MAS Notice 637

20 September 2023
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NOTICE TO BANKS
BANKING ACT, CAP 19

NOTICE ON RISK BASED CAPITAL ADEQUACY REQUIREMENTS FOR BANKS INCORPORATED IN SINGAPORE

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PART I: INTRODUCTION

1.1.1 This Notice is issued pursuant to section 10(2), section 10A(1), section 10B(1), and section 65(2) of the Banking Act and applies to all Reporting Banks.

1.1.2 This Notice establishes the capital adequacy ratios and leverage ratio requirements for a Reporting Bank and the methodologies a Reporting Bank must use for calculating these ratios ("Pillar 1")[1].

1.1.3 This Notice also sets out the requirements in respect of the internal capital adequacy assessment process of a Reporting Bank under the supervisory review process ("Pillar 2").

1.1.4 This Notice also specifies the minimum disclosure requirements for a Reporting Bank in relation to its capital adequacy, with a view to enhancing market discipline ("Pillar 3").

1.1.5 This Notice takes effect on 1 July 2024.

[1] While this Notice provides a range of approaches for calculating regulatory capital requirements, a Reporting Bank should adopt the approaches that are commensurate with the complexity and sophistication of its business and operations.

PART II: DEFINITIONS

2.1.1 The expressions used in this Notice are defined in the Glossary at Annex 2A.

2.1.2 The expressions used in this Notice shall, except where defined in this Notice or where the context otherwise requires, have the same meanings as in the Banking Act 1970.

2.1.3 Any reference to a paragraph, Sub-division, Division, Part or Annex is a reference to a paragraph, Sub-division, Division, Part or Annex in this Notice unless otherwise specified.

Annex 2A

GLOSSARY

α	in relation to the CCR internal models method, means the alpha factor set out in paragraph 2.9 of Annex 7E;
ABCP conduit	means a bankruptcy-remote SPE which issues commercial paper under an ABCP programme;
ABCP programme or asset-backed commercial paper programme	means a programme under which commercial paper is issued by a bankruptcy-remote SPE to third party investors with an original maturity of one year or less and is backed by assets or other exposures held by the bankruptcy-remote SPE;
ABCP programme investor	means the holder of – (a) commercial paper issued under an ABCP programme; or (b) any type of exposure to an ABCP conduit representing a financing liability of the ABCP conduit[2];
ABCP programme sponsor	means an entity which – (a) purchases or advises or causes an SPE to purchase the exposures of a third party, which are then used to back commercial papers issued under an ABCP programme; or (b) places ABCP securities into the market, or provides liquidity or credit enhancements to the ABCP;
ABCP transaction	means a transaction[3] in which an ABCP conduit acquires – (a) in the case where the law governing the transaction recognises the acquisition of beneficial interests, a beneficial interest in an asset or pool of assets; or (b) in the case where the law governing the transaction does not recognise the acquisition of beneficial interests, an interest in an asset or pool of assets;
ABCP transaction seller	means a party that – (a) has done either of the following: (i) concluded in its capacity as original lender the original agreement that created any of the following obligations or potential obligations: (A) a credit claim of an obligor; (B) a receivable of an obligor; (ii) purchased any of the obligations or potential obligations referred to in sub-paragraph (a)(i) from one or more original lenders that was or were parties to one or more original agreements that created the obligation or potential obligation; and

[2] For example, loans.

[3] This may include a direct asset purchase, an acquisition of undivided interest in a replenishing pool of assets, or a secured loan.

(b) has transferred the assets arising from the obligation or potential obligation referred to in sub-paragraph (a)(i), or passed on an interest in such assets, to an ABCP conduit through an ABCP transaction;

Accounting Loss Allowance	means the loss allowance for expected credit losses on the selected non-credit-impaired exposures[4] set out in Appendix C of MAS Notice 612, that is determined and recognised in accordance with the impairment measurement requirements under FRS 109;
Accounting Standards	has the same meaning as in section 4(1) of the Companies Act 1967;
ADC	means land acquisition, development and construction;
affiliate	means – (a) an entity that has a beneficial interest in 20% or more of the total number of ordinary shares or controls 20% or more of the voting power in the Reporting Bank; (b) an entity in which the Reporting Bank has a beneficial interest in 20% or more of the total number of ordinary shares or controls 20% or more of the voting power in the entity; or (c) an entity in which a related corporation of the Reporting Bank has a beneficial interest in 20% or more of the number of ordinary shares or controls 20% or more of the voting power in the entity;
A-IRBA or advanced IRBA	in relation to the IRBA wholesale asset class, means the approach under the IRBA under which a Reporting Bank uses its own estimates of PD, LGD and EAD;
APL or actual P&L	in relation to the IMA, means the P&L derived from the daily P&L process;
approved exchange	has the same meaning as in section 2 of the Securities and Futures Act 2001;
asset class	means – (a) in relation to the SA(CR), one of the classes of exposures set out in Sub-division 1 of Division 3 of Part VII; and (b) in relation to the IRBA, one of the classes of exposures set out in Sub-division 5 of Division 4 of Part VII;
associate	has the same meaning as "associate" under the Accounting Standards;

[4] To avoid doubt, "non-credit-impaired exposures" means credit exposures that do not fall within the definition of "credit-impaired financial asset" under FRS 109.

AT1 Capital or Additional Tier 1 Capital	means – (a) in relation to a Reporting Bank, the sum of items set out in paragraph 6.2.1; and (b) in relation to a subsidiary of a Reporting Bank, the sum of items set out in paragraph 6.2.1, where a reference to "Reporting Bank" shall be construed as a reference to "the subsidiary of the Reporting Bank";
AT1 capital instrument	means a capital instrument which complies with the requirements set out in paragraph 6.2.2;
automatic interest rate option	means an option arising from a standalone instrument[5], or explicitly embedded within the contractual terms of an instrument[6] where the option holder may be reasonably expected to exercise the option if it is in the option holder's financial interest to do so;
BA-CVA or basic approach for credit valuation adjustment	means the approach for calculating capital requirements for CVA risk set out in Sub-division 2 of Division 5 of Part VIII;
bank	means – (a) any company which holds a valid licence under section 7 or 79 of the Banking Act[7]; or (b) any entity established or incorporated in a foreign country or jurisdiction which is approved, licensed, registered or otherwise regulated by a bank regulatory agency of the foreign country or jurisdiction to carry on banking business under the laws of the foreign country or jurisdiction[8];
Banking Act	means Banking Act 1970;
banking book	means all on-balance sheet and off-balance sheet exposures of a Reporting Bank other than its trading book positions;
banking group	means the Reporting Bank and its banking group entities;
banking group entity	means any subsidiary or any other entity which is treated as part of the Reporting Bank's group of entities according to the Accounting Standards;
bank regulatory agency	in relation to a foreign country or jurisdiction, means an authority in the foreign country or jurisdiction exercising any function that corresponds to a regulatory function of the Authority under the Banking Act;

5 For example, an exchange-traded or OTC option contract.
6 For example, a capped rate loan.
7 Including the branches and offices of the company located outside Singapore.
8 Including the branches and offices of the entity located outside Singapore.

basis risk	in relation to market risk, means the risk that prices of instruments in a hedge are not perfectly correlated with each other;
BCBS	means the Basel Committee on Banking Supervision;
behavioural interest rate option	means an option embedded implicitly or within the terms of financial contracts, such that changes in interest rates may effect a change in the behaviour of the client;
BI	in relation to the SA(OR), means business indicator;
business day	means any calendar day other than – (a) a public holiday in the country or jurisdiction concerned; (b) a bank holiday in the country or jurisdiction concerned; or (c) a day on which the financial markets are not open for business in the country or jurisdiction concerned;
cash pooling arrangement	means an arrangement involving treasury products whereby a Reporting Bank combines the credit and debit balances of all participating accounts into a single account balance to facilitate cash management, liquidity management or both;
CCF	means credit conversion factor;
CCP or central counterparty	means a clearing facility that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer and thereby ensuring the future performance of open contracts, through novation, an open offer system or other legally binding arrangements;
CCP RWA	means the risk-weighted assets for exposures to CCPs arising from CCR exposures and default fund exposures, calculated in accordance with Division 7 of Part VII;
CCP trade exposures	means current exposure, including the variation margin due to a clearing member but not yet received, potential future exposure and initial margin of a clearing member or a client of a clearing member arising from any OTC derivative transaction, exchange-traded derivative transaction, long settlement transaction or SFT;
CCR or counterparty credit risk	means the risk that the counterparty to a transaction or portfolio of transactions could default before the final settlement of the transaction's cash flows where there is a bilateral risk of loss, giving rise to an economic loss to the Reporting Bank if the transaction or portfolio of transactions with the counterparty has a positive economic value at the time of default, and vice versa;

CCR exposure	means any pre-settlement counterparty exposure arising from OTC derivative transactions, exchange-traded derivative transactions, long settlement transactions and SFTs;
CCR-IRBA RWA	means the risk-weighted assets for any CCR exposure (other than any exposure to a CCP arising from a CCR exposure), calculated in accordance with the IRBA;
CCR internal models method	means the method for calculating E or EAD, whichever is applicable, for any CCR exposure set out in Annex 7E;
CCR-SA RWA	means the risk-weighted assets for any CCR exposure (other than any exposure to a CCP arising from a CCR exposure), calculated in accordance with the SA(CR);
CDS	means credit default swap;
CET1 Capital or Common Equity Tier 1 Capital	means – (a) in relation to a Reporting Bank, the sum of the items set out in paragraph 6.1.1; and (b) in relation to a subsidiary of a Reporting Bank, the sum of items set out in paragraph 6.1.1, where a reference to "Reporting Bank" shall be construed as a reference to "the subsidiary of the Reporting Bank";
CET1 capital instrument	means a capital instrument which complies with the requirements set out in paragraph 6.1.2;
CET1 CAR	in relation to a Reporting Bank, means Common Equity Tier 1 capital adequacy ratio, calculated in accordance with paragraph 4.1.1;
CF	means commodities finance;
clean-up call	means an option which permits the securitisation exposures to be called before all of the underlying exposures or securitisation exposures have been repaid. In the case of a traditional securitisation, this is generally accomplished by repurchasing the remaining securitisation exposures once the underlying exposures or the outstanding securities issued have fallen below some specified level. In the case of a synthetic securitisation, the clean-up call may take the form of a clause that extinguishes the credit protection;
clearing member	means a member of, or a direct participant in, a CCP that is entitled to enter into a transaction with the CCP, regardless of whether it enters into trades with a CCP for its own hedging, investment or speculative purposes or whether it also enters into trades as a financial intermediary between the CCP and other market participants. Where a CCP has a link to a second CCP, that second CCP must be treated as a clearing member of the CCP;

client	in relation to a clearing member, means a party to a transaction with a CCP through either the clearing member acting as a financial intermediary, or the clearing member guaranteeing the performance of the client to the CCP;
client sub-account	in relation to a clearing member, means an account for – (a) transactions that it enters into with a client acting as a financial intermediary between the client and the CCP; and (b) collateral posted by such a client, that is held separately from the clearing member's proprietary transactions and collateral;
closed-end fund	has the same meaning as in section 2 of the Securities and Futures Act 2001;
CM or capital measure	has the same meaning as Tier 1 Capital;
collective investment scheme	has the same meaning as in section 2 of the Securities and Futures Act 2001;
commitment	means any contractual arrangement that has been offered by a Reporting Bank and accepted by a counterparty, to extend credit, purchase assets or issue credit substitutes, and includes – (a) any such arrangement that can be unconditionally cancelled by a Reporting Bank at any time without prior notice to the counterparty; and (b) any such arrangement that can be cancelled by a Reporting Bank if the counterparty fails to meet conditions set out in the contractual arrangement, including conditions that must be met by the counterparty prior to any initial or subsequent drawdown arrangement, but, in relation to the leverage ratio requirements and credit risk capital requirements, excludes any arrangement that meets all of the following conditions: (i) the Reporting Bank receives no fees or commissions, including administrative fees, to establish or maintain the arrangement[9]; (ii) the counterparty is required to apply to the Reporting Bank for the initial and each subsequent drawdown; (iii) the Reporting Bank has full authority, regardless of the fulfilment by the counterparty of the conditions set out in the facility documentation, over the execution of each drawdown under the arrangement;

[9] To avoid doubt –
(a) fees or commissions charged only at the time of each drawdown; and
(b) fees or commissions collected by the Reporting Bank on behalf of third-party service providers (e.g. external valuation fees, external legal fees, insurance fees),
do not disqualify a Reporting Bank from meeting this condition.

(iv) the Reporting Bank's decision on the execution of each drawdown under the arrangement is only made after the Reporting Bank assesses the creditworthiness of the counterparty immediately prior to drawdown, and for this purpose, the Reporting Bank may rely on its routine credit assessments of the counterparty, supplemented by a confirmation provided by a party independent of the functions responsible for originating exposures that no material adverse information has arisen subsequent to the most recent credit assessment that would affect the counterparty's creditworthiness immediately prior to drawdown;

(v) the counterparty is a corporation, partnership, limited liability partnership, sole proprietorship, trust or fund, which is closely monitored by the Reporting Bank on an ongoing basis, and the exposure to the counterparty falls into one of the following asset classes or asset sub-classes:

(A) in the case of an SA(CR) exposure, the corporate asset class or real estate asset class;

(B) in the case of an IRBA exposure, the general corporate asset sub-class, corporate small business asset sub-class, or SL asset sub-class;

(vi) the arrangement is not in respect of a loan that is to be drawn down in a number of tranches;

core market participant — means any of the entities listed in Annex 7Q;

corporate exposure — means –

(a) in relation to the SA(CR), an exposure that falls within paragraph 7.3.1(g); and

(b) in relation to the IRBA, an exposure that falls within paragraph 7.4.42(a), (b), (e) or (f);

corporation — means any body corporate formed or incorporated or existing in Singapore or outside Singapore and includes any foreign company;

cover pool — in relation to an issuance of covered bonds, means a pool of assets that are –

(a) legally or beneficially owned or legally and beneficially owned by a bank, a mortgage institution or an SPV;

(b) held by a bank or a mortgage institution as trustee, or a replacement trustee, on behalf of an SPV; or

(c) both,

for the purposes of securing the payment of –

(i) the liabilities to the holders of the covered bonds;

(ii) any liabilities arising from the enforcement of the rights of the holders of the covered bonds; and

(iii) any liabilities to third party service providers appointed for the operation and administration of the covered bonds programme;

covered bond	(a) in the case of paragraph 3.1.5 and paragraph 1.4 of Annex 4C, has the same meaning as in MAS Notice 648; and (b) in all other cases, means any bond, note or other debenture issued by a bank or a mortgage institution, whether directly or through an SPV, and that meets all of the following requirements: (i) the bond, note or debenture must be subject to a law, whether in Singapore or outside Singapore, that protects all holders of the bond, note or debenture; (ii) the proceeds derived from the issuance of the bond, note or debenture must be invested in conformity with the law mentioned in sub-paragraph (b)(i) in assets that form a cover pool, where – (A) the aggregate value of the assets can satisfy all claims attached to the bond, note or debenture, during the duration of the validity of the bond, note or debenture; and (B) in the event that the issuer defaults on the bond, note or debenture, the assets will be used on a priority basis for the reimbursement of the principal, and the payment of the accrued interest, to the holder of the bond, note or debenture; (iii) a holder of the bond, note or debenture may enforce his rights against, and recover any payment owed to him by, the issuer of the bond, note or debenture;
CPF	means the Central Provident Fund Board constituted under section 3 of the Central Provident Fund Act 1953;
CPR	means conditional prepayment rate;
CPSS	means Committee on Payment and Settlement Systems;
CRE	means commercial real estate;
credit derivative	means any contract which transfers the credit risk of a reference obligation or set of reference obligations from the protection buyer to the protection seller, such that the protection seller has an exposure to the reference obligation(s);
credit enhancement	means a contractual arrangement in which a Reporting Bank or other entity retains or assumes a securitisation exposure that, in substance, provides some degree of credit protection to other parties to the securitisation;
credit RWA	means the risk-weighted assets for credit risk, determined in the manner set out in paragraph 7.1.1;
credit-enhancing interest only strip	means an on-balance sheet asset that represents a valuation of cash flows related to future margin income and is subordinated to the other securitisation exposures in a securitisation;

CRM or credit risk mitigation	means any technique used by a Reporting Bank to reduce the credit risk associated with any exposure which the Reporting Bank holds;
cross-product netting	means the netting between a Reporting Bank and a counterparty of pre-settlement counterparty exposures arising from transactions involving 2 or more of the following product categories: (a) OTC derivative transaction; (b) repo, reverse repo, securities or commodities lending transaction and securities or commodities borrowing transaction; (c) margin lending transaction;
CSR	in relation to market risk, means credit spread risk;
CSRBB	means credit spread risk in the banking book;
CTP or correlation trading portfolio	means a portfolio that incorporates – (a) securitisation exposures[10] that meet all of the following criteria: (i) the positions are not either of the following: (A) resecuritisation positions; (B) derivatives of securitisation exposures that do not provide a pro rata share in the proceeds of a securitisation tranche[11]; (ii) all reference instruments are single-name products, including single-name credit derivatives and traded indices based on single-name products, for which a liquid two-way market exists; (iii) the positions do not reference an underlying exposure that would fall within the scope of the regulatory retail asset class, other retail asset class, or real estate asset class, as set out in paragraph 7.3.1(i), (j) and (k), respectively, under the SA(CR); (iv) the positions do not reference a claim on a special purpose entity, where the special purpose entity-issued instrument is backed, directly or indirectly, by a position that would itself be excluded if held by a Reporting Bank directly; and (b) exposures that are not securitisation exposures and that hedge the securitisation exposures described in sub-paragraph (a),

[10] To avoid doubt, this includes n-th-to-default credit derivatives.

[11] Examples of derivatives of securitisation exposures that do not provide a pro rata share in the proceeds of a securitisation tranche are options on a securitisation exposure or a leveraged securitisation exposure.

	and for the purposes of this definition, a liquid two-way market is deemed to exist where there are independent bona fide offers to buy and sell so that a price reasonably related to the last sales price or current bona fide competitive bid and offer quotations can be determined within one day and trades settled at such price within a relatively short time conforming to trade custom;
currency mismatch	means a situation where an exposure and the collateral or credit protection provided in support of it are denominated in different currencies;
current exposure	means the larger of zero, or the current market value of a transaction or portfolio of transactions within a netting set with a counterparty that would be lost upon the immediate default of the counterparty, assuming no recovery on the value of those transactions in a bankruptcy or insolvency;
curvature risk	in relation to market risk and CVA risk, means the additional potential loss beyond delta risk due to a change in a risk factor for an instrument with optionality;
CVA or credit valuation adjustment	in relation to a Reporting Bank, means an adjustment to the mid-market valuation of the portfolio of trades with a counterparty, which reflects the market value of credit risk, and may include either the market value of the credit risk of the counterparty or the market value of the credit risk of both the Reporting Bank and the counterparty;
CVA loss	means CVA which has already been recognised by a Reporting Bank as an incurred write-down;
CVA portfolio	has the meaning in paragraph 8.5.2(b);
CVA risk	means the risk of losses arising from changes in – (a) CVA in response to changes in counterparty credit spreads; and (b) risk factors that affect values of derivative transactions or SFTs;
CVA RWA	means the risk-weighted assets for regulatory CVA calculated in accordance with Division 5 of Part VIII;
D-SIB	means domestic systemically important bank;
default	in relation to the SA(CR) or the IRBA, has the meaning in Annex 7L;

default fund[12]	means a fund established by a CCP, comprising the pre-funded or unfunded contributions of a CCP and its clearing members towards, or underwriting of, a CCP's mutualised loss sharing arrangements, and includes initial margins posted to a CCP in the case where the CCP uses the initial margins to mutualise losses among clearing members;
default fund exposure	means exposure arising from contributions of a Reporting Bank to a default fund of a CCP;
delta risk	in relation to market risk and CVA risk, means the linear estimate of the potential loss resulting from the change in value of an instrument due to a change in value of a risk factor[13];
dilution	means any reduction in a receivable amount through cash or non-cash credits to an obligor of the receivable;
distribution of exposures	means the forecast of the probability distribution of market values that is generated by setting forecast instances of negative net market values equal to zero;
distribution of market values	means the forecast of the probability distribution of net market values of transactions within a netting set for some future date (i.e. the forecasting horizon) given the realised market value of those transactions up to the present time;
diversification	in relation to market risk and CVA risk, means the reduction in risk when positions in instruments are aggregated due to the positions in different instruments not being perfectly correlated with one another;
DRC	in relation to the market risk, means default risk capital;
DvP or delivery-versus-payment transaction	means a transaction where cash is paid simultaneously with the receipt of the corresponding receivable of securities, foreign exchange instruments or commodities, or conversely, the delivery of securities, foreign exchange instruments or commodities simultaneously with the receipt of the corresponding cash payment, and includes a payment-versus-payment transaction;
EAD or exposure at the time of default	has the meaning in paragraph 4.1 of Annex 7U;

[12] A default fund may also be known as clearing deposits, guaranty fund deposits or any other name. The substance of a CCP's mutualised loss sharing arrangements, rather than the description given by a CCP to its mutualised loss sharing arrangements, is determinative of the status of the arrangement as a default fund.

[13] For example, a change in the price of an equity or commodity, or a change in an interest rate, credit spread or foreign exchange rate.

early amortisation provision	means a contractual provision that, once triggered, accelerates the reduction of the investor's interests in underlying exposures of a securitisation in which one or more underlying exposures represent, directly or indirectly, current or future draws on a revolving loan[14], and allows investors to be paid out prior to the originally stated maturity of the securities issued;
early redemption risk	means the risk of early withdrawal for fixed rate term deposits;
ECAI	means an external credit assessment institution, and includes all entities trading under the trade name of that external credit assessment institution;
EE or expected exposure	means the average of the distribution of exposures at any particular future date before the longest maturity transaction in the netting set matures;
effective EE	means as at a specific date – (a) the maximum EE that occurs at that date or any prior date; or (b) the greater of the expected exposure at that date, or the effective EE at the previous date;
effective EPE	means the weighted average over time of effective EEs over the first year, or if all the contracts within the netting set mature before one year, over the time period of the longest maturity contract in the netting set, where the weights are the proportion that an individual effective EE represents of the entire time interval;
EL or expected loss	in relation to the IRBA, means the ratio of the amount expected to be lost on an exposure arising from a potential default of a counterparty, dilution or both, over a one-year period to the amount outstanding at default;
EL amount	has the meaning in Sub-division 14 of Division 4 of Part VII;
eligible CRE	means any CRE held as collateral where the requirements set out in Annex 7H are satisfied;
eligible credit protection	means any guarantee (or other instrument as the Authority may allow) or credit derivative where the requirements set out in Annex 7H are satisfied;
eligible CVA hedge	means a CVA hedge that meets the eligibility criteria specified in paragraph 8.5.15 for the BA-CVA and paragraph 8.5.28 for the SA-CVA, whichever is applicable;

[14] Examples of revolving loans include credit card exposures, home equity lines of credit, commercial lines of credit, and other lines of credit.

eligible financial collateral	means – (a) in relation to the FC(SA), one or more types of collateral set out in paragraphs 2.2 and 2.10 of Annex 7H; and (b) in relation to the FC(CA) or the F-IRBA, one or more types of collateral set out in paragraphs 2.8 and 2.10 of Annex 7H, where the requirements set out in Annex 7H are satisfied;
eligible IRBA collateral	means one or more types of collateral set out in paragraph 2.11 of Annex 7H where the requirements set out in that Annex are satisfied;
eligible physical collateral	means any physical collateral where the requirements set out in Annex 7H are satisfied;
eligible protection provider	means any of the following, excluding an individual: (a) in relation to the SA(CR), SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA, a guarantor or protection seller which is – (i) a central government, a central bank, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism or the European Financial Stability Facility; (ii) an MDB; (iii) a PSE; (iv) an entity which would fall within the bank asset class in paragraph 7.3.1(e); (v) a qualifying CCP; (vi) an entity holding a capital markets services licence under the Securities and Futures Act 2001, other than entities that carry on business in providing credit rating services as defined under section 2(1) of the Securities and Futures Act 2001 and venture capital fund managers as defined under regulation 14(5) of the Securities and Futures (Licensing and Conduct of Business) Regulations; (vii) an entity licensed to carry on insurance business under the Insurance Act 1966; (viii) a securities firm in a foreign country or jurisdiction or an entity licensed to carry on insurance business in a foreign country or jurisdiction, where such entities are subject to prudential standards and supervision consistent with international norms; or (ix) in the case where the credit protection is – (A) not provided for a securitisation exposure, any other entity, including a related corporation of the counterparty to which the Reporting Bank has an exposure and for which the credit protection is provided, with an external credit assessment by a recognised ECAI; or (B) provided for a securitisation exposure, any other entity other than an SPE, and including a related corporation of the counterparty to which the

Reporting Bank has an exposure and for which the credit protection is provided, which has a credit quality grade of "2" or better as set out in Table 7M-1 at the time the credit protection was provided, and a credit quality grade of "3" or better as set out in Table 7M-1 during the period of recognition of the effects of CRM;

(b) in relation to the F-IRBA or the supervisory slotting criteria, a guarantor or protection seller which is –
  (i) any entity in sub-paragraphs (a)(i) to (a)(ix); or
  (ii) any entity which is internally rated;

(c) in relation to market risk, a guarantor or protection seller which is –
  (i) any entity in sub-paragraphs (a)(i) to (a)(ix); or
  (ii) any entity which has an existing internal rating under the F-IRBA or the A-IRBA;

eligible purchased receivables exposure	in relation to the IRBA, means any exposure that falls within paragraph 7.4.56;
eligible receivables	means any financial receivables held as collateral where the requirements set out in Annex 7H are satisfied;
eligible RRE	means any RRE held as collateral where the requirements set out in Annex 7H are satisfied;
Eligible Total Capital	in relation to a Reporting Bank or subsidiary of the Reporting Bank, means the sum of Tier 1 Capital and Tier 2 Capital;
EM or exposure measure	means the exposure amount in respect of an item as calculated in accordance with Annex 4C;
EPE or expected positive exposure	means the weighted average over time of EEs over the first year, or if all the contracts within the netting set mature before one year, over the time period of the longest maturity contract in the netting set, where the weights are the proportion that an individual EE represents of the entire time interval;
equity exposure	has the meaning given to it in paragraph 7.3.9;
ES or expected shortfall	means the average of all potential losses exceeding the VaR at a particular confidence level;
EVE	means the economic value of equity;
ΔEVE	means change in economic value of equity under an interest rate stress or shock scenario, calculated by subtracting the economic value of equity under the interest rate stress or shock scenario from the economic value of equity under the current interest rates;

excess spread	means any gross finance charge collections and other income received by the trust or SPE after deducting certificate interest, servicing fees, charge-offs, and other senior trust or SPE expenses;
external CVA hedge	in relation to a Reporting Bank, means a CVA hedge with a counterparty external to the Reporting Bank;
facility grade	in relation to wholesale exposures, means a risk category within the facility rating scale of a rating system to which exposures are assigned on the basis of a specified and distinct set of rating criteria and from which estimates of LGD are derived;
FC(CA) or financial collateral comprehensive approach	means the method for calculating the effects of CRM arising from eligible financial collateral set out in Annex 7J;
FC(SA) or financial collateral simple approach	means the method for calculating the effects of CRM arising from eligible financial collateral set out in Sub-division 4 of Division 3 of Part VII;
finance company	means a company licensed under section 6 of the Finance Companies Act 1967 to carry on financing business;
financial asset	has the same meaning as in FRS 32;
financial institution	means any of the following: (a) an entity, whether established or incorporated in Singapore or in a foreign country or jurisdiction, the principal activity of which is to carry on business in one or more of the following activities: (i) banking business; (ii) deposit-taking business; (iii) insurance business; (iv) dealing or trading in securities, exchange-traded derivative transactions or OTC derivative transactions, whether as an agent or on a proprietary basis; (v) foreign exchange trading and leveraged foreign exchange trading, whether as an agent or on a proprietary basis; (vi) advising on corporate finance; (vii) fund management; (viii) real estate investment trust management; (ix) securities financing; (x) providing custodial services; (xi) operating an exchange, trading system or market; (xii) providing central counterparty services;

(xiii) operating a payment system, securities depository, securities settlement system or trade repository;
(xiv) providing financial advisory services;
(xv) insurance broking;
(xvi) trust business;
(xvii) money broking;
(xviii) money-changing business;
(xix) remittance business;
(xx) lending;
(xxi) factoring;
(xxii) leasing;
(xxiii) provision of credit enhancements;
(xxiv) securitisation;
(xxv) such other business that the Authority may specify from time-to-time;

(b) a holding company which holds as a subsidiary, a bank or an insurance subsidiary;

(c) a CCP;

(d) any entity that is approved, licensed, registered or otherwise regulated by the Authority;

financial instrument	means any contract between 2 entities that gives rise to both a financial asset of one entity and a financial liability or equity of another entity, and includes both non-derivative and derivative instruments;
financial liability	has the same meaning as in FRS 32;
financial year	has the same meaning as in section 4(1) of the Companies Act 1967;
F-IRBA or foundation IRBA	in relation to the IRBA wholesale asset class, means the approach under the IRBA under which a Reporting Bank uses its own estimates of PD but not its own estimates of LGD and EAD;
foreign company	has the same meaning as in section 4(1) of the Companies Act 1967;
FRA	means a forward rate agreement;
FRS 32	means the Singapore Financial Reporting Standard 32;
FRS 105	means the Singapore Financial Reporting Standard 105;
FRS 109	means the Singapore Financial Reporting Standard 109;
FRS 110	means the Singapore Financial Reporting Standard 110;
FSB	means the Financial Stability Board;

FSB TLAC Term Sheet	means the FSB's TLAC principles and term sheet set out at the FSB's website;
funded credit protection	means a CRM where the reduction of the credit risk of an exposure of a Reporting Bank is derived from the right of the Reporting Bank, in the event of the default of a counterparty or on the occurrence of other specified credit events relating to the counterparty, to liquidate, to obtain transfer or appropriation of, or to retain, certain assets or amounts;
FX	means foreign exchange;
G-SIB	means global systemically important bank, as identified by the FSB;
gain-on-sale	means any increase in the equity of a Reporting Bank which is an originator resulting from the sale of underlying exposures in a securitisation;
general allowance	means loss allowance for credit exposures that do not fall within the definition of "credit-impaired financial asset" under FRS 109, and includes loss allowances maintained by a Reporting Bank in excess of the Accounting Loss Allowance;
general wrong-way risk	means the risk that arises when the probability of default of counterparties is positively correlated with general market risk factors;
GIRR	in relation to market risk, means general interest rate risk;
gross loss	in relation to the SA(OR), means a loss arising from an operational loss event before recoveries of any type;
HDB	means the Housing and Development Board established under section 3 of the Housing and Development Act 1959;
hedge	in relation to market risk and CVA risk, means the counterbalancing of risks from exposures to long and short risk positions in instruments whose price movements are correlated with each other;
hedging set	means a group of transactions within a single netting set within which full or partial offsetting is recognised for the purpose of calculating the potential future exposure under the SA-CCR;
higher level client	in relation to a multi-level client structure, means the financial institution providing clearing services;
holding period	in relation to collateralised transactions, means the period of time over which the exposure or collateral values are assumed to move before a Reporting Bank is able to close out the transactions;

house sub-account	in relation to a clearing member, means an account for (a) transactions conducted for its proprietary purposes and (b) collateral posted by the clearing member for such transactions, and that account is held separately from transactions conducted by the clearing member acting as a financial intermediary between the CCP and its client and collateral posted by such clients, in client sub-accounts;
HPL or hypothetical P&L	in relation to the IMA, means the daily P&L produced by revaluing the positions held at the end of the previous trading day, using the market data at the end of the current trading day;
HVCRE	means high-volatility commercial real estate;
IA	means the internal audit function or an equally independent function of a Reporting Bank;
ICA or independent collateral amount	means the amount of collateral other than variation margin posted by the counterparty that the Reporting Bank may seize upon default of the counterparty, which does not change in response to the value of transactions it secures, and includes the Independent Amount parameter defined in standard industry documentation[15];
ICAAP	means internal capital adequacy assessment process;
ILM	in relation to the SA(OR), means internal loss multiplier;
IMA or internal models approach	means the approach for calculating market risk capital requirements set out in Division 3 of Part VIII or, if the reference is to any regulatory requirements of, or administered by, a bank regulatory agency other than the Authority, the equivalent under those requirements;
IMA exposure	means any exposure for which a Reporting Bank is using the IMA to calculate its market risk capital requirement;
IMA portfolio	means a portfolio of risk positions held in trading desks that are in-scope of the IMA;
implicit support	in relation to a securitisation, means any support that a Reporting Bank provides to a securitisation in excess of its predetermined contractual obligations;
IMS	means internal measurement system;

[15] For example, the 1992 (Multicurrency-Cross Border) Master Agreement and the 2002 Master Agreement published by the International Swaps & Derivatives Association, Inc. (ISDA Master Agreement). The ISDA Master Agreement includes the ISDA Credit Support Annexes: the 1994 Credit Support Annex (Security Interest – New York Law), or, as applicable, the 1995 Credit Support Annex (Transfer – English Law) and the 1995 Credit Support Deed (Security Interest – English Law).

indirect client	means a financial institution which is not a direct clearing member, but provides clearing services as a client of a clearing member or a client of a client of a clearing member;
initial margin	in relation to exposures to a CCP, means collateral of a clearing member or a client of a clearing member posted to the CCP to mitigate the potential future exposure of the CCP to the clearing member arising from the possible future change in value of their transactions, but must not include any contribution to a CCP for mutualised loss sharing arrangements. This includes collateral in excess of the minimum amount required, provided the CCP or clearing member may prevent the clearing member or the client of a clearing member from withdrawing such excess collateral;
instrument	means a financial instrument or a contract giving rise to a position in foreign exchange or commodities, where commodities includes non-physical goods[16];
insurance business	means the business of assuming risk or undertaking liability under policies, and of – (a) receiving proposals for policies; (b) issuing policies; or (c) collecting or receiving premiums on policies, and but does not include the operation, otherwise than for profit, of a scheme or arrangement relating to service in particular offices or employments, and having for its object or one of its objects to make provision in respect of persons serving therein against future retirement or partial retirement, or against future termination of service through death or disability, or against similar matters. For the purpose of this definition, a policy includes any contract of insurance whether or not embodied in or evidenced by an instrument in the form of a policy;[17]
insurance subsidiary	means – (a) a subsidiary which carries on insurance business as an insurer; (b) a subsidiary which is – (i) a holding company of the subsidiary referred to in sub-paragraph (a); and (ii) subject to capital adequacy requirements set out in a direction or notice issued by the Authority under the Financial Holding Companies Act 2013; or (c) a subsidiary of the holding company referred to in sub-paragraph (b), which is included by the holding company in its computation of capital adequacy requirements set out in a direction or notice issued by the Authority under the Financial Holding Companies Act 2013;

[16] An example is electric power.

[17] To avoid doubt, insurance business includes reinsurance business.

internal CVA hedge	in relation to a Reporting Bank, means a hedge for CVA risk between the CVA portfolio and a market risk portfolio under the trading book of the Reporting Bank;
internal loss data	in relation to the SA(OR), means the internal data on operational risk losses;
internal risk transfer	means an internal written record of a transfer of risk within the banking book, between the banking book and the trading book or between different trading desks in the trading book;
internationally active bank	means a bank incorporated in Singapore which has been notified by the Authority that the Authority considers it to be internationally active, taking into consideration whether the bank has one or more banking group entity established or incorporated in a foreign country or jurisdiction which is approved, licensed, registered or otherwise regulated by a bank regulatory agency of the foreign country or jurisdiction to carry on banking business under the laws of the foreign country or jurisdiction, and whether the banking group entity's operations are significant in that foreign country or jurisdiction;
IOSCO	means the International Organisation of Securities Commissions;
IPRE	means income-producing real estate;
IRB pool or internal ratings-based pool	in relation to a securitisation, means a pool of underlying exposures to a securitisation for which a Reporting Bank has approval from the Authority under Sub-division 3 of Division 4 of Part VII, and sufficient information, to calculate capital requirements using the IRBA for all underlying exposures;
IRBA or internal ratings-based approach	means the approach for calculating credit risk-weighted exposure amounts set out in Division 4 of Part VII or, if the reference is to any regulatory requirements of, or administered by, a bank regulatory agency other than the Authority, the equivalent under those requirements;
IRBA adoption date	means the date from which a Reporting Bank begins using the IRBA for calculating any part of its regulatory capital requirements;
IRBA asset class	means any one of the classes of exposures belonging to the IRBA wholesale asset class, the IRBA retail asset class or the IRBA eligible purchased receivables asset class;
IRBA asset sub-class	in relation to the IRBA, means any one of the sub-classes of exposures set out in paragraphs 7.4.42, 7.4.50 and 7.4.56;

IRBA eligible purchased receivables asset class	in relation to the IRBA, means the class of exposures comprising eligible purchased receivables exposures;
IRBA exposure	means any exposure for which a Reporting Bank is using the IRBA to calculate its credit risk-weighted exposure amount;
IRBA for the IRBA retail asset class	means the approach under the IRBA for the IRBA retail asset class under which a Reporting Bank uses its own estimates of PD, LGD and EAD;
IRBA parameters	means PD, LGD and EAD;
IRBA retail asset class	in relation to the IRBA, means the class of exposures comprising retail exposures;
IRBA wholesale asset class	in relation to the IRBA, means the class of exposures comprising wholesale exposures;
IRRBB	means interest rate risk in the banking book;
ISDA	means the International Swaps and Derivatives Association;
IT	means information technology;
JTC	means the Jurong Town Corporation established under section 3 of the Jurong Town Corporation Act 1968;
	[MAS Notice 637 (Amendment) 2024]
JTD or jump to default	in relation to market risk, means an event where a credit exposure defaults before the market has factored its increased default risk into its current credit spreads;
JTD position	in relation to market risk, means the loss that could be incurred from a JTD;
legal event	means an event that results in a loss due to legal risk;
legal risk	means the risk of loss resulting from exposures to fines, penalties, damages or sums payable resulting from criminal prosecution, regulatory actions, supervisory actions, civil claims, settlements or similar actions;
LGD or loss given default	in relation to the IRBA and the SEC-IRBA, has the meaning in paragraph 3.1 of Annex 7U;
liquidity horizon	in relation to market risk, means the time assumed to be required to exit or hedge a risk position without materially affecting market prices in stressed market conditions;

long settlement transaction	means any transaction where a counterparty undertakes to deliver a security, a commodity or a foreign exchange amount against cash, other financial instruments or commodities, or vice versa, at a settlement or delivery date which is contractually specified as more than the lower of the market standard for this particular transaction type and 5 business days after the date on which the Reporting Bank enters into the transaction;
look-through approach	in relation to the SA(MR), means an approach in which the Reporting Bank determines the capital requirements for a position that has underlying instruments[18] as if the positions in underlying instruments were held directly by the Reporting Bank;
loss	in relation to the IRBA, means any economic loss on an exposure as described in Annex 7U;
lower level client	in relation to a multi-level client structure, means the financial institution clearing through – (a) a client of a clearing member; or (b) a client of a client of a clearing member;
LR or leverage ratio	in relation to a Reporting Bank, means the percentage calculated in accordance with paragraph 1.1 of Annex 4C;
M or effective maturity	in relation to the IRBA or the CCR internal models method, means the maturity of an exposure, determined in the manner set out in Annex 7V;
main index	means an index which – (a) comprises equities listed on any approved exchange or overseas exchange; and (b) is referenced by futures or options traded on any approved exchange or overseas exchange;
major stake company	in relation to a Reporting Bank, means any company in which the Reporting Bank is deemed, by virtue of section 32(7) of the Banking Act, to hold a major stake;
margin agreement	means any contractual agreement or any terms and conditions of an agreement, where one counterparty has to supply variation margin to a second counterparty when an exposure of that second counterparty to the first counterparty exceeds a specified level;
margin lending transaction	means a transaction in which a Reporting Bank extends credit in connection with the purchase, sale, carrying or trading of securities, where the loan amount is collateralised by securities whose value is generally greater than the amount of the loan, and

[18] A position that has underlying instruments could, for example, be an index instrument, multi-underlying option, or an equity investment in a fund.

	does not include other loans that happen to be collateralised by securities;
margin period of risk	means the time period from the last exchange of collateral covering a netting set of transactions with a defaulting counterparty until the netting set of transactions with the counterparty is closed out and the resulting market risk is re-hedged, where the last exchange of collateral refers to the market observation date corresponding to the last margin call to the counterparty for posting of the required collateral prior to its assumed default. To avoid doubt, the settlement process does not influence the length of the margin period of risk; [MAS Notice 637 (Amendment) 2024]
margin threshold	means the largest amount of an exposure that remains outstanding until one party has the right to call for variation margin;
mark-to-model	in relation to market risk, means any valuation which has to be benchmarked, extrapolated or otherwise calculated from a market input;
market risk	means the risk of losses arising from movements in market prices;
market RWA	means the risk-weighted assets for market risks, determined in the manner set out in paragraph 8.1.1;
maturity mismatch	means a situation where the residual maturity of the credit risk mitigant is less than the residual maturity of the underlying credit exposure;
MDB or multilateral development bank	means an institution which – (a) is created by 2 or more countries or jurisdictions; (b) provides financing and professional advice, for economic and social development projects; and (c) has its own independent legal and operational status;
mixed pool	in relation to a securitisation, means a pool of underlying exposures to a securitisation for which a Reporting Bank has approval from the Authority under Sub-division 3 of Division 4 of Part VII, and sufficient information, to calculate capital requirements using the IRBA for some, but not all, underlying exposures;
modellable risk factor	in relation to the IMA, means a risk factor that has passed the risk factor eligibility test in accordance with paragraph 8.3.111 and meets the requirements for the modellability of risk factors pursuant to paragraph 8.3.127;

mortgage institution	in relation to covered bond exposures, means any financial institution that provides a loan to an obligor for the purchase of any real estate, where the real estate is used as a security for that loan;
multi-level client structure	means any structure in which clearing services are provided by a financial institution which is an indirect client;
multi-underlying instrument	means an instrument that references multiple underlying instruments;
n-th-to-default credit derivative	means a contract where – (a) the payoff is based on the n-th asset to default in a basket of underlying reference instruments; and (b) the transaction terminates and is settled once the n-th default occurs;
net loss	in relation to the SA(OR), means the loss arising from an operational loss event after taking into account the impact of recoveries;
netting	means bilateral netting, including – (a) netting by novation, where obligations between 2 counterparties to deliver a given currency on a given value date under a transaction are automatically amalgamated with all other obligations under other transactions to deliver on the same currency and value date, thereby extinguishing former transactions with a single legally binding new transaction; (b) close-out netting, where some or all of the ongoing transactions between 2 counterparties are terminated due to the default of either counterparty or upon the occurrence of a termination event as defined in the netting agreement, whereupon the values of such transactions are combined and reduced to a single payable sum; and (c) in relation to a qualifying on-balance sheet netting agreement, the reduction of the loans and deposits of a Reporting Bank covered by the qualifying on-balance sheet netting agreement to a net sum that is to be paid to a counterparty or received by the Reporting Bank from a counterparty, but does not include payments netting which is designed to reduce the operational cost of daily settlements, where the gross obligations of the counterparties are not in any way affected;
netting agreement	means any agreement which effects netting between 2 counterparties, or any other arrangement to effect netting, which does not contain a walkaway clause;
netting set	means a group of transactions between 2 counterparties that is subject to a qualifying bilateral netting agreement or a qualifying

	cross-product netting agreement, as the case may be; any transaction which is not subject to a qualifying bilateral netting agreement or a qualifying cross-product netting agreement must be deemed a netting set;
NICA or net independent collateral amount[19]	means the amount of segregated and unsegregated collateral posted by the counterparty to the Reporting Bank, less the unsegregated collateral[20] posted by the Reporting Bank to the counterparty, and in relation to the Independent Amount defined in standard industry documentation, takes into account the differential of Independent Amount required for the Reporting Bank minus Independent Amount required for the counterparty;
NII	means net interest income;
ΔNII	means change in net interest income under an interest rate stress or shock scenario, calculated by subtracting the net interest income under the interest rate stress or shock scenario from the net interest income under the current interest rates;
NMDs or non-maturity deposits	means non-maturing deposits, which are liabilities of a Reporting Bank that have no contractually agreed maturity date and where a depositor is free to withdraw the deposits any time;
NMRF or non-modellable risk factor	in relation to the IMA, means a risk factor that has not passed the risk factor eligibility test in accordance with paragraph 8.3.111 or does not meet the requirements for the modellability of risk factors pursuant to paragraph 8.3.127;
nominated approach	means the approach used by a Reporting Bank to calculate its regulatory capital requirements for a particular type of risk under this Notice, other than one used solely to calculate the output floor as specified in paragraph 5.1.1;
non-DvP or non-delivery-versus-payment transaction	means a transaction where cash is paid without receipt of the corresponding receivable of securities, foreign exchange instruments or commodities, or conversely, the delivery of securities, foreign exchange instruments or commodities without the receipt of the corresponding cash payment;
non-performing loan securitisation or NPL securitisation	means a securitisation that fully meets the criteria set out in paragraph 7.6.85;
NOP	means net open foreign exchange positions;

[19] NICA represents the amount of collateral that a Reporting Bank may use to offset its exposure on the default of the counterparty.

[20] To avoid doubt, the collateral posted by the Reporting Bank to the counterparty, held in a segregated and bankruptcy remote manner, is not deducted in the calculation of NICA.

obligor grade	in relation to wholesale exposures, means a risk category within the obligor rating scale of a rating system to which obligors are assigned on the basis of a specified and distinct set of rating criteria and from which estimates of PD are derived;
OF	means object finance;
offsetting transaction	means the transaction leg between a clearing member and the CCP when the clearing member acts on behalf of a client, for example, when a clearing member clears or novates a client's trade;
one-sided CVA	means a credit valuation adjustment that reflects the market value of the credit risk of the counterparty to a Reporting Bank, but does not reflect the market value of the credit risk of the Reporting Bank to the counterparty;
operating entity	means an entity that is conducting business with the intention of earning a profit in its own right;
operational loss event	means an event that results in loss due to operational risk;
operational risk	means the risk of loss resulting from – (a) inadequate or failed internal processes; (b) actions or omissions of persons; (c) systems; or (d) external events, including legal risk, but does not include strategic or reputational risk;
operational RWA	means the risk-weighted assets for operational risk, determined in the manner set out in paragraph 9.1.1;
originator	means – (a) an entity which, either itself or through related entities, directly or indirectly, creates the exposure being securitised[21]; or (b) any entity which sponsors a securitisation, i.e. purchases or advises or causes an SPE to purchase the exposures of a third party, which are then used in a securitisation (to avoid doubt, selling credit protection such that the entity or the SPE has a long position in the credit risk of the obligor is equivalent to purchasing exposures)[22], and includes an ABCP programme sponsor;

[21] Where an entity lends to an SPE with a view to enabling that SPE to make loans which are then used in a securitisation, the entity will generally be deemed to be acting as an originator.

[22] An entity which advises or causes an SPE to purchase the exposures of a third party, which are then used in a securitisation will generally not be deemed to be acting as an originator if –

OTC	means over-the-counter;
OTC derivative transaction	means a derivative contract, including an exchange rate contract, interest rate contract, equity contract, precious metal or other commodity contract or credit derivative contract, which is not traded on an exchange;
overseas exchange	has the same meaning as in section 2 of the Securities and Futures Act 2001;
P&L	means profit and loss;
parameterisation process	means the process by which a Reporting Bank derives estimates of IRBA parameters as set out in Section 5 of Annex 7X;
PD or probability of default	in relation to the IRBA, has the meaning in paragraphs 2.1 and 2.2 of Annex 7U;
peak exposure	means a high percentile (typically 95% or 99%) of the distribution of exposures at any particular future date before the maturity date of the longest transaction in the netting set;
PE/VC investments	has the same meaning as defined in MAS Notice 630;
PF	means project finance;
PLA	in relation to the IMA, means P&L attribution;
predominantly banking DFHC	has the same meaning as in regulation 3 of the Financial Holding Companies Regulations;
pricing model	means a model that is used to determine the value of an instrument as a function of pricing parameters or to determine the change in the value of an instrument as a function of risk factors[23];
PSE or public sector entity	means – (a) a regional government or local authority that is able to exercise one or more functions of the central government at the regional or local level; (b) an administrative body or non-commercial undertaking responsible to, or owned by, a central government, regional

(a) the entity has not advised or caused the SPE to purchase any exposures which are then used in a securitisation before the date of issue of securities effecting the transfer of credit risk of those exposures to the investors in the securitisation;

(b) the entity will not be liable for any losses incurred by the SPE arising from the exposures (to avoid doubt, the entity may still be liable for losses arising from a breach of its fiduciary duties); and

(c) the entity does not undertake to achieve a minimum performance for the exposures.

[23] A pricing model may be the combination of several calculation steps, for example, a valuation technique to first calculate a price, followed by valuation adjustments for risks that are not taken into consideration in the first step and calculated using a model.

	government or local authority, which performs regulatory or non-commercial functions; (c) a statutory board in Singapore (other than the Authority); or (d) a town council in Singapore established pursuant to the Town Councils Act 1988;
QRRE	means qualifying revolving retail exposures;
qualifying bilateral netting agreement	means a bilateral netting agreement where the requirements set out in Annex 7G are complied with;
qualifying CCP	means a CCP that meets the requirements of paragraph 7.7.3;
qualifying cross-product netting agreement	means a cross-product netting agreement where the requirements set out in Annex 7G are complied with;
qualifying MDB	means an MDB listed in Annex 7O;
qualifying on-balance sheet netting agreement	means a netting agreement covering loans and deposits between a Reporting Bank and a counterparty where the requirements set out in Annex 7A are complied with;
qualifying repo-style transaction	means a repo-style transaction where the requirements set out in Annex 7P are complied with;
rating system	in relation to a class of exposures under the IRBA, means all of the methods, processes, controls, data collection and IT systems that support the assessment of credit risk, the assignment of exposures to grades or pools (internal risk ratings), and the parameterisation process for that class of exposures;
real estate	means an immovable property that is land, including agricultural land and forest, or anything treated as attached to land, in particular buildings, in contrast to being treated as movable or personal property;
real price	in relation to the risk factor eligibility test, under the IMA, has the same meaning as in paragraph 8.3.109;
recognised ECAI	means an ECAI recognised by the Authority pursuant to paragraph 7.3.126 and listed in Annex 7N;
recovery	in relation to the SA(OR), means an independent occurrence, related to the original operational loss event, separate in time, in which funds or inflows of economic benefits are received from a third party, and does not include receivables[24];

[24] Examples of recoveries are payments received from insurers, repayments received from perpetrators of fraud, and recoveries of misdirected transfers.

reference obligation	means any obligation specified under a credit derivative contract used for the purposes of either determining cash settlement value or the deliverable obligation;
regular way purchase or sale	has the same meaning as "regular way purchase or sale" under FRS 109;
regulatory capital	means capital which is used to meet regulatory requirements;
regulatory CRE exposure	in relation to the SA(CR), means an exposure in the regulatory real estate asset sub-class that is not a regulatory RRE exposure;
regulatory CVA	in relation to a Reporting Bank, means the adjustment to the valuations of derivative transactions or SFTs due to a potential default of a counterparty, specified at the level of each counterparty, reflecting the market value of credit risk[25];
regulatory loss allowance	means loss allowance held in excess of Accounting Loss Allowance, maintained in a non-distributable regulatory loss allowance reserve account mentioned in paragraph 6.3.8 of MAS Notice 612, including any loss allowance held in excess of the minimum level of loss allowance mentioned in paragraph 6.3.7 of MAS Notice 612;
regulatory RRE exposure	in relation to the SA(CR), means an exposure in the regulatory real estate asset sub-class that is – (a) secured by a real estate that has the nature of a housing and satisfies all applicable laws and regulations enabling the real estate to be occupied for housing purposes; or (b) secured by a real estate under construction, including land upon which real estate would be constructed, where the real estate being constructed has the nature of a housing, and is expected to satisfy all applicable laws and regulations enabling the real estate to be occupied for housing purposes;
repo	means a repurchase transaction;
repo-style transaction	means a transaction comprising any of the following: (a) a repo; (b) a reverse repo; (c) a securities lending transaction; (d) a securities borrowing transaction, where the value of the transaction depends on market valuation and the transaction is often subject to margin agreements;
Reporting Bank	means a bank incorporated in Singapore;

[25] Regulatory CVA may differ from CVA used for accounting purposes as follows:
(a) regulatory CVA excludes the effect of a Reporting Bank's own default;
(b) constraints imposed on the calculations of regulatory CVA reflect best practices in the industry for the calculations of CVA used for accounting purposes.

resecuritisation exposure	means a securitisation exposure in which the risk associated with an underlying pool of exposures is tranched and at least one of the underlying exposures is a securitisation exposure, and – (a) includes an exposure to one or more resecuritisation exposures; and (b) excludes an exposure resulting from retranching of a securitisation exposure, if the Reporting Bank is able to demonstrate to the satisfaction of the Authority that the cash flows to and from the Reporting Bank could be replicated in all circumstances and conditions by an exposure to the securitisation of a pool of assets that contains no securitisation exposures;
retail exposure	in relation to the IRBA, means any exposure which falls within paragraph 7.4.50;
reverse repo	means a reverse repurchase transaction;
revolving loan	means a credit facility where the obligor is allowed to drawdown, repay and re-draw the credit facility advanced to it, and has the flexibility to decide how often to withdraw from the credit facility and at what time intervals, and includes credit facilities that allow prepayments and subsequent re-draws of those prepayments;
risk bucket	in relation to the SA(MR), means a defined group of risk factors with similar characteristics;
risk charge	in relation to the SSA(MR), means the percentage assigned to that position to derive the capital requirement;
risk class	(a) in relation to the SA(MR), means any of the following classes of risks, that is used by the Reporting Bank as the basis for calculating market risk capital requirements: (i) general interest rate risk; (ii) credit spread risk (non-securitisation); (iii) credit spread risk (securitisation: non-correlation trading portfolio); (iv) credit spread risk (securitisation: correlation trading portfolio); (v) foreign exchange risk; (vi) equity risk; (vii) commodity risk; and (b) in relation to the SA-CVA, means any of the following classes of risk, that is used by the Reporting Bank as the basis for calculating CVA risk capital requirements: (i) interest rate risk; (ii) foreign exchange risk; (iii) counterparty credit spread risk; (iv) reference credit spread risk; (v) equity risk; (vi) commodity risk;

risk factor	in relation to market risk and CVA risk, means a principal determinant of the change in value of an instrument[26];
risk position	in relation to market risk and CVA risk, means the portion of the current value of an instrument that is subject to losses due to changes in a risk factor[27];
risk weight	in relation to an exposure, means a degree of risk expressed as a percentage assigned to that exposure;
risk weight function	in relation to the IRBA, means the formula for calculating credit risk-weighted exposure amounts using estimates of IRBA parameters;
risk-free rate	means the interest rate of a risk-free investment for a given maturity;
RRAO	in relation to the SA(MR), means residual risk add-on;
RRE	means residential real estate;
RTPL or risk-theoretical P&L	in relation to the IMA, means the daily trading desk-level P&L that is predicted by the valuation engines in the trading desk risk management model using all risk factors used in the trading desk risk management model (including the NMRFs);
RWA	means risk-weighted assets;
RWE	means risk-weighted exposure;
SA-CCR or standardised approach for counterparty credit risk	means the method for calculating E or EAD, whichever is applicable, for any pre-settlement counterparty exposure arising from OTC derivative transactions or exchange-traded derivative transactions, or long settlement transactions set out in Annex 7D;
SA(CR) or standardised approach to credit risk	means the approach for calculating credit risk-weighted exposure amounts set out in Division 3 of Part VII or, if the reference is to any regulatory requirements of, or administered by, a bank regulatory agency other than the Authority, the equivalent under those requirements;
SA(CR) exposure	means any exposure for which a Reporting Bank is using the SA(CR) to calculate its credit risk-weighted exposure amount;

[26] For example, an exchange rate or interest rate.

[27] For example, a bond denominated in a currency different from a Reporting Bank's reporting currency has risk positions in general interest rate risk, credit spread risk (non-securitisation) and foreign exchange risk, where the risk positions are the potential losses to the current value of the instrument that could occur due to a change in the relevant underlying risk factors, which are interest rates, credit spreads, or exchange rates).

SA-CVA or standardised approach for credit valuation adjustment	means the approach for calculating capital requirements for CVA risk set out in Sub-division 3 of Division 5 of Part VIII;
SA(IR)	means the standardised approach for calculating IRRBB as set out in Annex 10B;
SA(MR) or standardised approach to market risk	means the approach for calculating market risk capital requirements set out in Division 2 of Part VIII;
SA(OR) or standardised approach to operational risk	means the approach for calculating operational risk capital requirements set out in Division 1 of Part IX or, if the reference is to any regulatory requirements of, or administered by, a bank regulatory agency other than the Authority, the equivalent under those requirements;
SA pool or standardised approach pool	in relation to a securitisation, means a pool of underlying exposures to a securitisation for which a Reporting Bank – (a) does not have approval from the Authority to use the IRBA to calculate capital requirements for any underlying exposures or does not have sufficient information to calculate capital requirements using the IRBA for any underlying exposures; or (b) is prohibited by the Authority from treating the pool as a IRB pool or a mixed pool;
SBM	in relation to the SA(MR), means the sensitivities-based method;
SEC-ERBA or securitisation external ratings-based approach	means the approach for calculating credit risk-weighted exposure amounts for securitisation exposures set out in Sub-division 5 of Division 6 of Part VII;
SEC-IAA or securitisation internal assessment approach	means the method for calculating credit risk-weighted exposure amounts for securitisation exposures set out in Sub-division 6 of Division 6 of Part VII;
SEC-IRBA or securitisation internal ratings-based approach	means the approach for calculating credit risk-weighted exposure amounts for securitisation exposures set out in Sub-division 4 of Division 6 of Part VII;

SEC-SA or securitisation standardised approach	means the approach for calculating credit risk-weighted exposure amounts for securitisation exposures set out in Sub-division 7 of Division 6 of Part VII;
securities	means – (a) any securities as defined in section 2 of the Securities and Futures Act 2001; (b) any specified securities-based derivatives contracts as defined in section 2 of the Securities and Futures Act 2001; or (c) any units in a collective investment scheme;
securities firm	means – (a) any entity holding a capital markets services licence granted by the Authority under section 86 of the Securities and Futures Act 2001[28]; or (b) any entity established or incorporated in a foreign country or jurisdiction which is approved, licensed, registered or otherwise regulated by a regulatory agency of the foreign country or jurisdiction to carry on business in capital markets services under the laws of the foreign country or jurisdiction[29];
securitisation	means any transaction or scheme involving the tranching of credit risk associated with an exposure or a pool of exposures and which has all of the following characteristics: (a) payments in the transaction or scheme depend on the performance of the exposure or pool of exposures; (b) the subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme; (c) junior tranches can absorb losses without interrupting contractual payments to more senior tranches;
securitisation exposure	means any exposure to a securitisation, and includes – (a) any on-balance sheet exposure to securities issued pursuant to a securitisation[30], regardless of whether it was retained by the originator at, or repurchased by the originator after, the origination of the securitisation; (b) any off-balance sheet exposure to a securitisation[31]; and (c) reserve accounts[32] recorded as an asset by the originator;
securitised exposure	means an exposure, securitised by a Reporting Bank in its capacity as originator or ABCP programme sponsor, that forms an underlying exposure of a securitisation;

[28] Including the branches and offices of the entity located outside Singapore.

[29] Including the branches and offices of the entity located outside Singapore.

[30] For example, asset-backed securities, mortgage-backed securities or collateralised debt obligations.

[31] For example, through credit enhancements, liquidity facilities, credit derivatives, tranched cover, interest rate swaps or currency swaps.

[32] For example, cash collateral accounts.

segmentation	in relation to retail exposures, means the process by which a Reporting Bank aggregates retail exposures into homogenous pools;
senior securitisation exposure	in relation to a securitisation, is an exposure to a senior securitisation tranche;
senior securitisation tranche	in relation to a securitisation, is a tranche that is effectively backed or secured by a first claim on the cash flows from the underlying exposures, and where a senior tranche is retranched, or partially hedged and not on a pro rata basis, is the new most senior tranche[33];
sensitivity	in relation to market risk and CVA risk, means a Reporting Bank's estimate of the change in value of an instrument due to a small change in one of its underlying risk factors[34];
servicer	means any entity which carries out administrative functions relating to the cash flows of the underlying exposure or pool of exposures of a securitisation, including setting up and operating the mechanism for collecting payments of interest or principal derived from the underlying exposures and channeling these funds to the investors or the trustee representing them, customer service, cash management, maintenance of records and reporting duties;
SES	in relation to the IMA, means stressed expected shortfall;
settlement date accounting	has the same meaning as "settlement date accounting" under FRS 109;
SFT	means a securities or commodities financing transaction comprising any one of the following: (a) a repo or a reverse repo; (b) a securities or commodities lending transaction or securities or commodities borrowing transaction; (c) a margin lending transaction, for which the value of the transaction depends on market valuation and the transaction is often subject to margin agreements;
SL	means specialised lending;
small business	means a corporation, partnership, limited liability partnership, sole proprietorship, trust, or fund (including a collective

[33] While this generally includes only the most senior securities issued pursuant to a securitisation, in some instances there may be other claims that may be more senior in the cash flow waterfall (e.g. a swap claim) but may be disregarded for the purpose of determining which tranches are senior. To avoid doubt, different maturities of several senior tranches that share pro rata loss allocation have no effect on the seniority of these tranches, since they benefit from the same level of credit enhancement.

[34] Delta risk and vega risk are examples of sensitivities.

	investment scheme or closed-end fund), with reported annual revenue of less than or equal to S$100 million, as determined in accordance with paragraph 7.3.4;
SPE or special purpose entity	means a corporation, trust, or other entity established for a specific purpose, the activities of which are limited to those appropriate to accomplish that purpose, and the structure of which is intended to isolate the SPE from the credit risk of an originator or seller of exposures;
specific allowance	means loss allowance for credit exposures that fall within the definition of "credit-impaired financial asset" under FRS 109;
specific wrong-way risk	means the risk that arises when the exposure to a particular counterparty is positively correlated with the probability of default of the counterparty due to the nature of the transactions with that counterparty[35];
SPV or special purpose vehicle	means any special purpose vehicle incorporated or established for the primary purpose of issuing covered bonds or holding the cover pool in relation to such covered bonds or both;
SSA(MR)	means the simplified standardised approach for calculating market risk capital requirements set out in Division 4 of Part VIII;
structured note	has the same meaning as in section 240AA(5) of the Securities and Futures Act 2001;
subsidiary	has the same meaning as in section 5 of the Companies Act 1967;
supervisory slotting criteria	in relation to the IRBA, means the method of calculating credit risk-weighted exposure amounts for exposures in the SL asset sub-class or the HVCRE asset sub-class in accordance with Sub-division 13 of Division 4 of Part VII and Annex 7S;
supervisory validation	means the process by which the Authority examines the readiness of the Reporting Bank for adopting the IRBA, for the purposes of deciding whether to approve the Reporting Bank's application to adopt the IRBA;
synthetic securitisation	means a structure with at least 2 different tranches which reflect different degrees of credit risk, where credit risk of an underlying exposure or pool of exposures is transferred, in whole or in part, through the use of funded or unfunded credit derivatives or guarantees;
TDRR	means term deposit redemption rate;

[35] For example, a company writing put options on its own shares creates wrong-way risk exposures for the buyer that is specific to the counterparty.

TEM or total exposure measure	means the amount as calculated in accordance with paragraph 2.3 of Annex 4C;
TEP or total eligible provisions	means the sum of all allowances, including specific allowances, partial write-offs, portfolio-specific general allowances[36], which are attributed to credit exposures subject to the IRBA, and includes any discounts as referred to in paragraph 7.2.5 on defaulted assets, but excludes – (a) any allowances set aside against securitisation exposures, or underlying exposures to securitisations, which are held on the balance sheet of a Reporting Bank which is an originator; and (b) any CVA loss;
the Board	means – (a) in relation to a banking group entity, the board of directors, or a designated committee of the board of directors, of the banking group entity; and (b) in all other cases, the board of directors, or a designated committee of the board of directors, of the Reporting Bank;
Tier 1 Capital	in relation to a Reporting Bank or subsidiary of the Reporting Bank, means the sum of CET1 Capital and AT1 Capital;
Tier 1 CAR	in relation to a Reporting Bank, means Tier 1 capital adequacy ratio, calculated in accordance with paragraph 4.1.2;
Tier 2 Capital	means – (a) in relation to a Reporting Bank, the sum of the items set out in paragraph 6.3.1; and (b) in relation to a subsidiary of a Reporting Bank, the sum of items set out in paragraph 6.3.1, where a reference to "Reporting Bank" shall be construed as a reference to "the subsidiary of the Reporting Bank";
Tier 2 capital instrument	means a capital instrument which complies with the requirements set out in paragraph 6.3.6;
TLAC or Total Loss-absorbing Capacity holding	means TLAC-eligible instruments as set out in the FSB TLAC Term Sheet;
Total CAR	in relation to a Reporting Bank, means total capital adequacy ratio, calculated in accordance with paragraph 4.1.3;
total EL amount	means the amount calculated in accordance with paragraph 7.4.136;
trade date accounting	has the same meaning as "trade date accounting" under FRS 109;

[36] For example, country or jurisdiction risk allowances or general allowances.

trading book	has the meaning in Sub-division 5 of Division 1 of Part VIII;
trading desk	has the meaning in paragraph 8.1.62;
trading-related repo-style transactions	means repo-style transactions that are entered into by a Reporting Bank for the purposes of market-making, locking in arbitrage profits or creating short credit or equity positions;
traditional securitisation	means a structure where the cash flow from an underlying exposure or pool of exposures is used to service at least 2 different tranches reflecting different degrees of credit risk;
tranche	means a contractually established segment of the credit risk associated with an underlying exposure or pool of exposures, where a position in the segment entails a risk of credit loss greater than or less than a position of the same amount in each other such segment, without taking account of credit protection provided by third parties directly to the holders of positions in the segment or in other segments;
uncompensated prepayments	means any prepayment of a loan, or any part of it, for which the economic cost is not charged to the obligor;
unconsolidated financial institution	means a financial institution whose assets and liabilities are not included in the consolidated financial statements of the Reporting Bank;
unconsolidated major stake company	means a major stake company whose assets and liabilities are not included in the consolidated financial statements of the Reporting Bank;
unfunded credit protection	means a CRM where the reduction of the credit risk of an exposure of a Reporting Bank is derived from the undertaking of a third party to pay an amount in the event of the default of a counterparty or on the occurrence of other specified events;
unrated	in relation to any exposure, means that the exposure does not have an external credit assessment from a recognised ECAI;
UST exposure or unsettled transaction exposure	means any exposure of a Reporting Bank in respect of a transaction on securities, foreign exchange instruments or commodities that gives rise to a risk of delayed settlement or delivery, including a transaction that – (a) is made through a CCP; (b) is subject to daily mark-to-market and payment of daily variation margins; and (c) involves a mismatched trade, but does not include any CCR exposure;

UST-DvP RWA	means the risk-weighted assets for UST exposures arising from unsettled DvP transactions calculated in accordance with Sub-division 2 of Division 8 of Part VII;
UST-non-DvP RWA	means the risk-weighted assets for UST exposures arising from unsettled non-DvP transactions calculated in accordance with Sub-division 3 of Division 8 of Part VII;
VaR or value-at-risk	in relation to a portfolio of instruments, means the maximum expected loss on the portfolio of instruments resulting from market movements over a given time horizon at a particular confidence level;
variation margin	in relation to exposures to a CCP, means funded collateral of a clearing member or a client of a clearing member posted on a daily or intraday basis to a CCP based on price movements of the transactions of the clearing member or the client of a clearing member;
vega risk	in relation to market risk and CVA risk, means the potential loss resulting from the change in value of a derivative due to a change in the implied volatility of an underlying instrument;
walkaway clause	means any provision which permits a party to a netting agreement that is not in default to make limited payments or no payments at all, to a defaulting party under the same netting agreement, even if the party that is in default is a net creditor under the netting agreement;
wholesale exposure	in relation to the IRBA, means an exposure that falls within paragraph 7.4.42.

PART III: SCOPE OF APPLICATION

Division 1: Capital Adequacy Ratio Requirements

Requirements to Apply at both the Solo and Group Levels

3.1.1 A Reporting Bank must comply with the capital adequacy ratio requirements in this Notice at 2 levels:

(a) the bank standalone ("Solo") level capital adequacy ratio requirements, which measure the capital adequacy of a Reporting Bank based on its standalone capital strength and risk profile;

(b) the consolidated ("Group") level capital adequacy ratio requirements, which measure the capital adequacy of a Reporting Bank based on its capital strength and risk profile after consolidating the assets and liabilities of its banking group entities, taking into account –

(i) any exclusions of certain banking group entities provided for under paragraphs 3.1.2 and 3.1.3; and

(ii) any adjustments pursuant to Division 6 of Part VII.

Non-consolidation of Certain Subsidiaries at the Group Level

3.1.2 A Reporting Bank must –

(a) not consolidate the assets and liabilities of an insurance subsidiary; and

(b) account for the investment in such a subsidiary at cost,

when preparing the consolidated financial statements of the banking group for the purposes of calculating its capital adequacy ratio requirements at the Group level.

3.1.3 Subject to paragraph 3.1.2 and Part VI, a Reporting Bank may exclude from consolidation the assets and liabilities of any other subsidiary when preparing the consolidated financial statements of the banking group for the purposes of calculating its capital adequacy ratio requirements at the Group level only where such non-consolidation is expressly permitted under the Accounting Standards. Despite the provisions set out in this paragraph, the exemption for an entity that is a parent from presenting consolidated financial statements in paragraph 4(a) of FRS 110 does not apply to the Reporting Bank for the purposes of complying with paragraph 3.1.1(b).

3.1.4 Pursuant to paragraphs 3.1.1(b), 3.1.2 and 3.1.3, and for the purposes of the capital adequacy ratio requirements at the Group level in this Notice (other than paragraphs 3.1.1(b), 3.1.2 and 3.1.3), a Reporting Bank must deem –

(a) all assets, liabilities, equity, transactions, exposures and operations of a banking group entity of a Reporting Bank to be that of the Reporting Bank

(per the scope of consolidation in paragraphs 3.1.1(b), 3.1.2 and 3.1.3); and

(b) all collateral held by a banking group entity of a Reporting Bank to be collateral held by the Reporting Bank (per the scope of consolidation in paragraphs 3.1.1(b), 3.1.2 and 3.1.3).

Issuers of covered bonds

3.1.5 Where the Reporting Bank issues covered bonds, the Reporting Bank must continue to hold capital against its exposures in respect of the assets included in a cover pool in accordance with this Notice. Where the Reporting Bank uses an SPV to issue covered bonds or to hold the cover pool, the Reporting Bank must apply a "look through" approach for the purposes of computing capital requirements under this Notice. Under the "look through" approach, the Reporting Bank must treat the Reporting Bank and the SPV as a single entity for the purposes of this Notice by –

(a) deeming the assets of the cover pool held in the SPV (if any) as assets of the Reporting Bank, at both the Solo and Group levels; and

(b) eliminating transactions between the Reporting Bank and the SPV.

Division 2: Leverage Ratio Requirements

Requirements to Apply at both the Solo and Group Levels

3.2.1 A Reporting Bank must comply with the leverage ratio requirements in this Notice at 2 levels:

(a) the bank standalone ("Solo") level, which measures the leverage ratio of a Reporting Bank based on its standalone capital strength;

(b) the consolidated ("Group") level, which measures the leverage ratio of a Reporting Bank based on its capital strength after consolidating the assets and liabilities of its banking group entities, taking into account –

(i) any exclusions of certain banking group entities provided for under paragraphs 3.2.2 and 3.2.3; and

(ii) any adjustments pursuant to Division 6 of Part VII.

Non-consolidation of Certain Subsidiaries at the Group Level

3.2.2 A Reporting Bank must –

(a) not consolidate the assets and liabilities of an insurance subsidiary; and

(b) account for the investment in such a subsidiary at cost,

when preparing the consolidated financial statements of the banking group for the purposes of calculating its leverage ratio at the Group level.

3.2.3 Subject to paragraph 3.2.2 and Part VI, a Reporting Bank may exclude from consolidation the assets and liabilities of any other subsidiary when preparing the consolidated financial statements of the banking group for the purposes of calculating its leverage ratio at the Group level only where such non-consolidation is expressly permitted under the Accounting Standards. Notwithstanding the provisions set out in this paragraph, the exemption for an entity that is a parent from presenting consolidated financial statements in paragraph 4(a) of FRS 110 does not apply to the Reporting Bank for the purposes of complying with paragraph 3.2.1(b).

3.2.4 Pursuant to paragraphs 3.2.1(b), 3.2.2 and 3.2.3, and for the purposes of the leverage ratio requirements at the Group level in this Notice (other than paragraphs 3.2.1(b), 3.2.2 and 3.2.3), a Reporting Bank must deem –

(a) all assets, liabilities, equity, transactions, exposures and operations of a banking group entity of a Reporting Bank to be that of the Reporting Bank (per the scope of consolidation in paragraphs 3.2.1(b), 3.2.2 and 3.2.3); and

(b) all collateral held by a banking group entity of a Reporting Bank to be collateral held by the Reporting Bank (per the scope of consolidation in paragraphs 3.2.1(b), 3.2.2 and 3.2.3).

PART IV: CAPITAL ADEQUACY RATIOS AND LEVERAGE RATIO

Division 1: Capital Adequacy Ratios

4.1.1 A Reporting Bank must calculate its Common Equity Tier 1 CAR as follows:

$$\textbf{CET1 CAR} = \frac{\textbf{CET1 Capital}}{\textbf{Credit RWA + Market RWA + Operational RWA}}$$

4.1.2 A Reporting Bank must calculate its Tier 1 CAR as follows:

$$\textbf{Tier 1 CAR} = \frac{\textbf{Tier 1 Capital}}{\textbf{Credit RWA + Market RWA + Operational RWA}}$$

4.1.3 A Reporting Bank must calculate its Total CAR as follows:

$$\textbf{Total CAR} = \frac{\textbf{Eligible Total Capital}}{\textbf{Credit RWA + Market RWA + Operational RWA}}$$

4.1.4 A Reporting Bank must determine[37] the denominators for CET1 CAR, Tier 1 CAR and Total CAR by taking the higher of –

(a) the sum of credit RWA, market RWA, and operational RWA, calculated using the Reporting Bank's nominated approaches; and

(b) its output floor calculated in accordance with Part V.

Minimum ratios

4.1.5 A Reporting Bank that is designated by the Authority as a D-SIB[38] must, at all times, maintain at both the Solo and Group levels, the minimum ratios set out in Table 4-1:

Table 4-1: Minimum ratios for a Reporting Bank that is designated by the Authority as a D-SIB

	Minimum CAR
Minimum CET1 CAR	6.5%
Minimum Tier 1 CAR	8%
Minimum Total CAR	10%

[37] Table 4A-1 provides a simple example of how a Reporting Bank must determine the denominators for CET1 CAR, Tier 1 CAR and Total CAR, assuming an output floor calibration of 72.5%.

[38] The list of designated D-SIBs is published on the Authority's website.

4.1.6 A Reporting Bank that is not designated by the Authority as a D-SIB must, at all times, maintain at both the Solo and Group levels the minimum ratios set out in Table 4-2:

Table 4-2: Minimum ratios for a Reporting Bank that is not designated by the Authority as a D-SIB

	Minimum CAR
Minimum CET1 CAR	4.5%
Minimum Tier 1 CAR	6%
Minimum Total CAR	8%

Capital conservation buffer

4.1.7 In addition to complying with the applicable minimum ratios in paragraph 4.1.5 or 4.1.6, as the case may be, a Reporting Bank must, at all times, maintain at both the Solo and Group levels, a capital conservation buffer comprising CET1 Capital of 2.5% of total RWA (sum of Credit RWA, Market RWA and Operational RWA).

4.1.8 A Reporting Bank must ensure that its CET1 Capital is first used to meet the applicable minimum ratios in paragraph 4.1.5 or 4.1.6, as the case may be, before the remainder can count towards its capital conservation buffer.

4.1.9 For the purposes of paragraphs 4.1.10, 4.1.11, 4.1.12, 4.1.13, 4.1.14 and 4.1.25 –

(a) "CET1 CAR" in Tables 4-3 and 4-4, calculated as at the date of each distribution of an item subject to the restriction on distributions ("calculation date"), includes CET1 Capital used to meet the applicable minimum CET1 CAR in paragraph 4.1.5 or 4.1.6, as the case may be, but excludes any additional CET1 Capital needed to meet the applicable minimum Tier 1 CAR and applicable minimum Total CAR in paragraph 4.1.5 or 4.1.6, as the case may be;

(b) "buffer" refers to the capital conservation buffer set out in paragraph 4.1.7;

(c) "distribution payment period" refers to the 12 months starting from the calculation date referred to in sub-paragraph (a);

(d) "minimum capital conservation ratios" refer to the percentage of a Reporting Bank's earnings, as defined in sub-paragraph (f), that a Reporting Bank is required to conserve in the distribution payment period;

(e) "item subject to the restriction on distributions" refers to any distribution in the form of dividends, share buybacks, discretionary payments on AT1 capital instruments and discretionary bonus payments to staff, but excludes the following:

(i) a payment that does not result in a depletion of CET1 Capital by the Reporting Bank[39];

(ii) a dividend which satisfies all of the following conditions:

(A) the dividend cannot legally be cancelled by the Reporting Bank;

(B) the dividend has already been removed from CET1 Capital prior to the distribution of the dividend;

(C) the dividend was declared in line with the applicable capital conservation ratios set out in paragraph 4.1.11 at the date of declaration; and

(f) "earnings" refers to the Reporting Bank's distributable profits in the 4 quarters preceding the calculation date, calculated gross of the deduction of items subject to the restriction on distributions and less the tax which would have been payable had none of the items subject to the restriction on distributions been paid[40].

4.1.10 For the purposes of this Part, the capital conservation buffer range refers to –

(a) for a Reporting Bank that is designated by the Authority as a D-SIB, a CET1 CAR as defined in paragraph 4.1.9(a) of between 6.5% and the sum of 6.5% and the capital conservation buffer as defined in paragraph 4.1.7; and

(b) for a Reporting Bank that is not designated by the Authority as a D-SIB, a CET1 CAR as defined in paragraph 4.1.9(a) of between 4.5% and the sum of 4.5% and the capital conservation buffer as defined in paragraph 4.1.7.

4.1.11 Despite paragraph 4.1.7, where the CET1 CAR as defined in paragraph 4.1.9(a) of a Reporting Bank is within the capital conservation buffer range[41] as at the date of each distribution of an item subject to the restriction on distributions –

(a) a Reporting Bank that is designated by the Authority as a D-SIB must meet the minimum capital conservation ratios corresponding to the ranges of CET1 CAR, as defined in paragraph 4.1.9(a), set out in Table 4-3 in accordance with paragraphs 4.1.9 and 4.1.12; and

(b) a Reporting Bank that is not designated by the Authority as a D-SIB must meet the minimum capital conservation ratios corresponding to the ranges of CET1 CAR, as defined in paragraph 4.1.9(a), set out in Table 4-4 in accordance with paragraphs 4.1.9 and 4.1.12.

[39] For example, scrip dividends.

[40] This is to reverse any tax impact of making such distributions.

[41] For example, in periods of stress. A Reporting Bank should not choose in normal times, outside periods of stress, to operate within the capital conservation buffer range.

Table 4-3: Minimum capital conservation ratios for a Reporting Bank that is designated by the Authority as a D-SIB

CET1 CAR	Minimum capital conservation ratios (expressed as a percentage of earnings)
first quartile of buffer: 6.5% - 7.125%	100%
second quartile of buffer: >7.125% - 7.75%	80%
third quartile of buffer: >7.75% - 8.375%	60%
fourth quartile of buffer: >8.375% - 9%	40%
Above top of buffer: >9%	0%

Table 4-4: Minimum capital conservation ratios for a Reporting Bank that is not designated by the Authority as a D-SIB

CET1 CAR	Minimum capital conservation ratios (expressed as a percentage of earnings)
first quartile of buffer: 4.5% - 5.125%	100%
second quartile of buffer: >5.125% - 5.75%	80%
third quartile of buffer: >5.75% - 6.375%	60%
fourth quartile of buffer: >6.375% - 7%	40%
Above top of buffer: >7%	0%

4.1.12 In respect of items subject to the restriction on distributions[42], the Reporting Bank must, in any distribution payment period, distribute no more than the percentage of (100% less the minimum capital conservation ratio) of its earnings.

4.1.13 To avoid doubt, for the purposes of paragraph 4.1.12 –

(a) where a Reporting Bank's CET1 CAR, as defined in paragraph 4.1.9(a), falls into a lower quartile of buffer as at the next calculation date for the next distribution payment period, the higher minimum capital conservation ratio applicable to the lower quartile of buffer would apply for the next distribution payment period; and

(b) where a Reporting Bank's CET1 CAR, as defined in paragraph 4.1.9(a), falls into an upper quartile of buffer as at the next calculation date for the next distribution payment period, the higher minimum capital conservation ratio applicable to the current distribution payment period

[42] For example, a Reporting Bank that is designated by the Authority as a D-SIB with a CET1 CAR in the range of greater than 7.125% to 7.75% is required to conserve 80% of its earnings in the distribution payment period (i.e. distribute no more than 20% of earnings in terms of items subject to the restriction on distributions). To avoid doubt, the capital conservation requirement applies to items subject to the restriction on distributions only, not the operation of the Reporting Bank. A Reporting Bank should be able to conduct business as normal when its capital adequacy ratios fall within the capital conservation buffer range as it experiences losses.

would continue to apply until the end of the current distribution payment period.

4.1.14 Despite paragraph 4.1.11, where a Reporting Bank –

(a) does not have positive earnings; and

(b) has a CET1 CAR as defined in paragraph 4.1.9(a) of less than the sum of –

(i) the applicable minimum CET1 CAR in paragraph 4.1.5 or 4.1.6, as the case may be; and

(ii) the capital conservation buffer in accordance with paragraph 4.1.7,

the Reporting Bank must not make distributions of any item subject to the restriction on distributions in the distribution payment period.

4.1.15 Despite paragraphs 4.1.11, 4.1.12 and 4.1.14 which impose constraints on distributions, a Reporting Bank may, with the Authority's prior written approval, make any distributions in excess of the constraints imposed by those paragraphs, provided that the Reporting Bank raises capital in the private sector equal to the amount above the constraint that it wishes to distribute and subject to any further conditions and restrictions that the Authority may specify in its approval.

4.1.16 A Reporting Bank intending to draw on its capital conservation buffer must consult the Authority in advance and must present a capital plan on the rebuilding of the capital conservation buffer. The Reporting Bank must demonstrate to the satisfaction of the Authority that its capital plan will rebuild the capital conservation buffer within an appropriate timeframe.[43] The Authority may impose a time limit on a Reporting Bank operating within the capital conservation buffer range for, or other conditions related to, the rebuilding of the capital conservation buffer.

Countercyclical buffer

4.1.17 In addition to complying with the applicable minimum ratios in paragraph 4.1.5 or 4.1.6, as the case may be, and the capital conservation buffer in paragraph 4.1.7, a Reporting Bank must, at all times, maintain at both the Solo and Group levels, a countercyclical buffer comprising CET1 Capital ranging from zero up to 2.5% of total RWA (sum of Credit RWA, Market RWA and Operational RWA). To avoid doubt, the countercyclical buffer applicable to a Reporting Bank can be 0% at a particular point in time.

[43] A Reporting Bank operating within the capital conservation buffer range may look to rebuild its capital buffers through reducing discretionary distribution of earnings including reducing discretionary dividend payments, share-buybacks and staff bonus payments. The Reporting Bank may also choose to raise new capital from the private sector as an alternative to conserving internally generated capital. The Reporting Bank should not use future predictions of recovery as justification for maintaining distributions to shareholders, other capital providers and staff. The Reporting Bank should not signal their financial strength through the distribution of capital. The Reporting Bank should also make greater efforts to rebuild its capital buffers the more they are depleted.

4.1.18 For the purposes of paragraphs 4.1.19, 4.1.22, 4.1.23 and 4.1.28 to 4.1.31 –

(a) "country-specific countercyclical buffer requirement" means the countercyclical buffer requirement in respect of a particular country or jurisdiction (expressed as a percentage of RWA), which –

(i) in the case of Singapore, the Authority has applied; and

(ii) in the case of a country or jurisdiction other than Singapore, the national authority has applied[44,45], subject to a cap of 2.5% unless the Authority specifies that the cap does not apply or that a higher country-specific countercyclical buffer requirement applies, and subject to paragraph 4.1.21; and

(b) "RWA for private sector credit exposures" means, in relation to a Reporting Bank, the aggregate of –

(i) the credit RWA in respect of all the exposures in its banking book, other than –

(A) SA(CR) exposures referred to in paragraph 7.3.1(a), (b), (c), (d), (e)(i), (e)(ii), (e)(iii) and (e)(iv); and

(B) IRBA exposures referred to in paragraph 7.4.42(c) and (d), except for IRBA exposures to counterparties referred to in paragraphs 7.3.1(e)(v) and 7.4.42(d)(iv); and

(ii) 12.5 times of –

(A) for the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the market risk capital requirements for specific risk, IRC and securitisation exposures, where applicable, calculated in accordance with Part VIII of MAS Notice 637, in force immediately before 1 July 2024, in respect

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[44] A Reporting Bank may refer to the document, "Guidance for national authorities operating the countercyclical capital buffer" issued by the BCBS in December 2010, to understand the factors that could be considered by national authorities in applying the countercyclical buffer requirement.

[45] A country or jurisdiction is expected to announce, and promptly notify the Bank for International Settlements of –

(a) any decision to raise the level of the countercyclical buffer requirement for its country or jurisdiction up to 12 months prior to the requirement taking effect; and

(b) any decision to lower the level of the countercyclical buffer requirement for its country or jurisdiction. The country or jurisdiction is also expected to communicate its buffer decisions to the Bank for International Settlements at least annually, including where there is no change in the prevailing countercyclical buffer requirements. The pre-announced buffer decisions and the actual buffers in place for BCBS member countries or jurisdictions will be published on the website of the Bank for International Settlements (https://www.bis.org/ccyb/index.htm).

of all the exposures in the trading book, other than exposures to other banks, sovereigns, MDBs and PSEs[46]; and

(B) in all other cases:

(I) where the Reporting Bank uses the SA(MR), the DRC requirement, calculated in accordance with Division 2 of Part VIII in respect of securitisation (CTP), securitisation (non-CTP) and non-securitisation exposures in the trading book[47];

(II) where the Reporting Bank uses the IMA, the DRC requirement calculated in accordance with paragraphs 8.3.213 to 8.3.240 in respect of both securitisation and non-securitisation exposures in the trading book[48];

(III) where the Reporting Bank only uses the SSA(MR), its market risk capital requirements for specific risk in respect of both securitisation and non-securitisation exposures in the trading book,

where the scope of the exposures excludes exposures to other banks, sovereigns, MDBs and PSEs.

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[46] In the case of a Reporting Bank using the IMA under Part VIII of MAS Notice 637, in force immediately before 1 July 2024, for calculating its market risk capital requirement for the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the Reporting Bank should develop an approach that would translate the VaR for specific risk, the IRC and the comprehensive risk measurement charge into individual instrument risk weights that would then be allocated to the geographic location of the specific counterparties that make up the charge based on where the ultimate risk of the exposures reside. The manner in which the translation is done should be subject to the agreement of the Authority. In cases where it is not possible to break down the charges in such a manner due to the risk charges being calculated on a portfolio by portfolio basis, the risk charge for a particular portfolio should be allocated to the geographic regions of the constituents of the portfolio by calculating the proportion of the portfolio's total EAD that is due to the EAD resulting from counterparties in each geographic region based on where the ultimate risk of the exposures reside.

[47] The Reporting Bank should develop an approach that would translate the DRC requirement into individual instrument risk weights that would then be allocated to the geographical location of the specific counterparties of the exposures that make up the DRC requirement, based on where the ultimate risk of the exposures reside. The manner in which the translation is done should be subject to the agreement of the Authority. In cases where it is not possible to break down the DRC requirement in such a manner due to the DRC requirement being calculated on a portfolio by portfolio basis, the DRC requirement for a particular portfolio should be allocated to the geographic regions of the constituents of the portfolio by calculating the proportion of the portfolio's total EAD that is due to the EAD resulting from counterparties in each geographic region based on where the ultimate risk of the exposures reside.

[48] The Reporting Bank should develop an approach that would translate the DRC requirement into individual instrument risk weights that would then be allocated to the geographical location of the specific counterparties of the exposures that make up the DRC requirement, based on where the ultimate risk of the exposures reside. The manner in which the translation is done should be subject to the agreement of the Authority. In cases where it is not possible to break down the DRC requirement in such a manner due to the DRC requirement being calculated on a portfolio by portfolio basis, the DRC requirement for a particular portfolio should be allocated to the geographic regions of the constituents of the portfolio by calculating the proportion of the portfolio's total EAD that is due to the EAD resulting from counterparties in each geographic region based on where the ultimate risk of the exposures reside.

To avoid doubt, a Reporting Bank must include exposures to non-bank financial institutions within the scope of private sector credit exposures for the purposes of sub-paragraph (b).

[MAS Notice 637 (Amendment) 2024]

4.1.19 A Reporting Bank must calculate the actual magnitude of the countercyclical buffer to be applied under paragraph 4.1.17 as the weighted average of the country-specific countercyclical buffer requirements that are being applied in countries or jurisdictions by national authorities to which the Reporting Bank has private sector credit exposures. The Reporting Bank must –

(a) calculate each weighting by dividing the Reporting Bank's RWA for all its private sector credit exposures in each country or jurisdiction by the Reporting Bank's RWA for all its private sector credit exposures across all countries or jurisdictions; and

(b) apply the weighting calculated in sub-paragraph (a) for each country or jurisdiction to the country-specific countercyclical buffer requirement of that country or jurisdiction.

4.1.20 A country or jurisdiction whose national authority is a member of the BCBS or that is specified by the Authority, is referred to in paragraph 4.1.21 as a relevant country or jurisdiction.

4.1.21 For the purposes of paragraph 4.1.19, a Reporting Bank must apply a weight of zero to –

(a) a relevant country or jurisdiction where its private sector credit exposures to that relevant country or jurisdiction is zero; or

(b) a country or jurisdiction that is not a relevant country or jurisdiction.

4.1.22 For the purposes of paragraph 4.1.19, a Reporting Bank must determine the country or jurisdiction for each private sector exposure in accordance with Annex 4B.

4.1.23 Subject to paragraph 4.1.21, for the purposes of paragraph 4.1.19, a Reporting Bank must apply each country-specific countercyclical buffer requirement in calculating its countercyclical buffer from the effective date specified by the relevant national authority except in the following cases where the Reporting Bank must apply each country-specific countercyclical buffer requirement in calculating its countercyclical buffer from the effective date specified by the Authority –

(a) for an increase in a countercyclical buffer requirement in respect of a country or jurisdiction other than Singapore, where the period between the date of announcement and the effective date of the countercyclical capital buffer requirement is less than 12 months, and the Authority specifies a different effective date, no more than 12 months from the date of announcement by that country or jurisdiction; and

(b) for a decrease in a countercyclical buffer requirement in respect of a country or jurisdiction other than Singapore, where the Authority specifies a later effective date.

4.1.24 A Reporting Bank must ensure that the size of the capital conservation buffer applicable to a Reporting Bank under paragraph 4.1.7 is extended by the countercyclical buffer.

4.1.25 Despite paragraphs 4.1.7 and 4.1.17, where the CET1 CAR as defined in paragraph 4.1.9(a) is within the capital conservation buffer range referred to in paragraph 4.1.10, extended by the countercyclical buffer, the Reporting Bank must meet the minimum capital conservation ratios corresponding to the ranges of CET1 CAR calculated in accordance with paragraph 4.1.9(a), as set out in Table 4-5.[49]

Table 4-5: Minimum capital conservation ratios for a Reporting Bank that is subject to a countercyclical buffer

CET1 CAR	Minimum capital conservation ratios (expressed as a percentage of earnings)
≤ Aggregate of the applicable minimum CET1 CAR and ¼ of buffer	100%
> Aggregate of the applicable minimum CET1 CAR and ¼ of buffer, ≤ Aggregate of the applicable minimum CET1 CAR and ½ of buffer	80%
> Aggregate of the applicable minimum CET1 CAR and ½ of buffer, ≤ Aggregate of the applicable minimum CET1 CAR and ¾ of buffer	60%
> Aggregate of the applicable minimum CET1 CAR and ¾ of buffer, ≤ Aggregate of the applicable minimum CET1 CAR and buffer	40%

[49] Tables 4-6 and 4-7 illustrate the applicable ranges of CET1 CAR corresponding to various minimum capital conservation ratios, assuming a countercyclical buffer of 2.5%.

Table 4-6: Minimum capital conservation ratios for a Reporting Bank that is designated by the Authority as a D-SIB that is subject to a countercyclical buffer of 2.5%

CET1 CAR	Minimum capital conservation ratios (expressed as a percentage of earnings)
6.5% - 7.75%	100%
>7.75% - 9%	80%
>9% - 10.25%	60%
>10.25% - 11.5%	40%
>11.5%	0%

Table 4-7: Minimum capital conservation ratios for a Reporting Bank that is not designated by the Authority as a D-SIB that is subject to a countercyclical buffer of 2.5%

CET1 CAR	Minimum capital conservation ratios (expressed as a percentage of earnings)
4.5% - 5.75%	100%
>5.75% - 7%	80%
>7% - 8.25%	60%
>8.25% - 9.5%	40%
>9.5%	0%

CET1 CAR	Minimum capital conservation ratios (expressed as a percentage of earnings)
Above top of buffer	0%

4.1.26 To avoid doubt, paragraphs 4.1.8, 4.1.9, 4.1.10, 4.1.12, 4.1.14, 4.1.15 and 4.1.16 apply to a Reporting Bank which is subject to a countercyclical buffer. "Capital conservation buffer" in those paragraphs must be read to include the countercyclical buffer in such cases.

4.1.27 A Reporting Bank must ensure that its countercyclical buffer is calculated with at least the same frequency as its capital adequacy ratios. The Reporting Bank must calculate its countercyclical buffer based on the latest relevant country-specific countercyclical buffer requirements that are applicable at the date which the Reporting Bank calculates its capital adequacy ratios.

National countercyclical buffer requirements

4.1.28 Where the Authority has assessed a period of excess credit growth to be leading to a build up of system-wide risk, the Authority will consider setting a countercyclical buffer requirement in respect of Singapore ("Singapore-specific countercyclical buffer requirement"). The Authority will determine the size of the Singapore-specific countercyclical buffer requirement.

4.1.29 For the purposes of paragraph 4.1.28, the Singapore-specific countercyclical buffer requirement will range from zero to 2.5% of total RWA (sum of Credit RWA, Market RWA and Operational RWA), based on the Authority's assessment of the extent of the build-up of system-wide risk. The Authority will apply the principles in the document, "Guidance for national authorities operating the countercyclical buffer" issued by the BCBS in December 2010, in making its decisions on the level of the Singapore-specific countercyclical buffer requirement.

4.1.30 The Authority may implement a range of additional macroprudential tools including setting a Singapore-specific countercyclical buffer requirement that is higher than 2.5% of total RWA (sum of Credit RWA, Market RWA and Operational RWA) despite paragraph 4.1.29, if the Authority deems it necessary to do so, based on the Authority's assessment of the extent of excess credit growth and build-up of system-wide risk in Singapore.

4.1.31 The Authority will announce any decision by the Authority to set or to increase the Singapore-specific countercyclical buffer requirement, prior to but no longer than 12 months before Singapore-specific countercyclical buffer requirement is to take effect.

4.1.32 The Authority will announce any decision by the Authority to decrease the Singapore-specific countercyclical buffer requirement, and any such decision will take effect from the date of the announcement, unless otherwise specified by the Authority.[50]

[50] The Authority will communicate any of its announcements to set, increase, or decrease the Singapore-specific countercyclical buffer requirement promptly to the Bank for International Settlements. The Authority will also communicate its buffer decisions to the Bank for International Settlements at least annually, including where there is no change to the prevailing Singapore-specific countercyclical buffer requirement.

Overall capital adequacy

4.1.33 Despite that a Reporting Bank has complied with the requirements set out in paragraphs 4.1.5, 4.1.6, 4.1.7 and 4.1.17, the Reporting Bank must consider as part of its ICAAP whether it has adequate capital at both the Solo and Group levels, to cover its exposure to all risks.

4.1.34 The Authority may, pursuant to section 10(3) of the Banking Act, vary the minimum CET1 CAR, minimum Tier 1 CAR, minimum Total CAR, capital conservation buffer or countercyclical buffer applicable to a Reporting Bank. In exercising this discretion, the Authority may take into account, inter alia, any relevant risk factor, the ICAAP of a Reporting Bank and whether the CET1 CAR, Tier 1 CAR or Total CAR is commensurate with the overall risk profile of the Reporting Bank.

Division 2: Leverage Ratio[51]

4.2.1 A Reporting Bank must calculate its leverage ratio as set out in Annex 4C.

4.2.2 A Reporting Bank must, at all times, maintain at both the Solo and Group levels, a minimum leverage ratio of 3%.

[51] The leverage ratio is intended to –
(a) restrict the build-up of leverage in the banking sector to avoid destabilising deleveraging processes that damage the broader financial system and the economy; and
(b) reinforce the risk-based capital requirements with a simple, non-risk-based "backstop" measure.

Annex 4A

DENOMINATORS FOR CET1 CAR, TIER 1 CAR AND TOTAL CAR

Table 4A-1: Example of how a Reporting Bank must determine the denominators for CET1 CAR, Tier 1 CAR and Total CAR

	RWA calculated using the Reporting Bank's nominated approaches	RWA calculated using only standardised approaches	72.5% of total RWA calculated using only standardised approaches
Credit RWA	62	124	-
- of which Asset Class A	45	80	-
- of which Asset Class B	5	32	-
- of which Asset Class C (for which the Reporting Bank's nominated approach is the standardised approach)	12	12	-
Market RWA	2	4	-
Operational RWA	12	12	-
Total RWA	76	140	101.5
As the output floor (101.5) is higher than the sum of credit RWA, market RWA, and operational RWA, calculated using the Reporting Bank's nominated approaches (76), the Reporting Bank must use the output floor as the denominator for CET1 CAR, Tier 1 CAR and Total CAR.			

Annex 4B

DETERMINATION OF COUNTRY OR JURISDICTION FOR A PRIVATE SECTOR CREDIT EXPOSURE

1.1 Subject to paragraph 1.5 of this Annex, a Reporting Bank must determine the country or jurisdiction for a private sector credit exposure based on the country or jurisdiction where the ultimate risk of the exposure resides, in accordance with the principles to identify the country or jurisdiction of ultimate risk in Table 4B-1, and paragraphs 1.3 and 1.4 of this Annex.

1.2 For the purposes of Table 4B-1, a Reporting Bank must apply the principles described under "(I) Basic scenario" to identify the country or jurisdiction of ultimate risk for a private sector credit exposure, unless the principles described under "(II) Specific scenarios for other exposures" in the subsequent rows are applicable.

1.3 For a private sector credit exposure with credit protection, the country or jurisdiction where the ultimate risk of the exposure resides refers to the country or jurisdiction where the counterparty providing the credit protection resides.

1.4 For the purposes of paragraph 1.3 of this Annex, where a private sector credit exposure has more than one counterparty providing the credit protection, a Reporting Bank must sub-divide the exposure into portions covered by the credit protection provided by each counterparty. For each sub-divided portion of the exposure, the country or jurisdiction where the ultimate risk of the exposure resides, refers to the country or jurisdiction where the counterparty providing the credit protection resides.

1.5 In the case of securitisation exposures, where a Reporting Bank is unable to look through to the underlying exposures, the Reporting Bank must use the country or jurisdiction where the immediate counterparty resides.

1.6 Where a Reporting Bank is unable to identify the country or jurisdiction of ultimate risk for a private sector credit exposure in accordance with paragraph 1.1 of this Annex, the Reporting Bank may determine the country or jurisdiction of the private sector credit exposure based on the country or jurisdiction where the private sector credit exposure is booked. The Reporting Bank must demonstrate to the Authority why it is unable to do so if requested by the Authority.

Table 4B-1– Principles to identify the Country or Jurisdiction of Ultimate Risk for a Private Sector Credit Exposure

Scenario	Country or Jurisdiction of Ultimate Risk
(I) Basic scenario	
Obligor residing in country or jurisdiction A:	
Exposure has no credit protection	A
Exposure has credit protection from a counterparty residing in country or jurisdiction A	A

Scenario	Country or Jurisdiction of Ultimate Risk
Exposure has credit protection from a counterparty residing in country or jurisdiction B	B
Obligor is a branch of parent residing in country or jurisdiction B where the exposure has no credit protection	B
(II) Specific scenarios for other exposures	
Exposures relating to repo transaction with a counterparty residing in country or jurisdiction A (independent of geographical location of risk of collateral)	A
Securitisation exposures (where a Reporting Bank is able to look through to the underlying exposures) issued in country or jurisdiction A:	
Debtor of underlying exposure is residing in country or jurisdiction A	A
Debtor of underlying exposure is residing in country or jurisdiction B	B
Exposures relating to project finance where the obligor is residing in country or jurisdiction A and the project is located in country or jurisdiction B	B
Exposures to collective investment schemes constituted in country or jurisdiction A	Depends on whether the Reporting Bank has a debt or equity exposure to the collective investment scheme: (a) if the Reporting Bank has a debt exposure, the country or jurisdiction of ultimate risk – (i) where the exposure has no credit protection, the country or jurisdiction where the collective investment scheme is constituted or if the collective investment scheme has a parent entity, the country or jurisdiction where its parent entity resides; and (ii) where the exposure has credit protection, the country or jurisdiction

Scenario	Country or Jurisdiction of Ultimate Risk
	where the counterparty providing the credit protection resides; (b) if the Reporting Bank has an equity exposure, the country or jurisdiction of ultimate risk is – (i) where a Reporting Bank is able to look through to the underlying exposures, the countries or jurisdictions where the counterparty of each underlying exposure resides; or (ii) where a Reporting Bank is unable to look through to the underlying exposures of the collective investment scheme without disproportionate effort, the Reporting Bank may adopt an alternative methodology to identify the countries or jurisdictions of ultimate risk for the collective investment scheme. The Reporting Bank must be able to demonstrate to the Authority that the alternative methodology reflects, to the extent possible, the principle in sub-paragraph b(i) of this Table to identify the countries or jurisdictions of ultimate risk, when requested by the Authority.

Annex 4C

CALCULATION OF THE LEVERAGE RATIO

Section 1: Overview

1.1 A Reporting Bank must calculate its leverage ratio as follows:

$$\text{Leverage ratio (LR)} = \frac{\text{Capital measure (CM)}}{\text{Total exposure measure (TEM)}}$$

Scope of application

1.2 A Reporting Bank must calculate its leverage ratio at both the Solo and Group levels as set out in Division 2 of Part III as at the end of each quarter. Where a Reporting Bank does not consolidate its investment in an entity in accordance with Division 2 of Part III, the Reporting Bank must only include the investment in the capital of such entity (i.e. only the carrying amount of the investment, and not the underlying assets and other exposures of the entity), in the calculation of its TEM.

1.3 A Reporting Bank may deduct in the calculation of its TEM any item which is deducted in the calculation of CET1 Capital or AT1 Capital in accordance with paragraphs 6.1.5 and 6.2.6 respectively, including:

(a) the amount of any investment in the capital of an entity that is totally or partially deducted in the calculation of CET1 Capital or AT1 Capital in accordance with paragraphs 6.1.5(p) and 6.2.6(d) respectively, where the entity is not consolidated in accordance with Division 2 of Part III;

(b) any shortfall of the TEP relative to the EL amount deducted in the calculation of CET1 Capital in accordance with paragraph 6.1.5(e), where the Reporting Bank has adopted the IRBA;

(c) any valuation adjustments made in accordance with Annex 6C that exceed the valuation adjustments made under financial reporting standards, deducted in the calculation of CET1 Capital in accordance with paragraph 6.1.5(n),

but a Reporting Bank must not deduct in the calculation of its TEM any item related to liabilities.

1.4 Where a Reporting Bank issues covered bonds, the Reporting Bank must calculate its leverage ratio by including the EM in respect of assets included in a cover pool in the calculation of its TEM in accordance with this Annex. Where the Reporting Bank uses an SPV to issue covered bonds or to hold the cover pool, the Reporting Bank must apply a "look through" approach in calculating its leverage ratio under this Annex. Under the "look through" approach, the Reporting Bank must treat the Reporting Bank and the SPV as a single entity for the purposes of this Annex by –

(a) deeming the assets of the cover pool held in the SPV (if any) as assets of the Reporting Bank, at both the Solo and Group levels; and

(b) eliminating transactions between the Reporting Bank and the SPV.

Section 2: EM

2.1 Subject to paragraphs 2.2 to 2.53 of this Annex, a Reporting Bank must calculate its TEM in accordance with the Accounting Standards.

2.2 Unless otherwise specified in this Annex, a Reporting Bank must not net assets against liabilities when calculating its TEM, and must not take into account physical or financial collateral, guarantees or other CRM to reduce its TEM.

2.3 A Reporting Bank must calculate its TEM by aggregating the sum of exposure measures in respect of all the Reporting Bank's –

(a) on-balance sheet items calculated in accordance with paragraphs 2.8 to 2.12 of this Annex (other than items specified in sub-paragraphs (b) and (c)) ("exposure measures in respect of on-balance sheet items");

(b) derivative transactions calculated in accordance with paragraphs 2.13 to 2.39 of this Annex ("exposure measures in respect of derivative transactions");

(c) SFTs (including SFTs that have failed to settle) calculated in accordance with paragraphs 2.40 to 2.50 of this Annex ("exposure measures in respect of SFTs"); and

(d) off-balance sheet items calculated in accordance with paragraphs 2.51 to 2.53 of this Annex (other than items specified in sub-paragraphs (b) and (c)) ("exposure measures in respect of off-balance sheet items"),

and then applying deductions in accordance with paragraphs 1.3, 2.6, 2.8 and 2.21(b) of this Annex. Where an off-balance sheet item is treated as a derivative transaction under the Accounting Standards, the Reporting Bank must calculate the EM in respect of the item as a derivative transaction in accordance with sub-paragraph (b).

2.4 For the purposes of paragraph 2.3 of this Annex, a Reporting Bank must calculate the exposure measures in respect of –

(a) long settlement transactions; and

(b) unsettled transactions other than SFTs,

in accordance with their classification under the Accounting Standards, as follows:

(i) the EM in respect of a long settlement transaction classified as a derivative under the Accounting Standards must be calculated as the EM in respect of a derivative transaction under paragraph 2.3(b) of this Annex;

(ii) the EM in respect of an unsettled transaction classified as a receivable under the Accounting Standards must be calculated as the EM in respect of an on-balance sheet item under paragraph 2.3(a) of this Annex.

2.5 A Reporting Bank must not deduct any liability item including any –

(a) gains or losses on fair valued liabilities; or

(b) accounting valuation adjustments on derivative liabilities due to changes in the Reporting Bank's own credit risk,

as described in paragraph 6.1.5(h), in the calculation of its TEM.

2.6 A Reporting Bank which is an originator in a traditional securitisation may deduct securitised exposures that are included in its on-balance sheet items, in the calculation of its TEM only if all of the requirements in Section 1 of Annex 7AC have been complied with. A Reporting Bank that deducts such securitised exposures in the calculation of its TEM must include the exposure measures in respect of any securitisation exposures it retains in the calculation of its TEM. To avoid doubt, in cases where –

(a) a Reporting Bank is an originator in a traditional securitisation but not all the requirements in Section 1 of Annex 7AC have been complied with; or

(b) a Reporting Bank is an originator in a synthetic securitisation,

the Reporting Bank must not deduct its securitised exposures in the calculation of its TEM.

2.7 Where the Authority is concerned that the leverage of certain transactions or structures undertaken by a Reporting Bank is not adequately captured in the calculation of its TEM, the Authority may impose additional bank-specific capital requirements or take any other supervisory action, such as requiring enhancements to a Reporting Bank's management of leverage or imposing additional reporting to the Authority, to address the risks arising from such transactions.[52]

[52] A Reporting Bank should be vigilant to transactions and structures, for which the leverage undertaken by the Reporting Bank is inadequately captured in the TEM. A Reporting Bank should consult the Authority on the appropriate treatment of any such transactions or structures, where such transactions or structures are identified or where the Reporting Bank is in doubt. Examples of transactions where such concerns may arise include –
(a) an SFT where a Reporting Bank's exposure to the SFT counterparty increases as the counterparty's credit quality deteriorates;
(b) an SFT where the credit quality of the SFT counterparty is positively correlated with the value of the securities posted by the counterparty with a Reporting Bank;
(c) an SFT for which a Reporting Bank in substance acts as a principal, but structures the SFT such that it acts as an agent and calculates the EM in respect of the SFT in accordance with paragraph 2.47 or 2.49 of this Annex; and
(d) a collateral swap trade or other transaction structured such that a Reporting Bank calculates the EM in respect of the transaction to be zero even though the Reporting Bank undertakes leverage through the transaction.

On-balance Sheet Items

2.8 A Reporting Bank must include the exposure measures in respect of all on-balance sheet assets (including on-balance sheet collateral for any derivative transaction and collateral for any SFT) in the calculation of its TEM. For on-balance sheet assets which are not derivative transactions, a Reporting Bank must calculate the EM in respect of such on-balance sheet assets, based on their carrying amount as determined in accordance with the Accounting Standards, net of specific allowances. A Reporting Bank may deduct general allowances that have been set aside against on-balance sheet assets and which have reduced CET1 Capital, in the calculation of its TEM.

2.9 Where a Reporting Bank has leased a tangible asset, the Reporting Bank must include the EM in respect of a right of use asset in the calculation of its TEM.

2.10 A Reporting Bank may exclude in the calculation of its TEM, fiduciary assets that meet the criteria for de-recognition and, where applicable, de-consolidation, under the Accounting Standards.

2.11 Where a Reporting Bank uses trade date accounting in its treatment of the regular way purchase or sale of financial assets, the Reporting Bank must reverse out any offsetting that is recognised in accordance with the Accounting Standards, between cash receivables for unsettled sales of financial assets and cash payables for unsettled purchases of financial assets. However, the Reporting Bank may recognise offsetting between cash receivables for unsettled sales of financial assets and cash payables for unsettled purchases of financial assets, regardless of whether such offsetting is recognised under the Accounting Standards, where –

(a) the financial assets are fair valued through the profit and loss account of the financial statements of the Reporting Bank;

(b) the Reporting Bank allocates the financial assets to its trading book; and

(c) the purchase or sale transactions of the financial assets are DvP transactions.

2.12 A Reporting Bank may calculate the EM in respect of a cash pooling arrangement based on the combined single account balance where –

(a) the Reporting Bank physically transfers and combines at least on a daily basis, the credit and debit balances of all the participating accounts, into a single account balance, such that the Reporting Bank is not liable for the balance of any participating account on an individual basis thereafter; or

(b) all the following conditions are met:

(i) the cash pooling arrangement provides for a single designated account, in addition to the participating accounts, into which the Reporting Bank may transfer the balances of all participating accounts, such that the Reporting Bank is not liable for the balance of any participating account on an individual basis thereafter;

(ii) the Reporting Bank has obtained a written independent legal opinion[53] that at any point in time, the Reporting Bank has a legally enforceable right to perform such transfers, has the discretion and is in a position to exercise this right, and that the Reporting Bank is not liable for the balance of any participating account on an individual basis after such transfer;

(iii) the Reporting Bank performs such transfers at least on a quarterly basis, or such other frequency specified by the Authority;

(iv) any one of the following conditions are satisfied:

(A) there are no maturity mismatches among the balances of the participating accounts;

(B) there are maturity mismatches among the balances of the participating accounts, but all balances of the participating accounts are either overnight or on demand and the Reporting Bank does not net any credit balance from the debit balances unless –

(I) withdrawal is conditional upon the debit balances being repaid; and

(II) the condition referred to in sub-paragraph (b)(iv)(B)(I) is stipulated in the contractual agreement[54] with all counterparties to the cash pooling transaction;

(v) the Reporting Bank charges or pays interest, fees or both interest and fees, based only on the net balance of all participating accounts.

Derivative Transactions

2.13 Subject to paragraphs 2.22 and 2.23 of this Annex, for a derivative transaction that is not covered by a qualifying bilateral netting agreement, a Reporting Bank must calculate the EM in respect of the derivative transaction using the following formula:

$$exposure\ measure = alpha\ \times (RC + PFE)$$

where –

(a) $alpha = 1.4$;

[53] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, the Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating transactions covered by the cash pooling arrangement.

[54] Such withdrawal restrictions are intended to safeguard against the withdrawal of credit balances prior to a default, which would result in such exposure of the Reporting Bank not being captured by the leverage ratio.

(b) RC = the replacement cost of the derivative transaction calculated using the following formula:

$$RC = \max(V - CVM_r + CVM_p, 0)$$

where –

(i) V = the current market value of the derivative transaction;

(ii) CVM_r = the cash variation margin received by the Reporting Bank in relation to the derivative transaction that meets the conditions set out in paragraph 2.18 of this Annex and that has not reduced V under the Accounting Standards; and

(iii) CVM_p = the cash variation margin provided by the Reporting Bank in relation to the derivative transaction that meets the conditions set out in paragraph 2.18 of this Annex; and

(c) PFE = the potential future exposure of the derivative transaction calculated as –

$$PFE = multiplier \times AddOn^{aggregate}$$

in accordance with Sections 3 and 4 of Annex 7D, except that the value of the multiplier referred to in paragraph 3.1(b) of Annex 7D must be fixed at one. To avoid doubt, a Reporting Bank may calculate the maturity factor used in the calculation of $AddOn^{aggregate}$, in accordance with paragraphs 3.36 to 3.39 of Annex 7D (i.e. the Reporting Bank may recognise the PFE-reducing effect from the regular exchange of variation margin).

2.14 Subject to paragraphs 2.22 and 2.23 of this Annex, for a set of derivative transactions that is covered by a qualifying bilateral netting agreement, a Reporting Bank must calculate the EM in respect of the netting set using the following formula:

$$exposure\ measure = alpha \times (RC + PFE)$$

where –

(a) $alpha = 1.4$;

(b) RC = the replacement cost of the derivative transactions in the netting set calculated using the following formula:

$$RC = \max(V - CVM_r + CVM_p, 0)$$

where –

(i) V = the current market value of the derivative transactions in the netting set;

(ii) CVM_r = the cash variation margin received by the Reporting Bank in relation to the derivative transactions in the netting set that meets

the conditions set out in paragraph 2.18 of this Annex and that has not reduced V under the Accounting Standards; and

(iii) CVM_p = the cash variation margin provided by the Reporting Bank in relation to the derivative transactions in the netting set that meets the conditions set out in paragraph 2.18 of this Annex; and

(c) PFE = the potential future exposure of the derivative transactions in the netting set calculated as –

$$PFE = multiplier \times AddOn^{aggregate}$$

in accordance with Sections 3 and 4 of Annex 7D, except that the value of the multiplier referred to in paragraph 3.1(b) of Annex 7D must be fixed at one. To avoid doubt, a Reporting Bank may calculate the maturity factor used in the calculation of $AddOn^{aggregate}$, in accordance with paragraphs 3.36 to 3.39 of Annex 7D (i.e. the Reporting Bank may recognise the PFE-reducing effect from the regular exchange of variation margin).

2.15 For the purposes of paragraphs 2.13(b) and 2.14(b) of this Annex, where there is no accounting measure of exposure for certain derivative transactions because they are held completely off-balance sheet, the Reporting Bank must use the sum of positive fair values of these derivative transactions as the replacement cost.

2.16 A Reporting Bank must include the EM in respect of a written option in the calculation of its TEM, even if it is assigned a zero E or EAD for the purposes of credit risk capital requirements under Part VII.

2.17 A Reporting Bank must not reduce the EM in respect of a derivative transaction calculated in accordance with paragraph 2.13 or 2.14 of this Annex, whichever is applicable, by any collateral received from its counterparty in connection with the derivative transaction. To avoid doubt, the Reporting Bank must not net any collateral received against the derivative transaction even if such netting is permitted under the Accounting Standards or Part VII. Where collateral provided by the Reporting Bank in relation to a derivative transaction has reduced the value of its balance sheet assets in accordance with the Accounting Standards, the Reporting Bank must gross up the EM in respect of the derivative transaction by the amount of such collateral. A Reporting Bank must –

(a) for the purposes of paragraphs 2.13(b) and 2.14(b) of this Annex, not reduce RC by any collateral received from its counterparty in connection with the derivative transaction; and

(b) for the purposes of paragraphs 2.13(c) and 2.14(c) of this Annex, fix the value of the multiplier at one, but the Reporting Bank may calculate the maturity factor used in the calculation of $AddOn^{aggregate}$ in accordance with paragraphs 3.36 to 3.39 of Annex 7D (i.e. the Reporting Bank may recognise the PFE-reducing effect from the regular exchange of variation margin).

This paragraph does not apply to the computation of the EM in respect of a derivative transaction calculated under paragraph 2.25 of this Annex.

2.18 In calculating the EM in respect of a derivative transaction, a Reporting Bank may deem the cash portion of variation margin exchanged between counterparties as a form of pre-settlement payment (rather than a collateral) and reduce the EM in respect of a derivative transaction in accordance with paragraph 2.21 of this Annex, if all of the following conditions are met:

(a) for trades not cleared through a qualifying CCP, the cash received by the recipient counterparty is not segregated, i.e. there are no restrictions imposed on the recipient counterparty by law, regulation or any agreement, which restrict the recipient counterparty's ability to use the cash received;

(b) the variation margin is calculated and exchanged on a daily basis based on mark-to-market valuation of the derivative transaction, and the variation margin may be exchanged on the morning of the subsequent trading day based on the previous end-of-day market values;

(c) the cash portion of the variation margin is received in a currency specified in –

(i) the derivative contract;

(ii) an agreement to net that covers the derivative transaction, with the counterparty or the CCP; or

(iii) a credit support annex to an agreement to net mentioned in sub-paragraph (c)(ii);

(d) the variation margin exchanged is the full amount necessary to fully extinguish the mark-to-market exposure of the derivative transaction subject to the margin threshold and minimum transfer amounts applicable to the counterparty;

(e) the derivatives transaction and variation margin are covered by a single agreement to net between the counterparties in the derivatives transaction and the agreement to net –

(i) explicitly stipulates that the counterparties agree to settle on a net basis any obligation covered by such an agreement to net, taking into account any variation margin received or provided if a credit event occurs involving either counterparty;

(ii) is legally enforceable and effective in all relevant countries or jurisdictions within the meaning of paragraph 3.1(a) of Annex 7G, including in the event of default, insolvency, and bankruptcy; and

(iii) does not contain a walkaway clause;

(f) the Reporting Bank has obtained a written independent legal opinion[55] confirming that the agreement to net meets the criteria in sub-paragraph (e).

2.19 For the purposes of paragraph 2.18(c) and (e) of this Annex, an agreement to net is any agreement that provides a legally enforceable right of offset, and a Reporting Bank may deem a master agreement to net as a single agreement to net.

2.20 For the purposes of paragraph 2.18(d) of this Annex, where a margin dispute arises, a Reporting Bank must not recognise any variation margin as the variation margin exchanged, other than the amount of non-disputed variation margin that has been exchanged.

2.21 Pursuant to paragraph 2.18 of this Annex, if all of the conditions in paragraph 2.18 of this Annex are met, a Reporting Bank may –

(a) reduce the replacement cost calculated in accordance with paragraph 2.13(b) or 2.14(b) of this Annex, whichever is applicable, by the amount of the cash portion of the variation margin received, if the positive mark-to-market value of the derivative transaction or transactions is not already reduced by the same amount of the cash portion of the variation margin received in accordance with the Accounting Standards; or

(b) in respect of the cash portion of the variation margin provided to a counterparty, where the cash portion of the variation margin has been recognised as an asset in accordance with the Accounting Standards, deduct the resulting receivable in the calculation of its TEM, and instead include the cash portion of the variation margin provided in the calculation of RC via the term CVM_p.

To avoid doubt, the Reporting Bank must not use the cash portion of the variation margin received by the Reporting Bank to reduce the potential future exposure calculated in accordance with paragraph 2.13(c) or 2.14(c) of this Annex.

2.22 Where a Reporting Bank, acting as a clearing member of a qualifying CCP, offers clearing services for derivative transactions to a client, the Reporting Bank may exclude the EM in respect of the CCP trade exposures to the qualifying CCP in the calculation of the EM in respect of the derivative transaction if the Reporting Bank is not obligated, based on the contractual arrangements with the client, to reimburse the client for any losses suffered due to changes in the value of its derivative transactions in the event that the qualifying CCP defaults. To avoid doubt, a Reporting Bank must include the EM in respect of the CCP trade exposures based on the treatment for derivative transactions specified in this Annex, where –

(a) the Reporting Bank, in acting as a clearing member of a qualifying CCP, is obligated to reimburse the client for any losses suffered due to changes in

[55] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, the Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating transactions covered by the agreement to net.

the value of the client's transactions in the event that the qualifying CCP defaults; or

(b) the CCP trade exposures are to a CCP that is not a qualifying CCP.

2.23 Where a Reporting Bank is a higher level client in a multi-level client structure, and offers clearing services to a client for a derivative transaction that is cleared by a qualifying CCP, the Reporting Bank may exclude the EM in respect of the resulting CCP trade exposure to a clearing member or to an entity that is a higher level client to the Reporting Bank, in the calculation of the EM in respect of the derivative transaction if all of the following conditions are met:

(a) the Reporting Bank must confirm that the offsetting transaction in respect of the derivative transaction is identified by the qualifying CCP as a higher level client transaction;

(b) the Reporting Bank must obtain a written independent legal opinion[56] which concludes that –

(i) the collateral is held by the qualifying CCP or the clearing member, or both, to support the offsetting transaction in respect of the derivative transaction, under one or more arrangements that prevent any losses to the Reporting Bank due to –

(A) the default or insolvency of the clearing member;

(B) the default or insolvency of other clients of the clearing member; and

(C) the joint default or insolvency of the clearing member and any of its other clients;

(ii) under the arrangements in sub-paragraph (b)(i), upon the insolvency of the clearing member, there is no legal impediment (other than the need to obtain a court order to which the client is entitled) to the transfer of the collateral belonging to clients of the defaulting clearing member to the qualifying CCP, to one or more other surviving clearing members, or to clients or their respective nominees; and

(iii) the arrangements in sub-paragraph (b)(i) are binding on all relevant parties and legally enforceable in all relevant countries or jurisdictions within the meaning of paragraph 3.1(a) of Annex 7G;

(c) the Reporting Bank must ensure that the arrangements in sub-paragraph (b)(i) do not cease to be enforceable and there continues to be no legal impediment under sub-paragraph (b)(ii);

[56] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, the Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating transactions related to the Reporting Bank's client clearing services.

(d) the Reporting Bank must ensure that the laws, regulation, rules, contractual arrangements and administrative arrangements, that govern the derivative transaction between the Reporting Bank and the clearing member or higher level client, as the case may be –

(i) provide that the offsetting transaction in respect of the derivative transaction with a clearing member that has defaulted, or an insolvent clearing member, will continue to be indirectly transacted through the qualifying CCP, or by the qualifying CCP, should the clearing member default or become insolvent; and

(ii) allow for the Reporting Bank's positions and collateral placed with the qualifying CCP to be transferred at market value unless the Reporting Bank requests to close out at market value;

(e) the Reporting Bank must not be obligated, based on any contractual arrangements with its client, to reimburse the client for any losses suffered in the event that the qualifying CCP or the clearing member defaults.

2.24 For the purposes of paragraph 2.23(d) of this Annex, a Reporting Bank must consider all of the following factors when assessing if the offsetting transaction in respect of the derivative transaction will continue to be indirectly transacted:

(a) whether there is a precedent for transactions being ported to another clearing member or the qualifying CCP;

(b) whether there is any reason for the Reporting Bank to believe that the industry practice for such precedent to continue, will be changed.

The Reporting Bank must not determine that the criteria in paragraph 2.23(d) of this Annex is met solely on the basis that there is no prohibition against the porting of client trades in any documentation provided by the qualifying CCP, including in rules imposed by or agreements entered into with, the qualifying CCP, that govern transactions transacted with or through the qualifying CCP.

2.25 Where a Reporting Bank offers clearing services for derivative transactions to a client for derivative transactions that are cleared by a qualifying CCP or a CCP that is not a qualifying CCP, whether by acting as a clearing member of the CCP or by acting as a higher level client within a multi-level client structure, the Reporting Bank must determine the EM in respect of its exposure to the client as E calculated in accordance with paragraphs 1.1 to 1.3 and 2.4 to 5.4 of Annex 7D, subject to paragraph 2.26 of this Annex.

2.26 In determining the EM in respect of its exposure to the client, the Reporting Bank must restrict the amount of initial margin received by the Reporting Bank from the client, that may be included in the values of C and $NICA$ for the purposes of determining RC and PFE, to the amount for which the Reporting Bank records and maintains a separate book entry in relation to the client's money or other assets received from each client under the laws governing the Reporting Bank's handling or custody of client assets.

2.27 For the purposes of paragraphs 2.22 to 2.24 and 2.28 of this Annex, where a Reporting Bank offers clearing services for a derivative transaction to an affiliate of the

Reporting Bank, the Reporting Bank must consider the entity as a client if the entity is outside the regulatory scope of consolidation at the level at which the leverage ratio is being calculated. Where the entity is within the regulatory scope of consolidation at the level at which the leverage ratio is being calculated[57], the Reporting Bank must include the EM in respect of the Reporting Bank's trade exposure to the CCP resulting from the Reporting Bank's provision of clearing services for the derivative transaction, calculated in accordance with paragraphs 2.22 to 2.24 of this Annex, in the calculation of the EM in respect of the derivative transaction.

2.28 Where a client enters directly into a derivative transaction with the CCP and the Reporting Bank acting as a clearing member for the client to the CCP, guarantees the performance of its client's CCP trade exposures to the CCP for the transaction, the Reporting Bank must calculate the EM in respect of the guarantee as an EM in respect of the derivative transaction as set out in paragraphs 2.13 to 2.21 of this Annex, as if the Reporting Bank had entered directly into the transaction with the client, including with regard to the receipt or provision of the cash portion of the variation margin.

2.29 For the purposes of paragraphs 2.22 to 2.24 and 2.27 of this Annex, CCP trade exposures include initial margin posted to the CCP, irrespective of whether or not such margin is posted in a manner that makes it remote from the insolvency of the CCP.

Written Credit Derivatives

2.30 For the purposes of paragraphs 2.31 to 2.39 of this Annex –

(a) "written credit derivative" refers to a credit derivative through which a Reporting Bank sells credit protection to a third party, and includes a credit default swap, a total return swap and an option where a Reporting Bank has the obligation to provide credit protection; and

(b) "effective notional amount" in relation to a written credit derivative, means an amount obtained by adjusting the notional amount of the written credit derivative to reflect the true exposure of the written credit derivative that is leveraged or otherwise enhanced by the structure of the transaction.

2.31 In addition to the treatment for derivative transactions, which would include written credit derivatives, set out in paragraphs 2.13 to 2.29 of this Annex, a Reporting Bank must include, subject to paragraphs 2.32 to 2.39 of this Annex, in the EM in respect of a written credit derivative, the effective notional amount of the written credit derivative, unless –

(a) the written credit derivative is included in a transaction for which the Reporting Bank provides clearing services to a client by acting as a clearing member of a qualifying CCP, and the transaction meets the conditions in paragraph 2.22 of this Annex such that the Reporting Bank may exclude its CCP trade exposures in the calculation of the EM in respect of the derivative transaction; or

[57] In such a case, the Reporting Bank's trade exposure to the entity is eliminated in the course of consolidation, but the Reporting Bank still has a trade exposure to the CCP.

(b) the written credit derivative is included in a transaction for which the Reporting Bank provides clearing services to a client by acting as a higher level client in a multi-level client structure, and the transaction meets the conditions in paragraph 2.23 of this Annex such that the Reporting Bank may exclude the EM in respect of the resulting trade exposures to –

(i) the clearing member; or

(ii) an entity that serves as a higher level client to the Reporting Bank,

in the calculation of the EM in respect of the derivative transaction.

2.32 For the purposes of calculating the effective notional amount of a written credit derivative, a Reporting Bank may reduce the effective notional amount by any negative change in fair value amount that has been incorporated into the calculation of CM with respect to the written credit derivative.

2.33 The Reporting Bank may further reduce the resulting amount (derived pursuant to paragraph 2.32 of this Annex) by the effective notional amount of a purchased credit derivative on an identical reference name if –

(a) the material terms which the credit protection purchased through the purchased credit derivative is subject to, are the same or more conservative than the material terms in the corresponding written credit derivative, such that the credit protection purchased will deliver a payment in all potential future states in which the corresponding written credit derivative is triggered;

(b) the remaining maturity of the purchased credit derivative is equal to or greater than the remaining maturity of the written credit derivative;

(c) the purchased credit derivative is not purchased from a counterparty whose credit quality is positively correlated with the value of the reference obligation of the written credit derivative. The absence of a legal connection between the counterparty and the underlying reference name of the written credit derivative does not preclude such a positive correlation;

(d) where the effective notional amount of the written credit derivative is reduced by any negative change in fair value amount that has been incorporated into the calculation of the CM with respect to the written credit derivative, the Reporting Bank also reduces the effective notional amount of the purchased credit derivative by any resulting positive change in fair value that has been incorporated into the calculation of the CM with respect to the purchased credit derivative. Where the Reporting Bank does not reduce the effective notional amount of the purchased credit derivative by any resulting positive change in fair value that has been incorporated into the calculation of the CM with respect to the purchased credit derivative, the Reporting Bank may only offset the effective notional amount of the corresponding written credit derivative if the effective notional amount of the written credit derivative has not been reduced by

any negative change in fair value that has been incorporated into the calculation of the CM with respect to the written credit derivative; and

(e) the purchased credit derivative is not included in a transaction for which –

(i) the Reporting Bank provides clearing services to a client (whether by acting as a clearing member of a qualifying CCP or by acting as a higher level client in a multi-level client structure); and

(ii) the effective notional amount of the corresponding written credit derivative is excluded from the EM in respect of the written credit derivative in accordance with paragraph 2.31 of this Annex.

2.34 For the purposes of paragraph 2.33 of this Annex, in the case of a written credit derivative which is an option where a Reporting Bank has the obligation to provide credit protection, the effective notional amount of such an option sold by the Reporting Bank may be offset by the effective notional amount of an option by which the Reporting Bank has the right to purchase credit protection, provided the conditions in paragraph 2.33(a) to (e) of this Annex are met.

2.35 To avoid doubt, a Reporting Bank may offset the effective notional amount of a written credit derivative sold to a client by means of a credit derivative on an identical reference name purchased from a CCP, provided the conditions in paragraph 2.33(a) to (e) of this Annex are met.

2.36 For the purposes of paragraph 2.33(a) of this Annex, "material terms" include the level of subordination, optionality, credit events, reference obligation and any other characteristics relevant to the valuation of the derivative. The criterion set out in paragraph 2.33(a) of this Annex would be met only where –

(a) in the case of an option to provide credit protection, the strike price of the underlying purchased credit derivative is equal to or lower than the strike price of the underlying written credit derivative;

(b) in the case of a written single name credit derivative, the purchased credit derivative references an obligation which –

(i) ranks pari passu with the reference obligation of the written credit derivative; or

(ii) is junior to the reference obligation of the written credit derivative, and a credit event on the reference obligation of the written credit derivative will always result in a credit event on the reference obligation of the purchased credit derivative; and

(c) in the case of an exposure which is a tranche, the purchased credit derivative references an obligation with the same level of seniority as the reference obligation of the written credit derivative.

2.37 For the purposes of paragraph 2.33 of this Annex, 2 reference names are considered identical only if they refer to the same legal entity. A Reporting Bank may offset the written credit derivatives on individual reference names with credit protection

purchased through credit derivatives on a pool of reference names if the credit protection purchased is economically equivalent to purchasing credit protection separately on each of the individual reference names in the pool.[58] If a Reporting Bank purchases credit protection on a pool of reference names through credit derivatives, but the credit protection does not cover the entire pool[59], then the Reporting Bank must not offset the written credit derivatives on individual reference names. A Reporting Bank may offset written credit derivatives on a pool of reference names (or subset thereof) with credit protection purchased on a pool of reference names (or subset thereof) through credit derivatives provided that both instruments reference the same pool (or subset thereof) of reference names and the level of subordination of the reference obligations is identical under both instruments.

2.38 For the purposes of paragraph 2.33 of this Annex, where a Reporting Bank purchases credit protection through a total return swap and records the net payments received as net income, but does not record offsetting deterioration in the value of the written credit derivative (either through reductions in fair value or by an addition to reserves) in its CM, the Reporting Bank must not recognise the credit protection for the purposes of offsetting the effective notional amounts related to written credit derivatives.

2.39 For the purposes of calculating the amount for potential future exposure as set out in paragraphs 2.13(c) and 2.14(c) of this Annex, a Reporting Bank may exclude from the netting set for the potential future exposure calculation, the individual potential future exposure amount relating to a written credit derivative provided that –

(a) such individual potential future exposure amount is not offset by the effective notional amount of a purchased credit derivative under paragraph 2.33 of this Annex; and

(b) the effective notional amount of the written credit derivative is included in the calculation of the EM in respect of the written credit derivative under paragraph 2.31 of this Annex.

SFTs

2.40 Where a Reporting Bank acts as a principal in an SFT, the Reporting Bank must calculate the EM in respect of the SFT by adding –

(a) the gross SFT assets recognised in accordance with the Accounting Standards (i.e. with no recognition of accounting netting of cash payables against cash receivables) with the following adjustments:

(i) the Reporting Bank must exclude the value of any collateral received under the SFT, where the Reporting Bank has recognised the collateral as an asset on its balance sheet;

[58] For example, this would be the case if a Reporting Bank were to purchase credit protection on an entire securitisation structure.

[59] This means that the credit protection covers only a subset of the pool, as in the case of an nth-to-default credit derivative or a securitisation tranche.

(ii) the Reporting Bank may net the cash payables and cash receivables in the SFTs with the same counterparty if all of the following criteria are met:

(A) the SFTs have the same explicit final settlement date. An SFT with no explicit final settlement date but which can be unwound at any time by either party to the SFT would not satisfy this criterion;

(B) the right to set off the amount owed to the counterparty with the amount owed by the counterparty is legally enforceable both currently in the normal course of business and in the event of default, insolvency, and bankruptcy;

(C) the counterparties intend to settle net or settle simultaneously, or the SFTs are subject to a settlement mechanism that results in the functional equivalent of net settlement i.e. the cash flows of the SFTs are equivalent, in effect, to a single net amount on the settlement date; and

(b) the SFT counterparty exposure calculated in accordance with the following formula:

(i) where the Reporting Bank has entered into a qualifying agreement to net with the counterparty –

$CE_{SFT}^* = \max \{0, [\Sigma(CE_{SFT,i}) - \Sigma(C_{SFT,i})]\}$

where –

(A) "CE_{SFT}^*" refers to the SFT counterparty exposure;

(B) "$\Sigma(CE_{SFT,i})$" refers to the total fair value of collateral and cash lent to the counterparty for all SFTs included in the qualifying agreement to net; and

(C) "$\Sigma(C_{SFT,i})$" refers to the total fair value of collateral and cash received from the counterparty for all SFTs included in the qualifying agreement to net; and

(ii) where the Reporting Bank has not entered into a qualifying agreement to net with the counterparty, calculate for each SFT –

$CE_{SFT,i}^* = \max \{0, [(CE_{SFT,i}) - (C_{SFT,i})]\}$

where –

(A) "$CE_{SFT,i}^*$" refers to the SFT counterparty exposure for an SFT, *i*;

(B) "$CE_{SFT,i}$" refers to the fair value of collateral and cash lent to the counterparty for the SFT, *i*; and

(C) "$C_{SFT,\ i}$" refers to the fair value of collateral and cash received from the counterparty for the SFT, *i*.

However, a Reporting Bank may set $CE_{SFT,\ i}$* to zero where $CE_{SFT,\ i}$ comprises only the cash lent to a counterparty, and the cash receivables arising from the cash lent to the counterparty is not eligible for the netting treatment set out in sub-paragraph (a).

2.41 For the purposes of paragraph 2.40(a) of this Annex, where the SFT assets are subject to novation and cleared through a qualifying CCP, a Reporting Bank must use the final contractual exposure after the process of novation has been applied, in place of gross SFT assets. In calculating the final contractual exposure, a Reporting Bank may only net the cash payables and cash receivables with a qualifying CCP if the criteria in paragraph 2.40(a)(ii) of this Annex are met. A Reporting Bank must not recognise any other netting for the purposes of calculating the EM in respect of the SFT, even if such netting is permitted by a qualifying CCP.

2.42 For the purposes of paragraph 2.40(a)(ii)(C) of this Annex, cash flows of SFTs are equivalent only if –

(a) the SFTs are settled through the same settlement system;

(b) the settlement arrangements are supported by cash, or intraday credit facilities, or both, intended to ensure that settlement of the SFTs will occur by the end of the business day; and

(c) any issues arising from the collateral leg of the SFTs do not interfere with the completion of the net settlement of the cash receivables and payables[60]. Where there is a failure of the collateral leg of an SFT in such a mechanism at the end of the window for settlement in the settlement mechanism, a Reporting Bank must split out the SFT, including its matching cash leg, from the netting set and measure the EM in respect of the SFT on a gross basis.

2.43 For the purposes of paragraph 2.40(b) of this Annex, a qualifying agreement to net is an agreement to net that meets all of the following criteria:

(a) be legally enforceable in each relevant country or jurisdiction within the meaning of paragraph 3.1(a) of Annex 7G upon the occurrence of an event of default and regardless of whether the counterparty is insolvent or bankrupt;

(b) provide the non-defaulting party with the right to terminate and close out in a timely manner all SFTs under the agreement upon an event of default, including in the event of insolvency or bankruptcy of the counterparty;

[60] This means that the failure of any single collateral leg in the settlement mechanism delays settlement of only the matching cash leg or creates an obligation to the settlement mechanism, supported by an associated credit facility.

(c) provide for the netting of gains and losses on SFTs (including the value of any collateral) terminated and closed out under it so that a single net amount is owed by one party to the other;

(d) allow for the prompt liquidation or setoff of collateral upon the event of default.

Prior to treating an agreement to net as a qualifying agreement to net, a Reporting Bank must obtain a written independent opinion[61] confirming that the agreement to net meets the criteria in this paragraph.

2.44 For the purposes of paragraph 2.40(b)(i) of this Annex, a Reporting Bank may recognise netting across positions in the banking book and trading book only if –

(a) all SFTs are marked to market daily; and

(b) the collateral used in the SFTs is an eligible financial collateral in the banking book as set out in Annex 7H.

2.45 For the purposes of paragraph 2.40(b)(i)(B) and (ii)(B) of this Annex, in the case of a triparty repo, the term "$\sum(CE_{SFT,i})$" or "$CE_{SFT,\ i}$", as the case may be, includes collateral deposited at a triparty repo agent up to the amount effectively lent to the counterparty in the SFT, but excludes excess collateral that the Reporting Bank has deposited at a triparty repo agent but which has not been lent out.

2.46 Where a Reporting Bank has accounted for its SFT using sales accounting, the Reporting Bank must reverse all sales-related accounting entries and calculate the EM in respect of the SFT in accordance with paragraph 2.40 of this Annex as if the SFT had been treated as a financing transaction in accordance with the Accounting Standards.

2.47 Where a Reporting Bank acting as an agent in an SFT[62] provides an indemnity or guarantee to a customer or counterparty for the difference between the value of the collateral or cash the customer or counterparty has lent and the value of the collateral the borrower has provided, the Reporting Bank must calculate the EM in respect of the SFT by applying only paragraph 2.40(b) of this Annex if –

(a) the Reporting Bank does not own or control the underlying cash or security; and

(b) the Reporting Bank's exposure to the SFT is limited to the guaranteed difference between the value of the collateral or cash its customer or counterparty has lent and the value of the collateral the borrower has provided.

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[61] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, the Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating SFTs covered by the agreement to net.

[62] The Reporting Bank generally provides an indemnity or guarantee to one of the 2 parties involved, and only for the difference between the value of the security or cash its customer or counterparty has lent and the value of the collateral the borrower has provided.

2.48 Despite paragraph 2.47 of this Annex, a Reporting Bank must also include the full amount of the collateral or cash in the EM in respect of the SFT where the Reporting Bank is economically exposed beyond the guaranteed difference to the underlying collateral or cash.[63] This paragraph does not apply to client omnibus accounts that are used by agent lenders to hold and manage client collateral provided that client collateral is segregated from the Reporting Bank's proprietary assets and the Reporting Bank calculates the exposure on a client-by-client basis.

2.49 Subject to paragraphs 2.47 and 2.48 of this Annex, where the Reporting Bank acting as an agent in an SFT, does not provide an indemnity or guarantee to any of the parties involved in the SFT, the Reporting Bank may exclude the EM in respect of the SFT in the calculation of its TEM.

2.50 Where a Reporting Bank acting as an agent in an SFT provides an indemnity or guarantee to both parties involved in the SFT, the Reporting Bank must calculate the EM in respect of the SFT by applying paragraphs 2.40 to 2.49 of this Annex separately for each party involved in the SFT.

Off-balance Sheet Items

2.51 A Reporting Bank must calculate the EM in respect of an off-balance sheet item[64] by multiplying the notional amount for the item with –

(a) the applicable CCF set out in Annex 4D for an off-balance sheet item other than an off-balance sheet securitisation item; and

(b) the applicable CCF set out in Annex 7C for an off-balance sheet securitisation item.

2.52 For the purposes of paragraph 2.51 of this Annex, the notional amount of an off-balance sheet item refers to the amount which has been committed but is as yet undrawn. A Reporting Bank must measure the notional amount of an off-balance sheet item denominated in a foreign currency, based on the current exchange rate. The Reporting Bank must apply the CCF to the lower of the value of the unused committed credit line, and the value which reflects any possible constraining availability of the

[63] For example, due to the Reporting Bank managing collateral received in the Reporting Bank's name or on its own account rather than on the customer's or borrower's account (e.g. by on-lending or managing unsegregated collateral, cash or securities).

[64] A Reporting Bank should record a commitment (as defined in Annex 2A) as an exposure for leverage ratio purposes on the date it enters into the legal contract or agreement with the obligor, except in the following cases:
(a) where the Reporting Bank faces operational constraints in recording the commitment immediately, such as checking that the legal contract or agreement is in order, such delay should not exceed 15 business days;
(b) where the commitment is in respect of a credit facility to an obligor which is to be used for the purposes of repaying an existing credit facility issued by the Reporting Bank to the same obligor, such as for refinancing, the Reporting Bank should record the commitment on the date at which the existing credit exposure will be repaid. In the case where the amount for the commitment exceeds the outstanding amount to be repaid for the existing credit exposure, the Reporting Bank should recognise the difference on the date at which the legal contract or agreement or commitment is entered into by the Reporting Bank, subject to sub-paragraph (a).

facility[65]. Where a Reporting Bank contends that the availability of a facility is constrained, the Reporting Bank must have sufficient line monitoring and management procedures to support this contention.

2.53 A Reporting Bank may reduce the EM in respect of an off-balance sheet item by the amount of specific allowances and general allowances that have been set aside against the off-balance sheet item and which have reduced CET1 Capital, subject to the EM in respect of the off-balance sheet item not being less than zero.

[65] An example is the existence of a ceiling on the potential lending amount which is related to an obligor's reported cash flow.

Annex 4D

CCF FOR OFF-BALANCE SHEET ITEMS OTHER THAN SECURITISATION ITEMS UNDER THE LEVERAGE RATIO

1.1 Table 4D-1 sets out the CCFs for off-balance sheet items other than securitisation items.

1.2 Where a Reporting Bank undertakes to provide a commitment on another off-balance sheet item, a Reporting Bank must apply the lower of the applicable CCFs set out in Table 4D-1[66].

Table 4D-1 – CCF for off-balance sheet items

	Description of Off-balance Sheet Item	CCF
(a)	Direct credit substitutes[67]	100%
(b)	Sale and repurchase agreements and asset sales with recourse (other than SFTs), where the credit risk remains with the Reporting Bank	100%
(c)	Commitments with certain drawdown, including forward purchases, forward deposits, and partly paid shares and securities	100%
(d)	Credit substitutes which are not explicitly included in (a) to (c)	100%
(e)	Commitments to pay for unsettled purchases of financial assets, where the Reporting Bank treats the regular way purchase or sale of financial assets using settlement date accounting. The Reporting Bank may offset commitments to pay for unsettled purchases of financial assets by the amount of cash to be received for unsettled sales of financial assets where - (i) the financial assets are fair valued through the profit and loss account of the financial statements of the Reporting Bank; (ii) the Reporting Bank allocates the financial assets to its trading book; and (iii) the purchase or sale transactions of the financial assets are DvP transactions.	100%
(f)	Note issuance facilities and revolving underwriting facilities, regardless of the maturity of the underlying facility	50%

[66] For example, if a Reporting Bank has a commitment to open short-term self-liquidating trade letters of credit arising from the movement of goods, a 20% CCF must be applied (instead of a 40% CCF). If a Reporting Bank has an unconditionally cancellable commitment to issue direct credit substitutes, a 10% CCF must be applied (instead of a 100% CCF).

[67] For example, general guarantees of indebtedness (including standby letters of credit serving as financial guarantees for loans and securities), or acceptances (including endorsements with the character of acceptances).

(g)	Certain transaction-related contingent items[68]	50%
(h)	Other commitments, regardless of the maturity of the underlying facility, unless such other commitments fall within the scope of item (i) or (j)	40%
(i)	Self-liquidating trade-related contingent items[69] arising from the movement of goods with an original maturity of below one year. This paragraph is applicable where the Reporting Bank is the issuing bank or the confirming bank, of such commitments.	20%
(j)	Commitments which are unconditionally cancellable at any time by the Reporting Bank without prior notice, or that effectively provide for automatic cancellation due to deterioration in an obligor's creditworthiness	10%

1.3 Where the Reporting Bank makes a commitment to provide a loan that is to be drawn down in a number of tranches, the Reporting Bank must classify the commitment under item (h) of Table 4D-1 and apply 40% CCF to the full undisbursed portion of the loan, regardless of whether the commitment falls within the scope of another item in Table 4D-1.

1.4 For any item referred to in item (j) of Table 4D-1, where the Authority assesses that a 10% CCF does not adequately capture the exposure arising from such a commitment, the Authority may direct the Reporting Bank to apply a higher CCF to the commitment.

[68] For example, performance bonds, bid bonds, warranties or standby letters of credit related to particular transactions.

[69] For example, documentary credits collateralised by the underlying shipments.

PART V: OUTPUT FLOOR

5.1.1 A Reporting Bank must calculate its output floor as the sum of its credit RWA, market RWA, and operational RWA, calculated using only standardised approaches, multiplied by the output floor calibration.

5.1.2 For the purposes of paragraph 5.1.1, "standardised approaches" refers to the approaches set out in column (b) of Table 5-1, subject to paragraph 5.1.5. Where the Reporting Bank is using a nominated approach or a combination of nominated approaches, set out in column (a) of Table 5-1 to calculate the RWA for an exposure, for the purposes of paragraph 5.1.1, the Reporting Bank must calculate the RWA for the same exposure using the corresponding standardised approach or combination of standardised approaches, set out in column (b) of Table 5-1, subject to paragraph 5.1.5.

Table 5-1: Mapping of nominated approaches to standardised approaches

	(a) Nominated approach	(b) Standardised approach
(A)	SA(CR)	SA(CR)
(B)	IRBA	SA(CR)
(C)	look-through approach for equity investments in funds as set out in Division 5 of Part VII	look-through approach, mandate-based approach, or fall-back approach for equity investments in funds as set out in Division 5 of Part VII, except that under the look-through approach, the Reporting Bank must calculate the credit risk-weighted exposure amounts of the underlying exposures of the fund using only the approaches listed in this column
(D)	mandate-based approach for equity investments in funds as set out in Division 5 of Part VII	mandate-based approach for equity investments in funds as set out in Division 5 of Part VII
(E)	fall-back approach for equity investments in funds as set out in Division 5 of Part VII	fall-back approach for equity investments in funds as set out in Division 5 of Part VII
(F)	SEC-ERBA	SEC-ERBA
(G)	SEC-SA	SEC-SA
(H)	applying a risk weight of 1250% for securitisation exposures as set out in paragraph 7.6.19	applying a risk weight of 1250% for securitisation exposures as set out in paragraph 7.6.19
(I)	SEC-IRBA	SEC-ERBA, SEC-SA, or applying a risk-weight of 1250%, in accordance with the hierarchy of these approaches as set out in paragraphs 7.6.16, 7.6.18 and 7.6.19
(J)	SEC-IAA	SEC-ERBA, SEC-SA, or applying a risk-weight of 1250%, in accordance with the hierarchy of these approaches as set out in paragraphs 7.6.16, 7.6.18 and 7.6.19
(K)	SA-CCR	SA-CCR
(L)	FC(SA) for CCR exposures arising from SFTs	FC(SA)

	(a) Nominated approach	(b) Standardised approach
(M)	FC(CA) for CCR exposures arising from SFTs	FC(CA)
(N)	CCR internal models method for CCR exposures arising from OTC derivative transactions, exchange-traded derivative transactions or long settlement transactions	SA-CCR
(O)	CCR internal models method for CCR exposures arising from SFTs	FC(CA)
(P)	CCR internal models method for CCR exposures to a CCP	SA-CCR
(Q)	use of VaR models to calculate CCR exposures arising from SFTs, as set out in Annex 7F	FC(CA)
(R)	approach for calculating UST-DvP RWA as set out in Sub-division 2 of Division 8 of Part VII	approach for calculating UST-DvP RWA as set out in Sub-division 2 of Division 8 of Part VII
(S)	approach for calculating UST-non-DvP RWA as set out in Sub-division 3 of Division 8 of Part VII	approach for calculating UST-non-DvP RWA as set out in Sub-division 3 of Division 8 of Part VII, except that in the case of a UST exposure arising from an unsettled non-DvP transaction referred to in paragraph 7.8.12, the Reporting Bank must not adopt the approach in paragraph 7.8.12(b)
(T)	SSA(MR)	SSA(MR), except that the Reporting Bank must use the SEC-ERBA, SEC-SA, or apply a risk weight of 1250%, in accordance with the hierarchy of these approaches as set out in paragraphs 7.6.16, 7.6.18 and 7.6.19, to calculate the specific risk charge for securitisation exposures in the trading book
(U)	SA(MR)	SA(MR), except that the Reporting Bank must use the SEC-ERBA, SEC-SA, or apply a risk-weight of 1250%, in accordance with the hierarchy of these approaches as set out in paragraphs 7.6.16, 7.6.18 and 7.6.19, to set risk weights for securitisation exposures in the trading book
(V)	IMA	SA(MR), except that the Reporting Bank must use the SEC-ERBA, SEC-SA, or apply a risk-weight of 1250%, in accordance with the hierarchy of these approaches as set out in paragraphs 7.6.16, 7.6.18 and 7.6.19, to set risk weights for securitisation exposures in the trading book
(W)	BA-CVA	BA-CVA, except that the Reporting Bank must calculate E or EAD using SA-CCR, FC(SA) or

	(a) Nominated approach	(b) Standardised approach
		FC(CA), whichever is the applicable standardised approach corresponding to the nominated approach used by the Reporting Bank to calculate E or EAD in rows (K) to (Q) of this Table
(X)	SA-CVA	SA-CVA
(Y)	approach for calculating CVA RWA as set out in paragraph 8.5.10	approach for calculating CVA RWA as set out in paragraph 8.5.10, except that the Reporting Bank must calculate E or EAD using SA-CCR, FC(SA) or FC(CA), whichever is the applicable standardised approach corresponding to the nominated approach used by the Reporting Bank to calculate E or EAD in rows (K) to (Q) of this Table
(Z)	SA(OR)	SA(OR)

5.1.3 To avoid doubt, "standardised approaches" in paragraph 5.1.1 does not include all of the following approaches:

(a) IRBA (including the use of the IRBA to calculate RWA under the look-through and mandate-based approaches for equity investments in funds);

(b) SEC-IRBA and SEC-IAA (including the use of the SEC-IRBA or SEC-IAA to set risk weights or calculate the specific risk charge for securitisation exposures in the trading book);

(c) IMA;

(d) use of VaR models to calculate CCR exposures arising from SFTs;

(e) CCR internal models method (including the use of the CCR internal models method to calculate exposures to a CCP).

5.1.4 To avoid doubt, with effect from 1 January 2025, a Reporting Bank's market RWA calculated using only standardised approaches referred to in paragraph 5.1.1 includes its Pillar 1 RWA surcharge calculated in accordance with paragraphs 8.1.39 to 8.1.41 and 12.5 times of its capital requirements for net short positions in funds calculated in accordance with paragraph 8.1.11.

5.1.5 For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), a Reporting Bank must not apply rows (T) to (Y) of Table 5-1. Instead, where the Reporting Bank is using a nominated approach or a combination of nominated approaches, set out in column (a) of Table 5-2 to calculate the market RWA for an exposure, for the purposes of paragraph 5.1.1, the Reporting Bank must calculate the market RWA for the same exposure using the corresponding standardised approach or combination of standardised approaches, set out in column (b) of Table 5-2.

Table 5-2: Mapping of nominated approaches relating to market RWA to standardised approaches relating to market RWA for the period from 1 July 2024 to 31 December 2024 (both dates inclusive)

	(a) Nominated approach	(b) Standardised approach
(A)	SA(MR) set out in Division 2 of Part VIII of MAS Notice 637 in force immediately before 1 July 2024	SA(MR) set out in Division 2 of Part VIII of MAS Notice 637 in force immediately before 1 July 2024, except that the Reporting Bank must use the SEC-ERBA, SEC-SA, or apply a risk weight of 1250%, in accordance with the hierarchy of these approaches as set out in paragraphs 7.6.16, 7.6.18 and 7.6.19 of this Notice, to calculate the specific risk charge for securitisation exposures in the trading book
(B)	IMA set out in Division 3 of Part VIII of MAS Notice 637 in force immediately before 1 July 2024	SA(MR) set out in Division 2 of Part VIII of MAS Notice 637 in force immediately before 1 July 2024, except that the Reporting Bank must use the SEC-ERBA, SEC-SA, or apply a risk weight of 1250%, in accordance with the hierarchy of these approaches as set out in paragraphs 7.6.16, 7.6.18 and 7.6.19 of this Notice, to calculate the specific risk charge for securitisation exposures in the trading book
(C)	CVA standardised method set out in Section 2 of Annex 7AI of MAS Notice 637 in force immediately before 1 July 2024	CVA standardised method set out in Section 2 of Annex 7AI of MAS Notice 637 in force immediately before 1 July 2024, except that the Reporting Bank must calculate E or EAD using SA-CCR, FC(SA) or FC(CA), whichever is the applicable standardised approach corresponding to the nominated approach used by the Reporting Bank to calculate E or EAD in rows (K) to (Q) of Table 5-1
(D)	CVA advanced method set out in Section 3 of Annex 7AI of MAS Notice 637 in force immediately before 1 July 2024	CVA standardised method set out in Section 2 of Annex 7AI of MAS Notice 637 in force immediately before 1 July 2024, except that the Reporting Bank must calculate E or EAD using SA-CCR, FC(SA) or FC(CA), whichever is the applicable standardised approach corresponding to the nominated approach used by the Reporting Bank to calculate E or EAD in rows (K) to (Q) of Table 5-1

5.1.6 For the purposes of paragraph 5.1.1, "output floor calibration" refers to the relevant percentage set out in Table 5-3, or such other higher percentage (in any case, not more than 100%) as the Authority may determine to be applicable to the Reporting Bank.

Table 5-3: Output floor calibration

Period	Output floor calibration
From 1 July 2024 to 31 December 2024	50%
From 1 January 2025 to 31 December 2025	55%
From 1 January 2026 to 31 December 2026	60%
From 1 January 2027 to 31 December 2027	65%
From 1 January 2028 to 31 December 2028	70%
From 1 January 2029 onwards	72.5%

PART VI: DEFINITION OF CAPITAL

Division 1: Common Equity Tier 1 Capital

Components of CET1 Capital

6.1.1 A Reporting Bank must ensure its CET1 Capital is calculated as the sum of the following items, at both the Solo and Group levels:

(a) paid-up ordinary shares of the Reporting Bank that comply with the requirements in paragraph 6.1.2;

(b) share premium, resulting from the issuance of ordinary shares which fall within sub-paragraph (a), if any;

(c) retained earnings[70], after deducting any interim or final dividends which have been declared by the Board of the Reporting Bank or any banking group entity on any class of shares and any interim losses incurred since the end of the last financial reporting period and may include any interim profits earned since the end of the last financial reporting period where the following conditions are met:

(i) every quarterly financial statement is prepared using the same accounting policies and practices applied in the preparation of the year-end financial statements, unless the change in the accounting policy or practice is in accordance with any statutory requirement;

(ii) every quarterly financial statement and every significant transaction is reviewed in a timely manner by an external auditor;

(iii) the external auditor of the Reporting Bank has not expressed a qualified opinion on any of the quarterly financial statements in the preceding 12 months of the end of the interim financial reporting period;

(d) accumulated other comprehensive income and other disclosed reserves, other than revaluation surpluses on land and building assets, accumulated revaluation gains from investment properties and regulatory loss allowances;

(e) 45% of revaluation surpluses on land and building assets and accumulated revaluation gains from investment properties, where the following conditions pertaining to revaluations are satisfied:

(i) the valuation of any land and building asset or investment property is obtained from a qualified property valuer and the increase in value

[70] CET1 capital of the Group may include earnings of associates and joint ventures accounted for under the equity method, to the extent that they are reflected in retained earnings and other reserves of the group and not excluded by any of the regulatory adjustments set out in paragraph 6.1.5.

is recorded as a revaluation surplus or gain in the financial statements;

(ii) a new valuation from a qualified property valuer in respect of the land and building asset or investment property is obtained –

(A) at least once every 3 years; or

(B) where the value of the land and building asset or investment property has been substantially impaired by any event,

whichever is earlier;

(iii) impairment charges taken against any land and building asset or investment property are not netted against revaluation surplus or gain from any other asset;

(iv) the external auditor of the Reporting Bank has not expressed a qualified opinion on the revaluation of any land and building asset or investment property;

(f) paid-up ordinary shares issued by fully consolidated subsidiaries of the Reporting Bank and held by third party investors (i.e. minority interest) that meet the criteria for inclusion in CET1 Capital pursuant to paragraph 6.1.10;

(g) regulatory adjustments set out in paragraph 6.1.5.

Minimum Requirements for Paid-Up Ordinary Shares

6.1.2 For the purposes of paragraph 6.1.1(a), a Reporting Bank must not include a paid-up ordinary share of the Reporting Bank as CET1 Capital unless –

(a) the ordinary share represents the most subordinated claim in liquidation;

(b) the entitlement of ordinary shareholders to a claim on the residual assets is proportional to their share of issued share capital, after all senior claims have been repaid in liquidation. In this regard, the claims of such holders are unlimited and variable (i.e. not fixed or capped);

(c) the amount paid-up by ordinary shareholders is perpetual and is not repaid outside of liquidation. This excludes discretionary repurchases by the Reporting Bank or other means of reducing capital in a discretionary manner that is allowable under written law;

(d) the Reporting Bank does not create an expectation at issuance that the ordinary shares will be bought back, redeemed or cancelled, nor do the contractual terms provide any feature that might give rise to such an expectation;

(e) distributions in respect of ordinary shares ("distributions") are only paid by the Reporting Bank to the extent that the Reporting Bank has profits distributable under written law. The level of distributions is not tied or linked to the amount paid-up at issuance, and is not subject to a contractual cap, except to the extent that the Reporting Bank is unable to pay distributions that exceed the level of profits distributable under written law. In the case where the Reporting Bank does not earn any distributable profit, the Reporting Bank may distribute dividends as long as the Reporting Bank meets the minimum capital ratios to which it is subject, and does not exceed any of the distribution constraints of the capital conservation and countercyclical buffers, as set out in Part IV. Accordingly, the Reporting Bank may pay dividends out of reserves available for distribution including those reserves accumulated in prior years, provided that it observes the minimum capital ratios and distribution constraints of the capital conservation and countercyclical buffers;

(f) there are no circumstances under which distributions are obligatory and the non-payment of distributions is not an event of default;

(g) distributions are only paid after all legal and contractual obligations have been met, and after payments on AT1 capital instruments and Tier 2 capital instruments have been made. In this regard, there are no preferential distributions, including in respect of other CET1 capital instruments;

(h) the ordinary share takes the first and proportionately greatest share of any losses as they occur.[71] In this regard, it absorbs losses on a going-concern basis proportionately and *pari passu* with all other CET1 capital instruments;

(i) the amount paid-up by ordinary shareholders is recognised as equity and not a liability, for the purposes of determining balance sheet insolvency;

(j) the amount paid-up by ordinary shareholders is classified as equity under the Accounting Standards;

(k) the ordinary share is directly issued and fully paid-up in cash, and purchase of the ordinary share is not directly or indirectly funded by the Reporting Bank[72];

(l) the amount paid-up by ordinary shareholders is not secured or covered by a guarantee of the Reporting Bank or any of its related corporations or other affiliates. In addition, the ordinary share is not subject to any other

[71] To avoid doubt, in cases where capital instruments have a permanent write-down feature, this criterion is still deemed to be met by ordinary shares.

[72] The Reporting Bank does not have to exclude funding to a borrower that purchases the ordinary shares of the Reporting Bank from regulatory capital where –
(a) the Reporting Bank has full recourse to the borrower; and
(b) the funding was not provided specifically for the purpose of purchasing the ordinary shares of the Reporting Bank.

arrangement that legally or economically enhances the seniority of the claim;

(m) the ordinary share is issued with the approval of the ordinary shareholders. The approval is either given directly by the ordinary shareholders or, if permitted by written law, given by the Board of the Reporting Bank or by other persons duly authorised by the ordinary shareholders; and

(n) the ordinary share is clearly and separately disclosed on the Reporting Bank's balance sheet.

6.1.3 In the case where the Reporting Bank issues non-voting ordinary shares as part of CET1 Capital, the non-voting ordinary shares must be identical to the voting ordinary shares of the Reporting Bank in all respects, except the absence of voting rights.

6.1.4 The Reporting Bank must seek prior approval from the Authority if it intends to include in CET1 Capital an instrument that has its dividends paid in anything other than cash or shares.

Regulatory Adjustments Applied in the Calculation of CET1 Capital

6.1.5 A Reporting Bank must apply the following regulatory adjustments in the calculation of CET1 Capital, at both the Solo and Group levels:

(a) the Reporting Bank must deduct goodwill, including any goodwill included in the valuation of investments in unconsolidated major stake companies, in the calculation of CET1 Capital.[73] The Reporting Bank must deduct the full amount representing goodwill, net of any associated deferred tax liability that would be extinguished if the goodwill becomes impaired or is derecognised under the Accounting Standards;

(b) the Reporting Bank must deduct intangible assets, including but not limited to copyright, patents and other intellectual property, in the calculation of CET1 Capital. The Reporting Bank must deduct the full amount representing intangible assets, net of any associated deferred tax liability that would be extinguished if the intangible assets become impaired or are derecognised under the Accounting Standards;

(c) the Reporting Bank must deduct deferred tax assets that rely on the future profitability[74] of the Reporting Bank or any banking group entity to be realised in the calculation of CET1 Capital.[75] The Reporting Bank must assign, and must ensure that its banking group entity assigns, the relevant

[73] To avoid doubt, goodwill included in the carrying amount of associates accounted for using the equity method should be deducted from CET1 Capital at the Group level. Such goodwill should be calculated by separating any excess of the acquisition cost over the Reporting Bank's share of the net fair value of the identifiable assets and liabilities of the entity.

[74] The test to assess whether a deferred tax asset is realisable over a one year period is not applicable.

[75] Current year tax losses carried back to prior years or an overinstallment of tax may give rise to a claim or receivable from the government or relevant tax authority. Such amounts are usually classified as current tax assets for accounting purposes.

sovereign risk weight to a claim or receivable from the government or relevant tax authority. To avoid doubt, a Reporting Bank must deduct any deferred tax assets associated with general allowances or TEP, maintained by the Reporting Bank in the calculation of CET1 Capital.

At the Solo level, the Reporting Bank may net deferred tax assets with associated deferred tax liabilities prior to deducting deferred tax assets in the calculation of CET1 Capital, only if offsetting is permitted by the relevant tax authority. The Reporting Bank must exclude from deferred tax liabilities permitted to be netted against deferred tax assets, amounts that have been netted against the deduction of goodwill, intangible assets and defined benefit pension assets pursuant to sub-paragraphs (a), (b) and (i) respectively of this paragraph.

The Reporting Bank must not permit the following for the purposes of calculating CET1 CAR, Tier 1 CAR or Total CAR at the Group level:

(i) intra-entity netting of deferred tax assets against deferred tax liabilities for any banking group entity incorporated or established outside Singapore;

(ii) inter-entity netting of deferred tax assets against deferred tax liabilities.

However, the Authority may permit sub-paragraphs (c)(i) and (c)(ii) if the Reporting Bank confirms in writing to the Authority that the deferred tax assets and deferred tax liabilities relate to taxes levied by the same tax authority, and that it has received written opinions from external auditors and legal advisors that the relevant tax authorities allow or would allow, deferred tax assets to be offset against the deferred tax liabilities. To avoid doubt, the Reporting Bank must exclude from deferred tax liabilities permitted to be netted against deferred tax assets, amounts that have been netted against the deduction of goodwill, intangible assets and defined benefit pension assets pursuant to sub-paragraphs (a), (b) and (i) respectively of this paragraph;

(d) the Reporting Bank must derecognise the amount of cash flow hedge reserve that relates to the hedging of items that are not fair valued on the balance sheet, including projected cash flows, in the calculation of CET1 Capital. In this regard, positive amounts must be deducted, and negative amounts must be added back[76];

(e) in the case where the Reporting Bank has adopted the IRBA, the Reporting Bank must deduct any shortfall of the TEP relative to the total EL amount in the calculation of CET1 Capital. The Reporting Bank must deduct the full amount of such shortfall of the TEP, and must not reduce the amount by any tax effects that could be expected to occur if provisions were to rise to the level of total EL amount;

[76] This adjustment specifically identifies and removes the element of the cash flow hedge reserve that gives rise to artificial volatility in common equity, as the reserve only reflects the fair value of the derivative, and not the change in the fair value of the hedged future cash flow.

(f) the Reporting Bank must deduct any increase in equity resulting from a securitisation transaction, such as that which is associated with expected future margin income resulting in a gain-on-sale, in the calculation of CET1 Capital;

(g) the Reporting Bank must deduct any exposures to credit-enhancing interest-only strips, net of –

(i) specific allowances attributable to such exposures; and

(ii) the amount that must be deducted in the calculation of CET1 Capital under sub-paragraph (f) that is attributable to such exposures;

in the calculation of CET1 Capital;

(h) the Reporting Bank must derecognise all unrealised fair value gains or losses, whether recognised through profit and loss or other comprehensive income, on financial liabilities arising from changes in the credit risk of the Reporting Bank or any banking group entity in the calculation of CET1 Capital. In this regard, positive amounts must be deducted, and negative amounts must be added back. In addition, all accounting valuation adjustments on derivative liabilities arising from changes in the credit risk of the Reporting Bank or any banking group entity must be derecognised in the calculation of CET1 Capital. The offsetting between valuation adjustments arising from changes in the credit risk of the Reporting Bank or any banking group entity and those arising from changes in the credit risk of the counterparties must not be allowed. In addition, any funding valuation adjustment applied by a Reporting Bank or any banking group entity must not have the effect of offsetting or reducing its unrealised fair value gains or losses on financial liabilities or accounting valuation adjustments on derivative liabilities arising from changes in the credit risk of the Reporting Bank or any banking group entity, for the purposes of calculating the amount to be derecognised in the calculation of CET1 Capital;

(i) the Reporting Bank must fully recognise any defined benefit pension fund liabilities[77], as included in the balance sheet, in the calculation of CET1 Capital. The creation of the liability on the balance sheet of the bank will result in a reduction in the bank's common equity through a reduction in reserves and the Reporting Bank must ensure that no adjustment is applied in respect of the calculation of CET1 Capital. For each defined benefit pension fund that is an asset on the balance sheet, the Reporting Bank must deduct the asset in the calculation of CET1 Capital net of any associated deferred tax liabilities which would be extinguished if the asset becomes impaired or derecognised under the Accounting Standards. The Reporting Bank may, with the prior approval of the Authority, offset the

[77] The liability, as recorded on the balance sheet in respect of a defined benefit pension fund, must be recognised in the calculation of CET1 Capital. The creation of the liability on the balance sheet of the bank will result in a reduction in the bank's common equity through a reduction in reserves and no adjustment must be applied in respect of the calculation of CET1 Capital.

deduction of assets in the fund to which the Reporting Bank has unrestricted and unfettered access. The Reporting Bank must give such offsetting assets the risk weight they would receive as if they were owned directly by the Reporting Bank[78];

(j) the Reporting Bank must deduct all investments in the Reporting Bank's own ordinary shares (including treasury shares, where applicable), whether held directly or indirectly by the Reporting Bank or any of its banking group entities, in the calculation of CET1 Capital, unless already derecognised under the Accounting Standards.[79] If the Reporting Bank or any of its banking group entities is contractually obliged to purchase any of its own ordinary shares, the Reporting Bank must deduct such ordinary shares in the calculation of CET1 Capital. The Reporting Bank must apply this adjustment to exposures in both the banking book and trading book.[80] Where a Reporting Bank acts as a market-maker for its own ordinary shares, it is not required to deduct such capital instruments in the calculation of CET1 Capital, until the Reporting Bank has offered to purchase the ordinary shares at an agreed price, and this offer has either been accepted or cannot be withdrawn.[81]

Gross long positions may be deducted net of short positions in the same underlying exposure, only if the short positions involve no counterparty credit risk. The Reporting Bank must look through holdings of index securities to deduct exposures to its own ordinary shares. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate[82]. If the Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure. However, the Reporting Bank may net gross long positions in its own ordinary shares resulting from holdings of index securities against short positions in its own ordinary shares, which result

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78 This adjustment addresses the concern that assets arising from pension funds may not be capable of being withdrawn and used for the protection of depositors and other creditors of the Reporting Bank. The concern is that their only value stems from a reduction in future payments into the fund. The treatment allows the Reporting Bank to reduce the deduction of the assets if it can address these concerns and show that it has unrestricted and unfettered access to these assets and the assets can be easily and promptly withdrawn from the fund.

79 This deduction is to avoid the double counting of the Reporting Bank's own capital that arises from direct holdings, indirect holdings via index funds and potential future holdings as a result of contractual obligations to purchase own shares.

80 To avoid doubt, this adjustment does not cover ordinary shares held by the Reporting Bank or any of its banking group entities where –
(a) the investments in the ordinary shares are funded by third parties other than the Reporting Bank or any of its banking group entities (e.g. life insurance policyholders or other third party investors);
(b) the risks and rewards associated with the investments in ordinary shares are borne primarily by the third parties; and
(c) decisions to transact in the ordinary shares are made independently from the issuer of the capital instruments and in the interests of the third parties.

81 The purpose of the rule is to capture existing contractual arrangements that could lead to the Reporting Bank being required to make a purchase of its own capital instruments at a price agreed in the contract (e.g. a forward purchase or a written put option), such that the extent of the potential loss is known in advance. It was not intended to capture all potential contracts that a bank may enter to in the future.

82 If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to its own capital as a result of its holdings of index securities.

from short positions in the same underlying index[83]. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, an approval granted under paragraph 6.1.3(o)(ii)(A) read with footnote 43 of that Notice, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 6.1.5(j) of this Notice and every condition or restriction which the approval was subject to, that was in force immediately before 1 July 2024, will on and after that date continue to apply;

(k) the Reporting Bank must deduct reciprocal cross holdings[84] in the ordinary share capital of financial institutions that are designed to artificially inflate the capital position of the Reporting Bank in the calculation of CET1 Capital;

(l) the Reporting Bank must deduct PE/VC investments held beyond the relevant holding periods set out in MAS Notice 630 in the calculation of CET1 Capital, unless otherwise approved by the Authority;

(m) the Reporting Bank must deduct the full amount of capital deficits in subsidiaries that are financial institutions and that are subject to minimum prudential standards and supervision by a regulatory agency, and the pro rata share of capital deficits in associates that are financial institutions and that are subject to minimum prudential standards and supervision by a regulatory agency, in the calculation of CET1 Capital. In the event that a recapitalisation plan is in place or an irrevocable commitment has been given by other shareholders to make up the capital deficit, the Authority may approve a corresponding reduction in the amount of deductions in respect of such capital deficits;

(n) the Reporting Bank must deduct valuation adjustments made in accordance with Annex 6C that exceed the valuation adjustments made under financial reporting standards in the calculation of CET1 Capital;

(o) the Reporting Bank must deduct certain investments[85] in the ordinary shares of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake, in the calculation of CET1 Capital, in accordance with sub-paragraphs (o)(i) and (o)(ii):

(i) the amount of such investments to be deducted in the calculation of CET1 Capital must be the proportion of ordinary share holdings to total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv), multiplied by the amount by which total holdings of capital instruments and other TLAC liabilities not covered by the 5%

[83] In such cases, the short positions may involve counterparty credit risk, which will be subject to the relevant counterparty credit risk charge as set out in Part VII.

[84] Provision of capital support by way of guarantee or other capital enhancements is treated as capital invested in financial institutions, and the quantum of such capital is the maximum amount that could be required to be paid out on any such guarantee.

[85] Provision of capital support by way of guarantee or other capital enhancements is treated as capital invested in financial institutions, and the quantum of such capital is the maximum amount that could be required to be paid out on any such guarantee.

threshold described in paragraph 6.3.10(c)(iii) to (iv) in aggregate and on a net long basis exceed 10% of the Reporting Bank's common equity. In this sub-paragraph, the Reporting Bank's common equity for the purposes of calculating the 10% threshold must be calculated after applying the regulatory adjustments set out in sub-paragraphs (a) to (n) to the sum of the elements set out in paragraph 6.1.1(a) to (f);

(ii) the total holdings of capital instruments and other TLAC liabilities and ordinary share holdings referred to in sub-paragraph (o)(i) must be calculated as follows:

(A) direct, indirect and synthetic holdings of capital instruments and other TLAC liabilities must be included. For example, the Reporting Bank must look through holdings of index securities to determine the underlying holdings of capital and other TLAC liabilities. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate.[86] If the Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, an approval granted under paragraph 6.1.3(o)(ii)(A) read with footnote 43 of that Notice, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 6.1.5(o)(ii)(A) of this Notice and every condition or restriction which the approval was subject to, that was in force immediately before 1 July 2024, will on and after that date continue to apply;

(B) the net long positions in both the banking book and trading book must be included. In this regard, the gross long position can be offset against the short position in the same underlying exposure, if the maturity of the short position either matches the maturity of the long position, or has a residual maturity of at least one year[87,88,89]. For other TLAC liabilities, it is the

[86] If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to the capital or other TLAC liabilities of such entities as a result of its holdings of index securities.

[87] For positions in the trading book, if the Reporting Bank has a contractual right or obligation to sell a long equity position at a specific point in time and the counterparty in the contract has an obligation to purchase the long equity position if the Reporting Bank exercises its right to sell, this point in time may be treated as the maturity of the long position, and the maturity of the long and short positions are deemed to be matched.

[88] For a position hedged against market risk where the hedge does not qualify to offset the gross long position for the purposes of determining the amount to be deducted, the Reporting Bank may choose to include the long position in its calculation of market RWA, in addition to deducting the long position. Where the hedge qualifies to offset the gross long position, the Reporting Bank may choose to exclude both the gross long position and the hedge from its calculation of market RWA.

[89] Where a Reporting Bank uses a short position in an index to hedge a long position, the Reporting Bank may, with the prior approval of the Authority, offset the long position with the portion of the index that is composed of the same underlying exposure that is being hedged only if (a) both the long position and the hedge are held in the trading book; (b) the positions are are accounted for at fair value; and (c) the hedge is recognised as effective under the Reporting Bank's internal control processes.

gross long position that is to be included in paragraph 6.3.10(c) (iii) to (iv) and the net long position that is to be included in paragraph 6.1.5(o)(i) to (ii);

(C) underwriting positions in capital instruments or other TLAC liabilities held for a period longer than 5 working days must be included, while those positions held for 5 working days or less can be excluded. The calculation of the period of 5 working days must begin on the date on which the Reporting Bank makes the payment to the issuer to purchase the capital instruments;

(D) if the capital instrument of the entity in which the Reporting Bank has invested does not meet the criteria for CET1 Capital, AT1 Capital or Tier 2 Capital of the Reporting Bank, the capital instrument is to be considered as ordinary shares for the purposes of this regulatory adjustment[90];

(E) the maximum amount that could be paid out on any guarantee or capital enhancement, through which capital support is provided by the Reporting Bank to a financial institution must be included. The Reporting Bank must consult the Authority if there is uncertainty whether such guarantee or capital enhancement is to be considered as ordinary shares for the purposes of the regulatory adjustment;

(F) certain investments where these have been made in the context of resolving or providing financial assistance to reorganise a distressed institution may be temporarily excluded with the approval of the Authority;

(iii) the amount of total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv) that do not exceed the 10% threshold calculated in accordance with sub-paragraph (o)(i) and are not deducted must continue to be risk-weighted[91]. For the application of risk-weighting, the amount of the holdings must be allocated on a pro rata basis between those below and those above the threshold;

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[90] To avoid doubt –
(a) a capital instrument would be deemed to have met the criteria for CET1 Capital, AT1 Capital or Tier 2 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards;
(b) if the entity in which the Reporting Bank has invested is a financial institution that is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not included as regulatory capital of the entity, the investment can be excluded for the purposes of this regulatory adjustment; and
(c) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares but is nevertheless recognised as Tier 1 capital (or its equivalent) or Tier 2 capital (or its equivalent) of the entity, the capital instrument should be considered as an AT1 capital instrument or Tier 2 capital instrument, respectively, for the purposes of this regulatory adjustment.

[91] Capital instruments in the banking book and trading book will thus be subject to the capital treatment as set out in Part VII and Part VIII, respectively.

(p) the Reporting Bank must deduct certain investments[92] in the ordinary shares of unconsolidated financial institutions in which the Reporting Bank holds a major stake (including insurance subsidiaries), in the calculation of CET1 Capital, in accordance with sub-paragraphs (p)(i) and (p)(ii), unless a deduction has been made pursuant to sub-paragraph (l):

(i) subject to paragraphs 6.1.6 and 6.1.7, the amount of such investments to be deducted in the calculation of CET1 Capital must be the amount by which such investments in aggregate exceed the threshold amount. In this sub-paragraph, the threshold amount is the lower of:

(A) 10% of the Reporting Bank's common equity, calculated by applying the regulatory adjustments set out in sub-paragraphs (a) to (o) to the sum of elements set out in paragraph 6.1.1(a) to (f);

(B) 15% of the Reporting Bank's CET1 Capital[93];

(ii) the investments in aggregate referred to in sub-paragraph (p)(i) must be calculated as follows:

(A) direct, indirect and synthetic holdings must be included. The Reporting Bank must look through holdings of index securities to determine the underlying holdings of ordinary shares. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate.[94] If the Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure;

(B) the net long positions in both the banking book and trading book must be included. In this regard, the gross long position can be offset against the short position in the same underlying exposure, if the maturity of the short position either matches

[92] Provision of capital support by way of guarantee or other capital enhancements is treated as capital invested in financial institutions, and the quantum of such capital is the maximum amount that could be required to be paid out on any such guarantee.

[93] This is equivalent to 17.65% of the Reporting Bank's common equity after (a) applying all regulatory adjustments set out in paragraph 6.1.5(a) to (o); and (b) deducting in full such investments described in paragraph 6.1.5(p)(ii).

[94] If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to the capital or other TLAC liabilities of such entities as a result of its holdings of index securities.

the maturity of the long position or has a residual maturity of at least one year[95,96,97];

(C) underwriting positions held for a period longer than 5 working days must be included, while those positions held for 5 working days or less can be excluded;

(D) if the capital instrument of the entity in which the Reporting Bank has invested does not meet the criteria for CET1 Capital, AT1 Capital or Tier 2 Capital of the Reporting Bank, the capital instrument is to be considered as ordinary shares for the purposes of this regulatory adjustment[98];

(E) the maximum amount that could be paid out on any guarantee or capital enhancement, through which capital support is provided by the Reporting Bank to a financial institution must be included. The Reporting Bank must consult the Authority if there is uncertainty whether such guarantee or capital enhancement is to be considered as ordinary shares for the purposes of the regulatory adjustment;

(F) certain investments where these have been made in the context of resolving or providing financial assistance to reorganise a distressed institution may be temporarily excluded with the approval of the Authority;

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95 For positions in the trading book, if the Reporting Bank has a contractual right or obligation to sell a long equity position at a specific point in time and the counterparty in the contract has an obligation to purchase the long equity position if the Reporting Bank exercises its right to sell, this point in time may be treated as the maturity of the long position, and the maturity of the long and short positions are deemed to be matched.

96 For a position hedged against market risk where the hedge does not qualify to offset the gross long position for the purposes of determining the amount to be deducted, the Reporting Bank may choose to include the long position in its calculation of market RWA, in addition to deducting the long position. Where the hedge qualifies to offset the gross long position, the Reporting Bank may choose to exclude both the gross long position and the hedge from its calculation of market RWA.

97 Where a Reporting Bank uses a short position in an index to hedge a long position, the Reporting Bank may, with the prior approval of the Authority, offset the long position with the portion of the index that is composed of the same underlying exposure that is being hedged only if (a) both the long position and the hedge are held in the trading book; (b) the positions are accounted for at fair value; and (c) the hedge is recognised as effective under the Reporting Bank's internal control processes.

98 To avoid doubt –

(a) a capital instrument would be deemed to have met the criteria for CET1 Capital, AT1 Capital or Tier 2 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards;

(b) if the entity in which the Reporting Bank has invested is a financial institution that is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not included as regulatory capital of the entity, the investment can be excluded for the purposes of this regulatory adjustment; and

(c) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares but is nevertheless recognised as Tier 1 capital (or its equivalent) or Tier 2 capital (or its equivalent) of the entity, the capital instrument should be considered as an AT1 capital instrument or Tier 2 capital instrument, respectively, for the purposes of this regulatory adjustment.

(iii) the amounts of such investments that do not exceed the thresholds set out in sub-paragraph (p)(i) and are not deducted must be risk-weighted at 250%;

(q) the Reporting Bank must deduct any other item or class of items which the Authority may specify in writing to the Reporting Bank for the purposes of this paragraph;

(r) in the case where the Reporting Bank does not have enough AT1 Capital to satisfy the required deductions set out in paragraph 6.2.6, the Reporting Bank must deduct the shortfall in the calculation of CET1 Capital.

6.1.6 Despite paragraph 6.1.5(p)(i), a Reporting Bank may, in the calculation of CET1 Capital at the Solo level, risk-weight an investment in the ordinary shares of an unconsolidated financial institution in which the Reporting Bank holds a major stake, at 400%, with the approval of the Authority.

6.1.7 Where a Reporting Bank risk-weights an investment at 400% in accordance with paragraph 6.1.6 ("relevant investment"), the Reporting Bank must apply the regulatory adjustments in the calculation of CET1 Capital set out in paragraph 6.1.5(p) as follows:

(a) the Reporting Bank must include the relevant investment when calculating the "investments in aggregate" referred to in paragraph 6.1.5(p)(i) and (ii), the "threshold amount" referred to in paragraph 6.1.5(p)(i)(B)[99] and the "threshold" referred to in 6.1.5(p)(iii) (where the threshold amount referred to in paragraph 6.1.5(p)(i)(B) is applicable);

(b) the Reporting Bank must calculate the amount of investments to be deducted in the calculation of CET1 Capital as $A-B$, where –

(i) A is the amount of investments that the Reporting Bank would have deducted in the calculation of CET1 Capital but for paragraph 6.1.6 and this paragraph; and

(ii) B is the amount of the relevant investment;

(c) the Reporting Bank must risk-weight the amount of investments (excluding the relevant investment) that do not exceed the thresholds calculated in accordance with paragraph 6.1.5(p)(i) and sub-paragraph (a), and that are not deducted, in accordance with paragraph 6.1.5(p)(iii).

6.1.8 The Authority may grant the approval mentioned in paragraph 6.1.6 subject to such conditions or restrictions as the Authority may impose. The Authority will not normally grant such approval unless the Reporting Bank is able to demonstrate that such

[99] For example, in determining the threshold amount referred to in paragraph 6.1.5(p)(i)(B) using the formula in footnote 93, the Reporting Bank should include the relevant investment as part of the investments to be deducted under that formula.

investments can be realised and made available to the Reporting Bank during stress[100], and the risk of loss of value in stress is adequately covered by capital required by risk-weighting such investments at 400%[101]. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, an approval granted under paragraph 6.1.3A of that Notice, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 6.1.6 of this Notice and every condition or restriction which the approval was subject to, that was in force immediately before 1 July 2024, will on and after that date continue to apply.

[MAS Notice 637 (Amendment) 2024]

6.1.9 For the purposes of paragraph 6.1.5, indirect holdings of capital instruments and other TLAC liabilities refer to exposures or parts of exposures that, if a direct holding loses its value, will result in a loss to the Reporting Bank substantially equivalent to the loss in value of the direct holding.

Ordinary Shares Issued by Fully Consolidated Subsidiaries

6.1.10 A Reporting Bank must calculate the amount of minority interest that will be recognised as consolidated CET1 Capital as follows (please refer to Annex 6A for an illustrative example):

(a) CET1 capital that is held by third party investors ("eligible minority interest"); less

(b) the surplus CET1 Capital of the subsidiary attributable to the minority shareholders;

where:

(i) eligible minority interest is such minority interest that arises from paid-up ordinary shares issued by a fully consolidated subsidiary of the Reporting Bank which is a bank (whether licensed or regulated in Singapore or outside Singapore)[102,103] that if issued by the Reporting Bank, would meet all of the criteria for classification as ordinary shares for regulatory capital purposes, and includes retained

[100] For example, if value of the investment is realised through a disposal of overseas subsidiary, the Reporting Bank should present a credible disposal plan, including an intent to dispose the subsidiary in stress and demonstrate that there are no impediments to execute the sale (including details such as whether the investment is an integral part of the Reporting Bank's operations or franchise).

[MAS Notice 637 (Amendment) 2024]

[101] For example, this could be assessed by determining the sale value or "threshold price" at which there is no negative capital impact on the Reporting Bank's CET1 CAR levels between pre and post-sale and whether the estimated sale value during stress exceeds this threshold price. The Reporting Bank should ensure that its valuation should be backed by reasonable assumptions.

[102] For the purposes of this paragraph, any financial institution that is subject to the same minimum prudential standards and level of supervision as a bank may be considered to be a bank.

[103] Minority interest in a subsidiary that is itself a bank is strictly excluded from the consolidated CET1 Capital if the Reporting Bank or any of its related corporations or other affiliates have entered into any arrangements to fund directly or indirectly, minority investment in the subsidiary whether through an SPE or through another vehicle or arrangement. The treatment outlined above is thus applicable only where all minority investments in that subsidiary represent genuine third party common equity contributions to the subsidiary.

earnings and reserves of such a subsidiary that are attributable to third party investors;

(ii) the surplus CET1 Capital of the subsidiary is calculated as the CET1 Capital of the subsidiary, minus the lower of:

(A) 9%[104] of the subsidiary's total RWA; and

(B) 9%[105] of the consolidated RWA attributable to the subsidiary; and

(iii) the surplus CET1 Capital of the subsidiary attributable to minority shareholders is calculated by multiplying the surplus CET1 Capital of the subsidiary calculated in sub-paragraph (b)(ii), by the percentage of eligible minority interest.

To avoid doubt, a Reporting Bank must not include capital that has been issued to third party investors out of an SPE in CET1 Capital.

[104] This represents the sum of the minimum CET1 CAR of 6.5% and Capital Conservation Buffer of 2.5% that is applicable to the banking group. Where the Reporting Bank is not designated by the Authority as a D-SIB, the ratios set out in paragraph 62 of "Basel III: A global regulatory framework for more resilient banks and banking systems" issued by the BCBS in December 2010 (last revised in June 2011), will apply (i.e. 7% of the subsidiary's total RWA, which represents the sum of the minimum CET1 CAR of 4.5% and Capital Conservation Buffer of 2.5%).

[105] This represents the sum of the minimum CET1 CAR of 6.5% and Capital Conservation Buffer of 2.5% that is applicable to the banking group. Where the Reporting Bank is not designated by the Authority as a D-SIB, the ratios set out in paragraph 62 of "Basel III: A global regulatory framework for more resilient banks and banking systems" issued by the BCBS in December 2010 (last revised in June 2011), will apply (i.e. 7% of the consolidated RWA attributable to the subsidiary, which represents the sum of the minimum CET1 CAR of 4.5% and Capital Conservation Buffer of 2.5%).

Division 2: Additional Tier 1 Capital

Components of AT1 Capital

6.2.1 A Reporting Bank must ensure that its AT1 Capital is calculated as the sum of the following items, at both the Solo and Group levels:

(a) capital instruments issued by the Reporting Bank which comply with the requirements in paragraph 6.2.2, and are not included in CET1 Capital;

(b) share premium, resulting from the issuance of capital instruments which fall within sub-paragraph (a), if any;

(c) capital instruments issued by fully consolidated subsidiaries of the Reporting Bank and held by third party investors that meet the criteria for inclusion in AT1 Capital pursuant to paragraphs 6.2.8 and 6.2.9 , and are not included in CET1 Capital;

(d) regulatory adjustments set out in paragraph 6.2.6.

Minimum Requirements for AT1 Capital Instruments

6.2.2 For the purposes of paragraph 6.2.1(a), a Reporting Bank must not include a capital instrument of the Reporting Bank as AT1 Capital unless –

(a) the capital instrument is issued and fully paid-up in cash. The Reporting Bank must ensure that only the net proceeds received from the issuance of the capital instrument may be included as capital;

(b) the capital instrument is subordinated to depositors and general creditors of the Reporting Bank, and holders of Tier 2 capital instruments issued by the Reporting Bank;

(c) the paid-up amount is not guaranteed by the Reporting Bank or any of its related corporations or other affiliates, or covered under any other arrangement that legally or economically enhances the seniority of the claim vis-a-vis the Reporting Bank's creditors[106];

(d) the holder of the capital instrument waives his right, if any, to set off any amounts he owes the Reporting Bank against any subordinated amount owed to him due to the capital instrument and commits to return any set-off amounts or benefits received to the liquidator;

(e) the subordination provisions of the capital instrument are governed by the laws of Singapore and for capital instruments issued on or after 1 January 2017, the agreements governing the issuance of the capital instruments

[106] For example, where the Reporting Bank issues AT1 capital instruments via an SPE and provides support to the SPE (e.g. by contributing a reserve), the provision of support will constitute an enhancement and the capital instrument will be regarded as failing to meet this requirement.

must provide that any dispute arising out of or in connection with the provisions governed by the laws of Singapore will be determined exclusively by the courts of Singapore. Where the capital instrument is to be subject to the laws of a country or jurisdiction other than Singapore, the Reporting Bank must satisfy itself that all the relevant conditions specified in this paragraph are met under the laws of that country or jurisdiction;

(f) the capital instrument is perpetual. In this regard, there must be no maturity date, and there must be no step-ups or other provisions that mandate or create an incentive for the Reporting Bank to redeem the capital instrument[107]. The Reporting Bank must not create an expectation that the call option will be exercised;

(g) subject to paragraph 6.2.3, the capital instrument is callable at the option of the Reporting Bank only after a minimum of 5 years from the issue date, subject to the following requirements:

(i) a call option may be exercised only with the prior approval of the Authority;

(ii) the Reporting Bank must not create an expectation that the call option will be exercised[108];

(iii) the Reporting Bank must not exercise a call option unless –

(A) the capital instrument is replaced by the Reporting Bank with capital of the same or better quality, and the replacement of this capital is done at conditions which are sustainable for the income capacity of the Reporting Bank[109]; or

(B) the Reporting Bank demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised;

(h) any repayment of principal (e.g. through repurchases or redemptions) is done only with the prior approval of the Authority. The Reporting Bank must not assume or create any expectation that approval will be given by

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[107] For example, the following may be considered as an incentive to redeem:
(a) a call option combined with an increase in the credit spread of the capital instrument if the call option is not exercised;
(b) a call option combined with a requirement or an investor option to convert the capital instrument into ordinary shares if the call is not exercised; or
(c) a call option combined with a change in reference rate where the credit spread over the second reference rate is greater than the initial payment rate less the swap rate (i.e. the fixed rate paid to the call date to receive the second reference rate).
To avoid doubt, a conversion from a fixed rate to a floating rate or vice versa in combination with a call option without any increase in credit spread is not in itself be deemed an incentive to redeem.

[108] For example, the Authority is not likely to grant approval for redemption where a Reporting Bank calls a capital instrument and replaces it with another capital instrument that is more costly (e.g. with a higher credit spread).

[109] Replacement issues can be concurrent with, but not after the capital instrument is called.

the Authority. Without prejudice to any other matter that the Authority may consider relevant, the Authority may in determining whether to grant its approval, consider whether the Reporting Bank's capital is likely to remain adequate after redemption;

(i) with regard to the dividend or coupon payable on the capital instrument –

(i) the Reporting Bank has full discretion at all times to cancel distributions or payments, and the Reporting Bank must ensure that its AT1 instruments do not contain dividend pushers [110];

(ii) any cancellation of dividend or coupon is not an event of default;

(iii) the Reporting Bank has full access to cancelled payments to meet obligations as they fall due; and

(iv) any cancellation of dividend or coupon does not impose restrictions on the Reporting Bank[111], except in relation to distributions to ordinary shareholders;

(j) any dividend or coupon to be paid under the capital instrument is only paid to the extent that the Reporting Bank has profits distributable under written law;

(k) the capital instrument does not have a credit sensitive dividend feature, i.e. a dividend or coupon that is reset periodically, based in whole or in part on the credit standing of the Reporting Bank or any banking group entity;

(l) the capital instrument does not contribute to liabilities exceeding assets, if such a balance sheet test forms part of the law of insolvency;

(m) where the capital instrument is classified as a liability under the Accounting Standards, it must have principal loss absorption features through –

(i) a provision under which it converts to ordinary shares if the CET1 CAR of the Reporting Bank falls to 7% or below; or

[110] A capital instrument with a dividend pusher obliges the Reporting Bank to make a dividend or coupon payment on the instrument, if it has made a payment on another (typically more junior) capital instrument or share. This obligation is inconsistent with the requirement for the Reporting Bank to have full discretion at all times to cancel distributions or payments. Furthermore, the cancellation of distributions or payments means that these payments are extinguished without requiring the Reporting Bank to make distributions or payments in kind. To avoid doubt, "dividend stoppers" are not prohibited, provided that the Reporting Bank retains full discretion at all times to cancel distributions or payments. A capital instrument with a dividend stopper stops the Reporting Bank from making a dividend on its ordinary shares or other AT1 capital instruments if a dividend or coupon payment is not paid on its AT1 capital instruments.

[111] For example, restrictions which impede the Reporting Bank's ability to restructure or improve its capital position.

(ii) a write-down mechanism that allocates losses to the capital instrument if the CET1 CAR of the Reporting Bank falls to 7% or below. The write-down must have the following effects:

(A) it reduces the amount claimable by the holder of the capital instrument in the liquidation of the Reporting Bank;

(B) it reduces the amount to be repaid when a call option is exercised;

(C) it partially or fully reduces dividend or coupon payments on the capital instrument;

Under both sub-paragraphs (m)(i) and (m)(ii), the conversion or write-down must generate CET1 Capital under the Accounting Standards and the capital instrument will only receive recognition as AT1 Capital up to the minimum level of CET1 generated by a full conversion or write-down of the capital instrument. In addition, the aggregate amount to be converted or written down for all such capital instruments must be at least the amount needed to immediately return the Reporting Bank's CET1 CAR to 7% or, if this is not possible, the full principal value of the capital instruments.

Where a Reporting Bank issues the capital instrument in a foreign currency, the Reporting Bank must revalue the capital instrument periodically (at least monthly) in terms of Singapore dollars at the prevailing exchange rates. Where the Reporting Bank intends to use a swap to hedge the foreign exchange exposure arising from the foreign currency capital instrument, it must consult the Authority on the capital treatment applicable to the hedge prior to such use;

(n) the Reporting Bank has ensured that –

(i) neither the Reporting Bank nor any of its banking group entities or associates has purchased the capital instruments; and
(ii) the Reporting Bank has not directly or indirectly funded the purchase of the capital instrument;

(o) the capital instrument does not have any feature that hinders recapitalisation, such as provisions that require the issuer to compensate investors if a new instrument is issued at a lower price during a specified time frame. Where there is a dividend stopper within the terms and conditions of the AT1 capital instrument, the Reporting Bank must ensure that such a feature does not hinder the recapitalisation of the Reporting Bank[112];

[112] For example, a dividend stopper on an AT1 capital instrument must not (a) attempt to stop payment on another capital instrument where such payments are not fully discretionary; (b) prevent distributions to ordinary shareholders for a period that extends beyond the point in time that dividend or coupon payments on the AT1 capital instrument are resumed; or (c) impede the normal operation of the Reporting Bank or any restructuring activity such as acquisitions or disposals.

(p) if the capital instrument is not issued out of an operating entity or the holding company of the Reporting Bank (e.g. issued out of a SPE), the proceeds from the issuance of the capital instrument must be immediately available without limitation to an operating entity or the holding company of the Reporting Bank in a form which at the minimum meets all of the other requirements set out in this paragraph, for inclusion as AT1 Capital;

(q) the main features of the capital instrument are disclosed clearly and accurately to the investors of the capital instruments;

(r) the agreement governing the issuance of the capital instrument must not be changed without the prior approval of the Authority where such proposed changes could impact its eligibility as AT1 Capital; and

(s) the agreement governing the issuance of the capital instrument contain provisions which ensure its loss absorbency at the point of non-viability that meet the requirements set out in Annex 6B.

6.2.3 The Authority may grant approval for redemption of a capital instrument within the first 5 years from the issue date where –

(a) there is a change in tax status of the capital instrument due to changes in applicable tax laws of the country or jurisdiction in which the capital instrument was issued; or

(b) there is a change relating to the recognition of the capital instrument as capital for calculating Tier 1 CAR and Total CAR,

and provided that the requirements set out in paragraph 6.2.2(g)(i) to (iii) are met. The Authority may, in determining whether to grant approval, consider whether the Reporting Bank was in a position to anticipate the event at the issuance of the capital instrument.

6.2.4 For the purposes of paragraph 6.2.1(b), a Reporting Bank must not include any share premium that is not eligible for inclusion in CET1 Capital, in AT1 Capital, unless the shares giving rise to the share premium comply with the requirements in paragraph 6.2.2.

6.2.5 The Reporting Bank must seek prior approval from the Authority if it intends to include in AT1 Capital an instrument that has its dividends or coupons paid in anything other than cash or shares.

Regulatory Adjustments Applied in the Calculation of AT1 Capital

6.2.6 A Reporting Bank must apply the following regulatory adjustments in the calculation of AT1 Capital, at both the Solo and Group levels:

(a) the Reporting Bank must deduct all investments in the Reporting Bank's own AT1 capital instruments, whether held directly or indirectly by the Reporting Bank or any of its banking group entities, in the calculation of AT1 Capital, unless already derecognised under the Accounting

Standards.[113] If the Reporting Bank or any of its banking group entities is contractually obliged to purchase any of its own AT1 capital instruments, the Reporting Bank must deduct such AT1 capital instruments in the calculation of AT1 Capital. The Reporting Bank must apply this adjustment to exposures in both the banking book and trading book.[114] Where a Reporting Bank acts as a market-maker for its own AT1 capital instruments, it is not required to deduct such capital instruments in the calculation of AT1 Capital, until the Reporting Bank has offered to purchase the AT1 capital instruments at an agreed price, and this offer has either been accepted or cannot be withdrawn.[115]

Gross long positions may be deducted net of short positions in the same underlying exposure, only if the short positions involve no counterparty credit risk. The Reporting Bank must look through holdings of index securities to deduct exposures to its own AT1 capital instruments.[116] The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate.[117] If the Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure. However, the Reporting Bank may net gross long positions in its own AT1 capital instruments resulting from holdings of index securities against short positions in its own AT1 capital instruments, which result from short positions in the same underlying index[118] ;

(b) the Reporting Bank must deduct reciprocal cross holdings in the AT1 capital instruments[119] of financial institutions that are designed to

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113 This deduction is to avoid the double counting of the Reporting Bank's own capital that arises from direct holdings, indirect holdings via index funds and potential future holdings, as a result of contractual obligations to purchase its own AT1 capital instruments.

114 To avoid doubt, this adjustment does not cover AT1 capital instruments held by the Reporting Bank or any of its banking group entities where –

(a) the investments in the AT1 capital instruments are funded by third parties other than the Reporting Bank or any of its banking group entities (e.g. life insurance policyholders or other third party investors);

(b) the risks and rewards associated with the investments in AT1 capital instruments are borne primarily by the third parties; and

(c) decisions to transact in the AT1 capital instruments are made independently from the issuer of the capital instruments and in the interests of the third parties.

115 The purpose of the rule is to capture existing contractual arrangements that could lead to the Reporting Bank being required to make a purchase of its own capital instruments at a price agreed in the contract (e.g. a forward purchase or a written put option), such that the extent of the potential loss is known in advance. It was not intended to capture all potential contracts that a bank may enter to in the future.

116 For both investments in own shares and investments in unconsolidated financial institutions that result from holdings of index securities, a Reporting Bank is permitted to net gross long positions against short positions in the same underlying index as long as the maturity of the short position matches the maturity of the long position or has a residual maturity of at least one year.

117 If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to its own capital as a result of its holdings in index securities.

118 In such cases, the short positions may counterparty credit risk, and be subject to the relevant counterparty credit risk charge as set out in Part VII.

119 To avoid doubt –

(a) a capital instrument would be deemed to have met the criteria for AT1 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards; and

artificially inflate the capital position of the Reporting Bank in the calculation of AT1 Capital;

(c) the Reporting Bank must deduct certain investments in the AT1 capital instruments of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake, in the calculation of AT1 Capital[120], in accordance with sub-paragraphs (c)(i) and (c)(ii):

(i) the amount of such investments to be deducted in the calculation of AT1 Capital must be the proportion of AT1 capital instrument holdings to total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv), multiplied by the amount by which total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv) in aggregate and on a net long basis exceed 10% of the Reporting Bank's common equity. In this sub-paragraph, the Reporting Bank's common equity for the purposes of calculating the 10% threshold must be calculated in accordance with paragraph 6.1.5(o)(i) and the AT1 capital instrument holdings must be calculated as follows:

(A) direct, indirect and synthetic holdings of capital instruments must be included. The Reporting Bank must look through holdings of index securities to determine the underlying holdings of capital. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate[121]. If the Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, an approval granted under paragraph 6.2.3(d)(i)(A) read with footnote 64C of that Notice, that was in force immediately before 1 July 2024, is treated as an

(b) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares but is nevertheless recognised as Tier 1 capital (or its equivalent) of the entity, the capital instrument must be considered as an AT1 capital instrument for the purposes of this regulatory adjustment.

120 To avoid doubt –
(a) a capital instrument would be deemed to have met the criteria for AT1 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards;
(b) if the entity in which the Reporting Bank has invested is a financial institution that is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not included as regulatory capital of the entity, the investment can be excluded for the purposes of this regulatory adjustment; and
(c) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares but is nevertheless recognised as Tier 1 capital (or its equivalent) of the entity, the capital instrument must be considered as an AT1 capital instrument for the purposes of this regulatory adjustment.

121 If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to the capital of such entities as a result of its holdings of index securities.

approval granted under paragraph 6.2.6(c)(i)(A) of this Notice and every condition or restriction which the approval was subject to, that was in force immediately before 1 July 2024, will on and after that date continue to apply;

(B) the net long positions in both the banking book and trading book must be included. In this regard, the gross long position can be offset against the short position in the same underlying exposure, if the maturity of the short position either matches the maturity of the long position, or has a residual maturity of at least one year[122,123,124];

(C) underwriting positions held for a period longer than 5 working days must be included, while those positions held for 5 working days or less can be excluded. The calculation of the period of 5 working days must begin on the date on which the Reporting Bank makes the payment to the issuer to purchase the capital instruments;

(D) certain investments where these have been made in the context of resolving or providing financial assistance to reorganise a distressed institution may be temporarily excluded with the prior approval of the Authority;

(ii) the total holdings of capital instruments and other TLAC liabilities referred to in sub-paragraph (c)(i) must be calculated in accordance with paragraph 6.1.5(o)(ii);

(iii) the amount of total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv) that do not exceed the 10% threshold calculated in accordance with paragraph 6.1.5(o)(i) and are not deducted must continue to be risk-weighted[125]. For the application of risk-weighting, the amount of the holdings must be allocated on a pro rata basis between those below and those above the threshold;

(d) the Reporting Bank must deduct investments in the AT1 capital instruments of unconsolidated financial institutions in which the Reporting

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122 For positions in the trading book, if the Reporting Bank has a contractual right or obligation to sell a long equity position at a specific point in time and the counterparty in the contract has an obligation to purchase the long equity position if the Reporting Bank exercises its right to sell, this point in time may be treated as the maturity of the long position, and the maturity of the long and short positions are deemed to be matched.

123 For a position hedged against market risk where the hedge does not qualify to offset the gross long position for the purposes of determining the amount to be deducted, the Reporting Bank may choose to include the long position in its calculation of market RWA, in addition to deducting the long position. Where the hedge qualifies to offset the gross long position, the Reporting Bank may choose to exclude both the gross long position and the hedge from its calculation of market RWA.

124 Where a Reporting Bank uses a short position in an index to hedge a long position, the portion of the index that is composed of the same underlying exposure that is being hedged may be used to offset the long position only if (a) both positions are held in the trading book; (b) the positions are accounted for at fair value; and (c) the hedge is recognised as effective under the Reporting Bank's internal control processes.

125 Capital instruments in the banking book and trading book will thus be subject to the capital treatment as set out in Part VII and Part VIII, respectively.

Bank holds a major stake (including insurance subsidiaries), in the calculation of AT1 Capital[126]. The total of such investments must be calculated as follows:

(i) direct, indirect and synthetic holdings must be included. The Reporting Bank must look through holdings of index securities to determine the underlying holdings of AT1 capital instruments. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate.[127] If the Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure;

(ii) the net long positions in both the banking book and trading book must be included. In this regard, the gross long position can be offset against the short position in the same underlying exposure, if the maturity of the short position either matches the maturity of the long position or has a residual maturity of at least one year[128,129,130];

(iii) underwriting positions held for a period longer than 5 working days must be included, while those positions held for 5 working days or less can be excluded. The calculation of the period of 5 working days must begin on the date on which the Reporting Bank makes the payment to the issuer to purchase the capital instruments;

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126 To avoid doubt –
(a) a capital instrument would be deemed to have met the criteria for AT1 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards;
(b) if the entity in which the Reporting Bank has invested is a financial institution that is subject to minimum prudential standards and supervision by a regulatory agency and if the investment is not included as regulatory capital of the entity, the investment can be excluded for the purposes of this regulatory adjustment; and
(c) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares but is nevertheless recognised as Tier 1 capital (or its equivalent) of the entity, the capital instrument should be considered as an AT1 capital instrument for the purposes of this regulatory adjustment.

127 If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to the capital or other TLAC liabilities of such entities as a result of its holdings of index securities.

128 For positions in the trading book, if the Reporting Bank has a contractual right or obligation to sell a long equity position at a specific point in time and the counterparty in the contract has an obligation to purchase the long equity position if the Reporting Bank exercises its right to sell, this point in time may be treated as the maturity of the long position, and the maturity of the long and short positions are deemed to be matched.

129 For a position hedged against market risk where the hedge does not qualify to offset the gross long position for the purposes of determining the amount to be deducted, the Reporting Bank may choose to include the long position in its calculation of market RWA, in addition to deducting the long position. Where the hedge qualifies to offset the gross long position, the Reporting Bank may choose to exclude both the gross long position and the hedge from its calculation of market RWA.

130 Where a Reporting Bank uses a short position in an index to hedge a long position, the portion of the index that is composed of the same underlying exposure that is being hedged may be used to offset the long position only if (a) both the long position and the hedge are held in the trading book; (b) the positions are accounted for at fair value; and (c) the hedge is recognized as effective under the Reporting Bank's internal control processes.

(iv) certain investments where these have been made in the context of resolving or providing financial assistance to reorganise a distressed institution may be temporarily excluded with the approval of the Authority;

(e) the Reporting Bank must deduct any other item or class of items which the Authority may specify in writing to the Reporting Bank for the purposes of this paragraph;

(f) in the case where the Reporting Bank does not have enough Tier 2 Capital to satisfy the required deductions set out in paragraph 6.3.10, the Reporting Bank must deduct the shortfall in the calculation of AT1 Capital.

6.2.7 For the purposes of paragraph 6.2.6, indirect holdings of capital instruments and other TLAC liabilities refer to exposures or parts of exposures that, if a direct holding loses its value, will result in a loss to the Reporting Bank substantially equivalent to the loss in value of the direct holding.

Qualifying Capital Instruments Issued by Fully Consolidated Subsidiaries Recognised as Tier 1 Capital

6.2.8 A Reporting Bank may recognise CET1 capital instruments and AT1 capital instruments issued by a fully consolidated subsidiary of a Reporting Bank to third party investors (including amounts under paragraph 6.1.10) as Tier 1 Capital only if the capital instruments would, if issued by the Reporting Bank, meet all of the criteria for classification as Tier 1 Capital[131]. The Reporting Bank must calculate the amount that will be recognised as Tier 1 Capital as follows (please refer to Annex 6A for an illustrative example):

(a) Tier 1 capital of the subsidiary issued to third party investors; less

(b) the surplus Tier 1 Capital of the subsidiary attributable to third party investors;

where –

(i) Tier 1 capital of the subsidiary issued to third party investors means the sum of eligible minority interest and AT1 capital instruments issued by the subsidiary which are owned by third party investors;

(ii) the surplus Tier 1 Capital of the subsidiary is calculated as the Tier 1 Capital of the subsidiary, minus the lower of –

(A) 10.5%[132] of the subsidiary's total RWA; and

[131] CET1 capital instruments and AT1 capital instruments should meet all of the criteria for classification as CET1 capital instruments and AT1 capital instruments, respectively.

[132] This represents the sum of the minimum Tier 1 CAR of 8% and Capital Conservation Buffer of 2.5% that is applicable to the banking group. Where the Reporting Bank is not designated by the Authority as a D-SIB, the ratios set out in paragraph 63 of "Basel III: A global regulatory framework for more resilient banks and banking systems" issued by the BCBS in December 2010 (last revised in June 2011), will apply (i.e. 8.5% of the subsidiary's total RWA, which represents the sum of the minimum Tier 1 CAR of 6% and Capital Conservation Buffer of 2.5%).

(B) 10.5%[133] of the consolidated RWA attributable to the subsidiary; and

(iii) the surplus Tier 1 Capital of the subsidiary attributable to third party investors is calculated by multiplying the surplus Tier 1 Capital of the subsidiary calculated in sub-paragraph (b)(ii), by the percentage of Tier 1 capital that is held by third party investors.

A Reporting Bank, when recognising the amount of Tier 1 Capital calculated in this paragraph as AT1 Capital, must exclude amounts recognised as CET1 Capital under paragraph 6.1.10.

6.2.9 Where capital instruments purchased by third party investors are issued for and on behalf of a Reporting Bank out of an SPE, the Reporting Bank may include such capital instruments in its AT1 Capital and treat such capital instruments as if the Reporting Bank itself had issued the capital instruments directly to the third party investors, only if the capital instruments meet all the relevant entry criteria and the only asset of the SPE is its investment in the capital instruments of the Reporting Bank in a form that meets or exceeds all the relevant entry criteria[134] (as required by the criterion set out in paragraph 6.2.2(p) for AT1 Capital). In cases where the capital instruments have been issued to third party investors through an SPE by a fully consolidated subsidiary of the Reporting Bank, the Reporting Bank may, subject to the requirements of this paragraph in relation to capital instruments issued through an SPE, treat such capital instruments as if the subsidiary itself had issued the capital instruments directly to third party investors and may include such capital instruments in the Reporting Bank's consolidated AT1 Capital in accordance with the treatment outlined in paragraph 6.2.8.

[133] This represents the sum of the minimum Tier 1 CAR of 8% and Capital Conservation Buffer of 2.5% that is applicable to the banking group. Where the Reporting Bank is not designated by the Authority as a D-SIB, the ratios set out in paragraph 63 of "Basel III: A global regulatory framework for more resilient banks and banking systems" issued by the BCBS in December 2010 (last revised in June 2011), will apply (i.e. 8.5% of the consolidated RWA attributable to the subsidiary, which represents the sum of the minimum Tier 1 CAR of 6% and Capital Conservation Buffer of 2.5%).

[134] Assets that relate to the operation of the SPE may be excluded from this assessment if they are *de minimis*.

Division 3: Tier 2 Capital

Components of Tier 2 Capital

6.3.1 A Reporting Bank must ensure that its Tier 2 Capital is calculated as the sum of the following items, at both the Solo and Group levels:

(a) capital instruments issued by the Reporting Bank that comply with the requirements in paragraph 6.3.6, and are not included in Tier 1 Capital;

(b) share premium, resulting from the issuance of capital instruments which fall within sub-paragraph (a), if any;

(c) capital instruments issued by fully consolidated subsidiaries of the Reporting Bank and held by third party investors that meet the criteria for inclusion in Tier 2 Capital pursuant to paragraphs 6.3.12 and 6.3.13, and are not included in Tier 1 Capital;

(d) subject to paragraph 6.3.3, in the case where the Reporting Bank has adopted the SA(CR), SEC-ERBA, SEC-SA, or the approach for securitisation exposures to which the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied, general allowances that are held against future, presently unidentified losses, and that are freely available to meet losses which subsequently materialise. The Reporting Bank must exclude allowances ascribed to the identified deterioration of particular assets or known liabilities, whether individual or grouped. The Reporting Bank must ensure that the general allowances eligible for inclusion, measured gross of tax effects, do not exceed 1.25% of the sum of the Reporting Bank's (i) SA(CR) RWA determined in the manner set out in paragraph 7.1.1(a), (ii) CCR-SA RWA determined in the manner set out in paragraph 7.1.1(b), (iii) SEC-ERBA RWA, SEC-SA RWA, and RWA from securitisation exposures to which the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied, determined in the manner set out in paragraph 7.1.1(d), and (iv) CCP RWA determined in the manner set out in paragraph 7.1.1(e);

(e) subject to paragraph 6.3.3, in the case where the Reporting Bank has adopted the IRBA, any excess of the TEP, measured gross of tax effects, maintained by the Reporting Bank over the total EL amount. The Reporting Bank must ensure that the amount eligible for inclusion does not exceed 0.6% of the sum of the Reporting Bank's (i) IRBA RWA determined in the manner set out in paragraph 7.1.1(a), (ii) CCR-IRBA RWA determined in the manner set out in paragraph 7.1.1(b), and (iii) SEC-IRBA and SEC-IAA RWA determined in the manner set out in paragraph 7.1.1(d);

(f) regulatory adjustments set out in paragraph 6.3.10.

6.3.2 For the purposes of paragraph 6.3.1(e), where the Authority is not satisfied that the total EL amount fully reflects the conditions in the market in which the Reporting Bank operates, the Authority may require that a Reporting Bank exclude from Tier 2 Capital the excess amount of the TEP, measured gross of tax effects, maintained by the Reporting

Bank over the total EL amount, including any excess of specific allowances over the EL amount on defaulted assets to offset the EL amount on non-defaulted assets.

6.3.3 A Reporting Bank must apply paragraphs 6.3.4 and 6.3.5 where it has adopted (a) the SA(CR), SEC-ERBA, SEC-SA, or the approach for securitisation exposures to which the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied for a portion of its credit exposures, and (b) the IRBA, SEC-IRBA, or SEC-IAA for the remaining portion of its credit exposures.

6.3.4 For the purposes of determining the inclusion of general allowances in Tier 2 Capital under paragraph 6.3.1(d), a Reporting Bank referred to in paragraph 6.3.3 must pro-rate the general allowances it maintains using the following formula:

$$\text{Pro-rated general allowances} = \text{total general allowances} \times \frac{\text{the sum of the Reporting Bank's SA(CR) RWA determined in the manner set out in paragraph 7.1.1(a), its CCR-SA RWA determined in the manner set out in paragraph 7.1.1(b), its SEC-ERBA RWA, SEC-SA RWA, RWA from securitisation exposures to which the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied, determined in the manner set out in paragraph 7.1.1(d), and its CCP RWA determined in the manner set out in paragraph 7.1.1(e)}{\text{the sum of the Reporting Bank's credit RWA determined in the manner set out in paragraph 7.1.1(a),(b), (d), and (e)}}$$

Alternatively, subject to the prior approval of the Authority and such conditions as the Authority may impose, the Reporting Bank may rely on its internal methods for allocating general allowances for the purposes of determining their inclusion in Tier 2 Capital under paragraph 6.3.1(d).

6.3.5 For the purposes of determining the inclusion of general allowances in TEP under paragraph 6.3.1(e), a Reporting Bank referred to in paragraph 6.3.3 must pro-rate the general allowances it maintains using the following formula:

$$\text{Pro-rated general allowances} = \text{total general allowances} \times \frac{\text{the sum of the Reporting Bank's IRBA RWA determined in the manner set out in paragraph 7.1.1(a) and its CCR-IRBA RWA determined in the manner set out in paragraph 7.1.1(b)}}{\text{the sum of the Reporting Bank's credit RWA set out in paragraph 7.1.1(a), (b), (d), and (e)}}$$

Alternatively, subject to the prior approval of the Authority and such conditions as the Authority may impose, the Reporting Bank may rely on its internal models for allocating general allowances for the purposes of determining their inclusion in TEP under paragraph 6.3.1(e).

Minimum Requirements for Tier 2 Capital Instruments

6.3.6 For the purposes of paragraph 6.3.1(a), a Reporting Bank must not include a capital instrument of the Reporting Bank as Tier 2 Capital unless –

(a) the capital instrument is issued and fully paid-up in cash. The Reporting Bank must ensure that only the net proceeds received from the issuance of the capital instrument may be included as capital;

(b) the capital instrument is subordinated to depositors and general creditors of the Reporting Bank;

(c) the paid-up amount is not guaranteed by the Reporting Bank or any of its related corporations or other affiliates, or covered under any other arrangement that legally or economically enhances the seniority of the claim vis-a-vis the Reporting Bank's creditors and depositors[135];

(d) the holder of the capital instrument waives his right, if any, to set off any amounts he owes the Reporting Bank against any subordinated amount owed to him due to the capital instrument and commits to return any set-off amounts or benefits received to the liquidator;

(e) the subordination provisions of the capital instrument are governed by the laws of Singapore and for capital instruments issued on or after 1 January 2017, the agreements governing the issuance of the capital instruments must provide that any dispute arising out of or in connection with the provisions governed by the laws of Singapore will be determined exclusively by the courts of Singapore. Where the capital instrument is to be subject to the laws of a country or jurisdiction other than Singapore, the Reporting Bank must satisfy itself that all the relevant conditions specified in this paragraph are met under the laws of that country or jurisdiction;

(f) with regard to the maturity of the capital instrument –

(i) the capital instrument has a minimum original maturity of at least 5 years. Where the agreement governing the issuance of the capital instrument provides for the loan to be drawn down in a series of tranches, the minimum original maturity for each tranche must be 5 years from the date of its draw-down;

[135] For example, where the Reporting Bank issues Tier 2 capital instruments via an SPE and provides support to the SPE (e.g. by contributing a reserve), the provision of support will constitute an enhancement and the capital instrument will be regarded as failing to meet this requirement.

(ii) recognition of the capital instrument as Tier 2 Capital in its final 5 years to maturity is amortised on a straight-line basis by 20% per annum in accordance with Table 6-1. Where the capital instrument is repayable in separate tranches, each tranche must be amortised individually, as if it were a separate loan; and

Table 6-1: Amortisation Schedule for a Tier 2 capital instrument

Years to maturity (x)	Amortised amount eligible to be included in Tier 2 Capital
$x > 4$	100%
$3 < x \leq 4$	80%
$2 < x \leq 3$	60%
$1 < x \leq 2$	40%
$x \leq 1$	20%

(iii) there are no step-ups or other provisions that mandate or create an incentive for the Reporting Bank to redeem the capital instrument[136]. The Reporting Bank must not create an expectation that the call option will be exercised;

(g) subject to paragraph 6.3.7, the capital instrument is callable at the option of the Reporting Bank only after a minimum of 5 years from the issue date, subject to the following requirements:

(i) a call option may be exercised only with the prior approval of the Authority;

(ii) the Reporting Bank must not create an expectation that the call option will be exercised[137,138];

(iii) the Reporting Bank must not exercise a call option unless –

(A) the capital instrument is replaced by the Reporting Bank with capital of the same or better quality, and the replacement of

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136 For example, the following may be considered as an incentive to redeem:
(a) a call option combined with an increase in the credit spread of the capital instrument if the call option is not exercised;
(b) a call option combined with a requirement or an investor option to convert the capital instrument into ordinary shares if the call is not exercised; or
(c) a call option combined with a change in reference rate where the credit spread over the second reference rate is greater than the initial payment rate less the swap rate (i.e. the fixed rate paid to the call date to receive the second reference rate).
To avoid doubt, a conversion from a fixed rate to a floating rate or vice versa in combination with a call option without any increase in credit spread is not in itself be deemed an incentive to redeem.

137 Where this requirement is met, an option to call the capital instrument after 5 years but prior to the start of the amortisation period will not be deemed an incentive to redeem.

138 For example, the Authority is not likely to grant approval for redemption where a Reporting Bank exercises a call option in respect of a capital instrument and replaces it with another capital instrument that is more costly (e.g. with a higher credit spread).

this capital is done at conditions which are sustainable for the income capacity of the Reporting Bank[139]; or

(B) the Reporting Bank demonstrates that its capital position is well above the minimum capital requirements after the call option is exercised;

(h) the holder of the capital instrument has no rights to accelerate the repayment of future scheduled payments (either coupon or principal), except in a bankruptcy or liquidation of the Reporting Bank;

(i) the capital instrument does not have a credit sensitive dividend feature, i.e. a dividend or coupon that is reset periodically, based in whole or in part on the credit standing of the Reporting Bank or any banking group entity;

(j) neither the Reporting Bank nor any of its banking group entities or associates may purchase the capital instrument, nor can the Reporting Bank have directly or indirectly funded the purchase of the capital instrument;

(k) if the capital instrument is not issued out of an operating entity or the holding company of the Reporting Bank (e.g. issued out of a SPE), the proceeds from the issuance of the capital instrument must be immediately available without limitation to an operating entity or the holding company of the Reporting Bank in a form which at the minimum meets all of the other requirements set out in this paragraph, for inclusion as Tier 2 Capital;

(l) the main features of the capital instrument are disclosed clearly and accurately to the investors of the capital instruments;

(m) the agreement governing the issuance of the capital instrument must not be changed without the prior approval of the Authority where such proposed changes could impact its eligibility as Tier 2 Capital;

(n) where a Reporting Bank issues the capital instrument in a foreign currency, the capital instrument must be revalued periodically (at least monthly) in terms of Singapore dollars at the prevailing exchange rates. Where the Reporting Bank intends to use a swap to hedge the foreign exchange exposure arising from the foreign currency capital instrument, it must consult the Authority on the capital treatment applicable to the hedge prior to such use; and

(o) the agreement governing the issuance of the capital instrument contain provisions which ensure its loss absorbency at the point of non-viability that meet the requirements set out in Annex 6B.

[139] Replacement issues can be concurrent with, but not after the capital instrument is called.

6.3.7 The Authority may grant approval for redemption of a capital instrument within the first 5 years from the issue date where –

(a) there is a change in tax status of the capital instrument due to changes in applicable tax laws of the country or jurisdiction in which the capital instrument was issued; or

(b) there is a change relating to the recognition of the capital instrument as capital for calculating Total CAR,

and provided that the requirements set out in paragraph 6.3.6(g)(i) to (iii) are met. The Authority may, in determining whether to grant approval, consider whether the Reporting Bank was in a position to anticipate the event at the issuance of the capital instrument.

6.3.8 For the purposes of paragraph 6.3.1(b), a Reporting Bank must not include any share premium that is not eligible for inclusion in Tier 1 Capital, in Tier 2 Capital, unless the shares giving rise to the share premium comply with the requirements in paragraph 6.3.6.

6.3.9 The Reporting Bank must seek prior approval from the Authority if it intends to include in Tier 2 Capital an instrument that has its coupons paid in anything other than cash or shares.

Regulatory Adjustments Applied in the Calculation of Tier 2 Capital

6.3.10 A Reporting Bank must apply the following regulatory adjustments in the calculation of Tier 2 Capital, at both the Solo and Group levels:

(a) the Reporting Bank must deduct all investments in the Reporting Bank's own Tier 2 capital instruments, whether held directly or indirectly by the Reporting Bank or any of its banking group entities, in the calculation of Tier 2 Capital, unless already derecognised under the Accounting Standards.[140] If the Reporting Bank or any of its banking group entities is contractually obliged to purchase any of its own Tier 2 capital instruments, the Reporting Bank must deduct such Tier 2 capital instruments in the calculation of Tier 2 Capital. This adjustment must apply to exposures in both the banking book and trading book.[141] Where a Reporting Bank acts as a market-maker for its own Tier 2 capital instruments, it is not required to deduct such capital instruments in the calculation of Tier 2 Capital, until the Reporting Bank has offered to purchase the ordinary shares at an

[140] This deduction is to avoid the double counting of the Reporting Bank's own capital that arises from direct holdings, indirect holdings via index funds and potential future holdings as a result of contractual obligations to purchase its own Tier 2 capital instruments.

[141] To avoid doubt, this adjustment does not cover Tier 2 capital instruments held by the Reporting Bank or any of its banking group entities where –
(a) the investments in the Tier 2 capital instruments are funded by third parties other than the Reporting Bank or any of its banking group entities (e.g. life insurance policyholders or other third party investors);
(b) the risks and rewards associated with the investments in Tier 2 capital instruments are borne primarily by the third parties; and
(c) the decisions to transact in the Tier 2 capital instruments are made independently from the issuer of the capital instruments and in the interests of the third parties.

agreed price, and this offer has either been accepted or cannot be withdrawn;[142]

The Reporting Bank may deduct gross long positions net of short positions in the same underlying exposure, only if the short positions involve no counterparty credit risk. The Reporting Bank must look through holdings of index securities to deduct exposures to its own Tier 2 capital instruments. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate.[143] If the Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure. However, the Reporting Bank may net gross long positions in its own Tier 2 capital instruments resulting from holdings of index securities against short positions in its own Tier 2 capital instruments, which result from short positions in the same underlying index[144];

(b) the Reporting Bank must deduct reciprocal cross holdings in the Tier 2 capital instruments[145] and of other TLAC liabilities of financial institutions that are designed to artificially inflate the capital position of the Reporting Bank in the calculation of Tier 2 Capital;

(c) the Reporting Bank must deduct certain investments in Tier 2 capital instruments and other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake, in the calculation of Tier 2 Capital[146], in accordance with sub-paragraphs (c)(i) to (c)(iv):

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142 The purpose of the rule is to capture existing contractual arrangements that could lead to the Reporting Bank being required to make a purchase of its own capital instruments at a price agreed in the contract (e.g. a forward purchase or a written put option), such that the extent of the potential loss is known in advance. It was not intended to capture all potential contracts that a bank may enter to in the future.

143 If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to its own capital as a result of its holdings of index securities.

144 In such cases, the short positions may be exposed to counterparty credit risk, and be subject to the relevant counterparty credit risk charge as set out in Part VII.

145 To avoid doubt –

(a) a capital instrument would be deemed to have met the criteria for Tier 2 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards; and

(b) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares and is recognised as Tier 2 capital (or its equivalent) of the entity, the capital instrument should be considered as a Tier 2 capital instrument for the purposes of this regulatory adjustment.

146 To avoid doubt –

(a) a capital instrument would be deemed to have met the criteria for Tier 2 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards;

(b) if the entity in which the Reporting Bank has invested is a financial institution that is subject to minimum prudential standards and supervision by a regulatory agency and if the investment is not included as regulatory capital of the entity, the investment can be excluded for the purposes of this regulatory adjustment; and

(c) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares and is recognised as Tier 2 capital (or its equivalent)

(i) the amount of such investments to be deducted in the calculation of Tier 2 Capital must be the proportion of total holdings of Tier 2 capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv) to total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv), multiplied by the amount by which total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv) in aggregate and on a net long basis exceed 10% of the Reporting Bank's common equity. In this sub-paragraph, the Reporting Bank's common equity for the purposes of calculating the 10% threshold must be calculated in accordance with paragraph 6.1.5(o)(i) and the total holdings of Tier 2 capital instruments and other TLAC liabilities must be calculated as follows:

(A) direct, indirect and synthetic holdings of capital instruments and other TLAC liabilities must be included. The Reporting Bank must look through holdings of index securities to determine the underlying holdings of capital and other TLAC liabilities. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate[147]. If the Reporting Bank uses a conservative estimate, the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, an approval granted under paragraph 6.3.3(d)(i)(A) read with footnote 76C of that Notice, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 6.3.10(c)(i)(A) of this Notice and every condition or restriction which the approval was subject to, that was in force immediately before 1 July 2024, will on and after that date continue to apply;

(B) the net long positions in both the banking book and trading book must be included. In this regard, the gross long position can be offset against the short position in the same underlying exposure, if the maturity of the short position either matches the maturity of the long position, or has a residual maturity of

of the entity, the capital instrument should be considered as a Tier 2 capital instrument for the purposes of this regulatory adjustment.

147 If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to the capital or other TLAC liabilities of such entities as a result of its holdings of index securities.

at least one year[148,149,150]. For other TLAC liabilities, it is the gross long position that is to be included in paragraph 6.3.10(c)(iii) to (iv) and the net long position that is to be included in paragraph 6.3.10(c)(i) to (ii);

(C) underwriting positions held for a period longer than 5 working days must be included, while those positions held for 5 working days or less can be excluded. The calculation of the period of 5 working days must begin on the date on which the Reporting Bank makes the payment to the issuer to purchase the capital instruments;

(D) certain investments where these have been made in the context of resolving or providing financial assistance to reorganise a distressed institution may be temporarily excluded with the approval of the Authority;

(ii) the total holdings of capital instruments and other TLAC liabilities referred to in sub-paragraph (c)(i) must be calculated in accordance with paragraph 6.1.5(o)(ii);

(iii) holdings of other TLAC liabilities must be deducted from Tier 2 capital unless –

(A) the holding falls within the 10% threshold provided for in paragraph 6.1.5(o)(i); or

(B) the following conditions are met:

(I) the holding has been designated by the Reporting Bank to be treated in accordance with paragraph 6.3.10(c)(iii);

(II) the holding is in the Reporting Bank's trading book;

(III) the holding is sold within 30 business days of the date of its acquisition;

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148 For positions in the trading book, if the Reporting Bank has a contractual right or obligation to sell a long equity position at a specific point in time and the counterparty in the contract has an obligation to purchase the long equity position if the Reporting Bank exercises its right to sell, this point in time may be treated as the maturity of the long position, and the maturity of the long and short positions are deemed to be matched.

149 For a position hedged against market risk where the hedge does not qualify to offset the gross long position for the purposes of determining the amount to be deducted, the Reporting Bank may choose to include the long position in its calculation of market RWA, in addition to deducting the long position. Where the hedge qualifies to offset the gross long position, the Reporting Bank may choose to exclude both the gross long position and the hedge from its calculation of market RWA.

150 Where a Reporting Bank uses a short position in an index to hedge a long position, the portion of the index that is composed of the same underlying long exposure that is being hedged may be used to offset the long position only if (a) both the long position and the hedge are held in the trading book; (b) the positions are accounted for at fair value; and (c) the hedge is recognised as effective under the Reporting Bank's internal control processes.

(IV) such holdings are, in aggregate and on a gross long basis, less than 5% of the Reporting Bank's common equity (after applying the regulatory adjustments listed in paragraph 6.1.5(a) to (n));

(iv) if a holding designated under paragraph 6.3.10(c)(iii) no longer meets any of the conditions set out in that paragraph, it must be deducted in full from Tier 2 capital. Once a holding has been designated under paragraph 6.3.10(c)(iii), it may not subsequently be included within the 10% threshold referred to in paragraph 6.1.5(o)(i);

(v) the amount of holdings of other TLAC liabilities covered by the 5% threshold described in paragraph 6.3.10(c)(iii) and (iv) and are not deducted must continue to be risk-weighted[151];

(vi) the amount of total holdings of capital instruments and other TLAC liabilities not covered by the 5% threshold described in paragraph 6.3.10(c)(iii) to (iv) that do not exceed the 10% threshold calculated in accordance with paragraph 6.1.5(o)(i) and are not deducted must continue to be risk-weighted[152]. For the application of risk-weighting, the amount of the holdings must be allocated on a pro rata basis between those below and those above the threshold;

(d) the Reporting Bank must deduct investments in the Tier 2 capital instruments and other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank holds a major stake (including insurance subsidiaries), in the calculation of Tier 2 Capital[153]. The total of such investments must be calculated as follows:

(i) direct, indirect and synthetic holdings must be included. The Reporting Bank must look through holdings of index securities to determine the underlying holdings of Tier 2 capital instruments and other TLAC liabilities. The Reporting Bank may, with the prior approval of the Authority, use a conservative estimate[154]. If the

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151 Capital instruments in the banking book and trading book will thus be subject to the capital treatment as set out in Part VII and Part VIII, respectively.

152 Capital instruments in the banking book and trading book will thus be subject to the capital treatment as set out in Part VII and Part VIII, respectively.

153 To avoid doubt –
(a) a capital instrument would be deemed to have met the criteria for Tier 2 Capital of the Reporting Bank, if it satisfies the applicable regulatory capital criteria imposed by a bank regulatory agency that has implemented the Basel III standards;
(b) if the entity in which the Reporting Bank has invested is a financial institution that is subject to minimum prudential standards and supervision by a regulatory agency and if the investment is not included as regulatory capital of the entity, the investment can be excluded for the purposes of this regulatory adjustment; and
(c) if the entity in which the Reporting Bank has invested is a financial institution that is not a bank, the entity is subject to minimum prudential standards and supervision by a regulatory agency and the investment is not in the form of ordinary shares and is recognised as Tier 2 capital (or its equivalent) of the entity, the capital instrument must be considered as a Tier 2 capital instrument for the purposes of this regulatory adjustment.

154 If the Reporting Bank finds it operationally burdensome to look through and monitor its exact exposure to the capital or other TLAC liabilities of such entities as a result of its holdings of index securities.

Reporting Bank uses a conservative estimate, the Reporting Bank must ensure that the methodology for the estimate demonstrates that in no case will the actual exposure be higher than the estimated exposure;

(ii) the net long positions in both the banking book and trading book must be included. In this regard, the gross long position can be offset against the short position in the same underlying exposure, if the maturity of the short position either matches the maturity of the long position or has a residual maturity of at least one year[155,156,157];

(iii) underwriting positions held for a period longer than 5 working days must be included, while those positions held for 5 working days or less can be excluded. The calculation of the period of 5 working days must begin on the date on which the Reporting Bank makes the payment to the issuer to purchase the capital instruments;

(iv) certain investments where these have been made in the context of resolving or providing financial assistance to reorganise a distressed institution may be temporarily excluded with the approval of the Authority;

(e) the Reporting Bank must deduct any other item or class of items which the Authority may specify in writing to the Reporting Bank for the purposes of this paragraph.

6.3.11 For the purposes of paragraph 6.3.10, indirect holdings of capital instruments and other TLAC liabilities refer to exposures or parts of exposures that, if a direct holding loses its value, will result in a loss to the Reporting Bank substantially equivalent to the loss in value of the direct holding.

Qualifying Capital Instruments Issued by Fully Consolidated Subsidiaries Recognised as Eligible Total Capital

6.3.12 A Reporting Bank may recognise CET1 capital instruments, AT1 capital instruments and Tier 2 capital instruments issued by a fully consolidated subsidiary of a Reporting Bank to third party investors (including amounts under paragraphs 6.1.10, 6.2.8

[155] For positions in the trading book, if the Reporting Bank has a contractual right or obligation to sell a long equity position at a specific point in time and the counterparty in the contract has an obligation to purchase the long equity position if the Reporting Bank exercises its right to sell, this point in time may be treated as the maturity of the long position, and the maturity of the long and short positions are deemed to be matched.

[156] For a position hedged against market risk where the hedge does not qualify to offset the gross long position for the purposes of determining the amount to be deducted, the Reporting Bank may choose to include the long position in its calculation of market RWA, in addition to deducting the long position. Where the hedge qualifies to offset the gross long position, the Reporting Bank may choose to exclude both the gross long position and the hedge from its calculation of market RWA.

[157] Where a Reporting Bank uses a short position in an index to hedge a long position, the portion of the index that is composed of the same underlying long exposure that is being hedged may be used to offset the long position only if (a) both the long position and the hedge are held in the trading book; (b) the positions are accounted for at fair value; and (c) the hedge is recognised as effective under the Reporting Bank's internal control processes.

and 6.2.9) as Eligible Total Capital only if the capital instruments would, if issued by the Reporting Bank, meet all of the criteria for classification as Tier 1 Capital or Tier 2 Capital[158]. The Reporting Bank must calculate the amount that will be recognised as Eligible Total Capital as follows (please refer to Annex 6A for an illustrative example):

(a) total capital of the subsidiary issued to third party investors; less

(b) the surplus Eligible Total Capital of the subsidiary attributable to third party investors;

where –

(i) total capital of the subsidiary issued to third party investors means the sum of Tier 1 capital of the subsidiary and Tier 2 capital instruments issued by the subsidiary which are owned by third party investors;

(ii) the surplus Eligible Total Capital of the subsidiary is calculated as the Eligible Total Capital of the subsidiary, minus the lower of –

(A) 12.5%[159] of the subsidiary's total RWA; and

(B) 12.5%[160] of the consolidated RWA attributable to the subsidiary; and

(iii) the surplus Eligible Total Capital of the subsidiary attributable to third party investors is calculated by multiplying the surplus Eligible Total Capital of the subsidiary calculated in sub-paragraph (b)(ii), by the percentage of total capital that is held by third party investors.

A Reporting Bank when recognising the amount of Eligible Total Capital calculated in this paragraph as Tier 2 Capital, must exclude amounts recognised as CET1 Capital under paragraph 6.1.10 and amounts recognised as AT1 Capital under paragraphs 6.2.8 and 6.2.9.

6.3.13 Where capital instruments purchased by third party investors are issued for and on behalf of a Reporting Bank out of an SPE, the Reporting Bank may include such capital

[158] CET1 capital instruments, AT1 capital instruments and Tier 2 capital instruments should meet all of the criteria for classification as CET1 capital instruments, AT1 capital instruments and Tier 2 capital instruments, respectively.

[159] This represents the sum of the minimum Total CAR of 10% and Capital Conservation Buffer of 2.5% that is applicable to the banking group. Where the Reporting Bank is not designated by the Authority as a D-SIB, the ratios set out in paragraph 64 of "Basel III: A global regulatory framework for more resilient banks and banking systems" issued by the BCBS in December 2010 (last revised in June 2011), will apply (i.e. 10.5% of the subsidiary's total RWA, which represents the sum of the minimum Total CAR of 8% and Capital Conservation Buffer of 2.5%).

[160] This represents the sum of the minimum Total CAR of 10% and Capital Conservation Buffer of 2.5% that is applicable to the banking group. Where the Reporting Bank is not designated by the Authority as a D-SIB, the ratios set out in paragraph 64 of "Basel III: A global regulatory framework for more resilient banks and banking systems" issued by the BCBS in December 2010 (last revised in June 2011), will apply (i.e. 10.5% of the consolidated RWA attributable to the subsidiary, which represents the sum of the minimum Total CAR of 8% and Capital Conservation Buffer of 2.5%).

instruments in its Tier 2 Capital and treat such capital instruments as if the Reporting Bank itself had issued the capital instruments directly to the third party investors, only if the capital instruments meet all the relevant entry criteria and the only asset of the SPE is its investment in the capital instruments of the Reporting Bank in a form that meets or exceeds all the relevant entry criteria (as required by the criterion set out in paragraph 6.3.6(k) for Tier 2 Capital). In cases where the capital instruments have been issued to third party investors through an SPE by a fully consolidated subsidiary of the Reporting Bank, the Reporting Bank may, subject to the requirements of this paragraph in relation to capital instruments issued through an SPE, treat such capital instruments as if the subsidiary itself had issued the capital instruments directly to third party investors and may include such capital instruments in the Reporting Bank's consolidated Tier 2 Capital in accordance with the treatment outlined in paragraph 6.3.12.

TLAC Holdings

6.3.14 For the purposes of this part, other TLAC liabilities include –

(a) all direct, indirect and synthetic investments in the instruments of a G-SIB resolution entity that are eligible to be recognised as external TLAC but that do not otherwise qualify as regulatory capital[161] for the issuing G-SIB, with the exception of instruments excluded by paragraph 6.3.15; and

(b) all holdings of instruments issued by a G-SIB resolution entity that rank pari passu to any instruments included in sub-paragraph (a), with the exceptions of –

(i) instruments listed as liabilities excluded from TLAC in Section 10 of the FSB TLAC Term Sheet ("Excluded Liabilities"); and

(ii) instruments ranking pari passu with instruments eligible to be recognised as TLAC by virtue of the exemptions to the subordination requirements in section 11 of the FSB TLAC Term Sheet.

6.3.15 Where a G-SIB is permitted to recognise instruments ranking pari passu to Excluded Liabilities as external TLAC instruments[162], a Reporting Bank must subject its holdings of those instruments to a proportionate deduction approach. Under this approach, only a proportion of holdings of instruments that are eligible to be recognised as external TLAC by virtue of the exemptions to the subordination requirements set out in the penultimate paragraph of section 11 of the FSB TLAC Term Sheet will be considered a holding of TLAC by the Reporting Bank. The proportion is calculated as:

(a) the funding issued by the G-SIB resolution entity that ranks pari passu with Excluded Liabilities and that is recognised as external TLAC by the G-SIB resolution entity; divided by

[161] Tier 2 instruments that no longer count in full as regulatory capital (as a result of having a residual maturity of less than 5 years) continue to be recognised in full as a Tier 2 instrument by the Reporting Bank for the regulatory adjustments in this part.

[162] In certain countries or jurisdictions, G-SIBs may be permitted to recognise instruments ranking pari passu to Excluded Liabilities as external TLAC, up to a limit, in accordance with the exemptions to the subordination requirements set out in the penultimate paragraph of section 11 of the FSB TLAC Term Sheet.

(b) the funding issued by the G-SIB resolution entity that ranks pari passu with Excluded Liabilities and that would be recognised as external TLAC if the subordination requirement was not applied[163].

A Reporting Bank must calculate its holdings of other TLAC liabilities of the respective issuing G-SIB resolution entities based on the latest available public information provided by the issuing G-SIBs on the proportion to be used.

6.3.16 The Reporting Bank must apply the regulatory adjustments relating to TLAC holdings set out in this part from the date on which the issuing G-SIB becomes subject to a minimum TLAC requirement[164].

[163] For example, if a G-SIB resolution entity has funding that ranks pari passu with Excluded Liabilities equal to 5% of RWAs and receives partial recognition of these instruments as external TLAC equivalent to 3.5% of RWAs, then a Reporting Bank holding such instruments must include only 70% (= 3.5 / 5) of such instruments in calculating its TLAC holdings. The same proportion should be applied by the Reporting Bank to any indirect or synthetic investments in instruments ranking pari passu with Excluded Liabilities and eligible to be recognised as TLAC by virtue of the exemptions to the subordination requirements set out in the penultimate paragraph of section 11 of the FSB TLAC Term Sheet.

[164] The conformance period is set out in section 21 of the FSB TLAC Term Sheet. In summary, firms that have been designated as G-SIBs before end-2015 and continue to be designated thereafter, with the exception of such firms headquartered in an emerging market economy, will have to meet the TLAC requirements from 1 January 2019. For firms headquartered in emerging market economies, the requirements will apply from 1 January 2025 at the latest; this may be accelerated in certain circumstances.

Division 4: Submission Requirements

6.4.1 A Reporting Bank intending to issue or recognise any AT1 capital instrument or Tier 2 capital instrument for the purposes of inclusion as AT1 Capital under paragraph 6.2.1 or as Tier 2 Capital under paragraph 6.3.1, respectively, must –

(a) consult the Authority well in advance to allow adequate time for review if the capital instrument has additional features which are not explicitly addressed in paragraph 6.2.2 for AT1 Capital, or paragraph 6.3.6 for Tier 2 Capital; and

(b) submit the following documents to the Authority before including such issuance as AT1 Capital or Tier 2 Capital:

(i) a declaration signed by the chief financial officer of the Reporting Bank confirming –

(A) that the Reporting Bank is responsible for complying with the requirements for inclusion of the issuance of the AT1 capital instrument as AT1 Capital, or the issuance of the Tier 2 capital instrument as Tier 2 Capital;

(B) that all the requirements for the inclusion of the issuance of the AT1 capital instrument or Tier 2 capital instrument set out in this Notice have been met;

(C) the expected date on which the issuance would be included as AT1 Capital or Tier 2 Capital; and

(D) that the Reporting Bank is aware that the Authority may take such necessary action against the Reporting Bank, including requiring the exclusion of the issuance for inclusion as AT1 Capital or as Tier 2 Capital, if the issuance does not, or subsequently does not, comply with the requirements set out in this Notice;

(ii) all the executed agreements and offering documents governing the issuance of the AT1 capital instrument or Tier 2 capital instrument;

(iii) all external legal opinions obtained in respect of the issuance of the AT1 capital instrument or the Tier 2 capital instrument stating that the requirements in paragraphs 6.2.2 and 6.3.6 (where applicable) have been met;

(iv) a memorandum of compliance stating how the issuance complies with each of the requirements set out in paragraphs 6.2.2 and 6.3.6 (where applicable) and identifying the relevant portions of the agreements and offering documents governing the issuance of the AT1 capital instrument or Tier 2 capital instrument which address each requirement;

(v) the information and documents required to be submitted under paragraph 1.9 of Annex 6B;

(vi) where the agreements and offering documents governing the issuance of the AT1 capital instrument or Tier 2 capital instrument are governed by the laws of a country or jurisdiction other than Singapore, a written external legal opinion from an advocate and solicitor qualified to practise Singapore law, that he has reviewed all the agreements and offering documents governing the issuance, including any legal opinion from foreign law practitioners provided pursuant to paragraph 6.4.1(b)(iii) and the memorandum of compliance, and confirms that the memorandum of compliance read together with such agreements, offering documents, legal opinions and any letter of undertaking provided by the Reporting Bank or any banking group entity address the requirements of paragraphs 6.2.2 or 6.3.6, as the case may be.

6.4.2 For the purposes of paragraph 6.4.1(b)(iii), the written external legal opinion must be reasonably unqualified, in particular with respect to the prohibition on provisions which mandate or create incentives for the redemption of the instrument, and other requirements relating to loss absorption, priority of claims, waiver of set-off amounts or benefits and subordination.

Annex 6A

MINORITY INTEREST AND OTHER CAPITAL ISSUED BY FULLY CONSOLIDATED SUBSIDIARIES HELD BY THIRD PARTY INVESTORS – AN ILLUSTRATIVE EXAMPLE

This Annex illustrates the treatment of minority interest and other capital issued by subsidiaries to third party investors, set out in paragraphs 6.1.10, 6.2.8, 6.2.9, 6.3.12 and 6.3.13.

A banking group consists of 2 legal entities that are both banks. Bank P is the parent and Bank S is the subsidiary and their unconsolidated balance sheets are set out below.

Bank P balance sheet		**Bank S balance sheet**	
Assets		**Assets**	
Loans to customers	100	Loans to customers	150
Investment in CET1 capital instruments of Bank S	7		
Investment in AT1 capital instruments of Bank S	4		
Investment in Tier 2 capital instruments of Bank S	2		
Liabilities and equity		**Liabilities and equity**	
Depositors	70	Depositors	127
Tier 2 capital instruments	10	Tier 2 capital instruments	8
AT1 capital instruments	7	AT1 capital instruments	5
Common equity	26	Common equity	10

The balance sheet of Bank P shows that in addition to its loans to customers, it owns 70% of the ordinary shares of Bank S, 80% of the AT1 capital of Bank S and 25% of the Tier 2 capital of Bank S. The ownership of the capital of Bank S is therefore as follows:

Capital issued by Bank S			
	Amount issued to parent (Bank P)	**Amount issued to third party investors**	**Total**
CET1 capital (CET1)	7	3	10
AT1 capital (AT1)	4	1	5
Tier 1 capital (T1)	***11***	***4***	***15***
Tier 2 capital (T2)	2	6	8
Total capital (TC)	***13***	***10***	***23***

The consolidated balance sheet of the banking group is set out below:

Consolidated balance sheet	
Assets	
Loans to customers	250
Liabilities and equity	
Depositors	197
Tier 2 capital issued by subsidiary to third party investors	6
Tier 2 capital issued by parent	10
AT1 capital issued by subsidiary to third party investors	1
AT1 capital issued by parent	7
Common equity issued by subsidiary to third party investors (i.e. minority interest)	3
Common equity issued by parent	26

For illustrative purposes Bank S is assumed to have RWA of 100. In this example, the minimum capital requirements of Bank S and the subsidiary's contribution to the consolidated requirements are the same since Bank S does not have any loans to Bank P. This means that it is subject to the following minimum plus capital conservation buffer requirements and has the following surplus capital:

Minimum and surplus capital of Bank S		
	Minimum plus capital conservation buffer	**Surplus**
CET1	9.0 (= 9.0% of 100)	1.0 (=10 − 9.0)
T1	10.5 (= 10.5% of 100)	4.5 (=10 + 5 − 10.5)
TC	12.5 (= 12.5% of 100)	10.5 (=10 + 5 + 8 − 12.5)

The following table illustrates how to calculate the amount of capital issued by Bank S to include in consolidated capital, following the calculation procedure set out in paragraphs 6.1.10, 6.2.8, 6.2.9, 6.3.12 and 6.3.13:

Bank S: Amount of capital issued to third party investors included in consolidated capital

	Total amount issued (a)	**Amount issued to third party investors (b)**	**Surplus (c)**	**Surplus attributable to third party investors (i.e. amount excluded from consolidated capital) (d) =(c) * (b)/(a)**	**Amount included in consolidated capital (e) = (b) – (d)**
CET1	10	3	1.0	0.30	2.70
T1	15	4	4.5	1.20	2.80
TC	23	10	10.5	4.57	5.43

The following table summarises the components of capital for the consolidated group based on the amounts calculated in the table above. AT1 capital is calculated as the difference between CET1 capital and Tier 1 capital, and Tier 2 capital is the difference between Total capital and Tier 1 capital.

	Total amount issued by parent (all of which is to be included in consolidated capital)	**Amount issued by subsidiaries to third party investors to be included in consolidated capital**	**Total amount issued by parent and subsidiary to be included in consolidated capital**
CET1	26	2.70	28.70
AT1	*7*	*0.10*	*7.10*
T1	33	2.80	35.80
T2	*10*	*2.63*	*12.63*
TC	43	5.43	48.43

Annex 6B

REQUIREMENTS TO ENSURE LOSS ABSORBENCY AT THE POINT OF NON-VIABILITY

1.1 Paragraphs 6.2.2(s) and 6.3.6(o) require that the terms and conditions of AT1 capital instruments and Tier 2 capital instruments contain provisions which ensure their loss absorbency at the point of non-viability. A Reporting Bank must have a provision in the terms and conditions of all AT1 capital instruments and Tier 2 capital instruments issued by the Reporting Bank that requires such instruments, at the option of the Authority, to either be partially or fully written off or converted into ordinary shares upon the occurrence of the trigger event. The Reporting Bank must ensure that the write-off of any capital instruments issued by an SPE to investors mirrors the write-off of capital instruments issued by the Reporting Bank to the SPE, and the write-off or conversion must not constitute an event of default for the capital instruments. The Reporting Bank must consult the Authority on such arrangements in advance, to allow adequate time for review.

1.2 The Reporting Bank must ensure that any compensation paid to the instrument holders as a result of a write-off is paid immediately in the form of ordinary shares of the Reporting Bank (including any successor in resolution). The Reporting Bank must approach the Authority before the issuance of ordinary shares of the holding company of the Reporting Bank, where such shares are paid as compensation to the holders of the capital instrument.

1.3 A Reporting Bank must maintain at all times, all prior authorisation necessary to immediately issue the relevant number of ordinary shares specified in the capital instrument's terms and conditions should the trigger event occur. The Reporting Bank must ensure that the conversion formula for determining the number of ordinary shares to be issued upon conversion of the capital instrument is fixed at the point of issuance, and includes a limit on the maximum number of ordinary shares that would be issued upon conversion.

1.4 The Reporting Bank must ensure that the trigger event is the earlier of:

(a) the Authority notifying the Reporting Bank in writing that the Authority is of the opinion that a write-off or conversion is necessary, without which the Reporting Bank would become non-viable; and

(b) the Authority's decision to make a public sector injection of capital, or equivalent support, without which the Reporting Bank would have become non-viable, as determined by the Authority.

1.5 The Authority may take into account, among other considerations, the following[165] in assessing a Reporting Bank's viability:

[165] In its assessment, the Authority will bear in mind the aim of the requirements, which is to ensure loss absorbency at the point of non-viability. The Authority will also have full discretion to not trigger the provision under paragraph 1.1 of Annex 6B even if the Reporting Bank is assessed to have ceased, or is about to cease, to be viable.

(a) whether the assets of the Reporting Bank are, in the Authority's opinion, sufficient to provide adequate protection to the Reporting Bank's depositors and creditors;

(b) whether the Reporting Bank has lost the confidence of depositors, other creditors or the public. This may be characterised by ongoing increased difficulty of the Reporting Bank in obtaining or rolling over short-term funding;

(c) whether the Reporting Bank's regulatory capital has, in the Authority's opinion, reached a level, or is eroding in a manner, that may detrimentally affect its depositors or creditors;

(d) whether the Reporting Bank failed to pay any liability that has become due and payable or, in the Authority's opinion, will not be able to pay its liabilities as they become due and payable;

(e) whether the Reporting Bank failed to comply with an order of the Authority to increase its capital;

(f) whether in the Authority's opinion, any other state of affairs exists in respect of the Reporting Bank that may be materially prejudicial to the interests of the Reporting Bank's depositors or creditors or the owners of any assets under the Reporting Bank's administration;

(g) whether the Reporting Bank is able to recapitalise on its own through the issuance of ordinary shares or other forms of regulatory capital.

1.6 The Reporting Bank must ensure that the issuance of any new ordinary shares as a result of the trigger event occurs prior to any public sector injection of capital so that the capital provided by the public sector is not diluted.

Additional requirements for capital instruments issued by fully consolidated subsidiaries

1.7 Where a Reporting Bank intends to include the AT1 capital instruments and Tier 2 capital instruments issued by its subsidiary or issued for and on behalf of its subsidiary by an SPE in the consolidated group's regulatory capital at the Group level, the Reporting Bank may do so, to the extent permitted by the rules on eligibility of capital issued out of subsidiaries and held by third party investors set out in paragraphs 6.1.10, 6.2.8, 6.2.9, 6.3.12, 6.3.13 of this Part, if the terms and conditions specify an additional trigger event. The Reporting Bank must ensure that this additional trigger event is the earlier of –

(a) the Authority notifying the Reporting Bank in writing that the Authority is of the opinion that a write-off or conversion is necessary, without which the Reporting Bank would become non-viable; and

(b) the Authority's decision to make a public sector injection of capital, or equivalent support, without which the Reporting Bank would have become non-viable, as determined by the Authority.

1.8 For the purposes of paragraph 1.7, the Reporting Bank must ensure that any ordinary shares paid as compensation to the holders of the capital instrument are ordinary shares of either the subsidiary or of the Reporting Bank (including any successor in resolution). The Reporting Bank must approach the Authority before the issuance of ordinary shares paid as compensation to the holders of the capital instrument to be those of the holding company of the Reporting Bank.

Submission requirements

1.9 For the purposes of ensuring compliance with the above requirements, the Reporting Bank must submit the following information and documents to the Authority before including any issuance of capital instruments as AT1 Capital or Tier 2 Capital:

(a) an external legal opinion confirming that the write-off or conversion feature at the point of non-viability is enforceable, and that there are no impediments to the write-off or conversion of the instrument into ordinary shares of the Reporting Bank (or a banking group entity, where applicable) upon a trigger event;

(b) where the terms of the instrument provide for trigger events in addition to the trigger events specified in this Annex, the rationale for these additional trigger events and an assessment of the possible market implications that might arise from the inclusion of these additional trigger events or upon a breach of these trigger events;

(c) a detailed description of the rationale for the specified conversion method, including computations of the indicative dilution of the Reporting Bank's ordinary shares that would occur upon a trigger event, and an explanation of why such a conversion approach would help to ensure or maintain the viability of the Reporting Bank.

The Authority may require the Reporting Bank to submit additional information in such form and manner (as specified in writing by the Authority) before such capital instruments can be included as AT1 Capital or Tier 2 Capital.

Annex 6C

STANDARDS FOR A PRUDENT VALUATION FRAMEWORK

1.1 This Annex sets out the standards for valuing positions[166] that are accounted for at fair value, whether they are in the trading book or the banking book of a Reporting Bank (such positions are referred to in this Annex as "positions").

1.2 These standards are especially important for positions without actual market prices or observable inputs to valuation, as well as less liquid positions. The standards are not intended to require a Reporting Bank to change valuation procedures for financial reporting purposes.

1.3 The Authority will review the implementation of these standards by a Reporting Bank to assess the quality of its risk management systems, including whether the Reporting Bank has taken appropriate valuation adjustments for regulatory purposes under paragraphs 1.17 to 1.20 of this Annex. The degree of consistency between the Reporting Bank's valuation procedures and these standards will be a factor in the Authority's assessment of whether the Reporting Bank must take a valuation adjustment for regulatory purposes under paragraphs 1.17 to 1.20 of this Annex.

Governance Structure

1.4 A Reporting Bank must have in place a clear and delineated governance structure that facilitates the setting, implementation and review of its policies and procedures on valuation. A Reporting Bank must ensure that the governance structure includes all of the following key elements:

(a) approval by the Board for the overall valuation framework for positions of the Reporting Bank;

(b) periodic review by the Board on the valuation framework to ensure it remains appropriate, especially if any major acquisition, disposal or business changes have occurred;

(c) approval by the Board on all significant changes to a Reporting Bank's valuation policies and procedures;

(d) significant involvement by senior management of a Reporting Bank in the design and implementation of the controls and methodologies within the approved valuation framework;

(e) proper oversight by senior management on any significant breach of valuation policies and other significant issues arising from the valuation process. The Reporting Bank must document all breaches of valuation policies and issues arising from the valuation process, and the actions taken.

[166] To avoid doubt, this includes positions in instruments that are in scope for credit risk capital requirements and positions in instruments that are in scope for market risk capital requirements.

Policies, Systems and Controls

1.5 A Reporting Bank must ensure that its senior management establishes and maintains adequate policies, systems and controls to ensure that its valuation methodologies are robust and reliable.

1.6 A Reporting Bank must maintain sufficient documentation on its valuation policies and procedures. The Reporting Bank must ensure that such documentation contains all of the following key elements:

(a) responsibilities of the various units involved in the determination of the valuation;

(b) sources of market information and provisions for regular reviews of their appropriateness;

(c) policies for the use of unobservable inputs reflecting the Reporting Bank's assumptions of what market participants would use in pricing the position;

(d) frequency of independent valuation;

(e) timing for obtaining closing prices;

(f) procedures for adjusting valuations;

(g) end-of-the-month and other ad-hoc verification procedures[167].

1.7 A Reporting Bank must ensure that its units or departments accountable for the valuation process maintain clear reporting lines which are independent of the market risk-taking function of the Reporting Bank[168].

1.8 A Reporting Bank must integrate its valuation systems with other risk management systems within the Reporting Bank.

1.9 A Reporting Bank must ensure that its IA or external auditors conduct reviews of the independent price verification procedures and control processes on an annual basis.

Marking-to-Market

1.10 A Reporting Bank must mark-to-market its positions using readily available close out prices[169] that are sourced independently.

[167] This may include collateral reconciliations to position values, a review of similar recent transactions and early termination analysis.

[168] A Reporting Bank should ensure that the reporting line is ultimately to an executive director of the Board of the Reporting Bank.

[169] Examples of readily available close out prices include exchange prices, screen prices, or quotes from several independent reputable brokers.

1.11 A Reporting Bank must mark-to-market its positions on a regular and consistent basis and this must be done at least daily[170]. The Reporting Bank must use the more prudent side of bid and offer unless the Reporting Bank is a significant market maker in a particular position type and has the ability to close out at mid-market.

Marking-to-Model

1.12 Despite paragraph 1.11 of this Annex, where marking-to-market is not possible, a Reporting Bank must mark-to-model.

1.13 A Reporting Bank must meet all of the following requirements when implementing its marked-to-model valuation framework:

(a) the Reporting Bank must ensure its senior management is aware of the elements of the trading book or of other fair-valued positions which are marked-to-model and understand the materiality of the uncertainty this creates in the reporting of the risk or performance of the business;

(b) the Reporting Bank must ensure that market inputs are sourced externally and the appropriateness of market inputs for a particular position being valued is reviewed on a regular basis;

(c) the Reporting Bank must ensure that, where available, generally accepted valuation methodologies for particular products are used;

(d) where a model used in the valuation framework[171] is developed by the Reporting Bank, the Reporting Bank must ensure that the model, and any significant changes made to an existing model, are validated by a unit, or department, independent of both the development process and the front office, and that the validation includes validating the mathematics, the assumptions and the software implementation;

(e) the Reporting Bank must ensure that there are formal change control procedures in place for changes to models used in the valuation framework, and a copy of each model is maintained, with access controls in place to prevent unauthorised changes to the models, and periodically used to check the accuracy of valuations;

(f) the Reporting Bank must be aware of the weaknesses of each model used in the valuation framework and assess how best to reflect those in the model valuation;

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[170] A Reporting Bank should maximise the use of relevant observable inputs and minimise the use of unobservable inputs when estimating fair value using a valuation technique. However, observable inputs, such as transactions, may not be relevant, such as in a forced liquidation or distressed sale, or transactions may not be observable, such as when markets are inactive. In such cases, the Reporting Bank should consider the observable inputs, although such inputs may not be determinative of the fair value of a position.

[171] The Reporting Bank should ensure that each model used in the valuation framework is developed or approved by a unit or department independent of the front office and based on reasonable and appropriate assumptions which have been documented, and challenged and assessed by suitably qualified parties independent of the development process.

(g) the Reporting Bank must ensure that each model used in the valuation framework is reviewed to ascertain the accuracy of its performance, and such review includes ascertaining the reasonableness of assumptions made, analysing how changes in risk factors affect the profit and loss of a position and comparing how close actual close out values are to model valuations, and is conducted –

(i) periodically; and

(ii) when there are changes in the model or in the assumptions resulting from developments in market conditions,

and the Reporting Bank must document, for each model, the outcome of the review, the date of the last review and the scheduled date for the next review;

(h) the Reporting Bank must ensure that valuation adjustments are made as appropriate, including to address the uncertainty of a model valuation (see also paragraphs 1.15 to 1.20 of this Annex).

Independent Price Verification[172]

1.14 A Reporting Bank must verify the market prices and model inputs used for marking-to-market and marking-to-model, respectively, for appropriateness and accuracy. A Reporting Bank must ensure that price verification is performed by a unit independent of the market risk-taking function at a frequency that is commensurate with the nature of the market or trading activity, and in any case not less frequently than once a month.[173,174]

Valuation Adjustments

1.15 A Reporting Bank must establish and maintain procedures for considering valuation adjustments[175], whether the position is marked-to-market using market prices, observable inputs or third-party valuations, or marked-to-model.

1.16 While the list below is not intended to be exhaustive, a Reporting Bank must make valuation adjustments[176], where relevant, for the following:

(a) unearned credit spreads;

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172 Independent price verification is a process by which market prices or model inputs are regularly and independently verified for accuracy.

173 A Reporting Bank need not perform independent price verification daily, since the daily mark-to-market process should reveal any error or bias in pricing, which should result in the elimination of inaccurate daily marks.

174 A Reporting Bank should make independent unscheduled (e.g. mid-month) price verification of its positions. This should be performed especially if the Reporting Bank identifies potential or actual problems or inaccuracies in its valuation process and results. In the case where pricing sources are limited, e.g. only one available broker quote, measures such as valuation adjustments may be appropriate.

175 A Reporting Bank should make valuation adjustments at the position level, which means valuation adjustments should be made to the valuation of the net position in the same instrument.

176 The Reporting Bank should review the appropriateness of the valuation adjustments regularly.

(b) close-out costs;

(c) operational risks;

(d) early termination;

(e) investing and funding costs;

(f) future administrative costs;

(g) model risk.

Adjustment to the current valuation of less liquid positions for regulatory capital purposes

1.17 A Reporting Bank must establish and maintain procedures for judging the necessity of and calculating an adjustment to the current valuation of less liquid positions for regulatory capital purposes.[177] A Reporting Bank must consider the need for an adjustment to a position's valuation to reflect current illiquidity whether the position is marked-to-market using market prices, observable inputs or third-party valuations, or marked-to-model.

1.18 Where assumptions made about liquidity by a Reporting Bank in calculating its market risk capital requirements are inconsistent with the Reporting Bank's ability to sell or hedge out less liquid positions[178], a Reporting Bank must make an adjustment to the current valuation of these positions, where appropriate, and review their continued appropriateness on an ongoing basis. The Reporting Bank must consider all relevant factors and, at a minimum, the following factors when determining the appropriateness of the valuation adjustment for less liquid positions:

(a) the amount of time it would take to hedge out the risks within the position;

(b) the average volatility of bid and offer spreads;

(c) the availability of independent market quotes (including the number and identity of market makers);

(d) the average trading volume and volatility of trading volumes (including trading volumes during periods of market stress);

(e) market concentrations[179];

(f) the ageing of positions[180];

[177] This adjustment may be in addition to any changes to the value of the position required for financial reporting purposes.

[178] Reduced liquidity may have arisen from market events.

[179] A Reporting Bank should consider the impact of liquidating concentrated positions when determining the valuation adjustment.

[180] A Reporting Bank should consider the impact of liquidating stale positions when determining the valuation adjustment.

(g) the extent to which valuation relies on marking-to-model;

(h) the impact of other model risks, which the Reporting Bank has not calculated valuation adjustments for under paragraph 1.17 of this Annex.

1.19 For complex products including, but not limited to, securitisation exposures and n-th-to-default credit derivatives, a Reporting Bank must explicitly assess the need for valuation adjustments to reflect 2 forms of model risk: the model risk associated with using a possibly incorrect valuation methodology and the risk associated with using unobservable (and possibly incorrect) calibration parameters in the valuation model.

1.20 In some circumstances, it is possible that the adjustments to the current valuation of less liquid positions made under paragraph 1.17 of this Annex may exceed those valuation adjustments made under financial reporting standards and paragraphs 1.15 and 1.16 of this Annex. Where this occurs, a Reporting Bank must deduct the difference in the calculation of CET1 Capital.

PART VII: CREDIT RISK

Division 1: Overview of Credit RWA Calculation

Sub-division 1: Introduction

7.1.1 A Reporting Bank must calculate its credit RWA as the sum of –

(a) its SA(CR) RWA calculated in accordance with Sub-division 3 of this Division and its IRBA RWA calculated in accordance with Sub-division 4 of this Division, for on-balance sheet assets held in the banking book and off-balance sheet items held in the banking book, other than –

(i) exposures belonging to sub-paragraphs (b), (c), (d), (e) and (f); and

(ii) any securitised exposure that meets the requirements for the recognition of risk transference in a traditional securitisation set out in Sub-division 2 of Division 6 of this Part;

(b) its CCR-SA RWA and CCR-IRBA RWA, calculated in accordance with Sub-division 5 of this Division, for CCR exposures in the banking book and CCR exposures in the trading book, other than exposures belonging to sub-paragraphs (c), (d), (e), and (f);

(c) its RWA for equity investments in funds, held in the banking book, calculated in accordance with Sub-division 6 of this Division;

(d) its SEC-IRBA RWA, SEC-ERBA RWA, SEC-IAA RWA, SEC-SA RWA, and RWA from securitisation exposures to which the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied, calculated in accordance with Sub-division 7 of this Division, for securitisation exposures held in the banking book;

(e) its CCP RWA calculated in accordance with Division 7 of this Part for exposures to CCPs arising from –

(i) CCR exposures in the banking book;

(ii) CCR exposures in the trading book; and

(iii) default fund exposures; and

(f) its UST-DvP RWA and UST-non-DvP RWA, calculated in accordance with Division 8 of this Part, for UST exposures in the banking book and UST exposures in the trading book.

Sub-division 2: Exposures Included in the Calculation of SA(CR) RWA and IRBA RWA

7.1.2 For the purposes of paragraph 7.1.1(a), a Reporting Bank must include an exposure within the scope of paragraph 7.1.1(a) in its calculation of –

(a) IRBA RWA, if the exposure belongs to a class of exposures for which the Reporting Bank has obtained IRBA approval under paragraph 7.4.11; or

(b) SA(CR) RWA, in any other case.

Sub-division 3: Calculation of SA(CR) RWA

7.1.3 To calculate its SA(CR) RWA, a Reporting Bank must –

(a) apply the exposure measurement requirements in Sub-divisions 1 and 4 of Division 2 of this Part, and Sub-division 2 or 3 of Division 2 of this Part, to calculate E, or where applicable E*, for an SA(CR) exposure;

(b) categorise that SA(CR) exposure in accordance with Sub-division 1 of Division 3 of this Part;

(c) allocate an applicable credit quality grade and risk weight for that SA(CR) exposure in accordance with Sub-divisions 2 and 3 respectively of Division 3 of this Part;

(d) calculate the credit risk-weighted exposure amount for that SA(CR) exposure using the following formula:

Credit RWE = Exposure x RW

where –

(i) "Credit RWE" refers to the credit risk-weighted exposure amount for that SA(CR) exposure;

(ii) "Exposure" refers to E, or where applicable E*, for that SA(CR) exposure; and

(iii) "RW" refers to the applicable risk weight for that SA(CR) exposure determined in accordance with sub-paragraph (c); and

(e) aggregate the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (d) for all its SA(CR) exposures.

7.1.4 To avoid doubt, a Reporting Bank must cap the credit risk-weighted exposure amount calculated in accordance with paragraph 7.1.3(d) for any transaction for which CRM has been used, to the credit risk-weighted exposure amount applicable to an otherwise identical transaction where such CRM is not used.

Sub-division 4: Calculation of IRBA RWA

7.1.5 To calculate its IRBA RWA, a Reporting Bank must –

(a) apply the exposure measurement requirements in Sub-divisions 1 and 4 of Division 2 of this Part, and Sub-division 2 or 3 of Division 2 of this Part, to calculate EAD, or where applicable EAD*, for an IRBA exposure;

(b) categorise that IRBA exposure in accordance with Sub-division 5 of Division 4 of this Part;

(c) calculate K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{mort}, K_{qrre}, K_{oret}, K_{cp}, K_{sp}, K_{rp}, or K_{def}, whichever is applicable to that IRBA exposure based on the categorisation in sub-paragraph (b) (other than an IRBA exposure categorised under the SL asset sub-class or the HVCRE asset sub-class), in accordance with Sub-divisions 6, 8, 9, 10 and 12 of Division 4 of this Part, as the case may be;

(d) if the IRBA exposure is categorised under the SL asset sub-class or the HVCRE asset sub-class –

(i) where the Reporting Bank complies with the requirements in Annex 7X for deriving estimates of PD for such exposures, calculate K_{sl}, K_{hv} or K_{def} for that IRBA exposure in accordance with Sub-divisions 6, 8 and 12 of Division 4 of this Part; and

(ii) in all other cases, determine RW_{slot} for that IRBA exposure in accordance with the supervisory slotting criteria set out in Annex 7S and Sub-division 13 of Division 4 of this Part;

(e) calculate the credit risk-weighted exposure amount for that IRBA exposure as follows:

(i) for an IRBA exposure categorised under the SL asset sub-class or the HVCRE asset sub-class that is not in default and for which the Reporting Bank is using the supervisory slotting criteria to calculate the credit risk-weighted exposure amount, using the following formula:

$$\text{Credit RWE} = \text{Exposure} \times RW_{slot}$$

where –

(A) "Credit RWE" refers to the credit risk-weighted exposure amount for that IRBA exposure;

(B) "RW_{slot}" refers to RW_{slot} determined in accordance with sub-paragraph (d); and

(C) "Exposure" refers to EAD, or where applicable EAD*, for that IRBA exposure;

(ii) for all other IRBA exposures, using the following formula:

Credit RWE = Exposure x K x 12.5

where –

(A) "Credit RWE" refers to the credit risk-weighted exposure amount for that IRBA exposure;

(B) "K" refers to K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{sl}, K_{hv}, K_{mort}, K_{qrre}, K_{oret}, K_{cp}, K_{sp}, K_{rp}, or K_{def}, whichever is applicable to that IRBA exposure based on the categorisation in sub-paragraph (b), calculated in accordance with sub-paragraph (c); and

(C) "Exposure" refers to EAD, or where applicable EAD*, for that IRBA exposure; and

(f) aggregate the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (e) for all its IRBA exposures.

7.1.6 To avoid doubt, a Reporting Bank must cap the credit risk-weighted exposure amount calculated in accordance with paragraph 7.1.5(e) for any transaction for which CRM has been used, to the credit risk-weighted exposure amount applicable to an otherwise identical transaction where such CRM is not used.

Sub-division 5: Calculation of CCR-SA RWA and CCR-IRBA RWA

7.1.7 A Reporting Bank must include every CCR exposure (other than any exposure to a CCP arising from a CCR exposure) in its calculation of either CCR-SA RWA or CCR-IRBA RWA, as the case may be.

7.1.8 For the purposes of this Sub-division –

(a) "IRBA exposure" refers to any CCR exposure (other than any exposure to a CCP arising from a CCR exposure) that belongs to a class of exposures for which the Reporting Bank has obtained IRBA approval under paragraph 7.4.11; and

(b) "SA(CR) exposure" refers to any CCR exposure (other than any exposure to a CCP arising from a CCR exposure) in any other case.

7.1.9 A Reporting Bank must calculate its CCR-SA RWA by –

(a) applying the exposure measurement requirements in Sub-divisions 1 and 9 of Division 2 of this Part, and Sub-divisions 6, 7 or 8 of Division 2 of this Part to calculate E, or where applicable E*, for an SA(CR) exposure;

(b) categorising the SA(CR) exposure referred to in sub-paragraph (a) in accordance with Sub-division 1 of Division 3 of this Part;

(c) allocating an applicable credit quality grade and risk weight for the SA(CR) exposure referred to in sub-paragraph (a) in accordance with Sub-divisions 2 and 3 respectively of Division 3 of this Part;

(d) calculating the credit risk-weighted exposure amount for the SA(CR) exposure referred to in sub-paragraph (a) using the following formula:

Credit RWE = Exposure x RW

where –

(i) "Credit RWE" refers to the credit risk-weighted exposure amount for that SA(CR) exposure;

(ii) "Exposure" refers to E, or where applicable E*, for that SA(CR) exposure; and

(iii) "RW" refers to the applicable risk weight for that SA(CR) exposure determined in accordance with sub-paragraph (c); and

(e) aggregating the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (d) for all its SA(CR) exposures.

7.1.10 A Reporting Bank must calculate its CCR-IRBA RWA by –

(a) applying the exposure measurement requirements in Sub-divisions 1 and 9 of Division 2 of this Part and Sub-divisions 6, 7 or 8 of Division 2 of this Part to calculate EAD, or where applicable E*, for an IRBA exposure;

(b) categorising the IRBA exposure referred to in sub-paragraph (a) in accordance with Sub-division 5 of Division 4 of this Part;

(c) calculating K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{mort}, K_{qrre}, K_{oret}, K_{cp}, K_{sp}, K_{rp}, or K_{def}, whichever is applicable to the IRBA exposure referred to in sub-paragraph (a) based on the categorisation in sub-paragraph (b) (other than an IRBA exposure categorised under the SL asset sub-class or the HVCRE asset sub-class), in accordance with Sub-divisions 6, 8, 9, 10, and 12 of Division 4 of this Part, as the case may be;

(d) if the IRBA exposure referred to in sub-paragraph (a) is categorised under the SL asset sub-class or the HVCRE asset sub-class –

(i) where the Reporting Bank complies with the requirements in Annex 7X for deriving estimates of PD for such exposures, calculating K_{sl}, K_{hv} or K_{def} for that IRBA exposure in accordance with Sub-divisions 6, 8 and 12 of Division 4 of this Part; and

(ii) in all other cases, determining RW_{slot} for that IRBA exposure in accordance with the supervisory slotting criteria set out in Annex 7S and Sub-division 13 of Division 4 of this Part;

(e) calculating the credit risk-weighted exposure amount for the IRBA exposure referred to in sub-paragraph (a) as follows:

(i) for an IRBA exposure categorised under the SL asset sub-class or the HVCRE asset sub-class that is not in default and for which the Reporting Bank is using the supervisory slotting criteria to calculate the credit risk-weighted exposure amount, using the following formula:

Credit RWE = Exposure x RW_{slot}

where –

(A) "Credit RWE" refers to the credit risk-weighted exposure amount for that IRBA exposure;

(B) "RW_{slot}" refers to RW_{slot} determined in accordance with sub-paragraph (d); and

(C) "Exposure" refers to EAD, or where applicable EAD*, for that IRBA exposure;

(ii) for all other IRBA exposures to calculate its credit risk-weighted exposure amount, using the following formula:

Credit RWE = Exposure x K x 12.5

where –

(A) "Credit RWE" refers to the credit risk-weighted exposure amount for that IRBA exposure;

(B) "K" refers to K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{sl}, K_{hv}, K_{mort}, K_{qrre}, K_{oret}, K_{cp}, K_{sp}, K_{rp}, or K_{def}, whichever is applicable to that IRBA exposure based on the categorisation in sub-paragraph (b), calculated in accordance with sub-paragraph (c); and

(C) "Exposure" refers to EAD, or where applicable EAD*, for that IRBA exposure; and

(f) aggregating the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (e) for all its IRBA exposures.

7.1.11 To avoid doubt, a Reporting Bank must cap the credit risk-weighted exposure amount calculated in accordance with paragraph 7.1.9(d) or 7.1.10(e), as the case may be, for any transaction for which CRM has been used, to the credit risk-weighted exposure amount applicable to an otherwise identical transaction where such CRM is not used.

Sub-division 6: Calculation of Credit RWA for Equity Investments in Funds

7.1.12 To calculate its RWA for equity investments in funds, a Reporting Bank must –

(a) apply the exposure measurement requirements in Sub-division 1 of Division 2 of this Part, and Sub-divisions 2 or 3 of Division 2 of this Part to calculate E for an exposure in equity investments in funds;

(b) calculate the credit risk-weighted exposure amount of that exposure in equity investments in funds in accordance with Division 5 of this Part; and

(c) aggregate the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (b) for all its exposures in equity investments in funds.

7.1.13 To avoid doubt, a Reporting Bank must cap the credit risk-weighted exposure amount calculated in accordance with paragraph 7.1.12(b) for any transaction for which CRM has been used, to the credit risk-weighted exposure amount applicable to an otherwise identical transaction where such CRM is not used.

Sub-division 7: Calculation of Credit RWA for Securitisation Exposures

7.1.14 To calculate its RWA for a securitisation exposure, a Reporting Bank must –

(a) apply the exposure measurement requirements in Sub-divisions 1, 5 and 9 of Division 2 of this Part and Sub-divisions 2, 3, 6 or 7 of Division 2 of this Part to calculate E, or where applicable E*, for a securitisation exposure;

(b) calculate the credit risk-weighted exposure amount for each securitisation exposure, using the following formula:

Credit RWE = Exposure x RW

where –

(i) "Credit RWE" refers to the credit risk-weighted exposure amount for that securitisation exposure;

(ii) "Exposure" refers to E, or where applicable E* , for that securitisation exposure calculated in accordance with sub-paragraph (a); and

(iii) "RW" refers to –

(A) the applicable risk weight for an SEC-IRBA exposure determined in accordance with Sub-divisions 3 and 4 of Division 6 of this Part, as adjusted by Sub-division 10 or Sub-division 11 of Division 6 of this Part;

(B) the applicable risk weight for an SEC-ERBA exposure determined in accordance with Sub-divisions 3 and 5 of Division

6 of this Part, as adjusted by Sub-division 10 or Sub-division 11 of Division 6 of this Part;

(C) the applicable risk weight for an SEC-IAA exposure determined in accordance with Sub-divisions 3 and 6 of Division 6 of this Part, as adjusted by Sub-division 10 or Sub-division 11 of Division 6 of this Part;

(D) the applicable risk weight for an SEC-SA exposure determined in accordance with Sub-divisions 3 and 7 of Division 6 of this Part, as adjusted by Sub-division 9, Sub-division 10 or Sub-division 11 of Division 6 of this Part; or

(E) 1250% determined in accordance with Sub-division 3 of Division 6 of this Part if the Reporting Bank is unable to use the SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA, or where it cannot meet the requirements in paragraph 7.6.8(a) to (c),

subject to the maximum risk weights applicable for senior exposures, calculated in accordance with paragraphs 7.1.15 to 7.1.17, and the minimum risk weight applicable for exposures to a NPL securitisation set out in paragraph 7.6.88, as applicable;

(c) aggregate the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (b) for all its securitisation exposures arising from the same securitisation, and in doing so, may cap the credit risk-weighted exposure amount arising from the same securitisation in accordance with paragraphs 7.1.18 to 7.1.22, or 7.6.91, as applicable, and adjust the credit risk-weighted exposure amounts to recognise the effects of credit risk mitigation in accordance with paragraph 7.1.23; and

(d) aggregate the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (c) for all its securitisation exposures across all securitisations.

Maximum Risk Weight for Senior Exposures

7.1.15 A Reporting Bank may apply a "look-through" approach to senior securitisation exposures, where the risk weight applied to a senior securitisation exposure is capped at the exposure weighted-average risk weight applicable to the underlying exposures, provided that the Reporting Bank has knowledge of the composition of the underlying exposures at all times –

(a) where the Reporting Bank exclusively uses either the SA(CR) or the IRBA to calculate capital requirements for the underlying pool, the risk weight applied to the senior securitisation exposure is capped at the exposure weighted-average risk weight applicable to the underlying exposures under the SA(CR) or IRBA respectively; and

(b) in the case of mixed pools –

(i) when applying the SEC-IRBA, the risk weight applied to the senior securitisation exposure is capped at the exposure weighted-average risk weight calculated using –

(A) the SA(CR) risk weights for the portion of the underlying pool that would constitute an SA pool; and

(B) the IRBA risk weights for the portion of the underlying pool that would constitute an IRB pool; and

(ii) when applying the SEC-SA, the SEC-ERBA, or the SEC-IAA, the risk weight applied to the senior securitisation exposure is capped at the exposure weighted-average risk weight applicable to the underlying assets under the SA(CR), whether or not the Reporting Bank is able to use the IRBA to calculate their risk weights.

The Reporting Bank must calculate the applicable risk weight under the IRBA taking into account the expected loss multiplied by 12.5.

7.1.16 Where the risk weight cap results in a lower risk weight than the floor risk weight of 15%, a Reporting Bank must apply the risk weight resulting from the cap.

7.1.17 A Reporting Bank must not apply the cap on risk weights described in paragraphs 7.1.15 to 7.1.16 to resecuritisation exposures.

Maximum Credit Risk-Weighted Exposure Amounts

7.1.18 A Reporting Bank (as an originator of or investor in a securitisation) using the SEC-IRBA for a securitisation exposure may cap the credit risk-weighted exposure amount for the securitisation exposures it holds in the same securitisation in accordance with paragraph 7.1.20.

7.1.19 A Reporting Bank (as an originator of a securitisation) using the SEC-ERBA, the SEC-IAA or the SEC-SA for a securitisation exposure may cap the credit risk-weighted exposure amount for the securitisation exposures it holds in the same securitisation in accordance with paragraph 7.1.20.

7.1.20 A Reporting Bank which is capping the credit risk-weighted exposure amount must apply a maximum aggregated credit risk-weighted exposure for its securitisation exposures in the same securitisation of $P \times K_P \times 12.5$, with P and K_P defined as follows:

(a) P: The largest proportion of interest that the Reporting Bank holds across all tranches of a given pool –

(i) if the Reporting Bank's securitisation exposures all reside in a single tranche of a given securitisation, P equals the proportion (expressed as a percentage) of securitisation exposures that the Reporting Bank holds in that given tranche (calculated as the total nominal amount of the Reporting Bank's securitisation exposures in the tranche divided by the nominal amount of the tranche); and

(ii) if the Reporting Bank's securitisation exposures reside in different tranches of a given securitisation, P equals the maximum proportion of interest across tranches, where the proportion of interest for each of the different tranches is calculated as described above;

(b) K_P: The capital requirement for the underlying pool –

(i) for an IRB pool, K_P equals K_{IRB} as calculated in paragraphs 7.6.21 to 7.6.32;

(ii) for an SA pool, K_P equals K_{SA} as calculated in paragraphs 7.6.63 to 7.6.69; and

(iii) for a mixed pool, K_P equals the exposure-weighted average capital requirement of the underlying pool using K_{SA} for the proportion of the underlying pool for which the Reporting Bank cannot calculate K_{IRB}, and K_{IRB} for the proportion of the underlying pool for which the Reporting Bank can calculate K_{IRB}.

7.1.21 Despite the maximum risk-weighted exposure cap, a Reporting Bank must deduct the entire amount of any gain on sale and credit-enhancing interest-only strips arising from the securitisation transaction in accordance with paragraph 6.1.5(f) and (g).

7.1.22 A Reporting Bank must not apply the cap on credit risk-weighted exposure amounts described in paragraphs 7.1.18 to 7.1.20 to resecuritisation exposures.

7.1.23 A Reporting Bank which is adjusting its credit risk-weighted exposure amounts to recognise the effects of credit risk mitigation pursuant to paragraph 7.1.14(c) must –

[MAS Notice 637 (Amendment) 2024]

(a) compute an effective risk weight for each securitisation exposure, using the following formula:

Effective risk weight = Credit RWE / Exposure

where –

(i) "Effective risk weight" refers to the risk weight applicable to the unprotected portion of the securitisation exposure;

(ii) "Credit RWE" refers to the credit risk-weighted exposure amount for that securitisation exposure calculated in accordance with paragraph 7.1.14(a) to (c), after the application of any caps; and

(iii) "Exposure" refers to E, or where applicable E*, for that securitisation exposure calculated in accordance with paragraph 7.1.14(a); and

(b) recognise the effects of credit risk mitigation in accordance with Sub-division 13 of Division 6 of this Part, using the effective risk weight calculated in sub-paragraph (a) as the risk weight that is applicable to the unprotected portion of the securitisation exposure.

Division 2: Measurement of Exposures

Sub-division 1: Introduction

7.2.1 A Reporting Bank must apply the exposure measurement requirements set out in this Division and the standards for prudent valuation set out in Annex 6C to calculate –

(a) E, or where applicable E*, for any SA(CR) exposure, exposure in equity investments in funds, SEC-IRBA exposure, SEC-ERBA exposure, SEC-IAA exposure or SEC-SA exposure; and

(b) EAD, or where applicable EAD*, for any IRBA exposure.

7.2.2 For the purposes of paragraph 7.2.1(b), a Reporting Bank must comply with the requirements in Annex 7X for deriving estimates of EAD for such exposures.

7.2.3 A Reporting Bank must consult with the Authority on the appropriate treatment to apply in the measurement of E or EAD, whichever is applicable, for transactions that have not been addressed in this Division.

7.2.4 A Reporting Bank must calculate –

(a) E, or where applicable E*, for any SA(CR) exposure, SEC-IRBA exposure, SEC-ERBA exposure, SEC-IAA exposure or SEC-SA exposure, net of any –

(i) specific allowance (including partial write-offs) attributable to such SA(CR) exposure, SEC-IRBA exposure, SEC-ERBA exposure, SEC-IAA exposure or SEC-SA exposure, as determined in accordance with the Accounting Standards; and

(ii) purchase price discount attributable to such SEC-IRBA exposure, SEC-ERBA exposure, SEC-IAA exposure or SEC-SA exposure; and

(b) EAD, or where applicable EAD*, for any IRBA exposure gross of any specific allowance or partial write-offs attributable to such IRBA exposure as determined in accordance with the Accounting Standards.

7.2.5 For the purposes of paragraph 7.2.4(b), the Reporting Bank must ensure that the EAD on drawn amounts is not less than the sum of –

(a) the amount by which a Reporting Bank's regulatory capital would be reduced if the exposure were written-off fully; and

(b) any specific allowances and partial write-offs.

The difference between the EAD and the sum of (a) and (b), where positive, is referred to as a discount. To avoid doubt, the Reporting Bank must ensure that the calculation of EAD, or where applicable EAD*, and the calculation of IRBA RWA, is independent of any discounts.

Sub-division 2: Measurement of E or EAD for On-balance Sheet Assets

7.2.6 Subject to paragraph 7.2.9, a Reporting Bank must ensure that E or EAD, whichever is applicable, for each on-balance sheet asset is the carrying amount of the asset as determined in accordance with the Accounting Standards.[201] The Reporting Bank must ensure that E or EAD, whichever is applicable, is equal to the fair value of that asset presented in the balance sheet, except that –

(a) for any asset held at cost, the Reporting Bank must ensure that E or EAD, whichever is applicable, is equal to the cost of the asset presented in the balance sheet; and

(b) for any land and building asset or investment property where the Reporting Bank has recognised the revaluation surpluses or accumulated revaluation gains as CET1 Capital pursuant to paragraph 6.1.1(e), the Reporting Bank must ensure that E or EAD, whichever is applicable, includes only the portion of revaluation surpluses or accumulated revaluation gains that have been included as CET1 Capital (equivalent to the sum of historical cost and 45% of the revaluation surpluses or accumulated revaluation gains, less depreciation and any allowance for impairment).

7.2.7 In the case of a lease where the Reporting Bank is the lessor and is exposed to residual value risk (i.e. potential loss due to the fair value of the leased asset declining below the estimate of its residual value reflected on the balance sheet of the Reporting Bank at lease inception), the Reporting Bank must calculate –

(a) an exposure to the lessee equivalent to the discounted lease payment stream; and

(b) an exposure to the residual value of the leased assets equivalent to the estimate of the residual value reflected in the balance sheet of the Reporting Bank.

7.2.8 To avoid doubt, a Reporting Bank must calculate E or EAD of any asset on the balance sheet of the Reporting Bank that is –

(a) lent; or

(b) posted as collateral,

where the credit risk of the asset remains with the Reporting Bank, in accordance with paragraph 7.2.4.

[201] A Reporting Bank should allocate any foreign exchange transaction or translation gain or loss from a foreign currency-denominated on-balance sheet item as well as interest earned on a fixed income instrument to the exposure to which it accrues.

7.2.9 A Reporting Bank may recognise the effect of a qualifying on-balance sheet netting agreement for loans and deposits. However, the Reporting Bank must not recognise the effect of netting agreements relating to all other types of on-balance sheet assets and liabilities. To avoid doubt, this prohibition on the recognition of netting agreements does not apply to the calculation of E or EAD, whichever is applicable, for pre-settlement counterparty exposures arising from derivative transactions and long settlement transactions under the SA-CCR set out in Annex 7D.

7.2.10 For the purposes of paragraph 7.2.9, a Reporting Bank must –

(a) calculate E or EAD, whichever is applicable, for loans; and

(b) calculate E* or EAD*, whichever is applicable, as the net exposure of loans and deposits, by treating deposits as cash collateral and in accordance with paragraph 1.1 of Annex 7J, subject to all of the following:

(i) all applicable haircuts in paragraph 1.1 of Annex 7J are zero, except where there is a currency mismatch between the loans and deposits covered under the qualifying on-balance sheet netting agreement;

(ii) where there is a currency mismatch between the loans and deposits held, the Reporting Bank must reduce the amount of exposure to be netted by applying a haircut in accordance with paragraphs 2.4 and 2.5 of Annex 7J, and apply a 10-business day holding period;

(iii) where there is a maturity mismatch between the loans and deposits covered under the qualifying on-balance sheet netting agreement, the Reporting Bank must comply with the requirements set out in Section 7 of Annex 7H.

Sub-division 3: Measurement[202] of E or EAD for Off-balance Sheet Items Other than CCR Exposures

7.2.11 For an off-balance sheet item (other than a CCR exposure), which is an SA(CR) exposure, an exposure in equity investments in funds, or an exposure under the F-IRBA, a Reporting Bank must calculate E or EAD, whichever is applicable, by multiplying the notional amount with the applicable standardised CCF set out in Table 7B-1.

7.2.12 A Reporting Bank posting collateral for any transaction other than a CCR exposure must apply a 100% CCF to the fair value of the collateral.[203] To avoid doubt, a Reporting Bank must calculate E or EAD for such posted collateral in addition to the calculation of E or EAD pursuant to paragraph 7.2.8, where applicable.

7.2.13 For an off-balance sheet item (other than a CCR exposure), which is an exposure under the A-IRBA, or the IRBA for the IRBA retail asset class, a Reporting Bank must calculate EAD as follows:

(a) in the case of an undrawn commitment to a revolving loan to extend credit, purchase assets or issue credit substitutes, where all of the following conditions are met:

(i) the exposure is not subject to a standardised CCF of 100% as set out in Table 7B-1;

(ii) the Reporting Bank meets the minimum requirements for estimating EAD as set out in Annex 7X,

the Reporting Bank must calculate –

(A) EAD of the off-balance sheet item by multiplying the notional amount of the item with the Reporting Bank's own internal estimates of CCFs; or

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[202] A Reporting Bank should record a commitment (as defined in Annex 2A) as an exposure for regulatory capital purposes on the date at which it enters into the legal contract or agreement with the obligor, except in the following cases:
(a) where the Reporting Bank faces operational constraints in recording the commitment immediately, such as checking that the legal contract or agreement is in order, such delay should not exceed 15 business days;
(b) where the Reporting Bank intends to recognise the effects of CRM of collateral, and the disbursement of the credit facility is conditional on such recognition being achieved, the Reporting Bank should record the commitment in respect of the credit facility on the date at which it is first able to recognise the credit risk mitigating effects of any collateral which meets all the requirements for recognition of collateral under Annex 7H;
(c) where the commitment is in respect of a credit facility to an obligor which is to be used for the purposes of repaying an existing credit facility issued by the Reporting Bank to the same obligor, such as for refinancing, the Reporting Bank should record the commitment on the date at which the existing credit exposure will be repaid. In the case where the amount for the commitment exceeds the outstanding amount to be repaid for the existing credit exposure, the Reporting Bank should recognise the difference on the date at which the legal contract or agreement or commitment is entered into by the Reporting Bank, subject to sub-paragraphs (a) and (b).
To avoid doubt, this does not affect the measurement of E or EAD for the commitment.

[203] This is to account for the counterparty credit risk arising from the default of the obligor receiving such collateral.

(B) EAD of the total facility, consisting of both the on-balance sheet asset, and the off-balance sheet item, using the Reporting Bank's own internal estimates of total facility EAD;

(b) in any other case, the Reporting Bank must calculate EAD by multiplying the notional amount with the applicable standardised CCF set out in Table 7B-1.[204]

7.2.14 In the case where a Reporting Bank uses its own internal estimates to calculate EAD in accordance with paragraph 7.2.13(a), the Reporting Bank must determine EAD as follows for exposures other than an exposure in the sovereign asset sub-class under paragraph 7.4.42(c):

(a) EAD for foreign exchange and interest rate commitments within a Reporting Bank's IRBA retail asset class, if any, must be determined in accordance with paragraph 7.2.11;

(b) if the EAD of the off-balance sheet item calculated under paragraph 7.2.13(a)(A) is lower than 50% of the exposure measurement that would have been calculated for the same off-balance sheet item under paragraph 7.2.11, the Reporting Bank must use 50% of the exposure measurement that would have been calculated for the same off-balance sheet item under paragraph 7.2.11 as the EAD to calculate Credit RWE for that IRBA exposure under paragraph 7.1.5(e)(ii);

(c) if the EAD of the total facility calculated under paragraph 7.2.13(a)(B) is lower than the sum of –

(i) the on-balance sheet amount that would have been calculated under Sub-division 2 of this Division; and

(ii) 50% of the exposure measurement that would have been calculated for the off-balance sheet amount under paragraph 7.2.11,

the Reporting Bank must use the sum of (c)(i) and (c)(ii) as the EAD to calculate Credit RWE for that IRBA exposure under paragraph 7.1.5(e)(ii).

7.2.15 For an off-balance sheet item (other than a CCR exposure) which is a securitisation exposure, a Reporting Bank must calculate E, by multiplying the notional amount with the applicable CCF set out in Annex 7C.

7.2.16 For the purposes of this Sub-division –

(a) the notional amount of an off-balance sheet item refers to the amount which has been committed but is as yet undrawn; and

[204] For example, this paragraph would apply to any of the following:
(a) an undrawn commitment to a non-revolving loan;
(b) an off-balance sheet item that is subject to a standardised CCF of 100%;
(c) an exposure where the Reporting Bank does not meet the minimum requirements for estimating EAD as set out in Annex 7X.

(b) a Reporting Bank which is exposed to the risk of the underlying securities or commodities in –

(i) an OTC derivative transaction;

(ii) an exchange-traded derivative transaction;

(iii) a long settlement transaction; or

(iv) an SFT,

where the transaction is in substance similar to a forward purchase or credit substitute, must calculate E or EAD, whichever is applicable, for such an exposure in accordance with this Sub-division.

7.2.17 For the purposes of paragraph 7.2.16(a), a Reporting Bank must measure the notional amount of an off-balance sheet item denominated in a foreign currency, based on the current exchange rate. The Reporting Bank must apply the CCF to the lower of the value of the unused committed credit line, and the value which reflects any possible constraining availability of the facility[205]. Where a Reporting Bank contends that the availability of a facility is constrained, the Reporting Bank must have sufficient line monitoring and management procedures to support this contention.

7.2.18 To avoid doubt, if a Reporting Bank has securitised only the drawn balances of revolving loans, the Reporting Bank must hold capital against the undrawn balances associated with the securitised exposures, and must calculate E or EAD, whichever is applicable, based on the applicable CCF set out in Annex 7B. For the purposes of this paragraph, a securitisation of revolving loans is a securitisation in which one or more underlying exposures represent, directly or indirectly, current or future draws on a revolving loan[206].

7.2.19 To avoid doubt, where a Reporting Bank has provided unfunded credit protection via a total rate of return swap, the Reporting Bank must calculate E or EAD, whichever is applicable, as the notional amount of the underlying reference credit exposure for which the Reporting Bank is providing protection adjusted for any payments received from or made to the protection buyer and recognised in the profit and loss account of the Reporting Bank. Where a Reporting Bank has provided unfunded credit protection via a credit default swap, the Reporting Bank must calculate E or EAD, whichever is applicable, as the notional amount of the underlying reference credit exposure for which the Reporting Bank is providing protection.

[205] An example is the existence of a ceiling on the potential lending amount which is related to an obligor's reported cash flow.

[206] Examples of revolving loans include credit card exposures, home equity lines of credit, commercial lines of credit, and other lines of credit.

Sub-division 4: Recognition of Eligible Financial Collateral for On-balance Sheet Assets and Off-balance Sheet Items Other than Exposures in Equity Investments in Funds, Securitisation Exposures, and CCR Exposures

7.2.20 A Reporting Bank which has taken eligible financial collateral for any transaction other than an exposure in equity investments in funds, a securitisation exposure, or a CCR exposure, may recognise the effect of such collateral in accordance with paragraphs 7.2.21 to 7.2.26.

7.2.21 A Reporting Bank that does not use the IRBA may use either the FC(SA) or the FC(CA) to recognise the effect of eligible financial collateral. The Reporting Bank must apply the chosen approach consistently to the entire banking book and must not use a combination of both approaches. A Reporting Bank using the IRBA must not use the FC(SA).

7.2.22 A Reporting Bank using the SA(CR) and the FC(SA) may recognise the effect of eligible financial collateral in accordance with Sub-division 4 of Division 3 of this Part. Paragraphs 7.2.23 to 7.2.26 do not apply where a Reporting Bank uses the FC(SA).

7.2.23 A Reporting Bank using the SA(CR) and the FC(CA) may calculate E*, the SA(CR) exposure adjusted for eligible financial collateral, in accordance with Annex 7J and substitute E* for E when calculating the credit risk-weighted exposure amount for that SA(CR) exposure under Sub-division 3 of Division 1 of this Part.

7.2.24 A Reporting Bank using the F-IRBA may calculate LGD* for IRBA exposures in accordance with paragraphs 7.4.75 to 7.4.79 to recognise the effect of eligible financial collateral.

7.2.25 A Reporting Bank using the supervisory slotting criteria and the FC(CA) may calculate EAD*, the IRBA exposure adjusted for eligible financial collateral, in accordance with Annex 7J and substitute EAD* for EAD when calculating the credit risk-weighted exposure amount and EL amount for that IRBA exposure under Sub-division 4 of Division 1 and Sub-division 14 of Division 4 of this Part, respectively. A Reporting Bank may apply this treatment only if the CRM of the eligible financial collateral has not been taken into consideration in assigning the exposure to internal obligor grades as set out in paragraph 7.4.124.

7.2.26 A Reporting Bank using the A-IRBA or the IRBA for the IRBA retail asset class may take collateral into account when deriving its own estimates of LGD.

Sub-division 5: Recognition of Eligible Financial Collateral for Securitisation Exposures

7.2.27 A Reporting Bank which has taken eligible financial collateral for a securitisation exposure may recognise the effect of such collateral used to hedge the credit risk of a securitisation exposure, in accordance with paragraphs 7.2.28 to 7.2.30. A Reporting Bank may recognise collateral pledged by an SPE.

7.2.28 A Reporting Bank that does not use the IRBA, the SEC-IRBA and the SEC-IAA may use either the FC(SA) or the FC(CA) to recognise the effect of eligible financial collateral. The Reporting Bank must apply the chosen approach consistently to the entire

banking book and must not use a combination of both approaches. A Reporting Bank using the IRBA, SEC-IRBA, or SEC-IAA must not use the FC(SA).

7.2.29 A Reporting Bank using the SEC-ERBA or SEC-SA and the FC(SA) may recognise the effect of eligible financial collateral in accordance with Sub-division 13 of Division 6 of this Part. Paragraph 7.2.30 does not apply to a Reporting Bank using the FC(SA).

7.2.30 A Reporting Bank using the SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA and the FC(CA) may calculate E*, the SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA exposure adjusted for eligible financial collateral, in accordance with Annex 7J and substitute E* for E when calculating the credit risk-weighted exposure amount for that SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA exposure under Sub-division 7 of Division 1 of this Part.

Sub-division 6: Measurement of E or EAD for Pre-settlement Counterparty Exposures Arising from OTC Derivative Transactions, Exchange-traded Derivative Transactions and Long Settlement Transactions, Other than Transactions Covered by a Qualifying Cross-Product Netting Agreement

7.2.31 Subject to paragraph 7.2.32, for each OTC derivative transaction, exchange-traded derivative transaction or long settlement transaction which is not covered by a qualifying cross-product netting agreement, a Reporting Bank must calculate E or EAD, whichever is applicable, for the pre-settlement counterparty exposure arising from that OTC derivative transaction, exchange-traded derivative transaction or long settlement transaction using one of the following methods:

(a) the SA-CCR set out in Annex 7D;

(b) the CCR internal models method set out in Annex 7E.

7.2.32 For each counterparty, a Reporting Bank must ensure that the E or EAD, whichever is applicable, for each OTC derivative transaction calculated in accordance with paragraph 7.2.31, is the greater of zero and the difference between the sum of E or EAD, whichever is applicable, across all netting sets with the counterparty and the CVA loss. The Reporting Bank must calculate the CVA loss without taking into account any offsetting debit valuation adjustments which have been deducted in the calculation of CET1 Capital in accordance with paragraph 6.1.5(h). For the purposes of calculating the CVA risk capital requirement in Division 5 of Part VIII, a Reporting Bank must not reduce EAD by CVA losses. Where a Reporting Bank uses a combination of the SA-CCR and CCR internal models method to calculate its E or EAD, whichever is applicable, to a single counterparty, the Reporting Bank must allocate separately (with no double-counting) collateral posted by the counterparty, for the purposes of calculating its E or EAD, whichever is applicable, under each of the respective methods.

7.2.33 A Reporting Bank must not use the CCR internal models method unless it has received the approval of the Authority to do so.

7.2.34 Regardless of the method used by a Reporting Bank for calculating E or EAD, whichever is applicable, for the pre-settlement counterparty exposure arising from OTC derivative transactions, exchange-traded derivative transactions and SFTs, a Reporting Bank may determine E or EAD, whichever is applicable, for the pre-settlement

counterparty exposure arising from long settlement transactions using either of the methods set out in paragraph 7.2.31.

7.2.35 To avoid doubt, in calculating E for a securitisation exposure which arises from a derivative transaction other than a credit risk derivative transaction, a Reporting Bank must calculate E in accordance with this Sub-division.

Sub-division 7: Measurement of E or EAD for Pre-Settlement Counterparty Exposures Arising from SFTs, Other than Transactions Covered by a Qualifying Cross-Product Netting Agreement

7.2.36 A Reporting Bank must treat an SFT as a collateralised transaction for the purposes of this Notice, despite the wide range of structures which could be used for SFTs.

7.2.37 A Reporting Bank must calculate E or EAD, whichever is applicable, for a pre-settlement counterparty exposure arising from an SFT, other than an exposure covered by a qualifying cross-product netting agreement –

(a) in accordance with paragraphs 7.2.41 to 7.2.47; or

(b) using the CCR internal models method set out in Annex 7E.

7.2.38 A Reporting Bank must not use the CCR internal models method unless it has received the approval of the Authority to do so.

7.2.39 A Reporting Bank on either side of an SFT must hold capital for the SFT.[207]

7.2.40 To avoid doubt, a Reporting Bank must calculate the E or EAD, as the case may be, of the on-balance sheet leg of an SFT under Sub-division 2 of this Division.

7.2.41 Unless a Reporting Bank is using the CCR internal models method and subject to paragraph 7.2.42, it must determine E or EAD, whichever is applicable, for a pre-settlement counterparty exposure arising from an SFT which is not covered by a qualifying cross-product netting agreement as follows:

(a) in the case where the Reporting Bank has lent collateral to a counterparty or sold collateral to a counterparty with a commitment to repurchase those collateral at a specified price on a specified future date, the latest fair value of the collateral lent or sold;

(b) in the case where the Reporting Bank has lent cash to a counterparty through the borrowing of collateral from the counterparty or paid cash for the purchase of collateral from a counterparty with a commitment to resell those collateral at a specified price on a specified future date, the amount of cash lent or paid.

7.2.42 Despite paragraph 7.2.41(a), where a Reporting Bank is using the FC(CA) for the recognition of eligible financial collateral, for SFTs where a Reporting Bank has lent or

[207] For example, a Reporting Bank must hold capital for repos and reverse repos, securities lending and securities borrowing transactions.

sold non-eligible financial collateral to a counterparty, a Reporting Bank must determine E* or EAD* in accordance with Annex 7J, and substitute E* for E and EAD* for EAD when calculating the credit risk-weighted exposure amount for that SA(CR) exposure or IRBA exposure under Sub-division 5 of Division 1 of this Part.

7.2.43 A Reporting Bank which has taken eligible financial collateral for any SFT where the pre-settlement counterparty exposure is determined in accordance with paragraph 7.2.41 may recognise the effect of such collateral in accordance with paragraphs 7.2.44 to 7.2.47.

7.2.44 A Reporting Bank that does not use the IRBA may use either the FC(SA) or the FC(CA) to recognise the effect of eligible financial collateral for any SFT. The Reporting Bank must apply the chosen approach consistently to the entire banking book and must not use a combination of both approaches. A Reporting Bank using the IRBA must not use the FC(SA) to recognise the effect of eligible financial collateral for any SFT.

7.2.45 A Reporting Bank using the SA(CR) and FC(SA) may recognise the effect of eligible financial collateral for any SFT in accordance with Sub-division 4 of Division 3 of this Part. Paragraphs 7.2.46 to 7.2.47 do not apply where a Reporting Bank uses the FC(SA).

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7.2.46 A Reporting Bank which has taken eligible financial collateral for any SFT that is not covered by a qualifying bilateral netting agreement, or which has taken eligible financial collateral for any SFT that is covered by a qualifying bilateral netting agreement but for which the Reporting Bank has elected not to recognise the netting effects for the purposes of calculating regulatory capital requirements, may –

(a) if it is using the SA(CR) and the FC(CA), calculate E*, the SA(CR) exposure adjusted for eligible financial collateral, in accordance with Annex 7J, and substitute E* for E when calculating the credit risk-weighted exposure amount for that SA(CR) exposure under Sub-division 5 of Division 1 of this Part; and

(b) if it is using the IRBA (whether F-IRBA, A-IRBA or IRBA for the IRBA retail asset class), calculate EAD* in accordance with Annex 7J (if the Reporting Bank is using the FC(CA)) or Annex 7F (if the Reporting Bank is using VaR models), and substitute EAD* for EAD when calculating the credit risk-weighted exposure amount for that IRBA exposure under Sub-division 5 of Division 1 of this Part.

7.2.47 A Reporting Bank which has taken eligible financial collateral for an SFT that is covered by a qualifying bilateral netting agreement may –

(a) if it is using the SA(CR) and the FC(CA), calculate E*, the SA(CR) exposure adjusted for eligible financial collateral for all its SA(CR) exposures to any single counterparty covered by the qualifying bilateral netting agreement, in accordance with Annex 7J, and substitute E* for E when calculating the credit risk-weighted exposure amount for its SA(CR) exposures to that counterparty under Sub-division 5 of Division 1 of this Part; and

(b) if it is using the IRBA (whether F-IRBA, A-IRBA or IRBA for the IRBA retail asset class), calculate EAD*, the IRBA exposure adjusted for eligible financial collateral for all its IRBA exposures to any single counterparty covered by the qualifying bilateral netting agreement, in accordance with Annex 7J (if the Reporting Bank is using the FC(CA)), or Annex 7F (if the Reporting Bank is using VaR models), and substitute EAD* for EAD when calculating the credit risk-weighted exposure amount for its IRBA exposures to that counterparty under Sub-division 5 of Division 1 of this Part.

7.2.48 Where a Reporting Bank, acting as an agent of a party (the "third party"), arranges a repo-style transaction, a commodities lending transaction or a commodities borrowing transaction between a counterparty and a third party and provides a guarantee to the counterparty that the third party will perform on its obligations, the risk to the Reporting Bank is the same as if the Reporting Bank had entered into the transaction as a principal. In such circumstances, the Reporting Bank must calculate capital requirements as if it were itself the principal to the repo-style transaction, a commodities lending transaction or a commodities borrowing transaction.

Sub-division 8: Measurement of E or EAD for Pre-Settlement Counterparty Exposures Arising from OTC Derivative Transactions, Long Settlement Transactions and SFTs Covered by a Qualifying Cross-Product Netting Agreement

7.2.49 Subject to paragraph 7.2.50, a Reporting Bank must calculate E or EAD, whichever is applicable, for any pre-settlement counterparty exposure arising from any OTC derivative transaction, long settlement transaction or SFT to a single counterparty that is covered by a qualifying cross-product netting agreement, using the CCR internal models method set out in Annex 7E.

7.2.50 For each counterparty, a Reporting Bank must ensure that the E or EAD, whichever is applicable, for each OTC derivative transaction calculated in accordance with paragraph 7.2.49, is the greater of zero and the difference between the sum of E or EAD, whichever is applicable, across all netting sets with the counterparty and the CVA loss. The Reporting Bank must calculate the CVA loss without taking into account any offsetting debit valuation adjustments which have been deducted in the calculation of CET1 Capital in accordance with paragraph 6.1.5(h). For the purposes of calculating the CVA risk capital requirement in Division 5 of Part VIII, a Reporting Bank must not reduce EAD by CVA losses.

7.2.51 A Reporting Bank must not use the CCR internal models method unless it has received the approval of the Authority to do so.

Sub-division 9: Exceptions to the Measurement of E or EAD

7.2.52 Despite paragraphs 7.2.1 to 7.2.51, a Reporting Bank may attribute a value of zero to E or EAD, whichever is applicable, for –

(a) any pre-settlement counterparty exposure arising from any credit derivative which a Reporting Bank may recognise as eligible credit protection for a banking book exposure or another CCR exposure; and

(b) any pre-settlement counterparty exposure arising from any sold credit default swap in the banking book, where the credit default swap is treated as credit protection sold by the Reporting Bank, and subject to credit risk capital requirements for the full notional amount.

7.2.53 For the purposes of calculating the CVA risk capital requirement in Division 5 of Part VIII, the Reporting Bank must not attribute a value of zero to E or EAD, whichever is applicable, for the pre-settlement counterparty exposure to the protection provider, arising from a credit derivative which the Reporting Bank recognises as an eligible hedge, in the calculation of the CVA risk capital requirement.

Division 3: SA(CR)

Sub-division 1: Categorisation of SA(CR) Exposures

7.3.1 A Reporting Bank must categorise any SA(CR) exposure into one of the following asset classes and where applicable, one of the following asset sub-classes, under SA(CR):

(a) cash items, which consist of –

(i) cash and cash equivalents, including cheques, drafts and other items drawn on other banks, merchant banks or finance companies that are either payable immediately upon presentation or that are in the process of collection; and

(ii) gold bullion held in the vaults of the Reporting Bank or on an allocated basis in the vaults of another entity to the extent that it is backed by gold bullion liabilities;

(b) central government and central bank asset class, which consists of any exposure to a central government, a central bank, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism, or the European Financial Stability Facility;

(c) PSE asset class, which consists of any exposure to a PSE;

(d) MDB asset class, which consists of any exposure to an MDB;

(e) bank asset class, which consists of any exposure to –

(i) a bank;

(ii) a merchant bank;

(iii) a finance company;

(iv) a financial holding company that has a subsidiary that is a bank incorporated in Singapore and is a predominantly banking DFHC; or

(v) a securities firm or other financial institution incorporated in a foreign country or jurisdiction, if the Reporting Bank has determined that such a securities firm or financial institution is classified and risk-weighted as a bank under the regulatory capital requirements for banks in that foreign country or jurisdiction, unless a published, international assessment[208], as notified by the Authority to the Reporting Bank, has identified that the class of securities firms or financial institutions to which such a securities firm or financial institution belongs, is not subject to prudential standards and supervision equivalent to those applied to banks,

[208] For example, the BCBS' Regulatory Consistency Assessment Programme.

but excludes any exposure categorised in sub-paragraph (f) or (h);

(f) covered bond asset class, which consists of any exposure which is an eligible covered bond;

(g) corporate asset class, which consists of any exposure to any corporation, partnership, limited liability partnership, sole proprietorship, trust or fund (but excludes exposures categorised in sub-paragraphs (a) to (f) and (h) to (k), and exposures to individuals), and which consists of the following asset sub-classes:

(i) general corporate asset sub-class, which consists of any exposure in the corporate asset class that does not belong to an asset sub-class set out in sub-paragraphs (g)(ii) and (g)(iii);

(ii) corporate SME asset sub-class, which consists of any exposure in the corporate asset class to a small business;

(iii) specialised lending asset sub-class, which consists of any exposure in the corporate asset class meeting all of the following characteristics, either in legal form or economic substance[209]:

(A) the exposure is within the definitions of project finance, object finance or commodities finance in paragraph 7.3.7;

(B) the obligor has few or no other material assets or activities and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the assets being financed;

(C) for the purposes of sub-paragraph (g)(iii)(B), the primary source of repayment of the obligation is the income generated by the assets, rather than the independent capacity of the broader commercial enterprise of the obligor;

(D) the terms of the obligation give the Reporting Bank a substantial degree of control over the assets and the income that such assets generate;

(h) equity and subordinated debt asset class, which consists of any exposure which is –

(i) a subordinated debt as defined in paragraph 7.3.8;

(ii) an equity exposure as defined in paragraph 7.3.9; or

(iii) a regulatory capital instrument as defined in paragraph 7.3.14,

[209] Such an exposure is typically to an entity (including an SPE) which was created specifically to finance or operate physical assets or both.

issued by a bank, corporation, partnership, limited liability partnership, sole proprietorship, trust, fund, or any type of business vehicle where –

(A) the exposure is not required to be deducted in the calculation of any one of the following:

(I) CET1 Capital;

(II) AT1 Capital;

(III) Tier 2 Capital; and

(B) the exposure is not risk-weighted at 250% pursuant to paragraph 6.1.5(p)(iii) or 400% pursuant to paragraph 6.1.6;

(i) regulatory retail asset class, which consists of any exposure meeting all of the following conditions (but excludes exposures that are derivatives or securities (including bonds and equities), whether listed or not, and any exposure categorised in sub-paragraph (k)):

(i) the exposure is to an individual, a group of individuals, or a small business;

(ii) the exposure takes the form of any of the following:

(A) revolving loans, including credit cards, charge cards and overdrafts;

(B) personal term loans and leases, including instalment loans, vehicle loans and leases, student and educational loans, and personal finance;

(C) small business credit facilities and commitments;

(iii) the total exposure to any obligor or group of obligors, pursuant to paragraph 7.3.16, regardless of whether the exposure is defaulted, is not more than S$2 million;

(iv) the total exposure to any obligor or group of obligors, pursuant to paragraph 7.3.16, is less than or equal to 0.2% of the sum of exposures categorised in sub-paragraph (i) and exposures categorised in sub-paragraph (j) that meet the conditions in sub-paragraphs (i)(i), (i)(ii) and (i)(iii), after excluding exposures that are defaulted,

and such regulatory retail asset class consists of the following asset sub-classes:

(A) regulatory retail transactor, which refers to an exposure in the regulatory retail asset class to an obligor in relation to revolving loans including credit cards and charge cards where the billed balance has been repaid in full at or before each scheduled

repayment date for the previous 12 months, or in relation to overdrafts that have not been drawn down over the previous 12 months;

(B) regulatory retail non-transactor, which refers to any other exposure in the regulatory retail asset class that is not a regulatory retail transactor, including any exposure with less than 12 months of repayment history;

(j) other retail asset class, which consists of any exposure to an individual or a group of individuals other than exposures categorised in sub-paragraph (i) or (k);

(k) real estate asset class, which consists of any exposure that is secured by real estate and which consists of the following asset sub-classes:

(i) ADC asset sub-class, which consists of any exposure in the real estate asset class to companies or SPEs financing any –

(A) land acquisition for development, or development and construction, purposes; or

(B) development, or development and construction, of any RRE or CRE,

but does not include an exposure to a company or SPE financing any acquisition of forest or agricultural land, where there is no planning consent and no intention from the company or SPE to apply for planning consent;

(ii) regulatory real estate asset sub-class, which consists of any exposure in the real estate asset class meeting all the conditions in paragraph 7.3.17;

(iii) other real estate asset sub-class, which consists of any exposure in the real estate asset class other than exposures categorised in sub-paragraph (k)(i) or (k)(ii);

(l) other exposures asset class, which consists of any exposure which does not fall within any of the categories in sub-paragraphs (a) to (k). This includes –

(i) any exposure that is risk-weighted at 250% pursuant to paragraph 6.1.5(p)(iii);

(ii) any exposure that is risk-weighted at 400% pursuant to paragraph 6.1.6;

(iii) in the case where the Reporting Bank is a lessor, any exposure to the residual value of leased assets calculated in accordance with paragraph 7.2.7(b); and

(iv) a right-of-use asset where the Reporting Bank is a lessee and the underlying asset is a tangible asset.

7.3.2 For the purposes of paragraph 7.3.1(f), an eligible covered bond refers to a covered bond that meets all of the following conditions at the issuance date of the covered bond and throughout its remaining maturity:

(a) the cover pool of the covered bond consists of assets that constitute –

(i) exposures which would fall within the asset classes in paragraph 7.3.1(b), (c) or (d), or are guaranteed by the entities referred to in those paragraphs;

(ii) regulatory RRE exposures which would fall within the regulatory real estate asset sub-class in paragraph 7.3.1(k)(ii) with a loan-to-value ratio ("LTV") of 80% or lower;

(iii) regulatory CRE exposures which would fall within the regulatory real estate asset sub-class in paragraph 7.3.1(k)(ii) with an LTV of 60% or lower; or

(iv) exposures which would fall within the bank asset class in paragraph 7.3.1(e), or are guaranteed by entities referred to in paragraph 7.3.1(e), and which would qualify for a 30% or lower risk weight under paragraphs 7.3.52 to 7.3.63, provided that such exposures do not in aggregate exceed 15% of the relevant covered bond issuance;

(b) the nominal value of the cover pool assigned to the covered bond by its issuer exceeds the nominal outstanding value of the covered bond issuance ("over-collateralisation requirement") by at least 10%[210], and for the purposes of meeting this over-collateralisation requirement of at least 10% –

(i) where the relevant legislative framework governing the issuance of such covered bonds does not stipulate an over-collateralisation requirement of at least 10%, the Reporting Bank must ensure that the issuer of the covered bond publicly discloses on a regular basis that the cover pool meets the over-collateralisation requirement of 10% at all times; and

(ii) in addition to the primary assets set out in sub-paragraph (a), the assets used to meet this over-collateralisation requirement may include substitution assets that are cash or short-term liquid and high quality assets held in substitution of the primary assets to top up the cover pool for management purposes, and derivatives entered into for the purposes of hedging the risks arising in the covered bond programme;

[210] For this purpose, the value of the cover pool does not need to be that required by the relevant legislative framework governing the issuance of such covered bonds.

(c) the Reporting Bank can demonstrate to the Authority that –

(i) it receives portfolio information at least on –

(A) the value of the cover pool and outstanding covered bonds;

(B) the geographical distribution and type of assets in the cover pool, loan size, interest rate and currency risks;

(C) the maturity structure of assets in the cover pool and covered bonds; and

(D) the percentage of loans more than 90 days past due; and

(ii) the issuer has made, or has undertaken to make, the information referred to in sub-paragraph (c)(i) available to the Reporting Bank at least semi-annually.

7.3.3 To avoid doubt, a Reporting Bank must categorise an exposure to a securities firm or other financial institution which does not fall within paragraph 7.3.1(e)(v) under the corporate asset class in paragraph 7.3.1(g).

7.3.4 For the purposes of determining whether a corporation, partnership, limited liability partnership, sole proprietorship, trust, or fund ("business") has a reported annual revenue of less than or equal to S$100 million, and therefore whether an SA(CR) exposure to such a business is to be categorised under the corporate SME asset sub-class, the Reporting Bank must –

(a) if the business is part of a group of companies as defined in section 209A of the Companies Act 1967, use the reported annual consolidated revenue of the group of companies;

(b) have in place rigorous information gathering and timely updating processes to ensure that the reported annual revenue figure used is timely and relevant;

(c) use an audited reported annual revenue figure, but where a business is established in a country or jurisdiction where the legislation governing the preparation of the business's financial statements does not require audited financial statements to be maintained, the Reporting Bank may use unaudited accounts to ascertain the reported annual revenue figure;

(d) subject unaudited accounts used to ascertain the reported annual revenue figures under sub-paragraph (c) to an internal or external independent verification conducted on an annual basis;

(e) use a reported annual revenue figure taken from the most recent full-year financial statements, which must be for a financial period ending not more than 21 months before the time when the credit risk-weighted exposure

amount for that SA(CR) exposure is calculated, unless paragraph 7.3.5 applies[211]; and

(f) not categorise an exposure under the corporate SME asset sub-class if it becomes aware of any event after the date of the financial statements referred to in sub-paragraph (e) that would reasonably cause an adjustment of the reported annual revenue of the business such that it is more than S$100 million.

7.3.5 Despite paragraph 7.3.4(e), where subsequent to the Reporting Bank's initial categorisation of an SA(CR) exposure into the corporate SME asset sub-class, a Reporting Bank is unable to obtain updated financial statements of the business, the Reporting Bank may use a reported annual revenue figure taken from full-year financial statements which are for a financial period ending more than 21 months before the time when the credit risk-weighted exposure amount for that SA(CR) exposure is calculated. In such a case, the Reporting Bank may continue to categorise such an exposure under the corporate SME asset sub-class, but must risk-weight the exposure in accordance with paragraphs 7.3.67 to 7.3.70.

7.3.6 For the purposes of paragraphs 7.3.1(g), 7.3.1(h) and 7.3.4, "fund" includes any collective investment scheme or closed-end fund.

7.3.7 For the purposes of paragraph 7.3.1(g)(iii)(A), –

(a) "Project finance" refers to the method of funding in which the Reporting Bank looks primarily to the revenues generated by a single project, both as a source of repayment and as security for the exposure. This type of financing is usually for large, complex and expensive installations[212]. Project finance may take the form of financing of the construction of a new capital installation, or refinancing of an existing installation, with or without improvements;

(b) "Object finance" refers to the method of funding the acquisition of physical assets[213] where the repayment of the exposure is dependent on the cash flows generated by the specific assets that have been financed and pledged or assigned to the Reporting Bank; and

(c) "Commodities finance" refers to structured short-term lending to finance reserves, inventories, or receivables of exchange-traded commodities[214], where the exposure will be repaid from the proceeds of the sale of the commodity and the obligor has no independent capacity to repay the exposure.

7.3.8 For the purposes of paragraph 7.3.1(h), "subordinated debt" means any liability or debt instrument that is subordinated to general creditors of the entity, and includes any

[211] For example, a Reporting Bank must not use the reported annual revenue figure for the 12 months ending 31 December 2022 for calculating credit risk-weighted exposure amounts after 30 September 2024.

[212] For example, power plants, chemical processing plants, mines, transportation infrastructure, environment infrastructure, or media and telecommunications infrastructure.

[213] For example, ships, aircraft, satellites, railcars, or fleets.

[214] For example, crude oil, metals or crops.

liability that meets the definition of "other TLAC liabilities" in paragraphs 6.3.14 and 6.3.15, provided that such liability or debt instrument does not fall within the scope of equity exposures as set out in paragraphs 7.3.9 and 7.3.10.

7.3.9 For the purposes of paragraph 7.3.1(h), "equity exposure" refers to any exposure that meets all of the following requirements:

(a) the instrument is irredeemable and the return of invested funds can be achieved only by the sale of the investment or sale of the rights to the investment or by the liquidation of the issuer of the instrument;

(b) the instrument does not in substance amount to an obligation on the part of the issuer of the instrument;

(c) the instrument conveys a residual claim on the assets or income of the issuer of the instrument.

7.3.10 A Reporting Bank must include all of the following as equity exposures:

(a) any direct or indirect ownership interests, whether voting or non-voting, in the assets or income of a bank, corporation, partnership, limited liability partnership, sole proprietorship, trust, fund or any type of business vehicle, where indirect ownership interests include holdings of derivative instruments tied to equity interests and holdings in a bank, corporation, partnership, limited liability partnership, sole proprietorship, trust, fund or any type of business vehicle that issues ownership interests and is engaged principally in the business of investing in equity instruments;

(b) any instrument with the same structure as one approved for inclusion as Tier 1 Capital under Part VI or equivalent regulatory requirements of a bank regulatory agency other than the Authority;

(c) any instrument that in substance amounts to an obligation on the part of the issuer of the instrument and where one or more of the following conditions are satisfied:

(i) the issuer may defer the settlement of the obligation indefinitely;

(ii) the obligation requires, or permits at the discretion of the issuer, settlement by issuance of a fixed number of the equity shares of the issuer;

(iii) the obligation requires, or permits at the discretion of the issuer, settlement by issuance of a variable number of the equity shares of the issuer and ceteris paribus, any change in the value of the obligation is attributable to, comparable to, and in the same direction

as, the change in the value of a fixed number of the equity shares of the issuer[215];

(iv) the instrument is an instrument where the holder has the option to require that the obligation be settled in equity shares, but does not include any of the following instruments:

(A) a traded instrument where the Reporting Bank is able to demonstrate to the satisfaction of the Authority that the instrument is traded more like the debt of the issuer than its equity;

(B) a non-traded instrument where the Reporting Bank is able to demonstrate to the satisfaction of the Authority that the instrument should be treated as a debt exposure;

(d) any instrument, including any debt, security, partnership, derivative or vehicle, structured with the intent of conveying the economic substance of an ownership interest exposure as defined in sub-paragraph (a). This includes –

(i) any debt instrument which is convertible into equity at the option of the issuer or automatically by the terms of the instruments;

(ii) any equity that is recorded as a loan, arising from a debt to equity swap made as part of the orderly realisation or restructuring of the debt, where such instrument does not attract a lower regulatory capital requirement than would apply if the holding remained in the debt portfolio; and

(iii) any instrument with a return linked to that of equities, unless it is directly hedged by another equity exposure and the net position does not involve material risk;

(e) any perpetual instrument which is irredeemable or redeemable at the issuer's option, including any irredeemable perpetual preference shares or perpetual preference shares redeemable at the issuer's option;

(f) any debt holding where the Authority has, on a case-by-case basis, required the Reporting Bank to recharacterise as an equity exposure for the purposes of calculating regulatory capital requirements.

[215] For certain obligations that require or permit settlement by issuance of a variable number of the issuer's equity shares, the change in the monetary value of the obligation is equal to the change in the fair value of a fixed number of equity shares multiplied by a specified factor. Those obligations meet the conditions of paragraph 7.3.10(c)(iii) if both the factor and the referenced number of shares are fixed. For example, an issuer may be required to settle an obligation by issuing shares with a value equal to 3 times the appreciation in the fair value of 1,000 equity shares. That obligation is considered to be the same as an obligation that requires settlement by issuance of shares equal to the appreciation in the fair value of 3,000 equity shares.

7.3.11 For the purposes of paragraph 7.3.10(d)(iii), a Reporting Bank must, if required by the Authority, be able to demonstrate that the net position of hedged equity exposures does not involve material risk.

7.3.12 For the purposes of paragraph 7.3.10(d), the Reporting Bank must not include any instrument structured with the intent of conveying the economic substance of a debt holding or securitisation exposure.[216]

7.3.13 For the purposes of paragraph 7.3.10(c)(iv)(A) and (B), subject to approval by the Authority, a Reporting Bank may break down the risks associated with the instrument into an equity exposure and a debt exposure for the purposes of calculating regulatory capital requirements under the Notice. The Reporting Bank must, if required by the Authority, be able to demonstrate how it breaks down the risks into an equity exposure and a debt exposure.

7.3.14 For the purposes of paragraph 7.3.1(h), "regulatory capital instrument" refers to an instrument which is included in the regulatory capital of a financial institution that is subject to minimum prudential standards by a financial regulatory agency.

7.3.15 For the purposes of paragraph 7.3.1(i), in the case of an exposure to a small business, a Reporting Bank must ensure that the exposure also qualifies as a retail small business exposure in accordance with the internal written policies of the Reporting Bank.

7.3.16 For the purposes of determining the total exposure to any obligor or group of obligors in paragraph 7.3.1(i)(iii) and (iv), the Reporting Bank must ensure that the total exposure is gross of any CRM and comprises all exposures to that obligor or group of obligors under paragraph 7.3.1(i) and (j). For off-balance sheet exposures, the Reporting Bank must ensure the exposure is gross of any CRM and calculated after applying the relevant CCFs. In addition, the Reporting Bank must ensure that the basis of aggregation, is the same basis on which the Reporting Bank treats an obligor in a group of obligors for its risk management purposes, and must include exposures to related corporations of the obligor and exposures to the sole proprietors or partners in any of the entities in the group of obligors. However, the Reporting Bank may disaggregate its exposures to an obligor in a group of obligors if it has assessed that the disaggregated obligor has sufficient financial resources to fully service the obligor's liabilities and does not need to depend on any other entity within the group of obligors for financial assistance in meeting the liabilities. A Reporting Bank must not disaggregate based on product type alone.

7.3.17 For the purposes of paragraph 7.3.1(k)(ii), a Reporting Bank must categorise an SA(CR) exposure in the real estate asset class, under the regulatory real estate asset sub-class, if all of the following conditions are met:

(a) the exposure is –

(i) secured by a fully completed real estate;

(ii) to an individual and secured by RRE under construction or land upon which RRE would be constructed in Singapore, where the RRE is –

[216] For example, a Reporting Bank must treat perpetual preference shares redeemable at the holder's option and non-convertible term preference shares as debt exposures.

(A) an HDB flat, Design, Build and Sell Scheme (DBSS) flat, or Executive Condominium (EC);

(B) RRE constructed by a licensed housing developer as defined in section 2 of the Housing Developers (Control & Licensing) Act 1965, and licensed under Part II of the Housing Developers (Control & Licensing) Act 1965; or

(C) RRE that will be the primary residence of the obligor, with 4 or fewer units, and is not, in effect, indirectly financing ADC; or

(iii) to an individual and secured by RRE under construction or land upon which RRE would be constructed in a foreign country or jurisdiction and all of the following conditions are met:

(A) the bank regulatory agency in the foreign country or jurisdiction allows the SA(CR) exposure in the real estate asset class to an individual and secured by RRE under construction or land upon which RRE would be constructed in the foreign country or jurisdiction to be subject to the same capital treatment as an exposure secured by a fully completed real estate;

(B) the Reporting Bank has assessed and ascertained that –

(I) the sovereign or a PSE in the foreign country or jurisdiction has the legal powers and ability to ensure that the RRE under construction will be completed; or

(II) the SA(CR) exposure in the real estate asset class meets the condition in sub-paragraph (a)(ii)(C);

(C) the Reporting Bank has informed the Authority in writing of the assessment in sub-paragraph (a)(iii)(B), prior to categorising the exposure in the regulatory real estate asset sub-class, unless the Authority has directed that the Reporting Bank must seek prior approval for any such categorisations. To avoid doubt, the Authority may disallow the categorisation if the Authority is not satisfied with the assessment in sub-paragraph (a)(iii)(B);

(b) the Reporting Bank must obtain a written independent legal opinion[217], which concludes that any claim on the real estate securing the exposures is binding on all relevant parties and legally enforceable in all relevant countries or jurisdictions, including the country or jurisdiction whose law governs the collateral agreement and the country or jurisdiction whose law governs the transaction in relation to the collateral agreement;

[217] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, a Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating the exposure.

(c) the collateral agreement mentioned in sub-paragraph (b) and the legal process underpinning it provides for the Reporting Bank to realise the value of the property within a reasonable time frame;

(d) the Reporting Bank holds –

(i) a first charge over the real estate;

(ii) a junior charge over the real estate where all the senior charges ranking above the junior charge in question are held by one or more of the following persons:

(A) the Reporting Bank;

(B) CPF;

(C) HDB;

(D) JTC; or

[MAS Notice 637 (Amendment) 2024]

(iii) a junior charge over the real estate where another person or persons hold any senior charges, or a junior charge and senior charge over the real estate, with another person or persons holding an intermediate charge, where the junior charge provides the Reporting Bank a claim for the real estate that is legally enforceable and constitutes an effective mitigant for credit risk, and all of the following conditions are met:

(A) the Reporting Bank is able to initiate the sale of the real estate independently from other persons holding a charge over the real estate;

(B) in cases where the real estate is not sold by means of a public auction, persons holding the senior charge over the real estate are required to take reasonable steps to obtain a fair market value or the best price that may be obtained in the circumstances when exercising any power of sale on their own;

(C) for the purposes of sub-paragraph (d)(iii)(B), persons holding the senior charge to the real estate are not allowed to sell the real estate on their own at a discounted value in detriment of the junior charge;

(e) the obligor must meet the criteria set out in the Reporting Bank's underwriting policies for granting exposures secured by real estate, including the assessment of the ability of the obligor to repay;

(f) the Reporting Bank must ensure that its underwriting policies –

(i) define relevant metrics, including the debt service coverage ratio, and specify the corresponding relevant levels for the Reporting Bank's assessments;[218] and

(ii) define additional relevant metrics, including occupancy rate of the real estate, where the repayment of the exposure depends materially on the cash flows generated by the real estate;

(g) the Reporting Bank must calculate the LTV of the exposure as the amount of the loan divided by the value of the real estate, in accordance with all of the following:

(i) the value of the real estate must be based on a valuation that satisfies all of the following conditions:

(A) the valuation is appraised independently from the Reporting Bank's mortgage acquisition, loan processing and loan decision process;

(B) the valuation criteria is prudently conservative, and excludes expectations on price increases and reflects the value that is sustainable over the life of the exposure, taking into account the potential for the current market price to be significantly above this value;

(C) the valuation is not higher than the market value of the real estate where the market value can be determined or the effective purchase price of the real estate where the exposure is financing the purchase of the real estate;

(ii) the value of the real estate must be maintained at the valuation referred to in sub-paragraph (g)(i) measured at origination of the exposure, subject to all of the following:

(A) where the value of the real estate has declined since origination, including where there is an impairment to the value of the real estate, the Reporting Bank must apply the lower value;

(B) the Reporting Bank may make a upward adjustment to the value of the real estate, subsequent to an adjustment in sub-paragraph (g)(ii)(A), in accordance with an increase in the value of the real estate, provided that the value of the real estate does not exceed the valuation measured at origination;

(C) where the value of the real estate has unequivocally increased due to modifications made to the real estate, based on a subsequent formal valuation of the real estate by an

[218] The Reporting Bank should refer to Notice 645 on "Computations of Total Debt Servicing Ratio for Property Loans" and Notice 632 on "Residential Property Loans" published by the Authority and "Principles for sound residential mortgage underwriting practices" (April 2012) issued by the FSB for the setting of the appropriate metrics and levels.

independent accredited valuer, the Reporting Bank may apply the higher value;

(iii) the amount of loan must include the outstanding amount and any undrawn committed amount of the exposure, and be calculated gross of any specific or general allowances and before the application of CRM, subject to all of the following:

(A) a Reporting Bank may net pledged deposits from the amount of the loan in accordance with paragraphs 7.2.9 and 7.2.10 where the loans and deposits are covered by a qualifying on-balance sheet netting agreement, and the deposits are pledged unconditionally and irrevocably for the sole purpose of redemption of the exposure;

(B) in the case where a Reporting Bank has different exposures secured by the same real estate and the charges for these exposures are sequential in ranking order i.e. no intermediate charge from another person, the Reporting Bank must treat the different exposures as a single exposure for risk-weighting purposes and calculate the amount of the loan for the LTV computation by aggregating the amount of the loans of the different exposures;

(C) in the case where the Reporting Bank holds a junior charge over the real estate and another person or persons hold any senior charges pursuant to sub-paragraphs (d)(ii) and (d)(iii), the Reporting Bank must calculate the amount of loan for the LTV computation for the exposure secured by the junior charge in question as the aggregate of the amount of loan of the exposure secured by the junior charge in question and the amount of loans secured by other charges of equal or higher ranking than the junior charge in question, including senior charges held by one or more of the persons listed under sub-paragraph (d)(ii);

[MAS Notice 637 (Amendment) 2024]

(h) the value of the real estate must not depend materially on the performance of the obligor;

(i) the Reporting Bank must ensure that all the information required at the origination of the exposure and for monitoring purposes is properly documented, including information on the ability of the obligor to repay in sub-paragraph (e) and on the valuation of the property in sub-paragraph (g).

7.3.18 For the purposes of the condition in paragraph 7.3.17(a)(i), the Reporting Bank must treat forest and agricultural land as fully completed.

7.3.19 For the purposes of paragraph 7.3.17(a)(ii)(C), the Reporting Bank must assess whether the RRE is the primary residence of the obligor at the inception of the exposure

and update the assessment when the Reporting Bank becomes aware of any relevant information.

7.3.20 For the purposes of paragraph 7.3.17(a)(ii) and (iii), a Reporting Bank may treat an exposure to an entity other than an individual, as an exposure to the individual, if the Reporting Bank meets all the following conditions:

(a) the Reporting Bank has robust processes to ascertain that the exposure is structured to replicate the risk profile of an exposure to an individual;

(b) the Reporting Bank is able to identify and manage the legal risks that arise in such structures;

(c) the Reporting Bank ensures that the exposure is covered by a personal guarantee which is –

(i) provided by an individual who ultimately owns or controls the entity or an individual on whose behalf the exposure is established; and

(ii) meets the requirements in paragraph 4.1 of Annex 7H;

(d) the Reporting Bank is able to demonstrate to the satisfaction of the Authority that the conditions in sub-paragraphs (a), (b) and (c) are met, when requested to do so by the Authority.

7.3.21 For the purposes of the valuation referred to in paragraph 7.3.17(g)(i), a Reporting Bank must obtain a formal valuation by an independent accredited valuer at origination. For the purposes of paragraph 7.3.17(g), a Reporting Bank must assess the value of the real estate at least on an annual basis. The Reporting Bank must have in place policies addressing matters in relation to the value of the real estate in paragraph 7.3.17(g)(i) and (ii), including the frequency of revaluation, the procedures for revaluation under various market circumstances, and the revaluation methods and approaches to be used in each circumstance which may include statistical methods[219] or a formal revaluation by an independent accredited valuer.[220] A Reporting Bank must obtain a formal revaluation by an independent accredited valuer on the valuation of the real estate if the Reporting Bank assesses that the value of the real estate may have declined materially relative to general market prices or when a credit event[221] occurs.

7.3.22 For the purposes of paragraph 7.3.17(g)(iii)(C), if there is insufficient information to ascertain the ranking of the other charges, the Reporting Bank must assume that the other charges rank pari passu with the junior charge held by the Reporting Bank.

[219] For example, reference to property indices or sampling.

[220] A Reporting Bank should regularly backtest and benchmark statistical methods, where possible, so that the results obtained are robust. A Reporting Bank may also use statistical methods to identify real estate that may have declined in value and that may need revaluation. In general, a Reporting Bank should undertake a formal revaluation regularly.

[221] For example, default.

Sub-division 2: Credit Quality Grades and External Credit Assessments

7.3.23 A Reporting Bank must assign an SA(CR) exposure to a credit quality grade based on the external credit assessment that is applicable to the SA(CR) exposure in accordance with Tables 7M-1 and 7M-2, as the case may be.

7.3.24 A Reporting Bank must only use external credit assessments by recognised ECAIs. The Authority may impose conditions on the use of such external credit assessments.

7.3.25 A Reporting Bank must not consider an SA(CR) exposure as being rated from the perspective of the Reporting Bank unless the exposure has an external credit assessment by a recognised ECAI and the Reporting Bank has notified the Authority of its nomination to use the external credit assessments of that recognised ECAI for regulatory capital purposes. In other words, if an external credit assessment by an ECAI exists but –

(a) the ECAI is not a recognised ECAI; or

(b) the ECAI is a recognised ECAI that has not been nominated by the Reporting Bank,

the Reporting Bank must consider the exposure as being unrated from the perspective of the Reporting Bank.

7.3.26 Subject to paragraph 7.3.27, a Reporting Bank must perform due diligence to –

(a) ensure that the Reporting Bank has an adequate understanding, at origination and thereafter on a regular basis at least annually, of the risk profile and characteristics of its counterparties; and

(b) in cases where external credit assessments are used, assess the risk of the exposure for risk management purposes and whether the risk weight applied is appropriate and prudent.[222]

7.3.27 A Reporting Bank must assess the operating and financial performance levels and trends, through internal credit analysis or other analytics outsourced to a third party, for each counterparty. A Reporting Bank must be able to access information about its counterparties on a regular basis to complete due diligence analyses.[223] A Reporting Bank must be able to demonstrate to the Authority that its due diligence analyses are appropriate.[224]

7.3.28 Paragraphs 7.3.26 and 7.3.27 do not apply to SA(CR) exposures in the central government and central bank asset class, and PSE asset class.

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[222] The sophistication of the due diligence should be appropriate to the size and complexity of the Reporting Bank's activities.

[223] For SA(CR) exposures to entities belonging to consolidated groups, a Reporting Bank should perform due diligence, to the extent possible, at the legal entity level to which there is a SA(CR) exposure. In evaluating the repayment capacity of the legal entity, a Reporting Bank should take into account the support of the group and the potential for it to be adversely impacted by problems in the group.

[224] A Reporting Bank should have in place effective internal policies, processes, systems and controls to ensure that the appropriate risk weights are assigned to counterparties.

7.3.29 A Reporting Bank must use its nominated recognised ECAIs and their external credit assessments consistently for each type of exposure, for both risk-weighting and risk management purposes. A Reporting Bank must not cherry-pick the assessments provided by different recognised ECAIs or arbitrarily change its choice of recognised ECAIs for each type of exposure.

7.3.30 For a particular SA(CR) exposure –

(a) if there is only one external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank, the Reporting Bank must use that assessment to determine the risk weight of the SA(CR) exposure;

(b) if there are 2 external credit assessments by recognised ECAIs that have been nominated by the Reporting Bank, and the assessments map into different credit quality grades, the Reporting Bank must assign the SA(CR) exposure to the credit quality grade associated with the higher risk weight; or

(c) if there are 3 or more external credit assessments by recognised ECAIs that have been nominated by the Reporting Bank, and the assessments map into different credit quality grades, the Reporting Bank must use only the 2 assessments that correspond to the lowest risk weights, and –

(i) if the 2 credit assessments map into the same credit quality grade, the Reporting Bank must use that credit assessment to determine the risk weight of the SA(CR) exposure; and

(ii) if the 2 credit assessments map into different credit quality grades, the Reporting Bank must assign the SA(CR) exposure to the credit quality grade associated with the higher risk weight.

7.3.31 A Reporting Bank must not recognise the effects of CRM if such CRM is already reflected in the issue-specific external credit assessment of the SA(CR) exposure.

7.3.32 Where an SA(CR) exposure has an issue-specific external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank, a Reporting Bank must use such assessment to determine the risk weight of the SA(CR) exposure. Where an SA(CR) exposure does not have an issue-specific external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank –

(a) if there is an issue-specific external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank for another exposure to the same obligor which maps to a risk weight that is lower than that applicable to an unrated exposure, a Reporting Bank may use that issue-specific assessment to risk-weight the SA(CR) exposure only if the SA(CR) exposure ranks *pari passu* with or is senior to the exposure with the issue-specific assessment in all respects;

(b) if the obligor has an issuer external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank which maps to a risk weight that is lower than that applicable to an unrated exposure –

(i) if the SA(CR) exposure is a senior claim, a Reporting Bank may use the issuer assessment of the obligor to risk-weight the SA(CR) exposure; and

(ii) if the SA(CR) exposure is not a senior claim, the Reporting Bank must apply the risk weight that is applicable to an unrated exposure;

(c) if there is an issue-specific external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank for another exposure to the same obligor which maps to a risk weight that is equal to or higher than that applicable to an unrated exposure, a Reporting Bank must use that issue-specific assessment to risk-weight the SA(CR) exposure if the SA(CR) exposure ranks *pari passu* with or is subordinated to the exposure with the issue-specific assessment;

(d) if the obligor has an issuer external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank which maps to a risk weight that is equal to or higher than that applicable to an unrated exposure, a Reporting Bank must use the issuer assessment of the obligor to risk-weight the SA(CR) exposure if the SA(CR) exposure ranks *pari passu* with or is subordinated to the highest unsecured claim on the obligor;

(e) if the obligor has an issuer external credit assessment by a recognised ECAI that has been nominated by the Reporting Bank which maps to a risk weight that is lower than that applicable to an unrated exposure, and which only applies to a limited class of liabilities, a Reporting Bank may use the issuer assessment of the obligor only if the exposure falls within that class; or

(f) in all other cases, a Reporting Bank must apply the risk weight that is applicable to an unrated exposure.

7.3.33 A Reporting Bank must not use a short-term issue-specific external credit assessment to derive risk weights for other short-term claims to the same obligor, except where set out in paragraphs 7.3.54, 7.3.55, 7.3.56, 7.3.68, 7.3.69, 7.3.72 and 7.3.73. In all cases, a Reporting Bank must not use a short-term issue-specific external credit assessment to support a risk weight for an unrated long-term claim.

7.3.34 A Reporting Bank must not use external credit assessments for an obligor within a group to risk-weight other obligors within the same group.

7.3.35 Where an SA(CR) exposure is risk-weighted in accordance with paragraph 7.3.32(a) to (e), a Reporting Bank must use a foreign currency external credit assessment for an SA(CR) exposure denominated in foreign currency. A Reporting Bank may use a domestic currency external credit assessment, if separate, only if –

(a) the SA(CR) exposure is denominated in that domestic currency; or

(b) the SA(CR) exposure arises through a Reporting Bank's participation in a loan that has been extended, or is guaranteed against convertibility and transfer risk, by a qualifying MDB, in which case the domestic currency external credit assessment may be used instead of its foreign currency

external credit assessment. Where the SA(CR) exposure is guaranteed against convertibility and transfer risk by a qualifying MDB, the domestic currency external credit assessment may be used only for the portion of the SA(CR) exposure that is covered by such a guarantee. For the portion of the SA(CR) exposure that is not covered by such a guarantee, a Reporting Bank must use the foreign currency external credit assessment.

7.3.36 A Reporting Bank may use an external credit assessment to risk-weight an SA(CR) exposure only if the external credit assessment has taken into account and reflects the entire amount of credit risk exposure the Reporting Bank has with regard to all payments owed to it.[225]

7.3.37 A Reporting Bank must not use unsolicited external credit assessments to assign any SA(CR) exposure to a credit quality grade, unless –

(a) it has assessed the quality of the unsolicited external credit assessments that it intends to use and is satisfied that these are comparable in performance with solicited external credit assessments and maintains relevant records and documents to be made available to the Authority upon request; and

(b) it uses unsolicited external credit assessments consistently for each type of exposures, for both risk-weighting and risk management purposes.

7.3.38 The Authority may exclude the use of unsolicited external credit assessments by a recognised ECAI for the purposes of calculating regulatory capital requirements if the Authority is not satisfied that the unsolicited assessments are not inferior in quality to the general quality of solicited assessments. In the event the Authority is of the view that an ECAI uses unsolicited external credit assessments to put pressure on entities to obtain solicited external credit assessments, the Authority may refuse to recognise such ECAIs as eligible for capital adequacy purposes.

Sub-division 3: Risk Weights

7.3.39 Subject to Sub-division 4 of this Division, a Reporting Bank using the SA(CR) must[226] –

(a) for an SA(CR) exposure that is not defaulted, determine the applicable risk weight in accordance with paragraphs 7.3.40 to 7.3.108; and

(b) for an SA(CR) exposure that is defaulted, determine the applicable risk weight in accordance with paragraphs 7.3.109 to 7.3.111.

[225] For example, if a Reporting Bank is owed both principal and interest, the Reporting Bank must ensure that the assessment fully takes into account and reflects the credit risk associated with repayment of both principal and interest.

[226] This includes an SA(CR) exposure to a lessee equivalent to the discounted lease payment and an SA(CR) exposure to the residual value of the leased assets equivalent to the estimate of the residual value reflected in the balance sheet of the Reporting Bank, as calculated in accordance with paragraph 7.2.7.

Cash Items

7.3.40 Subject to paragraph 7.3.41, a Reporting Bank must apply a 0% risk weight to any SA(CR) exposure categorised as a cash item.

7.3.41 A Reporting Bank must apply a 20% risk weight to cash equivalents, including cheques, drafts and other items drawn on other banks, merchant banks or finance companies that are either payable immediately upon presentation or that are in the process of collection.

Central Government and Central Bank Asset Class

7.3.42 Subject to paragraphs 7.3.43 to 7.3.46, a Reporting Bank must risk-weight any SA(CR) exposure in the central government and central bank asset class in accordance with Table 7-1.

Table 7-1: Risk Weights for the Central Government and Central Bank Asset Class

Credit Quality Grade	1	2	3	4	5	6	Unrated
Risk Weight	0%	20%	50%	100%	100%	150%	100%

7.3.43 A Reporting Bank must apply a 0% risk weight to any SA(CR) exposure to the Singapore Government or the Authority which is denominated in Singapore dollars and funded by liabilities denominated in Singapore dollars.

7.3.44 For any SA(CR) exposure to any other central government or central bank which is denominated and funded by liabilities denominated in the local currency of that country or jurisdiction, a Reporting Bank may apply such risk weights as may be specified by the bank regulatory agency of that country or jurisdiction.

7.3.45 To avoid doubt, where applicable, a Reporting Bank may apply the risk weights specified in paragraphs 7.3.43 and 7.3.44 as the risk weight applicable to the eligible protection provider or eligible financial collateral pursuant to Sub-division 4 of this Division.

7.3.46 A Reporting Bank must apply a 0% risk weight to any SA(CR) exposure to the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism or the European Financial Stability Facility.

PSE Asset Class

7.3.47 Subject to paragraph 7.3.48, a Reporting Bank must risk-weight any SA(CR) exposure in the PSE asset class in accordance with Table 7-2.

Table 7-2: Risk Weights for the PSE Asset Class

Credit Quality Grade	1	2	3	4	5	6	Unrated
Risk Weight	20%	50%	50%	100%	100%	150%	50%

7.3.48 A Reporting Bank must risk-weight any SA(CR) exposure in the PSE asset class in accordance with Table 7-3 if –

(a) in the case of a PSE in Singapore, the exposure to the PSE is treated as an exposure to the Singapore Government and the Singapore Government has a credit quality grade of "1" or "2" as set out in Table 7M-1; and

(b) in the case of a PSE outside Singapore, the bank regulatory agency of the country or jurisdiction where the PSE is established has exercised the national discretion to treat the exposure to the PSE as an exposure to the central government and the central government of the country or jurisdiction of that PSE has a credit quality grade of "1" or "2" as set out in Table 7M-1.

Table 7-3: Risk Weights for Exposures to PSEs where the Central Government has a Credit Quality Grade of "1" or "2"

Credit Quality Grade	1	2	3	4	5	6	Unrated
Risk Weight where the Central Government has a Credit Quality Grade of "1"	0%	0%	0%	100%	100%	150%	0%
Risk Weight where the Central Government has a Credit Quality Grade of "2"	20%	20%	20%	100%	100%	150%	20%

7.3.49 For the purposes of paragraph 7.3.48(a), an exposure to a PSE in Singapore is treated as an exposure to the Singapore Government only if the exposure is an exposure to a statutory board in Singapore (other than the Authority).

MDB Asset Class

7.3.50 Subject to paragraph 7.3.51, a Reporting Bank must risk-weight any SA(CR) exposure in the MDB asset class in accordance with Table 7-4.

Table 7-4: Risk Weights for the MDB Asset Class

Credit Quality Grade	1	2	3	4	5	6	Unrated
Risk Weight	20%	30%	50%	100%	100%	150%	50%

7.3.51 A Reporting Bank must apply a 0% risk weight to any SA(CR) exposure to a qualifying MDB.

Bank Asset Class

7.3.52 Subject to paragraphs 7.3.54 to 7.3.57, for any rated SA(CR) exposure in the bank asset class, a Reporting Bank must apply the risk weight determined in accordance with Table 7-5. Short-term exposures in Table 7-5 refer to either of the following:

(a) exposures with an original maturity of 3 months or less;

(b) exposures that arise from the movement of goods across national borders with an original maturity of 6 months or less[227].

Table 7-5: Risk Weights for the Bank Asset Class (Rated)

Credit Quality Grade	1	2	3	4	5	6
Risk Weight	20%	30%	50%	100%	100%	150%
Risk Weight for Short-Term Exposures	20%	20%	20%	50%	50%	150%

7.3.53 For the purposes of risk-weighting under paragraph 7.3.52, a Reporting Bank may use external credit assessments that incorporate assumptions of implicit government support up to 31 December 2028, unless the Authority requires otherwise. With effect from 1 January 2029, a Reporting Bank must not use external credit assessments that incorporate assumptions of implicit government support, unless the external credit assessments refer to a public bank owned by its government. Where an external credit assessment which does not incorporate assumptions of implicit government support is unavailable, a Reporting Bank must risk-weight the SA(CR) exposure as an exposure that does not have an external credit assessment by a recognised ECAI under paragraph 7.3.58. For the purposes of this paragraph, implicit government support refers to the notion that the government would act to prevent bank creditors from incurring losses in the event of a bank default or bank distress.

7.3.54 A Reporting Bank must risk-weight any short-term SA(CR) exposure[228] in the bank asset class with an issue-specific external credit assessment by a recognised ECAI, in accordance with Table 7-6.

Table 7-6: Risk Weights for Short-Term SA(CR) Exposures in the Bank Asset Class with Issue-Specific External Credit Assessments

Short-Term Credit Quality Grade	I	II	III	IV
Risk Weight	20%	50%	100%	150%

7.3.55 If a rated short-term SA(CR) exposure in the bank asset class with an issue-specific external credit assessment –

(a) attracts a risk weight of 50% or 100%, then the Reporting Bank must apply a risk weight of not lower than 100% to any unrated short-term SA(CR) exposure to the same entity; or

(b) attracts a risk weight of 150%, then the Reporting Bank must apply a risk weight of 150% to any unrated SA(CR) exposure (whether long-term or short-term) to the same entity, unless the Reporting Bank uses recognised CRM for such exposure.

7.3.56 A Reporting Bank must comply with all of the following requirements when determining whether to apply the general preferential treatment for short-term exposures

[227] This may include on-balance sheet exposures such as loans and off-balance sheet exposures such as self-liquidating trade-related contingent items.

[228] An example of a short term SA(CR) exposure is a particular issuance of commercial paper.

in the bank asset class as described in paragraph 7.3.52, or the treatment for issue-specific short-term external credit assessments as set out in paragraph 7.3.54:

(a) the Reporting Bank must apply the general preferential treatment for short-term exposures to all exposures in the bank asset class of up to 3 months original maturity when there is no issue-specific short-term external credit assessment for any short-term exposure to the obligor;

(b) if there is an issue-specific short-term external credit assessment for a short-term exposure to the obligor which maps to a risk weight that is lower or identical to that derived from the general preferential treatment, the Reporting Bank must use the issue-specific short-term external credit assessment for only that specific short-term exposure and apply the general preferential treatment to other short-term exposures to the same obligor;

(c) if there is an issue-specific short-term external credit assessment for a short-term exposure to the obligor which maps to a higher risk weight than that derived from the general preferential treatment, the Reporting Bank must not use the general short-term preferential treatment. The Reporting Bank must ensure that all unrated short-term exposures receive the same risk-weighting as that implied by the issue-specific short-term external credit assessment.

7.3.57 A Reporting Bank must perform due diligence to ensure that any external credit assessment by a recognised ECAI appropriately and conservatively reflects the creditworthiness of the SA(CR) exposure in the bank asset class. If the due diligence analysis reflects higher risk characteristics than that implied by the credit quality grade of the exposure, the Reporting Bank must assign a risk weight corresponding to at least one credit quality grade higher than that determined in accordance with Table 7-5 or Table 7-6, as the case may be. The Reporting Bank must ensure that the due diligence analysis does not result in the application of a lower risk weight than that determined in accordance with Table 7-5 or Table 7-6, as the case may be.

7.3.58 Subject to paragraph 7.3.59, for any SA(CR) exposure in the bank asset class that does not have an external credit assessment by a recognised ECAI, a Reporting Bank must classify the exposure into one of the 3 assessment grades in accordance with paragraph 7.3.60 and apply the risk weight determined in accordance with Table 7-7. Short-term exposures in Table 7-7 refer to either of the following:

(a) exposures with an original maturity of 3 months or less;

(b) exposures that arise from the movement of goods across national borders with an original maturity of 6 months or less[229].

[229] This may include on-balance sheet exposures such as loans and off-balance sheet exposures such as self-liquidating trade-related contingent items.

Table 7-7: Risk Weights for the Bank Asset Class (Unrated)

Credit risk assessment grade	Grade A	Grade B	Grade C
Risk Weight	40%	75%	150%
Risk Weight for Short-Term Exposures	20%	50%	150%

7.3.59 A Reporting Bank may apply a 30% risk weight, instead of a 40% risk weight, to an SA(CR) exposure in the bank asset class that does not have an external credit assessment by a recognised ECAI and meets the criteria in paragraph 7.3.60(a) for Grade A classification, provided that, based on the latest available information –

(a) the counterparty has a Common Equity Tier 1 ratio which meets or exceeds 14%; and

(b) the counterparty has a Tier 1 leverage ratio which meets or exceeds 5%.

7.3.60 A Reporting Bank must classify an SA(CR) exposure in the bank asset class that does not have an external credit assessment by a recognised ECAI into one of the 3 assessment grades, based on the following criteria:

(a) *Grade A*

(i) Grade A refers to exposures to counterparties with adequate capacity to meet their financial commitments (including repayments of principal and interest) in a timely manner, for the projected life of the assets or exposures, and irrespective of economic cycles and business conditions.

(ii) Subject to paragraph 7.3.61, a Reporting Bank must classify a counterparty into Grade A where the counterparty meets or exceeds the published minimum regulatory requirements and buffers established by its national regulatory agency as implemented in the country or jurisdiction where it is incorporated, except for entity-specific minimum regulatory requirements or buffers that may be imposed through supervisory actions and are not made public[230]. If such minimum regulatory requirements and buffers (other than entity-specific minimum requirements or buffers) are not publicly disclosed or otherwise made available to the Reporting Bank, the Reporting Bank must classify the counterparty as Grade B or Grade C. For the purposes of this paragraph, published minimum regulatory requirements exclude liquidity standards.

(b) *Grade B*

(i) Grade B refers to exposures to counterparties which are subject to substantial credit risk, including exposures for which the counterparty's repayment capacity is dependent on stable or favourable economic or business conditions.

[230] For example, capital add-ons under Pillar 2.

(ii) A Reporting Bank must classify a counterparty into Grade B where the counterparty meets or exceeds the published minimum regulatory requirements (excluding buffers) established by its national regulatory agency as implemented in the country or jurisdiction where it is incorporated, except for entity-specific minimum regulatory requirements or buffers that may be imposed through supervisory actions and are not made public[231]. If such minimum regulatory requirements are not publicly disclosed or otherwise made available to the Reporting Bank, the Reporting Bank must classify the counterparty as Grade C. For the purposes of this paragraph, published minimum regulatory requirements exclude liquidity standards.

(c) *Grade C*

(i) Grade C refers to higher credit risk exposures to counterparties with material default risks and limited margins of safety, and for which adverse business, financial, or economic conditions are very likely to lead, or have led, to an inability to meet their financial commitments.

(ii) At a minimum, if any of the following conditions are met, a Reporting Bank must classify the exposure as Grade C:

(A) the counterparty does not meet the published minimum regulatory requirements as set out in sub-paragraph (b)(ii);

(B) where in compliance with the legislation governing the preparation of the counterparty's financial statements, in the country or jurisdiction in which the counterparty is established, the counterparty has prepared audited financial statements and the external auditor has issued an adverse audit opinion or has expressed doubt about the counterparty's ability to continue as a going concern in its financial statements or audited reports within the previous 12 months.

(iii) In all other cases where none of the conditions in sub-paragraph (c)(ii) is met, a Reporting Bank must classify an exposure to a counterparty as Grade C where the Reporting Bank assesses that the counterparty meets the criteria in sub-paragraph (c)(i).

7.3.61 For the purposes of paragraph 7.3.60, if, as part of its due diligence, a Reporting Bank assesses that the counterparty does not meet the definition of Grade A in paragraph 7.3.60(a), the Reporting Bank must classify the exposure as Grade B, unless it meets the criteria for Grade C in paragraph 7.3.60(c).

7.3.62 Subject to paragraph 7.3.63, for any SA(CR) exposure in the bank asset class that does not have an external credit assessment by a recognised ECAI, a Reporting Bank must apply the risk weight determined in accordance with Table 7-7 or the risk weight that is applicable to an SA(CR) exposure to the central government of the country or jurisdiction

[231] For example, capital add-ons under Pillar 2.

in which the counterparty is incorporated, whichever is higher, where all of the following conditions are met:

(a) the SA(CR) exposure is not denominated in the local currency of the country or jurisdiction in which the counterparty is incorporated;

(b) if the SA(CR) exposure is booked in a branch of the counterparty which is located in a country or jurisdiction other than the country or jurisdiction in which the counterparty is incorporated, the SA(CR) exposure is not denominated in the local currency of the country or jurisdiction where the branch is located.

7.3.63 Paragraph 7.3.62 does not apply to self-liquidating trade-related contingent items that arise from the movement of goods with an original maturity of below one year.

Covered Bond Asset Class

7.3.64 A Reporting Bank must risk-weight any SA(CR) exposure in the covered bond asset class that has an issue-specific external credit assessment by a recognised ECAI in accordance with Table 7-8.

Table 7-8: Risk Weights for Exposures in the Covered Bond Asset Class with Issue-Specific External Credit Assessments

Credit Quality Grade	1	2	3	4	5	6
Risk Weight	10%	20%	20%	50%	50%	100%

7.3.65 A Reporting Bank must risk-weight any SA(CR) exposure in the covered bond asset class that does not fall within paragraph 7.3.64 in accordance with Table 7-9, based on the risk weight applicable to the bank or mortgage institution issuing the covered bond (whether directly or through an SPV) as determined in accordance with Table 7-5 or Table 7-7, as the case may be.

Table 7-9: Risk Weights for Exposures in the Covered Bond Asset Class without Issue-Specific External Credit Assessments

Risk weight applicable to the bank or mortgage institution	20%	30%	40%	50%	75%	100%	150%
Risk Weight	10%	15%	20%	25%	35%	50%	100%

7.3.66 A Reporting Bank must perform due diligence to ensure that any external credit assessment by a recognised ECAI appropriately and conservatively reflects the creditworthiness of the covered bond and the issuing bank or mortgage institution. If the due diligence analysis reflects higher risk characteristics than that implied by the credit quality grade of the exposure, the Reporting Bank must assign a risk weight corresponding to at least one credit quality grade higher than that determined in accordance with Table 7-8 or Table 7-9, as the case may be. A Reporting Bank must ensure that due diligence analysis does not result in the application of a lower risk weight than that determined in accordance with Table 7-8 or Table 7-9, as the case may be.

Corporate Asset Class

General Corporate Asset Sub-Class

7.3.67 Subject to paragraphs 7.3.68 and 7.3.69, a Reporting Bank must risk-weight any SA(CR) exposure in the general corporate asset sub-class in accordance with Table 7-10.

Table 7-10: Risk Weights for the General Corporate Asset Sub-Class

Credit Quality Grade	1	2	3	4	5	6	Unrated
Risk Weight	20%	50%	75%	100%	150%	150%	100%

7.3.68 A Reporting Bank must risk-weight any short-term SA(CR) exposure in the general corporate asset sub-class with an issue-specific external credit assessment by a recognised ECAI in accordance with Table 7-11.

Table 7-11: Risk Weights for Short-Term SA(CR) Exposures in the General Corporate Asset Sub-Class with Issue-Specific External Credit Assessments

Short-Term Credit Quality Grade	I	II	III	IV
Risk Weight	20%	50%	100%	150%

7.3.69 If a short-term SA(CR) exposure in the general corporate asset sub-class with an issue-specific external credit assessment –

(a) attracts a risk weight of 50% or 100%, then the Reporting Bank must apply a risk weight of not lower than 100% to any unrated short-term SA(CR) exposure to the same corporate entity; or

(b) attracts a risk weight of 150%, then the Reporting Bank must apply a risk weight of 150% to any unrated SA(CR) exposure (whether long-term or short-term) to the same entity, unless the Reporting Bank recognises CRM for such exposure.

7.3.70 A Reporting Bank must perform due diligence to ensure that any external credit assessment by a recognised ECAI appropriately and conservatively reflects the creditworthiness of the SA(CR) exposure in the general corporate asset sub-class. If the due diligence analysis reflects higher risk characteristics than that implied by the credit quality grade of the exposure, the Reporting Bank must assign a risk weight corresponding to at least one credit quality grade higher than that determined in accordance with Table 7-10 or Table 7-11, as the case may be. A Reporting Bank must ensure that due diligence analysis does not result in the application of a lower risk weight than that determined in accordance with Table 7-10 or Table 7-11, as the case may be.

Corporate SME Asset Sub-Class

7.3.71 Subject to paragraphs 7.3.72 and 7.3.73, a Reporting Bank must risk-weight any SA(CR) exposure in the corporate SME asset sub-class in accordance with Table 7-12.

Table 7-12: Risk Weights for the Corporate SME Asset Sub-Class

Credit Quality Grade	1	2	3	4	5	6	Unrated
Risk Weight	20%	50%	75%	100%	150%	150%	85%

7.3.72 A Reporting Bank must risk-weight any short-term SA(CR) exposure in the corporate SME asset sub-class with an issue-specific external credit assessment by a recognised ECAI in accordance with Table 7-13.

Table 7-13: Risk Weights for Short-Term SA(CR) Exposures in the Corporate SME Asset Sub-Class with Issue-Specific External Credit Assessments

Short-Term Credit Quality Grade	I	II	III	IV
Risk Weight	20%	50%	100%	150%

7.3.73 If a short-term SA(CR) exposure in the corporate SME asset sub-class with an issue-specific external credit assessment –

(a) attracts a risk weight of 50% or 100%, then the Reporting Bank must apply a risk weight of not lower than 100% to any unrated short-term SA(CR) exposure to the same entity; or

(b) attracts a risk weight of 150%, then the Reporting Bank must apply a risk weight of 150% to any unrated SA(CR) exposure (whether long-term or short-term) to the same entity, unless the Reporting Bank recognises CRM for such exposure.

7.3.74 A Reporting Bank must perform due diligence to ensure that any external credit assessment by a recognised ECAI appropriately and conservatively reflects the creditworthiness of the SA(CR) exposure in the corporate SME asset sub-class. If the due diligence analysis reflects higher risk characteristics than that implied by the credit quality grade of the exposure, the Reporting Bank must assign a risk weight corresponding to at least one credit quality grade higher than that determined in accordance with Table 7-12 or Table 7-13, as the case may be. A Reporting Bank must ensure that the due diligence analysis does not result in the application of a lower risk weight than that determined in accordance with Table 7-12 or Table 7-13, as the case may be.

Specialised Lending Asset Sub-Class

7.3.75 A Reporting Bank must risk-weight any SA(CR) exposure in the specialised lending asset sub-class that has an issue-specific external credit assessment by a recognised ECAI in accordance with Table 7-14. The Reporting Bank must not use issuer external credit assessments.

Table 7-14: Risk Weights for the Specialised Lending Asset Sub-Class (Rated)

Credit Quality Grade	1	2	3	4	5	6
Risk Weight	20%	50%	75%	100%	150%	150%

7.3.76 A Reporting Bank must risk-weight any SA(CR) exposure in the specialised lending asset sub-class that does not have an issue-specific external credit assessment by a recognised ECAI in accordance with Table 7-15.

Table 7-15: Risk Weights for the Specialised Lending Asset Sub-Class (Unrated)

Condition	Risk Weight
Where the project finance exposure is in the operational phase as defined in paragraph 7.3.77(a) and is a high quality project finance exposure as defined in paragraph 7.3.77(b)	80%
Where the project finance exposure is in the operational phase as defined in paragraph 7.3.77(a), but is not a high quality project finance exposure as defined in paragraph 7.3.77(b)	100%
Any other project finance exposure	130%
Object finance exposures and commodities finance exposures	100%

7.3.77 For the purposes of determining the risk weight of a project finance exposure pursuant to paragraph 7.3.76 –

(a) operational phase refers to the phase of a project finance exposure in which the entity that was created specifically to finance or operate physical assets or both has –

(i) a positive net cash flow that is sufficient to cover any remaining contractual obligation; and

(ii) declining long-term debt; and

(b) high quality project finance exposure refers to a project finance exposure in which the entity that was created specifically to finance or operate physical assets or both meets all of the following conditions:

(i) the Reporting Bank assesses that the entity is able to meet its financial commitments in a timely manner and that the entity's ability to do so is robust against adverse changes in the economic cycle and business conditions;

(ii) the entity is restricted from acting to the detriment of the creditors[232];

(iii) the entity has sufficient reserve funds or other financial arrangements to cover the contingency funding and working capital requirements of the project;

(iv) the entity's revenues are availability-based or subject to a rate-of-return regulation or take-or-pay contract;

[232] For example, the entity is not able to issue additional debt without the consent of existing creditors.

(v) the entity's revenue depends on one main counterparty, where an exposure to the main counterparty –

(A) is categorised by the Reporting Bank under, or if the main counterparty were an obligor of the Reporting Bank, would be categorised by the Reporting Bank under –

(I) the central government and central bank asset class and is an exposure to a central government;

(II) the PSE asset class; or

(III) the corporate asset class; and

(B) qualifies, or if the main counterparty were an obligor of the Reporting Bank, would have qualified for a risk weight of 80% or lower under paragraphs 7.3.42 to 7.3.44, 7.3.46, 7.3.47 to 7.3.48, Table 7-10, or Table 7-12;

(vi) the contractual provisions governing the exposure to the entity provide for a high degree of protection for the Reporting Bank in case of a default of the entity;

(vii) the Reporting Bank is protected from the losses resulting from the termination of the project by the main counterparty or at least one counterparty, under contractual provisions governing the exposure to the entity, where an exposure to the counterparty –

(A) is categorised by the Reporting Bank under, or if the counterparty were an obligor of the Reporting Bank, would be categorised by the Reporting Bank under –

(I) the central government and central bank asset class and is an exposure to a central government;

(II) the PSE asset class, or

(III) the corporate asset class; and

(B) qualifies, or if the counterparty were an obligor of the Reporting Bank, would have qualified for a risk weight of 80% or lower under paragraphs 7.3.42 to 7.3.44, 7.3.46, 7.3.47 to 7.3.48, Table 7-10, or Table 7-12;

(viii) all assets and contracts necessary to operate the project have been pledged to the Reporting Bank to the extent permitted by applicable law;

(ix) the Reporting Bank may assume control of the project finance entity in case of its default.

7.3.78 For the purposes of paragraph 7.3.77(a)(ii), the Reporting Bank may consider the entity that was created specifically to finance or operate physical assets or both to have a declining long-term debt if there is an overall decline in the long-term debt between the start date of the project and the point of evaluation. For the purposes of this paragraph, long term debt refers to a debt with original maturity of one year or more.

7.3.79 For the purposes of paragraph 7.3.77(b)(iv), availability-based revenues mean that –

(a) once construction is completed, the entity is entitled to payments from its contractual counterparties, as long as contract conditions are fulfilled; and

(b) the payments referred to in sub-paragraph (a) are –

(i) sized to cover operating and maintenance costs, debt service costs and equity returns as the project finance entity operates the project; and

(ii) not subject to swings in demand[233], and are adjusted typically only for lack of performance or lack of availability of the asset to the public.

Equity and Subordinated Debt Asset Class

7.3.80 Subject to paragraphs 7.3.82 and 7.3.84, a Reporting Bank must risk-weight any SA(CR) exposure in the equity and subordinated debt asset class as follows:

(a) 400% risk weight to speculative unlisted equity exposures as set out in paragraph 7.3.81;

(b) 250% risk weight to all other equity exposures;

(c) 150% risk weight to subordinated debt and regulatory capital instruments which are not equities.

7.3.81 Speculative unlisted equity exposures refers to equity investments in unlisted companies that are –

(a) invested for short-term resale purposes; or

(b) venture capital or similar investments[234],

and excludes investments in unlisted equities of corporate clients with which the Reporting Bank has or intends to establish a long-term business relationship and debt-equity swaps for corporate restructuring purposes.

7.3.82 A Reporting Bank must apply a risk weight of 1250% to –

[233] For example, traffic levels.

[234] Venture capital or similar investments are typically investments that are subject to price volatility and are acquired in anticipation of significant future gains.

(a) all of the following:

(i) the portion of an individual equity exposure held in an unconsolidated major stake company that is not a financial institution, which exceeds 15% of the Reporting Bank's Eligible Total Capital;

(ii) the portion of an individual subordinated debt held in an unconsolidated major stake company that is not a financial institution, which exceeds 15% of the Reporting Bank's Eligible Total Capital; and

(b) the portion of the sum of –

(i) the aggregate of the Reporting Bank's equity exposures held in unconsolidated major stake companies that are not financial institutions; and

(ii) the aggregate of the Reporting Bank's subordinated debt held in unconsolidated major stake companies that are not financial institutions;

which exceeds 60% of the Reporting Bank's Eligible Total Capital.

7.3.83 For the purposes of paragraph 7.3.82(b), a Reporting Bank must –

(a) calculate –

(i) for each individual equity exposure held in an unconsolidated major stake company that is not a financial institution, the portion of the exposure that does not exceed 15% of the Reporting Bank's Eligible Total Capital; and

(ii) for each individual subordinated debt held in an unconsolidated major stake company that is not a financial institution, the portion of the exposure that does not exceed 15% of the Reporting Bank's Eligible Total Capital;

(b) aggregate the amounts calculated in sub-paragraphs (a)(i) and (a)(ii);

(c) calculate the portion of the sum of the exposures in paragraph 7.3.82(b)(i) and (ii) which exceeds 60% of the Reporting Bank's Eligible Total Capital;

(d) calculate the ratio of the amount calculated in sub-paragraph (c) to the amount calculated in sub-paragraph (b); and

(e) for each individual equity exposure held in an unconsolidated major stake company that is not a financial institution and each individual subordinated debt held in an unconsolidated major stake company that is not a financial institution, apply a risk weight of 1250% on each amount calculated in sub-paragraphs (a)(i) and (a)(ii), multiplied by the ratio calculated in sub-paragraph (d).

7.3.84 To avoid doubt, a Reporting Bank must apply the risk weights set out in paragraph 7.3.80 to an SA(CR) exposure in the equity and subordinated debt asset class that is not subject to a 1250% risk weight under paragraph 7.3.82.

7.3.85 A Reporting Bank must subject the risk weights set out in paragraph 7.3.80(a) and (b) to a phase-in arrangement from 1 July 2024, as set out in Table 7-16.

Table 7-16: Phase-in of risk weights for equity exposures from 1 July 2024

	Risk weight for speculative unlisted equity exposures	Risk weight for all other equity exposures
From 1 July 2024	160%	130%
From 31 December 2025	220%	160%
From 31 December 2026	280%	190%
From 31 December 2027	340%	220%
From 31 December 2028	400%	250%

Regulatory Retail Asset Class

7.3.86 A Reporting Bank must risk-weight any SA(CR) exposure in the regulatory retail asset class in accordance with Table 7-17.

Table 7-17: Risk Weights for the Regulatory Retail Asset Class

Asset Sub-class	Risk Weight
Regulatory retail transactor	45%
Regulatory retail non-transactor	75%

Other Retail Asset Class

7.3.87 A Reporting Bank must apply a 100% risk weight to any SA(CR) exposure in the other retail asset class.

Real Estate Asset Class

ADC Asset Sub-Class

7.3.88 Subject to paragraph 7.3.89, a Reporting Bank must risk-weight any SA(CR) exposure in the ADC asset sub-class at 150%.

7.3.89 A Reporting Bank may risk-weight any SA(CR) exposure secured by RRE in the ADC asset sub-class at 100% if the SA(CR) exposure meets all of the following:

(a) prudential underwriting standards in paragraph 7.3.17(f);

(b) LTV of the exposure, calculated as the amount of the loan divided by the value of the real estate, is less than or equal to 80%, with the value of the real estate based on a valuation that is calculated in accordance with all of the following:

(i) the valuation is based on the gross development value of the real estate development and the real estate development is appraised independently from the Reporting Bank's mortgage acquisition, loan processing and loan decision process;

(ii) the valuation criteria is prudently conservative, and excludes expectations on price increases and reflects the value that is sustainable over the life of the exposure, taking into account the potential for the current market price to be significantly above this value;

(iii) the valuation is not higher than the market value of the real estate where the market value can be determined.

7.3.90 For the purposes of the valuation referred to in paragraph 7.3.89(b), a Reporting Bank must obtain a formal valuation by an independent accredited valuer at origination. For the purposes of paragraph 7.3.89(b), a Reporting Bank must assess the value of the real estate at least on an annual basis. The Reporting Bank must have in place policies addressing matters in relation to the value of the real estate in paragraph 7.3.89(b), including the frequency of revaluation, the procedures for revaluation under various market circumstances, and the revaluation methods and approaches to be used in each circumstance which may include statistical methods[235] or a formal revaluation by an independent accredited valuer.[236] A Reporting Bank must obtain a formal revaluation by an independent accredited valuer on the valuation of the real estate if the Reporting Bank assesses that the value of the real estate may have declined materially relative to general market prices or when a credit event[237] occurs.

Regulatory Real Estate Asset Sub-Class[238]

7.3.91 Subject to paragraph 7.3.96, a Reporting Bank must risk-weight any regulatory RRE exposure which is classified by the Reporting Bank as not materially dependent on cash flows generated by the real estate pursuant to paragraphs 7.3.100 and 7.3.101, in accordance with Table 7-18.

Table 7-18: Risk Weights for regulatory RRE exposures which are not materially dependent on the cash flows generated by the real estate

LTV	LTV≤50%	50%<LTV ≤60%	60%<LTV ≤80%	80%<LTV ≤90%	90%<LTV ≤100%	LTV>100%
Risk Weight	20%	25%	30%	40%	50%	70%

235 For example, reference to property indices or sampling.

236 A Reporting Bank should regularly backtest and benchmark statistical methods, where possible, so that the results obtained are robust. A Reporting Bank may also use statistical methods to identify real estate that may have declined in value and that may need revaluation. In general, a Reporting Bank should undertake a formal revaluation regularly.

237 For example, default.

238 The Authority may from time to time specify a higher risk weight for a particular exposure or group of exposures, taking into account, among other things, the default experience and other factors such as market price stability.

7.3.92 Subject to paragraph 7.3.96, a Reporting Bank must risk-weight any regulatory RRE exposure which is classified by the Reporting Bank as materially dependent on cash flows generated by the real estate pursuant to paragraphs 7.3.100 and 7.3.101, in accordance with Table 7-19.

Table 7-19: Risk Weights for regulatory RRE exposures which are materially dependent on cash flows generated by the real estate

LTV	LTV≤50%	50%<LTV ≤60%	60%<LTV ≤80%	80%<LTV ≤90%	90%<LTV ≤100%	LTV>100%
Risk Weight	30%	35%	45%	60%	75%	105%

7.3.93 Subject to paragraph 7.3.96, a Reporting Bank must risk-weight any regulatory CRE exposure which is classified by the Reporting Bank as not materially dependent on cash flows generated by the real estate pursuant to paragraph 7.3.100, in accordance with Table 7-20.

Table 7-20: Risk Weights for regulatory CRE exposures which are not materially dependent on cash flows generated by the real estate

LTV	LTV≤60%	LTV>60%
Risk Weight	Min. (60%, Risk Weight of counterparty)	Risk Weight of counterparty

7.3.94 For the purposes of Table 7-20, the risk weight of the counterparty refers to –

(a) in the case of an exposure to an individual or group of individuals, 75%;

(b) in the case of an exposure to a small business, 85%; and

(c) in all other cases, the risk weight that is applicable to an unsecured exposure to the obligor.

7.3.95 Subject to paragraph 7.3.96, a Reporting Bank must risk-weight any regulatory CRE exposure which is classified by the Reporting Bank as materially dependent on cash flows generated by the real estate pursuant to paragraph 7.3.100 in accordance with Table 7-21.

Table 7-21: Risk Weights for regulatory CRE exposures which are materially dependent on cash flows generated by the real estate

LTV	LTV≤60%	60%<LTV≤80%	LTV>80%
Risk Weight	70%	90%	110%

7.3.96 A Reporting Bank must apply a multiplier of 1.25 to the applicable risk weight of any regulatory real estate exposure against a junior charge, unless the applicable risk weight of the regulatory real estate exposure against a junior charge corresponds to the lowest LTV bucket in Table 7-18, 7-19, 7-20 or 7-21. The Reporting Bank must subject the resulting risk weight after applying the multiplier of 1.25 to a cap based on the applicable risk weight of the regulatory real estate exposure assuming that the exposure is in the other real estate asset sub-class.

7.3.97 A Reporting Bank which has bought eligible credit protection or has taken eligible financial collateral for an SA(CR) exposure in the regulatory real estate asset sub-class may recognise the effects of CRM. For the purposes of this paragraph, eligible credit protection includes a mortgage insurance which complies with the requirements for recognition of guarantees set out in Annex 7H.[239] For the unprotected portion or uncollateralised portion of the SA(CR) exposure, the Reporting Bank must apply the risk weight based on the LTV bucket prior to the application of the effects of CRM.

Other Real Estate Asset Sub-Class

7.3.98 A Reporting Bank must apply the following risk weights to any SA(CR) exposure in the other real estate asset sub-class, which is classified by the Reporting Bank as not materially dependent on cash flows generated by the real estate pursuant to paragraph 7.3.100:

(a) in the case of an exposure to an individual or group of individuals, 75%;

(b) in the case of an exposure to a small business, 85%;

(c) in all other cases, the risk weight that is applicable to an unsecured exposure to the obligor.

7.3.99 A Reporting Bank must risk-weight any SA(CR) exposure in the other real estate asset sub-class which is classified by the Reporting Bank as materially dependent on cash flows generated by the real estate pursuant to paragraph 7.3.100 at 150%.

Material Dependence Conditions

7.3.100 A Reporting Bank must classify an SA(CR) exposure in the regulatory real estate asset sub-class or the other real estate asset sub-class as being materially dependent on cash flows generated by the real estate, if the servicing of the exposure and the prospects for recovery in the event of default materially depend on the cash flows generated by the real estate securing the exposure rather than on the underlying capacity of the obligor to service the exposure from other sources. The primary source of these cash flows would generally be lease or rental payments or the sale of the property.[240,241]

7.3.101 Despite paragraph 7.3.100, for an SA(CR) exposure in the regulatory real estate asset sub-class, a Reporting Bank must not classify the following types of exposures as materially dependent on cash flows generated by the real estate:

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[239] Where mortgage insurance is used by the Reporting Bank, the Reporting Bank should refer to the "Principles for sound residential mortgage underwriting practices" (April 2012) issued by the FSB.

[240] It is expected that an exposure which is classified by the Reporting Bank as materially dependent on cash flows generated by the real estate would predominantly apply to an obligor where an unsecured exposure to the obligor is in the corporate asset class or to an SPE, but is not restricted to such exposures.

[241] As an example, an exposure may be considered materially dependent on cash flows generated by the real estate if more than 50% of the income from the obligor used in the Reporting Bank's assessment of the obligor's ability to service the exposure is from cash flows generated by the real estate securing the exposure.

(a) an exposure secured by a real estate that is owner-occupied and is the obligor's primary residence;

(b) an exposure, secured by non-owner occupied residential real estate, to an individual who has mortgaged 2 or less non-owner occupied residential real estate units to the Reporting Bank;

(c) an exposure secured by RRE to –

(i) associations of individuals; or

(ii) cooperatives of individuals,

where such associations or cooperatives are regulated under national law and exist with the only purpose of granting its members the use of a primary residence in the real estate securing the exposure;

(d) an exposure secured by RRE to –

(i) public housing companies; or

(ii) not-for-profit associations,

regulated under national law, that exist to serve social purposes and to offer tenants long-term housing.

7.3.102 For the purposes of assessing material dependence in paragraphs 7.3.100 and 7.3.101, a Reporting Bank must perform the assessment at the time of the inception of the exposure. The Reporting Bank must review the assessment of material dependence, based on the most current and updated information, where available.

7.3.103 To avoid doubt, for the purposes of paragraph 7.3.101(a), a Reporting Bank must count only up to one owner-occupied residential real estate unit as the obligor's primary residence. For the purposes of paragraph 7.3.101(b), a Reporting Bank must count any mortgages on other owner-occupied residential real estate units as mortgages on non-owner occupied residential real estate units.

Other Exposures Asset Class

7.3.104 A Reporting Bank must risk-weight an exposure referred to in paragraph 6.1.5(p)(iii) at 250%.

7.3.105 A Reporting Bank must risk-weight an exposure referred to in paragraph 6.1.6 at 400% for the purposes of calculating regulatory capital requirements at the Solo level only where the Reporting Bank has obtained the Authority's approval pursuant to paragraph 6.1.6.

7.3.106 A Reporting Bank must apply a 100% risk weight to any other SA(CR) exposure in the other exposures asset class.

Risk weight multiplier to certain exposures denominated in a currency that differs from the income currency

7.3.107 Subject to a maximum risk weight of 150%, a Reporting Bank must apply a multiplier of 1.5 times to the applicable risk weight of an exposure which fulfils all the following conditions[242]:

(a) the exposure is an exposure to an individual;

(b) the exposure is –

(i) an exposure in the regulatory retail asset class that is risk-weighted in accordance with paragraph 7.3.86;

(ii) an exposure in the other retail asset class that is risk-weighted in accordance with paragraph 7.3.87;

(iii) a regulatory RRE exposure that is risk-weighted in accordance with –

(A) paragraph 7.3.91 or 7.3.92;

(B) paragraph 7.3.96, where applicable; and

(C) paragraph 7.3.97, where applicable; or

(iv) an exposure in the other real estate asset sub-class that is risk-weighted in accordance with paragraph 7.3.98 or 7.3.99, and is secured by RRE;

(c) the exposure is denominated in a currency that differs from the currency of the individual's source of income[243,244];

(d) the exposure is an unhedged exposure.

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[242] A margin facility for which the Reporting Bank has policies and procedures in place to ensure that all of the following are met, need not be considered as an exposure to which the Reporting Bank must apply the multiplier:
(a) the total outstanding loan amount (including any accrued interest) is over-collateralised on an ongoing basis;
(b) the collateral comprises predominantly traded financial instruments (including insurance policies which can be surrendered to, or collective investment schemes which can be redeemed with, a financial institution subject to minimum prudential standards and supervision by a financial regulatory agency);
(c) the collateral is revalued and remargined daily;
(d) the revaluation of collateral referred to in (c) includes the application of haircuts for currency mismatch between the exposure and collateral.

[243] Where the Reporting Bank is aware that the individual relies on more than one source of income to pay for the loan instalments, and where one or more of the sources of income is denominated in a currency that differs from the loan currency, the Reporting Bank should consider this condition as fulfilled.

[244] Where information on the currency of the individual's source of income is not readily available and impractical to obtain, the Reporting Bank may use the currency of the individual's country or jurisdiction of residence as a proxy for determining the currency of the individual's source of income.

7.3.108 For the purposes of paragraph 7.3.107, an unhedged exposure means an exposure to an obligor that does not have natural or financial hedges that cover in aggregate at least 90% of the repayment of the loan instalment against the foreign exchange risk resulting from the mismatch between the currency of the obligor's income and currency of the exposure. A natural hedge exists where the obligor, in its normal operating procedures, receives foreign currency income that matches the currency of a given exposure[245]. A financial hedge refers to a legal contract between the obligor and a financial institution to hedge the exposure[246].

Defaulted Exposures

7.3.109 Subject to paragraphs 7.3.110 and 7.3.111, a Reporting Bank must risk-weight the uncollateralised or unprotected portion of any SA(CR) exposure that is a defaulted exposure in accordance with Table 7-22. A defaulted exposure refers to an exposure that is in default in accordance with the definition of default in Annex 7L.

Table 7-22: Risk Weights for Defaulted Exposures

Condition	Risk Weight
Where specific allowances are less than 20% of the outstanding amount of the exposure	150%
Where specific allowances are no less than 20% of the outstanding amount of the exposure	100%

7.3.110 Subject to paragraph 7.3.111, a Reporting Bank must apply a 100% risk weight to any regulatory RRE exposure or any SA(CR) exposure in the other real estate asset sub-class which is secured by RRE that is –

(a) classified by the Reporting Bank as not materially dependent on cash flows generated by the real estate; and

(b) a defaulted exposure.

7.3.111 For the purposes of paragraphs 7.3.109 and 7.3.110 , a Reporting Bank must calculate the uncollateralised or unprotected portion of any SA(CR) exposure that is a defaulted exposure as follows:

(a) for a Reporting Bank using the FC(SA),

Uncollateralised or unprotected portion = $E - P - C_f$

where –

(i) E = E calculated in accordance with Division 2 of this Part;

(ii) P = notional amount of eligible credit protection received; and

[245] For example, remittances, rental incomes, or salaries.
[246] For example, a forward contract with a financial institution.

(iii) C_f = fair value of eligible financial collateral received;

(b) for a Reporting Bank using the FC(CA),

Uncollateralised or unprotected portion = E*– P

where –

(i) E* = E* calculated in accordance with Division 2 of this Part; and

(ii) P = notional amount of eligible credit protection received.

Sub-division 4: Treatment of Credit Protection and Recognition of Eligible Financial Collateral

Treatment of Eligible Credit Protection Bought

7.3.112 A Reporting Bank which has bought eligible credit protection for an SA(CR) exposure from an eligible protection provider may recognise the effects of CRM of the eligible credit protection, where the risk weight of the eligible protection provider is lower than that of the obligor, as follows:

(a) break down the SA(CR) exposure into –

(i) a protected portion with E equal to the notional amount of the eligible credit protection, subject to any adjustments due to a currency mismatch or a maturity mismatch set out in Annex 7H; and

(ii) an unprotected portion with E equal to the E of the SA(CR) exposure less the notional amount of the eligible credit protection adjusted for any currency mismatch or maturity mismatch set out in Annex 7H;

(b) for the purposes of calculating the credit risk-weighted exposure amount pursuant to Sub-division 3 or 5 of Division 1 of this Part, use –

(i) for the protected portion, the risk weight that is applicable to the eligible protection provider; and

(ii) for the unprotected portion, the risk weight that is applicable to the obligor.

7.3.113 Despite paragraph 7.3.112(b), a Reporting Bank must apply a 1250% risk weight to an SA(CR) exposure below a materiality threshold for which no payment will be made by the protection provider in the event of loss on the SA(CR) exposure as such an exposure is equivalent to a retained first loss position.

[MAS Notice 637 (Amendment) 2024]

7.3.114 A Reporting Bank must apply the relevant provisions in Annex 7I for the purposes of determining the protected portion in cases of proportional cover, principal-only cover, partially eligible credit derivatives, tranched cover and basket credit derivatives.

Treatment of Credit Protection Sold

7.3.115 A Reporting Bank which has sold unfunded credit protection acquires exposure to the reference asset. If such exposure is an SA(CR) exposure, the Reporting Bank must calculate the credit risk-weighted exposure amount for the exposure using the risk weight that is applicable to the obligor of the reference asset.

7.3.116 If the unfunded credit protection has more than one reference asset, the credit risk-weighted exposure amount for the credit protection is the sum of the credit risk-weighted exposure amounts in respect of each reference asset calculated using the risk weights that are applicable to the obligors of the respective reference assets.

7.3.117 A Reporting Bank which has sold funded credit protection acquires exposure to both the reference asset and the protection buyer. If such exposures are SA(CR) exposures, the Reporting Bank must calculate the credit risk-weighted exposure amount for the credit protection as the sum of –

(a) the credit risk-weighted exposure amount for the exposure to the reference asset calculated in accordance with paragraphs 7.3.115 and 7.3.116 , as applicable; and

(b) the credit risk-weighted exposure amount for the exposure to the protection buyer, using –

(i) E = the carrying amount of the collateral placed with the protection buyer; and

(ii) the risk weight that is applicable to the protection buyer.

7.3.118 The capital requirement for the credit protection calculated in accordance with paragraphs 7.3.116 and 7.3.117 must not exceed the notional amount of the credit protection i.e. the maximum possible payout under the credit protection.

7.3.119 Where a Reporting Bank has provided credit protection (whether funded or unfunded) through a proportionate structure, i.e. where the maximum possible payout in respect of any particular reference asset is capped at a pre-determined proportion of the notional amount of the credit protection, the Reporting Bank must divide the exposure into individual sub-exposures equal to the proportionate amount of credit protection in respect of each reference asset for the purposes of calculating the credit risk-weighted exposure amount applicable to the credit protection sold.

7.3.120 Where a Reporting Bank has provided credit protection for a basket of reference exposures through a first-to-default credit derivative, the Reporting Bank must calculate the credit risk-weighted exposure amount applicable to the credit protection sold by aggregating the risk weights that would be assigned to the reference exposures, subject to a cap of 1250%, and multiplying the aggregate with the nominal amount of the protection provided by the credit derivative.

7.3.121 Where a Reporting Bank has provided credit protection for a basket of reference exposures through a nth-to-default credit derivative, the Reporting Bank must calculate the credit risk-weighted exposure amount applicable to the credit protection sold by applying the treatment referred to in paragraph 7.3.120, except that in aggregating the

risk weights, the risk weights assigned to the n-1 assets in the basket of reference exposures with the lowest credit risk-weighted exposure amounts may be excluded.

Recognition of Eligible Financial Collateral under FC(SA)

7.3.122 A Reporting Bank which has taken eligible financial collateral must ensure that the eligible financial collateral is pledged for at least the life of the exposure, and must mark-to-market and revalue the eligible financial collateral at least on a 6-monthly basis, or more frequently if specified by the Authority, to recognise the effects of CRM of the eligible financial collateral under the FC(SA). Subject to paragraph 7.3.124, the Reporting Bank using the FC(SA) may recognise the effects of CRM of the eligible financial collateral as follows:

(a) break down the SA(CR) exposure into –

(i) a collateralised portion with E equal to the latest fair value of the eligible financial collateral; and

(ii) an uncollateralised portion with E equal to the E of the SA(CR) exposure less the latest fair value of the eligible financial collateral;

(b) for the purposes of calculating the credit risk-weighted exposure amount pursuant to Sub-division 3 or 5 of Division 1 of this Part, use –

(i) for the collateralised portion, the risk weight that is applicable to the eligible financial collateral as though the Reporting Bank had a direct exposure to that collateral; and

(ii) for the uncollateralised portion, the risk weight that is applicable to the obligor.

7.3.123 For the purposes of paragraph 7.3.122(b)(i), when cash on deposit, certificates of deposit or other similar instruments issued by the Reporting Bank –

(a) are held in a non-custodial arrangement, as collateral at a third-party bank, merchant bank or finance company; and

(b) are unconditionally and irrevocably pledged or assigned to the Reporting Bank as the lender,

the Reporting Bank must apply the risk weight of the third-party bank, merchant bank or finance company, as the case may be, to the collateralised portion of the exposure covered by such collateral.

7.3.124 If the risk weight determined in accordance with paragraph 7.3.122(b)(i) is less than 20%, a Reporting Bank must apply a risk weight of 20% to the collateralised portion of the SA(CR) exposure, except in the following cases:

(a) a qualifying repo-style transaction where the counterparty in the transaction is a core market participant, in which case the Reporting Bank may apply a risk weight of 0%;

(b) a qualifying repo-style transaction where the counterparty in the transaction is not a core market participant, in which case the Reporting Bank may apply a risk weight of 10%;

(c) a transaction where there is no currency mismatch and the collateral comprises –

(i) cash and certificates of deposit or other instruments similar to certificates of deposit issued by the Reporting Bank, but excluding structured deposits as defined under regulation 2 of the Financial Advisers (Structured Deposits – Prescribed Investment Product and Exemption) Regulations, as set out in paragraph 2.2(a) of Annex 7H; or

(ii) exposures in the central government and central bank asset class or in the PSE asset class or a combination thereof qualifying for a 0% risk weight under the SA(CR), and the latest fair value of such collateral has been discounted by 20% for the purposes of determining the value of the collateralised portion of the SA(CR) exposure in accordance with paragraph 7.3.122(a)(i),

in which case the Reporting Bank may apply a risk weight of 0%.

Treatment of Pools of CRM

7.3.125 A Reporting Bank which is using multiple CRM to cover a single SA(CR) exposure[247] must sub-divide the exposure into portions covered by each type of CRM[248] and calculate the credit risk-weighted exposure amount of each portion separately by applying paragraphs 7.3.112, 7.3.113, 7.3.114, 7.3.122 and 7.3.124, whichever is applicable. A Reporting Bank must apply the same approach when recognising eligible credit protection by a single eligible protection provider with differing maturities.

Sub-division 5: Recognised ECAIs

Recognition of an ECAI

7.3.126 The Authority may recognise an ECAI if the Authority –

(a) is satisfied that the ECAI meets the recognition criteria set out in paragraphs 7.3.130 to 7.3.138[249], including for short-term external credit assessments where short-term external credit assessments are to be used; and

[247] For example, the Reporting Bank has both eligible financial collateral and eligible credit protection partially covering the exposure.

[248] For example, a portion covered by eligible financial collateral and a portion covered by eligible credit protection.

[249] For this purpose, the Authority will consider, among others, the ECAI's adherence to the "Code of Conduct Fundamentals for Credit Rating Agencies" issued by IOSCO (revised March 2015 and available at www.iosco.org/library/pubdocs/pdf/IOSCOPD482.pdf).

(b) has received a letter of support from a Reporting Bank stating that it intends to use the external credit assessments of that ECAI for the purposes of calculating regulatory capital requirements pursuant to this Notice[250].

7.3.127 The recognition of an ECAI by the Authority is for the sole purpose of calculating regulatory capital requirements by a Reporting Bank pursuant to this Notice, and must not be taken as regulation of the ECAI or licensing or approval of the ECAI to do business in Singapore.

7.3.128 The Authority may revoke its recognition of an ECAI if the ECAI no longer meets the criteria set out in paragraphs 7.3.130 to 7.3.138.

7.3.129 The list of recognised ECAIs is set out at Annex 7N.

Recognition Criteria

7.3.130 *Objectivity:* The methodology for assigning credit assessments of a recognised ECAI must be rigorous, systematic, and subject to validation based on historical experience. Credit assessments must be subject to ongoing review and responsive to changes in financial condition of the entity assessed. An assessment methodology for each market segment, including rigorous backtesting, must have been established for at least one year, and preferably at least 3 years. In this regard –

(a) the ECAI must document and have procedures in place to ensure that its assessment methodologies are applied consistently in the formulation of all credit assessments in a given asset class, industry sector or region[251];

(b) the ECAI must establish a credit assessment committee with formalised terms of reference to approve credit assessments that have been recommended by credit assessment analysts. The ECAI must also have an independent internal audit function (or a function that plays a similar role and carries out similar tasks) to assess the compliance of the ECAI with its internal policies and procedures;

(c) the assessment methodologies of the ECAI must incorporate factors that are relevant in determining an entity's creditworthiness. To the extent possible, the ECAI must be able to demonstrate that its assessment methodologies have produced accurate credit assessments in the past;

(d) the assessment methodologies of the ECAI must be based on both qualitative and quantitative approaches;

(e) the assessment methodologies of the ECAI are subject to robust and quantitative backtesting based on at least one year of historical data, and

[250] The Reporting Bank should perform an appropriate level of due diligence on the ECAI before submitting such a letter of support.

[251] "Asset class" refers to categories such as loans, asset-backed securities, collateralised debt obligations, etc., "industry sector" refers to categories such as utilities, financial institutions, telecommunications, etc., and "region" refers to categories such as emerging markets, Asia ex-Japan, Europe, etc.

preferably 3 years. Other statistical studies[252] must be carried out periodically by the ECAI to validate its assessment methodologies over time and across different asset classes. Any systematic assessment errors identified through backtesting and other statistical reviews must be incorporated in the assessment methodologies; and

(f) the ECAI must have procedures that are written and implemented to ensure that its credit assessments are reviewed and updated at least annually or upon the occurrence of material events.

7.3.131 *Independence:* A recognised ECAI must not be subject to economic, political and any other pressures that may influence its credit assessments. In particular, an ECAI must not delay or refrain from taking a rating action based on its potential effect (economic, political or otherwise).[253] In this regard –

(a) the ECAI must have in place and implement adequate processes and safeguards to ensure that its ownership structure and board composition do not prejudice the objectivity of its credit assessments;

(b) the ECAI must not conduct any business transactions with any of the entities it assesses that could undermine the objectivity of its credit assessments;

(c) the ECAI must be able to demonstrate that its businesses, other than those incidental or synergistic to the issuance of credit assessments, are operationally separated from its credit assessment business;

(d) the ECAI must be able to demonstrate that its financial viability is not dependent on revenue generated from a few key customers;

(e) the ECAI must provide adequate disclosure of its pricing policy and any fee charged must not be dependent on the credit assessment issued; and

(f) employees of the ECAI must not be in an executive position in any of the entities assessed by the ECAI and must not be compensated in a way that could lead a compromise in the objectivity of the credit assessments.

7.3.132 *International Access and Transparency:* The individual credit assessments of a recognised ECAI, the key elements underlying the assessments and whether the issuer participated in the assessment process must be publicly available on a non-selective basis, unless they are private assessments[254]. In addition, the general procedures, methodologies and assumptions for arriving at assessments used by a recognised ECAI must be publicly disclosed.

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252 Examples are transition and default matrices.

253 The credit assessment process should be as free as possible from any constraints which could arise in situations where the composition of the board of directors or the shareholder structure of the ECAI may be seen as creating a conflict of interest. Furthermore, an ECAI should separate operationally, legally and, if practicable, physically, its credit assessment business from other businesses and analysts.

254 Private assessments should be at least available to both domestic and foreign institutions with legitimate interest and on equivalent terms.

7.3.133 *Disclosure:* A recognised ECAI must disclose its code of conduct, its compensation arrangements[255], any conflict of interest, its assessment methodologies (including the definition of default, the time horizon, and the meaning of each credit assessment), the actual default rates experienced in each credit assessment category, and the transitions of the assessments.[256] In this regard –

(a) the ECAI must make public the principles of its assessment methodologies;

(b) the ECAI must publicly disclose in a timely manner, any material changes made to its assessment methodologies or any significant event that could affect its performance on any of the criteria set out in paragraphs 7.3.130 to 7.3.138;

(c) the ECAI must publicly disclose information regarding the meaning of each credit assessment category, actual default rates, transition matrices, definition of default and the time horizon for which a default is considered; and

(d) the ECAI must publicly disclose whether a credit assessment was solicited or unsolicited. For the latter, the ECAI must make public its definition of an unsolicited credit assessment.

7.3.134 Without prejudice to the generality of paragraph 7.3.133, the following situations and their influence on the ECAI's credit assessment methodologies or credit assessment actions must be disclosed as conflicts of interest mentioned under paragraph 7.3.133:

(a) the ECAI is being paid to issue a credit assessment by the assessed entity or by the obligor, originator, underwriter, or arranger of the assessed obligation;

(b) the ECAI is being paid by subscribers with a financial interest that could be affected by a credit assessment action of the ECAI;

(c) the ECAI is being paid by assessed entities, obligors, originators, underwriters, arrangers, or subscribers for services other than issuing credit assessment or providing access to the ECAI's credit assessments;

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[255] Regarding the disclosure of an ECAI's compensation arrangements –
(a) the ECAI should disclose the general nature of its compensation arrangements with assessed entities, obligors, lead underwriters, and arrangers;
(b) when the ECAI receives from an assessed entity, obligor, originator, lead underwriter, or arranger compensation unrelated to its credit assessment services, the ECAI should disclose such unrelated compensation as a percentage of total annual compensation received from such assessed entity, obligor, lead underwriter, or arranger in the relevant credit assessment report or elsewhere, as appropriate; and
(c) the ECAI should disclose in the relevant credit assessment report or elsewhere, as appropriate, if it receives 10% or more of its annual revenue in aggregate from a single client (e.g. an assessed entity, obligor, originator, lead underwriter, arranger, or subscriber), related corporations and associates of the single client, and entities which the single client is an associate of.

[256] For example, a recognised ECAI should disclose the likelihood of "AA" external credit assessments becoming "A" over time. The recognised ECAI should disclose a credit assessment as soon as practicably possible after issuance. When disclosing a credit assessment, the ECAI should provide the information in plain language, indicating the nature and limitation of credit assessment and the risk of unduly relying on it to make investments.

(d) the ECAI is providing a preliminary indication or similar indication of credit quality to an entity, obligor, originator, underwriter, or arranger prior to being hired, to determine the final credit assessment for the entity, obligor, originator, underwriter, or arranger;

(e) the ECAI has a direct or indirect ownership interest in an assessed entity, or obligor, or an assessed entity or obligor has a direct or indirect ownership interest in the ECAI.

7.3.135 *Resources:* A recognised ECAI must have sufficient resources to carry out credit assessments properly. These resources must allow for substantial ongoing contact with senior and operational levels within the entities assessed in order to add value to the credit assessments. A recognised ECAI must assign analysts with appropriate knowledge and experience to assess the creditworthiness of the type of entity or obligation being assessed. In this regard –

(a) credit assessments must be made by a credit assessment committee composed of adequately qualified and experienced individuals, in accordance with the established criteria and methodology of the ECAI;

(b) the ECAI must possess a sufficient number of staff members with the requisite level of analytical skills and professional experience necessary for them to perform credit assessments competently;

(c) the ECAI must be financially sound and have enough resources to invest in the necessary infrastructure required for the efficient processing of data and timely release of reliable credit assessments; and

(d) the ECAI must establish recruitment and training policies for each level of analysts under its employment.

7.3.136 *Credibility:* To some extent, credibility is derived from the criteria above. In addition, the reliance on an ECAI's external credit assessments by independent parties[257] would be evidence of the credibility of the assessments of the ECAI. The credibility of an ECAI is also underpinned by the existence of internal procedures to prevent the misuse of confidential information. In order to be eligible for recognition, an ECAI does not have to assess firms in more than one country or jurisdiction. Considerations assessed by the Authority to determine if the ECAI satisfies this criterion include –

(a) the financial viability and market share of the ECAI, especially in the market for which the ECAI is operating and is to be recognised;

(b) the level of market acceptance and reliance on the credit assessments of the ECAI;

(c) statistical data that demonstrates market reliance on the credit assessments of the ECAI[258]; and

[257] For example, investors, insurers, trading partners.

[258] For example, market movements in response to changes in credit assessments.

(d) the presence of internal procedures to detect misuse or unauthorised disclosure or leakage of confidential information.

7.3.137 *No abuse of unsolicited external credit assessments:* A recognised ECAI must not use unsolicited external credit assessments to put pressure on entities to obtain external credit assessments.

7.3.138 *Cooperation with the Authority:* A recognised ECAI must provide access to the Authority to external credit assessments, significant changes to methodologies and other relevant data in order to support initial and continued determination of eligibility.

Mapping Process

7.3.139 The Authority shall map the external credit assessments of a recognised ECAI to the credit quality grades set out in Annex 7M, taking into account the qualitative factors set out in paragraph 7.3.140 and the guidelines for supervisors set out in "Standardised approach – implementing the mapping process (April 2019)" published by BCBS.

7.3.140 The qualitative factors considered by the Authority for the mapping process include –

(a) the size and scope of the pool of issuers covered by the ECAI;

(b) the range of credit assessments assigned by the ECAI;

(c) the definition of each credit assessment category;

(d) the definition of default used by the ECAI;

(e) the dynamic properties and characteristics of the rating system or methodology; and

(f) the geographical coverage (i.e. use of regional or global data).

Division 4: IRBA

Sub-division 1: Application to Adopt the IRBA

7.4.1 A Reporting Bank which intends to adopt the IRBA for any class of exposures, must apply in writing to the Authority for approval to do so.

7.4.2 Subject to paragraph 7.4.3, a Reporting Bank must ensure that the application to adopt the IRBA for a class of exposures pursuant to paragraph 7.4.1 contains all of the following:

(a) a written confirmation from the executive officer responsible for risk management in the Reporting Bank that –

(i) the use of rating systems and –

(A) in the case of exposures for which the Reporting Bank is applying to adopt the F-IRBA to calculate the credit risk-weighted exposure amounts, internal estimates of PD; and

(B) in the case of exposures for which the Reporting Bank is applying to adopt the A-IRBA or the IRBA for the IRBA retail asset class to calculate the credit risk-weighted exposure amounts, internal estimates of PD, LGD and EAD,

form an integral part of the systems and processes of the Reporting Bank for managing credit risk;

(ii) the Reporting Bank has –

(A) a process for managing the potential variability of its credit RWA over the business cycles of the respective industries and geographic regions which it is exposed to, to help ensure ongoing compliance with the minimum capital requirements specified in this Notice and bank-specific capital requirements set by the Authority pursuant to section 10(3) of the Banking Act;

(B) carefully considered the implications of its IRBA systems on credit risk assessment and capital management; and

(C) in the case where the Reporting Bank uses IRBA systems that would result in changes in its assessment of credit risk over a business cycle, ensured that its process for capital management is designed to address potential capital shortfalls in economic downturns;

(iii) the Reporting Bank has a process for continually determining the suitability of its credit risk management strategy and framework as well as IRBA systems, taking into account such regulations, Notices

and guidelines that the Authority may issue from time to time, including Annex 7X[259] hereto;

(iv) the Reporting Bank has systems, processes and controls to calculate credit RWA under the IRBA accurately and that those systems, processes and controls are subject to internal audit at least on an annual basis;

(v) the Reporting Bank has a process to calculate the credit risk-weighted exposure amount for any IRBA exposure using the SA(CR) in accordance with Sub-division 3 of Division 1 of this Part, within a 3-month period if required by the Authority; and

(vi) the IRBA rollout plan of the Reporting Bank is in accordance with Sub-division 4 of this Division and meets the Guidelines in Annex 7Y;

(b) a written confirmation from the executive officer responsible for internal audit of the Reporting Bank that –

(i) he agrees with the confirmation by the executive officer responsible for risk management pursuant to sub-paragraph (a); and

(ii) the Reporting Bank has –

(A) been using its rating system for the class of exposures in a manner broadly in line with the minimum standards for use as set out in paragraph 2.7 of Annex 7X for at least one year prior to the application;

(B) conducted an internal validation of the rating system referred to in sub-paragraph (b)(ii)(A), pursuant to Annex 7X;

(C) ascertained that it has the systems, processes and controls necessary for adopting the IRBA; and

(D) in areas where the internal validation referred to in sub-paragraph (b)(ii)(B) assesses that the Reporting Bank does not fully meet the requirements and guidelines of the Authority as set out in Annex 7X and Annex 7Z, conducted self-assessments to identify the key shortcomings, developed comprehensive action plans to address them, and identified in the action plans the personnel responsible for specific actions, resource needs and a schedule for completion[260];

(c) a report on the latest internal validation conducted by the Reporting Bank prior to the application and any relevant supporting documentation relating to the adoption of the IRBA for the class of exposures. For the

[259] Annex 7X sets out the requirements of the Authority for a Reporting Bank adopting the IRBA.

[260] The Reporting Bank should implement the measures described in its action plans within a reasonable timeframe. The Authority will take into consideration shortcomings identified and the Reporting Bank's action plans to address them, including the schedule for completion, in its planning of the supervisory validation.

purposes of this paragraph, the internal validation report must cover a duration of at least one year during which the Reporting Bank must have used its rating system for the class of exposures in a manner broadly in line with the minimum standards for use as set out in paragraph 2.7 of Annex 7X.

7.4.3 Notwithstanding paragraph 7.4.2(a)(vi), the Reporting Bank need not provide a written confirmation from the executive officer responsible for risk management in the Reporting Bank, that the IRBA rollout plan of the Reporting Bank is in accordance with Sub-division 4 of this Division and meets the Guidelines in Annex 7Y if the Reporting Bank is able to demonstrate to the satisfaction of the Authority that it faces exigencies that are material and relevant.

7.4.4 Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, any application made by a Reporting Bank under paragraph 7.4.1 of that Notice, that is pending immediately before 1 July 2024, is treated as an application made by the Reporting Bank under paragraph 7.4.1 of this Notice. To avoid doubt, the Reporting Bank must comply with the requirements under Division 4 of Part VII of this Notice applicable to its application, including paragraphs 7.4.2, 7.4.5, 7.4.8 and 7.4.20 of this Notice.

Sub-division 2: Submission of Information for Supervisory Validation Prior to IRBA Adoption

7.4.5 A Reporting Bank must calculate its CET1 CAR, Tier 1 CAR and Total CAR using both the IRBA and the prevailing capital requirements that are applicable to the Reporting Bank under this Notice at both the Solo and Group levels (referred to as "parallel calculations" in this Sub-division) as at the end of each quarter for the latest 4 consecutive quarters before its intended IRBA adoption date. To avoid doubt, where the Reporting Bank revises its intended IRBA adoption date, the Reporting Bank must perform the parallel calculations for the latest 4 consecutive quarters prior to the revised intended IRBA adoption date.

7.4.6 Despite paragraph 7.4.5, the Authority may require a Reporting Bank to submit additional parallel calculations as at other dates for other time periods, where necessary to ascertain the readiness of a Reporting Bank to adopt the IRBA.

7.4.7 To avoid doubt, for the purposes of paragraphs 7.4.5 and 7.4.6, the date on which a parallel calculation is based may precede the date on which the IRBA application was submitted to the Authority.

7.4.8 A Reporting Bank must submit to the Authority all parallel calculations referred to in paragraphs 7.4.5 and 7.4.6, before its intended IRBA adoption date, and within such timelines as specified by the Authority. To avoid doubt, where the Reporting Bank revises its intended IRBA adoption date, the Reporting Bank must submit to the Authority all parallel calculations, before the revised intended IRBA adoption date, and within such timelines as specified by the Authority.

7.4.9 If a Reporting Bank becomes aware after the submission of its IRBA application but before receiving approval to adopt the IRBA, that the confirmations made pursuant to paragraph 7.4.2(a) and (b) are no longer valid, it must –

(a) inform the Authority in writing as soon as practicable and, in any case, no later than 5 business days of the Reporting Bank becoming aware, of the invalidity of any confirmation;

(b) assess the effect of the invalidity of the confirmation(s) in terms of the risk(s) posed to the Reporting Bank (if any);

(c) prepare a plan to rectify the issues that led to the invalidity of the confirmation(s) and inform the Authority of its plan (including its target completion date for the plan) as soon as practicable; and

(d) undertake prompt corrective action within a reasonable time in accordance with the plan prepared pursuant to sub-paragraph (c).

7.4.10 Where there are findings arising from the Authority's supervisory validation which a Reporting Bank is required to address before its intended IRBA adoption date that could impact the parallel calculations previously submitted by a Reporting Bank under paragraph 7.4.8, the Authority may require the Reporting Bank, after it has addressed such findings, to recalculate and resubmit the parallel calculations previously submitted, or to submit additional parallel calculations, before its intended IRBA adoption date. To avoid doubt, where the Reporting Bank revises its intended IRBA adoption date, the Reporting Bank must, if required by the Authority, recalculate and resubmit the parallel calculations previously submitted, or submit additional parallel calculations, before the revised intended IRBA adoption date.

Sub-division 3: Approval to Adopt the IRBA

7.4.11 The Authority may grant approval for a Reporting Bank to adopt the IRBA for a class of exposures, subject to such conditions or restrictions as the Authority may impose. The Authority may at any time vary or revoke any existing conditions or restrictions of approval, or impose conditions or restrictions, or additional conditions or restrictions thereto.

7.4.12 A Reporting Bank must comply with the public disclosure requirements set out in Part XI to be eligible to adopt the IRBA.

7.4.13 As part of its approval process, the Authority will consider whether –

(a) the Reporting Bank's IRBA systems comply with the requirements and meet the guidelines set out in Annex 7X and Annex 7Z;

(b) the risk management process and system of the Reporting Bank are adequate to support the IRBA; and

(c) the Reporting Bank has addressed to the Authority's satisfaction all findings arising from the Authority's supervisory validation before its intended IRBA adoption date.

7.4.14 The Authority may withhold approval for the Reporting Bank to adopt the IRBA for a class of exposures if –

(a) during its supervisory validation, it becomes aware of information that materially affects its assessment of the readiness of the Reporting Bank to adopt the IRBA for the class of exposures; or

(b) any outstanding finding identified during its supervisory validation that the Reporting Bank is required to address before its intended IRBA adoption date has not been addressed to the satisfaction of the Authority.

7.4.15 If a Reporting Bank becomes aware after it has received approval to adopt the IRBA for a class of exposures that any of the confirmations made pursuant to paragraph 7.4.2(a) and (b) in force at the time the approval was granted are no longer valid, that it no longer complies with any of the conditions or restrictions imposed by the Authority pursuant to paragraph 7.4.11 or that it no longer complies with paragraph 7.4.12, it must –

(a) inform the Authority in writing as soon as practicable and in any case no later than 5 business days of the Reporting Bank becoming aware, of the invalidity of any confirmations, any non-compliance with the conditions or restrictions pursuant to paragraph 7.4.11 or any non-compliance with paragraph 7.4.12, as the case may be;

(b) assess the effect of the invalidity of the confirmation(s), non-compliance with the conditions or restrictions pursuant to paragraph 7.4.11 or non-compliance with paragraph 7.4.12, as the case may be, in terms of the risk(s) posed to the Reporting Bank (if any);

(c) prepare a plan to rectify the issues that led to the invalidity of the confirmation(s), non-compliance with the conditions or restrictions pursuant to paragraph 7.4.11 or non-compliance with paragraph 7.4.12, inform and seek approval from the Authority of its plan (including its target completion date for the plan) as soon as practicable; and

(d) undertake prompt corrective action within a reasonable time in accordance with the plan prepared pursuant to sub-paragraph (c).

7.4.16 The Authority may suspend or revoke its approval for a Reporting Bank to adopt the IRBA for a class of exposures, subject the Reporting Bank to higher bank-specific capital requirements pursuant to section 10(3) of the Banking Act, or take any other actions if –

(a) the Reporting Bank has not complied with any of the conditions or restrictions imposed by the Authority pursuant to paragraph 7.4.11;

(b) the Reporting Bank has not complied with paragraph 7.4.12;

(c) the Reporting Bank fails to comply with paragraph 7.4.15;

(d) the Authority subsequently becomes aware that the Reporting Bank has furnished information that is false or misleading in a material manner to the Authority in connection with its application for approval to adopt the IRBA;

(e) the Reporting Bank has not executed its IRBA rollout in accordance with Sub-division 4 of this Division; or

(f) the Authority is not satisfied that the Reporting Bank is in compliance with the requirements in Annex 7X, or that the risk management process and system of the Reporting Bank are adequate to support the IRBA.

7.4.17 A Reporting Bank must inform the Authority no less than 3 months prior to the expected date of implementation of any significant change to its IRBA systems subsequent to the Authority granting approval for the Reporting Bank to adopt the IRBA for a class of exposures, unless the Authority has directed that the Reporting Bank seeks prior approval for any such change. The Authority may also direct the Reporting Bank to seek approval prior to any significant change to its IRBA systems, subsequent to the notification by the Reporting Bank to the Authority.

7.4.18 Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024,

(a) any approval granted under paragraph 7.4.10 of that Notice, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 7.4.11 of this Notice; and

(b) any condition or restriction imposed by the Authority pursuant to paragraph 7.4.10 of that Notice will continue to apply as though it were imposed under paragraph 7.4.11 of this Notice.

7.4.19 A Reporting Bank granted the approval referred to in paragraph 7.4.18(a) must comply with all applicable requirements in this Notice as though the approval was granted under paragraph 7.4.11 of this Notice, except that a reference to "confirmations made pursuant to paragraph 7.4.2(a) and (b) in force at the time the approval was granted" in paragraph 7.4.15 of this Notice must be read to mean "confirmations made pursuant to paragraph 7.4.2(a) and (b) of MAS Notice 637 in force immediately before 1 July 2024".

Sub-division 4: IRBA Rollout

7.4.20 A Reporting Bank must, in its application to the Authority to adopt the IRBA for a class of exposures pursuant to paragraph 7.4.1, submit an IRBA rollout plan for the IRBA asset sub-class or combination of IRBA asset sub-classes, as set out in paragraph 1.2 of Annex 7Y, specifying to what extent and when it intends to rollout the IRBA for the IRBA asset sub-class or combination of IRBA asset sub-classes across business units of the banking group.

7.4.21 A Reporting Bank which has obtained IRBA approval for any class of exposures pursuant to paragraph 7.4.11 must provide to the Authority the status of, and updates to, its IRBA rollout plan in respect of the IRBA asset sub-classes or combination of IRBA asset sub-classes, as set out in paragraph 1.2 of Annex 7Y every 12 months.

7.4.22 Where a Reporting Bank adopts the IRBA for a class of exposures in –

(a) an IRBA asset sub-class; or

(b) combination of IRBA asset sub-classes;

as set out in paragraph 1.2 of Annex 7Y, and the class of exposures fall within a particular business unit, it must apply the IRBA to all exposures within that business unit that fall within the same IRBA asset sub-class or combination of IRBA asset sub-classes.

7.4.23 For the purposes of paragraphs 7.4.20 and 7.4.22, a Reporting Bank must show how it defines the boundaries of a putative business unit and how it allocates exposures to that business unit on an ongoing basis.

7.4.24 If a Reporting Bank that has adopted the IRBA for an IRBA asset sub-class or combination of IRBA asset sub-classes, as set out in paragraph 1.2 of Annex 7Y, intends to adopt the SA(CR) or F-IRBA instead, it must only do so in exceptional circumstances which have been approved by the Authority[261].

7.4.25 A Reporting Bank may continue to use the supervisory slotting criteria for one or more of the 4 categories of the SL asset sub-class as set out in Annex 7R or the HVCRE asset sub-class, and adopt the F-IRBA or A-IRBA for the other categories of the SL asset sub-class or the HVCRE asset sub-class. Where a Reporting Bank has adopted the F-IRBA or A-IRBA for the IPRE lending exposures under the SL asset sub-class, and where the IPRE lending exposures are material, the Reporting Bank must adopt the F-IRBA or A-IRBA, as the case may be, for the HVCRE asset sub-class.

7.4.26 A Reporting Bank must not, during the period when it is rolling out the adoption of the IRBA for the banking group, undertake intra-group transactions (including but not limited to asset sales or cross guarantees) which are designed to reduce the banking group's aggregate capital requirements by transferring credit risk between entities on the SA(CR) and entities on the IRBA.

Exclusions from the IRBA

7.4.27 Where a Reporting Bank adopts the IRBA for part of its exposures for an IRBA asset sub-class or combination of IRBA asset sub-classes, as set out in paragraph 1.2 of Annex 7Y, the Reporting Bank may exclude from the IRBA, exposures that would fall within that IRBA asset sub-class or combination of IRBA asset sub-classes –

(a) in the case of exposures arising from the acquisition of a new business or entity by the Reporting Bank –

[261] Where a Reporting Bank has adopted the IRBA for the IRBA asset sub-class or combination of IRBA asset sub-classes as set out in paragraph 1.2 of Annex 7Y, it should continue to adopt the IRBA. The Reporting Bank may be allowed to adopt the SA(CR) or F-IRBA in instances such as a divestiture of a large fraction of the Reporting Bank's credit-related business, subject to the approval by the Authority.

(i) if the exposures acquired are immaterial in size and risk profile within the IRBA asset sub-class or combination of IRBA asset sub-classes; or

(ii) the Reporting Bank will transition the exposures acquired onto the IRBA and incorporate the exposures as part of its IRBA rollout plan for the IRBA asset sub-class or combination of IRBA asset-sub classes,

provided that the Reporting Bank had obtained the prior approval of the Authority, which may be subject to conditions imposed by the Authority with respect to the approval; and

(b) in all other cases, if the exposures are immaterial in size and risk profile within the IRBA asset sub-class or combination of IRBA asset sub-classes, provided that the Reporting Bank had obtained the prior approval of the Authority, which may be subject to conditions imposed by the Authority with respect to the approval.

7.4.28 A Reporting Bank may exclude exposures that are mentioned in paragraph 7.4.27(b) from its IRBA rollout plan.

7.4.29 A Reporting Bank must use the SA(CR) to calculate the credit risk-weighted exposure amounts for exposures excluded from the IRBA pursuant to paragraph 7.4.27. In such cases, the Authority may require the Reporting Bank to maintain additional capital under Part X for such exposures.

7.4.30 Despite paragraph 7.4.27, a Reporting Bank may use the SA(CR) to calculate the credit risk-weighted exposure amounts for long settlement transactions on a permanent basis without any prior approval of the Authority.

7.4.31 For the purposes of obtaining the Authority's approval in accordance with paragraph 7.4.27(a)(i) and (b), as applicable, a Reporting Bank must show why the exposures falling within an IRBA asset sub-class or combination of IRBA asset sub-class that it proposes to exclude from the IRBA are considered to be immaterial both in terms of size and risk profile within their IRBA asset sub-class or combination of IRBA asset sub-classes as set out in paragraph 1.2 of Annex 7Y.[262]

7.4.32 When approving exclusions, the Authority will consider a Reporting Bank's ability to meet the threshold specified in paragraph 2.2 of Annex 7Y and risk concentrations that may be present in excluded portfolios.

7.4.33 Where a Reporting Bank has adopted the IRBA for an IRBA asset sub-class or combination of IRBA asset sub-classes, as set out in paragraph 1.2 of Annex 7Y, the Reporting Bank must calculate the percentage of exposures excluded from the IRBA in each IRBA asset sub-class or combination of IRBA asset sub-classes as set out in paragraph 1.2 of Annex 7Y as follows:

[MAS Notice 637 (Amendment) 2024]

[262] The Authority may revoke any approval previously given under paragraph 7.4.27(a)(i) or (b), if the exposures become material in size or risk profile.

(a) for the IRBA sovereign asset sub-class, by dividing the total exposure amount of exposures excluded from the IRBA which would fall within the IRBA sovereign asset sub-class if the IRBA had been adopted ("excluded exposures"), by the aggregate of –

(i) the total exposure amount of exposures under the IRBA sovereign asset sub-class;

(ii) the total exposure amount of exposures transitioning to the IRBA sovereign asset sub-class; and

(iii) excluded exposures,

for all on-balance sheet assets and off-balance sheet items within the scope of paragraph 7.1.1(a), (b) and (f);

(b) for all other IRBA asset sub-classes or combination of IRBA asset sub-classes set out in paragraph 1.2 of Annex 7Y, by dividing the total RWA of exposures excluded from the IRBA for an IRBA asset sub-class or combination of IRBA asset sub-classes which would fall within that IRBA asset sub-class or combination of IRBA asset sub-classes if the IRBA had been adopted ("RWA of excluded exposures"), by the aggregate of –

(i) the total RWA of exposures under that IRBA asset sub-class or combination of IRBA asset sub-classes;

(ii) the total RWA of exposures transitioning to that IRBA asset sub-class or combination of IRBA asset sub-classes; and

(iii) RWA of excluded exposures,

for all on-balance sheet assets and off-balance sheet items within the scope of paragraph 7.1.1(a), (b) and (f).

7.4.34 For the purposes of paragraph 7.4.33(a), a Reporting Bank must calculate the exposure amount of each exposure, whether such exposures are under the IRBA, transitioning to the IRBA or excluded from the IRBA, by applying the exposure measurement requirements in paragraphs 7.1.3(a) and 7.1.9(a).

7.4.35 For the purposes of paragraph 7.4.33(b), the Reporting Bank must calculate the RWA of each exposure, whether such exposures are under the IRBA, transitioning to the IRBA or excluded from the IRBA, by applying the requirements in paragraphs 7.1.3 and 7.1.9.

7.4.36 For the purposes of the calculation in paragraph 7.4.33, a Reporting Bank must –

(a) map its SA(CR) exposures to the relevant IRBA asset sub-class that the SA(CR) exposure would fall within, if the IRBA was applied for the exposure. A Reporting Bank may assume that SA(CR) exposures within the ADC asset sub-class would fall within the IRBA SL asset sub-class;

(b) exclude the exposure amount of the following exposures from excluded exposures, and from the aggregate of exposure amounts set out in paragraph 7.4.33(a)(i) to (iii), for the calculation in paragraph 7.4.33(a):

(i) equity exposures set out in paragraphs 7.3.9 and 7.3.10;

(ii) exposures required to be deducted from regulatory capital or risk-weighted at 250% under paragraph 7.3.104;

(iii) exposures risk-weighted at 1250% under paragraph 7.3.82; and

(c) exclude the RWA of the following exposures from the RWA of excluded exposures, and from the aggregate of RWA amounts set out in paragraph 7.4.33(b)(i) to (iii), for the calculation in paragraph 7.4.33(b):

(i) equity exposures set out in paragraphs 7.3.9 and 7.3.10;

(ii) exposures required to be deducted from regulatory capital or risk-weighted at 250% under paragraph 7.3.104;

(iii) exposures risk-weighted at 1250% under paragraph 7.3.82.

7.4.37 A Reporting Bank must ensure that exposures to CCPs arising from OTC derivative transactions, exchange-traded derivative transactions and SFTs are treated in accordance with the relevant requirements set out under Division 7 of this Part, irrespective of materiality.

[MAS Notice 637 (Amendment) 2024]

Sub-division 5: Categorisation of IRBA Exposures

7.4.38 A Reporting Bank must categorise any IRBA exposure into an asset sub-class belonging to the IRBA wholesale asset class, the IRBA retail asset class or the IRBA eligible purchased receivables asset class[263] as defined in paragraphs 7.4.42 to 7.4.56.

7.4.39 A Reporting Bank must apply the specified treatment set out in this Sub-division to each of its exposures for the purposes of deriving its regulatory capital adequacy requirements. A Reporting Bank must be able to demonstrate to the Authority that its methodology for assigning exposures to the different asset sub-classes is appropriate and consistent over time. Where the Authority deems that the methodology used by the Reporting Bank is not appropriate or may not result in broadly consistent categorisation across Reporting Banks, the Authority may require the Reporting Bank to re-categorise any exposure or class of exposures into asset sub-classes as set out in this Sub-division.

7.4.40 A Reporting Bank must treat any exposure within the scope of paragraph 7.1.1(a) that does not fall within any of the IRBA wholesale asset class, the IRBA retail

[263] The categorisation of exposures into various asset sub-classes as set out in this Sub-division is intended to be consistent with established industry practice. However, the Authority recognises that a Reporting Bank may use different definitions and methodology for the purposes of internal reporting and risk measurement.

asset class or the IRBA eligible purchased receivables asset class as an SA(CR) exposure under one of the following asset classes, whichever relevant, in accordance with Division 3 of this Part:

(a) cash items under paragraph 7.3.1(a);

(b) equity and subordinated debt asset class under paragraph 7.3.1(h);

(c) other exposures asset class under paragraph 7.3.1(l).

7.4.41 In the case of a lease where the Reporting Bank is a lessor and is exposed to residual value risk, the Reporting Bank must –

(a) categorise the exposure to the lessee, calculated under paragraph 7.2.7(a), in accordance with paragraph 7.4.38; and

(b) treat the exposure to the residual value of the leased assets, calculated under paragraph 7.2.7(b), in accordance with paragraph 7.4.40(c).

7.4.42 The IRBA wholesale asset class consists of the following asset sub-classes:

(a) general corporate asset sub-class, which consists of –

(i) any IRBA exposure to a corporation, partnership, limited liability partnership, sole proprietorship, trust or fund (but excludes an exposure belonging to an asset sub-class set out in sub-paragraph (b), (c), (d), (e) or (f), paragraph 7.4.50(c), or paragraph 7.4.56(a), (b) or (c)); and

(ii) any IRBA exposure to an individual (but excludes an exposure belonging to an asset sub-class set out in sub-paragraph (b), (c), (d), (e) or (f), paragraph 7.4.50(a), (b) or (c), or paragraph 7.4.56(a), (b) or (c));

(b) corporate small business asset sub-class, which consists of any IRBA exposure to a corporation, partnership, limited liability partnership, sole proprietorship, trust or fund ("business") (but excludes an exposure belonging to an asset sub-class set out in sub-paragraph (c), (d), (e) or (f), paragraph 7.4.50(c), or paragraph 7.4.56(a), (b) or (c)), where the reported annual revenue of the business determined in accordance with paragraph 7.4.43 is less than or equal to S$100 million or where paragraph 7.4.45 applies.

(c) sovereign asset sub-class, which consists of any IRBA exposure to –

(i) the counterparties referred to in paragraph 7.3.1(b);

(ii) a PSE, where such exposure would qualify for a 0% or 20% risk weight under the SA(CR) pursuant to paragraph 7.3.48 and Table 7-3; or

(iii) a qualifying MDB;

(d) bank asset sub-class, which consists of any IRBA exposure –

(i) to the counterparties referred to in paragraph 7.3.1(e)(i) to (v);

(ii) to a PSE (but excludes an exposure referred to in sub-paragraph (c)(ii));

(iii) to an MDB which is not a qualifying MDB; or

(iv) which is an eligible covered bond referred to in paragraph 7.3.2;

(e) SL asset sub-class, which consists of any IRBA exposure that meets the characteristics set out in Annex 7R (but excludes an exposure belonging to the IRBA asset sub-class set out in sub-paragraph (f));

(f) HVCRE asset sub-class, which consists of any IRBA exposure that meets the characteristics set out in Annex 7R.

7.4.43 For the purposes of determining whether a business mentioned under paragraph 7.4.42(b) has a reported annual revenue of less than or equal to S$100 million, the Reporting Bank must –

(a) if the business is part of a group of companies as defined in section 209A of the Companies Act 1967, use the reported annual consolidated revenue of the group of companies;

(b) have in place rigorous information gathering and timely updating processes to ensure that the reported annual revenue figure used is timely and relevant;

(c) use an audited reported annual revenue figure, but where a business is established in a country or jurisdiction where the legislation governing the preparation of the business's financial statement does not require audited financial statements to be maintained, the Reporting Bank may use unaudited accounts to ascertain the reported annual revenue figure;

(d) subject unaudited accounts used to ascertain the reported annual revenue figures under sub-paragraph (c) to an internal or external independent verification conducted on an annual basis;

(e) use a reported annual revenue figure taken from the most recent full-year financial statements, which must be for a financial period ending not more than 21 months before the time when the credit risk-weighted exposure amount for that IRBA exposure is calculated, unless paragraph 7.4.44 applies[264]; and

(f) not categorise an exposure under the corporate small business asset sub-class if it becomes aware of any event after the date of the financial

[264] For example, a Reporting Bank must not use the reported annual revenue figure for the 12 months ending 31 Dec 2022 for calculating credit risk-weighted exposure amounts after 30 Sep 2024.

statements referred to in sub-paragraph (e) that would reasonably cause an adjustment of the reported annual revenue of the business such that it is more than S$100 million.

7.4.44 Despite paragraph 7.4.43(e), where subsequent to the Reporting Bank's initial categorisation of an IRBA exposure into the corporate small business asset sub-class, a Reporting Bank is unable to obtain updated financial statements of the business, the Reporting Bank may use a reported annual revenue figure taken from full-year financial statements which are for a financial period ending more than 21 months before the time when the credit risk-weighted exposure amount for that IRBA exposure is calculated. In such a case, the Reporting Bank may continue to categorise such exposures under the corporate small business asset sub-class, but must not use the reported annual revenue figure of the obligor in the K_{sm} formulas stated in paragraph 7.4.65.

7.4.45 For the purposes of paragraph 7.4.42(b), a Reporting Bank may include an IRBA exposure to a business mentioned under paragraph 7.4.42(b), with reported total assets of less than or equal to S$100 million, provided that –

(a) the Reporting Bank has in place internal policies setting out the types of entities and circumstances, where total revenue is not a meaningful indicator of the size of an entity and the use of reported total assets is more appropriate than reported annual revenue;

(b) the internal policies mentioned in sub-paragraph (a) have been approved in writing by the Authority;

(c) the Reporting Bank applies the reported total assets threshold and the internal policies mentioned in sub-paragraph (a) consistently to all exposures for each type of entity identified in those internal policies; and

(d) based on the Reporting Bank's application of the reported total assets threshold and internal policies mentioned in sub-paragraph (a), the total revenue is not a meaningful indicator of the size of the entity and the use of reported total assets is more appropriate than reported annual revenue.

7.4.46 For the purposes of paragraph 7.4.45 and determining whether a business mentioned under paragraph 7.4.42(b) has reported total assets of less than or equal to S$100 million, the Reporting Bank must –

(a) if the business is part of a group of companies as defined in section 209A of the Companies Act 1967, use the reported consolidated total assets of the group of companies;

(b) have in place rigorous information gathering and timely updating processes to help ensure that the reported total assets figure used is timely and relevant;

(c) use an audited reported total assets figure, but where a business is established in a country or jurisdiction where the legislation governing the preparation of the business's financial statement does not require audited financial statements to be maintained, the Reporting Bank may use unaudited accounts to ascertain the reported total assets figure;

(d) subject unaudited accounts used to ascertain the reported total assets figures under sub-paragraph (c) to an internal or external independent verification conducted on an annual basis;

(e) use a reported total assets figure taken from the most recent full-year financial statements, which must be for a financial period ending not more than 21 months before the time when the credit risk-weighted exposure amount for that IRBA exposure is calculated, unless paragraph 7.4.47 applies[265]; and

(f) not categorise an exposure under the corporate small business asset sub-class if it becomes aware of any event after the date of the financial statements referred to in sub-paragraph (e) that would reasonably cause an adjustment of the reported total assets of the business such that it is more than S$100 million.

7.4.47 Despite paragraph 7.4.46(f), where subsequent to the Reporting Bank's initial categorisation of an IRBA exposure into the corporate small business asset sub-class, a Reporting Bank is unable to obtain updated financial statements of the business, the Reporting Bank may use a reported total assets figure taken from full-year financial statements which are for a financial period ending more than 21 months before the time when the credit risk-weighted exposure amount for that IRBA exposure is calculated. In such a case, the Reporting Bank may continue to categorise such exposures under the corporate small business asset sub-class, but must not use the reported total assets figure of the obligor in the K_{sm} formulas stated in paragraph 7.4.65;

7.4.48 For the purposes of paragraph 7.4.42, "fund" includes any collective investment scheme or closed-end fund.

7.4.49 To avoid doubt, the general corporate asset sub-class in paragraph 7.4.42(a), corporate small business asset sub-class in paragraph 7.4.42(b), and bank asset sub-class in paragraph 7.4.42(d) include exposures to the relevant entities listed in those paragraphs that are in the form of subordinated debt or regulatory capital instruments, provided that such instruments –

(a) do not fall within the scope of equity exposures as set out in paragraphs 7.3.9 and 7.3.10;

(b) are not required to be deducted from regulatory capital or risk-weighted at 250% under paragraph 7.3.104; and

(c) are not risk-weighted at 1250% under paragraph 7.3.82.

A Reporting Bank must treat an instrument which meets one of the criteria in sub-paragraph (a), (b) or (c) as an SA(CR) exposure in accordance with Division 3 of this Part.

[265] For example, a Reporting Bank must not use the reported total assets figure for the 12 months ending 31 Dec 2022 for calculating credit risk-weighted exposure amounts after 30 Sep 2024.

7.4.50 The IRBA retail asset class[266] consists of the following asset sub-classes set out in sub-paragraphs (a) to (c):

(a) residential mortgage asset sub-class, which consists of any IRBA exposure (but excludes an exposure belonging to the asset sub-class set out in paragraph 7.4.56(c)) that meets all of the following conditions:

(i) the exposure is extended to –

(A) an individual;

(B) a group of individuals; or

(C) an association of individuals or a co-operative of individuals, where such association or co-operative is regulated under national law and is established only for the purposes of granting its members the use of a primary residence in the property securing the exposure;

(ii) the exposure is managed by the Reporting Bank as part of a large pool of similar loans;

(iii) the exposure is secured or partly secured against a mortgage of a residential property;

(b) QRRE asset sub-class, which consists of any IRBA exposure (but excludes an exposure belonging to the asset sub-class set out in paragraph 7.4.56(c)) which meets all of the following conditions:

(i) the exposure is to an individual;

(ii) the exposure is managed by the Reporting Bank as part of a large pool of similar exposures;

(iii) the exposure is to a revolving loan, and is unsecured, and uncommitted both contractually and in practice;

(iv) the exposure, including any exposure in the QRRE asset sub-class to the same individual that is classified as in default in accordance with the definition of default in Annex 7L, together with other exposures in the QRRE asset sub-class to the same individual, is not more than S$200,000;

(v) the Reporting Bank demonstrates to the satisfaction of the Authority that the exposures categorised under this asset sub-class exhibit a low volatility of loss rates, relative to the average level of loss rates,

[266] For example, exposures to individuals granted revolving loans (e.g. credit cards, overdrafts, or retail facilities secured by financial instruments) as well as personal term loans and leases (e.g. instalment loans, auto loans and leases, student and educational loans, personal finance, or other exposures with similar characteristics) are eligible for retail treatment.

at both the aggregate QRRE asset sub-class level and relevant sub-portfolio level where applicable, especially within the low PD bands;

(vi) the Reporting Bank retains data on the loss rates for the purposes of analysis of loss volatilities;

(vii) the Reporting Bank is able to demonstrate to the satisfaction of the Authority that treatment as QRRE is consistent with the underlying risk characteristics of the QRRE asset sub-class and the relevant sub-portfolio where applicable;

(c) other retail exposures asset sub-class, which consists of any IRBA exposure (but excludes an exposure belonging to an asset sub-class set out in sub-paragraph (a) or (b), or paragraph 7.4.56(c)) that meets the following conditions:

(i) the exposure is to an individual and the exposure is managed as part of a large pool of similar exposures; or

(ii) the exposure is to a small business and –

(A) the total exposure of the Reporting Bank to the small business (on a consolidated basis where applicable) is not more than S$2 million, gross of CRM.[267] For the purposes of determining whether the S$2 million threshold is met, the Reporting Bank must –

(I) include any exposure to the same small business that is classified as in default in accordance with the definition of default in Annex 7L, but must not include any IRBA exposure in the residential mortgage asset sub-class;

(II) subject to paragraph 7.4.54, ensure that the basis of aggregation for total exposures to the small business on a consolidated basis, is the same basis on which the Reporting Bank treats an obligor in a group of obligors, for its risk management purposes, and must include exposures to related corporations of the obligor, and exposures to the sole proprietors or partners in any of the entities in the group of obligors; and

(III) aggregate exposures to the same small business which are extended through or guaranteed by an individual; and

[267] When an IRBA exposure categorised under the other retail exposures asset sub-class pursuant to this provision exceeds the S$2 million threshold, a Reporting Bank should re-categorise the exposure under the general corporate asset sub-class or corporate small business asset sub-class. The Authority will be flexible if the need for re-categorisation arises solely from short-term exchange rate fluctuations, for example, exchange rate fluctuations of non-Singapore dollar-denominated assets. In such cases, the Authority would expect the Reporting Bank to establish appropriate policies and procedures to determine when the threshold is exceeded in a more permanent way, for example, through the extension of increased credit or a major currency revaluation, and to re-categorise the exposures if necessary.

(B) the exposure qualifies as a retail small business exposure in accordance with the internal written policies of the Reporting Bank, and is managed by the Reporting Bank as part of a large pool of similar exposures consistently over time and in the same manner as other exposures categorised under the IRBA retail asset class. This means that the exposure is originated in a similar manner to other exposures categorised under the IRBA retail asset class, and is not managed individually in a way comparable to exposures categorised under the general corporate asset sub-class or corporate small business asset sub-class, but rather as part of a pool of exposures with similar risk characteristics for the purposes of risk assessment and quantification.

7.4.51 The Reporting Bank must have controls to ensure that any inadvertent assignment of exposures that do not meet the conditions in paragraph 7.4.50 to the IRBA retail asset class would be sufficiently immaterial that it would not result in any significant distortion of the overall statistical characteristics of the pools. To avoid doubt, the Reporting Bank must not use cost considerations to justify inclusion of exposures that do not meet the conditions in paragraph 7.4.50 if the effect on the statistical characteristics of the pools would be material.[268]

7.4.52 For the purposes of categorising an exposure in the QRRE asset sub-class under paragraph 7.4.50(b), in the case where a Reporting Bank segments its QRRE asset sub-class into 2 or more sub-portfolios, a Reporting Bank must ensure that such segmentation is performed in a manner consistent with the segmentation of its retail activities generally.[269]

7.4.53 The Reporting Bank must categorise an exposure in the QRRE asset sub-class mentioned under paragraph 7.4.50(b) into any one of the following categories of exposures:

(a) QRRE transactor, which refers to an exposure in the QRRE asset sub-class to an obligor in relation to facilities including credit cards and charge cards where the billed balance has been repaid in full at or before each scheduled repayment date for the previous 12 months, or in relation to overdrafts that have not been drawn down over the previous 12 months;

(b) QRRE revolver, which refers to any other exposure in the QRRE asset sub-class that is not a QRRE transactor, including any exposure with less than 12 months of repayment history.

7.4.54 For the purposes of paragraph 7.4.50(c)(ii)(A)(II), the Reporting Bank may disaggregate its exposures to an obligor in a group of obligors if it has assessed that the disaggregated obligor has sufficient financial resources to fully service the obligor's liabilities and does not need to depend on any other entity within the group of obligors for financial assistance in meeting the liabilities. A Reporting Bank must not disaggregate based on product type alone.

[268] Sample testing may be one method of demonstrating that such impact would be immaterial.
[269] A Reporting Bank should, at a minimum, segment by country or jurisdiction.

7.4.55 For the purposes of paragraph 7.4.50(c)(ii)(B), an exposure to a small business will not normally be considered to be individually managed in a way comparable to exposures categorised under the general corporate asset sub-class or corporate small business asset sub-class if management of that exposure –

(a) is sufficiently insignificant so as not to disrupt the homogeneity of the pool;

(b) is consistent with the management of other exposures in the same pool; and

(c) is significantly different in extent from the individual management that occurs for exposures categorised under the general corporate asset sub-class or corporate small business asset sub-class, looked at as a whole.

7.4.56 The IRBA eligible purchased receivables asset class consists of the following asset sub-classes:

(a) purchased corporate receivables asset sub-class, which consists of purchased receivables that meet the criteria for categorisation under the corporate asset sub-class;

(b) purchased corporate small business receivables asset sub-class, which consists of purchased receivables that meet the criteria for categorisation under the corporate small business asset sub-class;

(c) purchased retail receivables asset sub-class, which consists of purchased receivables that meet the criteria for categorisation under the IRBA retail asset class.

Sub-division 6: Calculation of Capital Requirements, K, under the IRBA

7.4.57 Subject to paragraphs 7.4.58 and 7.4.61, a Reporting Bank using the IRBA must –

(a) for an IRBA exposure not classified as in default in accordance with the definition of default in Annex 7L, calculate K for that exposure in accordance with Sub-divisions 8, 9, 10, and 11 of this Division, whichever is applicable; and

(b) for an IRBA exposure that is classified as in default in accordance with the definition of default in Annex 7L, calculate K for that exposure in accordance with Sub-division 12.[270]

7.4.58 A Reporting Bank must not use the A-IRBA for any of the following IRBA exposures:

[270] The credit RWA under the IRBA has been calibrated to cover only the unexpected losses that could arise from the credit and investment related risks of a Reporting Bank for exposures in the banking book. A Reporting Bank should consider whether it has set aside sufficient allowances to cover the EL amounts that could arise from such exposures. Paragraph 6.1.5(e) provides for the appropriate deduction in the calculation of CET1 Capital in the event that a Reporting Bank has not set aside sufficient allowances to cover the EL amounts that could arise.

(a) exposures categorised in the general corporate asset sub-class in paragraph 7.4.42(a), to an entity which belongs to a group with total consolidated annual revenue greater than S$750 million;

(b) exposures categorised in the bank asset sub-class in paragraph 7.4.42(d);

(c) exposures to any financial institution, including exposures to securities firms and insurance companies, which are categorised in the general corporate asset sub-class in paragraph 7.4.42(a) or corporate small business asset sub-class in paragraph 7.4.42(b).

7.4.59 For the purposes of determining whether the S$750 million total consolidated annual revenue threshold in paragraph 7.4.58(a) is met, the Reporting Bank must use the reported total revenue of the entity. For an entity that is part of a consolidated group, the Reporting Bank must use the reported total revenue of the consolidated group of companies which includes the entity, according to the accounting standard applicable to the ultimate parent of the consolidated group. In calculating the total consolidated annual revenue, the Reporting Bank must –

(a) calculate the average reported total annual revenue based on the past 3 consecutive financial years[270A] of audited financial statements; or

[MAS Notice 637 (Amendment) 2024]

(b) where financial statements for any one or more of the past 3 consecutive financial years are available, use the reported total annual revenue for the financial year with the most recent audited financial statements.

[MAS Notice 637 (Amendment) 2024]

7.4.60 For the purposes of calculating K_{corp}, K_{sov}, K_{bank}, K_{sl}, K_{sm}, K_{hv}, K_{mort}, K_{qrre} and K_{oret} in Sub-divisions 8 and 9 of this Division –

(a) Ln denotes the natural logarithm;

(b) N(x) denotes the cumulative distribution function for a standard normal random variable (i.e. the probability that a normal random variable with mean zero and variance of one is less than or equal to x)[271]; and

(c) G(z) denotes the inverse cumulative distribution function for a standard normal random variable (i.e. the value of x such that N(x) = z)[272].

[270A] As an example, for an entity or consolidated group, as the case may be, whose financial year ends on 31 December 2023 –
(a) as of 31 December 2023, the "past 3 consecutive financial years" would refer to 1 January 2020 to 31 December 2022; and
(b) as of 31 March 2024, 30 June 2024 and 30 September 2024, the "past 3 consecutive financial years" would refer to 1 January 2021 to 31 December 2023.

[MAS Notice 637 (Amendment) 2024]

[271] The normal cumulative distribution function is, for example, available in Excel as the function NORMSDIST.

[272] The inverse of the normal cumulative distribution function is, for example, available in Excel as the function NORMSINV.

Sub-division 7: Calculation of Capital Requirements, K, and Determination of Risk Weights, RW_{slot}, for Exposures in the SL Asset Sub-Class and HVCRE Asset Sub-Class under the IRBA

7.4.61 For any IRBA exposure belonging to the SL asset sub-class or HVCRE asset sub-class, a Reporting Bank must –

(a) if the Reporting Bank complies with the requirements for wholesale exposures under the F-IRBA in Annex 7X for deriving estimates of PD for such exposures, or the requirements for wholesale exposures under the A-IRBA in Annex 7X for deriving estimates of PD, LGD and EAD for such exposures, calculate K for that exposure in accordance with Sub-division 6 of this Division; and

(b) in all other cases, determine RW_{slot} for that exposure in accordance with the supervisory slotting criteria set out in Sub-division 13 of this Division.

Sub-division 8: Calculation of K for IRBA Wholesale Asset Class

Calculation of K_{corp}, K_{sov}, K_{bank} and K_{sl}

7.4.62 A Reporting Bank must calculate K_{corp}, K_{sov}, K_{bank} and K_{sl} for an IRBA exposure in the general corporate, sovereign, bank and SL asset sub-classes, respectively, using the following formula:

Correlation (R) = $0.12 \times \frac{(1-e^{-50 \times PD})}{(1-e^{-50})} + 0.24 \times (1 - \frac{(1-e^{-50 \times PD})}{(1-e^{-50})})$

Maturity adjustment (b) = $[0.11852 - 0.05478 \times \ln(PD)]^2$

Capital requirement (K_{corp}, K_{sov}, K_{bank} or K_{sl})
= $\left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \times G(0.999)\right] - PD \times LGD\right] \times \frac{(1+(M-2.5)\times b)}{(1-1.5\times b)}$

Illustrative risk weights are set out in Annex 7AA.

7.4.63 Despite paragraph 7.4.62, for all IRBA exposures to financial institutions subject to minimum prudential standards and supervision by a financial regulatory agency ("regulated financial institutions") with total assets greater than or equal to USD 100 billion (or equivalent), and financial institutions which are not subject to minimum prudential standards and supervision by a financial regulatory agency ("unregulated financial institutions"), a Reporting Bank must calculate K_{corp}, K_{bank} and K_{sl} using the following formula:

Correlation (R_FI) = $1.25 \times \left[0.12 \times \frac{(1-e^{-50 \times PD})}{(1-e^{-50})} + 0.24 \times \left(1 - \frac{(1-e^{-50 \times PD})}{(1-e^{-50})}\right)\right]$

Maturity adjustment (b) = $[0.11852 - 0.05478 \times \ln(PD)]^2$

Capital requirement (K_{corp}, K_{bank} or K_{sl})
= $\left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R\_FI)}} + \sqrt{\frac{R\_FI}{1-R\_FI}} \times G(0.999)\right] - PD \times LGD\right] \times \frac{(1+(M-2.5)\times b)}{(1-1.5\times b)}$

For the purposes of determining whether the USD 100 billion (or equivalent) total assets threshold is met, the Reporting Bank must use the reported total assets of the consolidated group of companies which include the regulated financial institution. The reported total assets figure must be taken from the most recent audited financial statements.

7.4.64 For the purposes of paragraph 7.4.63 –

(a) "financial institution" refers to an entity specified in Annex 2A, a collective investment scheme or a closed-end fund; and

(b) the Authority may from time to time specify any entity or group of entities as unregulated financial institutions.

Calculation of K_{sm}

7.4.65 A Reporting Bank must calculate K_{sm} for an IRBA exposure in the corporate small business asset sub-class using the following formula:

Correlation (R) = $0.12 \times \frac{(1-e^{-50 \times PD})}{(1-e^{-50})} + 0.24 \times \left(1 - \frac{(1-e^{-50 \times PD})}{(1-e^{-50})}\right) - 0.04 \times \left(1 - \frac{(S-10)}{90}\right)$

Maturity adjustment (b) = $[0.11852 - 0.05478 \times \ln(PD)]^2$

Capital Requirement (K_{sm})
= $\left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \times G(0.999)\right] - PD \times LGD\right] \times \frac{(1+(M-2.5)\times b)}{(1-1.5\times b)}$

where "S" refers to total reported annual revenue, or reported total assets where a Reporting Bank has included an IRBA exposure to an obligor in the corporate small business sub-class pursuant to paragraph 7.4.45, of the obligor (calculated in millions of Singapore dollars), or if the obligor is part of a consolidated group, of the consolidated group. Where the reported annual revenue figure or reported total assets figure, as the case may be, is less than S$10 million, the Reporting Bank must apply S = 10 for the purposes of calculating K_{sm}. Where the Reporting Bank is not permitted to use the total reported annual revenue or reported total assets of the obligor in the K_{sm} formula in accordance with paragraph 7.4.44 or 7.4.47, the Reporting Bank

must apply S = 100 for the purposes of calculating K_{sm}. The adjustment of $0.04 \times \left(1 - \frac{(S-10)}{90}\right)$ is referred to as the "firm-size adjustment".

Illustrative risk weights are set out in Annex 7AA.

7.4.66 Despite paragraph 7.4.65, for all IRBA exposures to regulated financial institutions with total assets greater than or equal to USD 100 billion (or equivalent) and unregulated financial institutions, a Reporting Bank must calculate K_{sm} using the following formula:

Correlation (R_FI) = $1.25 \times \left[0.12 \times \frac{(1-e^{-50 \times PD})}{(1-e^{-50})} + 0.24 \times \left(1 - \frac{(1-e^{-50 \times PD})}{(1-e^{-50})}\right)\right]$

Maturity adjustment (b) = $[0.11852 - 0.05478 \times \ln(PD)]^2$

Capital requirement (K_{sm})

= $\left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R\_FI)}} + \sqrt{\frac{R\_FI}{1-R\_FI}} \times G(0.999)\right] - PD \times LGD\right] \times \frac{(1+(M-2.5)\times b)}{(1-1.5\times b)}$

For the purposes of determining whether the USD 100 billion (or equivalent) total assets threshold is met, the Reporting Bank must use the reported total assets of the consolidated group of companies which include the regulated financial institution. The reported total assets figure must be taken from the most recent audited financial statements.

7.4.67 For the purposes of paragraph 7.4.66 –

(a) "financial institution" refers to an entity specified in Annex 2A, a collective investment scheme or a closed-end fund; and

(b) the Authority may from time to time specify any entity or group of entities as unregulated financial institutions.

Calculation of K_{hv}

7.4.68 A Reporting Bank must calculate K_{hv} for an IRBA exposure in the HVCRE asset sub-class using the following formula:

Correlation (R) = $0.12 \times \frac{(1-e^{-50 \times PD})}{(1-e^{-50})} + 0.30 \times (1 - \frac{(1-e^{-50 \times PD})}{(1-e^{-50})})$

Maturity adjustment (b) = $[0.11852 - 0.05478 \times \ln(PD)]^2$

Capital requirement (K_{hv})

= $\left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \times G(0.999)\right] - PD \times LGD\right] \times \frac{(1+(M-2.5)\times b)}{(1-1.5\times b)}$

7.4.69 Where K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{sl} or K_{hv} for any IRBA exposure calculated in accordance with paragraphs 7.4.62 to 7.4.68 is less than zero, the Reporting Bank must

apply K = 0 for the purposes of calculating the credit risk-weighted exposure amount for that IRBA exposure pursuant to Sub-division 4 or 5 of Division 1 of this Part.

Probability of Default, PD

7.4.70 For the purposes of paragraphs 7.4.62 to 7.4.68, PD of an exposure in the IRBA wholesale asset class refers to the PD associated with the obligor grade to which the IRBA exposure is assigned and estimated in accordance with Annex 7X. PD is measured as a decimal.

7.4.71 For the purposes of calculating K_{corp}, K_{sm}, K_{bank}, K_{sl} and K_{hv} pursuant to paragraphs 7.4.62 to 7.4.68, the Reporting Bank must apply PD = 0.0005 where the PD is less than 0.0005.

Loss Given Default, LGD

7.4.72 For the purposes of paragraphs 7.4.62 to 7.4.68, LGD of an exposure in the IRBA wholesale asset class refers to the LGD associated with the facility grade to which the IRBA exposure is assigned and estimated in accordance with Annex 7X, or where applicable LGD* calculated in accordance with paragraphs 7.4.75 to 7.4.79, subject to paragraphs 7.4.73, 7.4.74 and 7.4.80. LGD, or where applicable LGD*, is measured as a decimal.

7.4.73 For an IRBA exposure for which the Reporting Bank is using the F-IRBA to calculate the credit risk-weighted exposure amount and where the IRBA exposure is not secured by any eligible financial collateral or eligible IRBA collateral, a Reporting Bank must apply the following in the calculation of LGD for the purposes of calculating K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{sl} and K_{hv} pursuant to paragraphs 7.4.62 to 7.4.68:

(a) if the exposure is expressly subordinated to another facility, assign a LGD of 0.75;

(b) in any other case –

(i) assign a LGD of 0.45 for the following exposures:

(A) exposures categorised in the sovereign asset sub-class in paragraph 7.4.42(c) or bank asset sub-class in paragraph 7.4.42(d);

(B) exposures to any financial institution, including exposures to securities firms and insurance companies, which are categorised in the general corporate asset sub-class in paragraph 7.4.42(a) or corporate small business asset sub-class in paragraph 7.4.42(b); and

(ii) assign a LGD of 0.4 for any other exposures.

7.4.74 A Reporting Bank must use either of the following for CCR exposures (other than any exposure to a CCP arising from a CCR exposure) that are categorised under the IRBA wholesale asset class:

(a) the values of LGD, as applicable, set out in paragraph 7.4.73, in the case where the Reporting Bank is using the F-IRBA;

(b) estimates of LGD without recognising the effects of CRM, in the case where the Reporting Bank is using the A-IRBA.

7.4.75 For an IRBA exposure for which the Reporting Bank is using the F-IRBA to calculate the credit risk-weighted exposure amount, and where the Reporting Bank has taken eligible financial collateral or eligible IRBA collateral for the IRBA exposure and recognises the effect of CRM of such collateral, the Reporting Bank must calculate LGD*, which is the LGD applicable to a collateralised transaction, as the exposure weighted average of the LGD applicable to the unsecured portion of an exposure and the LGD applicable to the secured portion of the exposure. The Reporting Bank must calculate LGD*, as follows:

$$LGD^* = LGD_U \times \frac{E\,(1+H_E) - C(1-H_C-H_{FX})}{E\,(1+H_E)} + LGD_S \times \frac{C(1-H_C-H_{FX})}{E\,(1+H_E)}$$

where –

(a) LGD_U = LGD applicable to the unsecured exposure set out in paragraph 7.4.73;

(b) E = fair value of the exposure of the transaction, as though no collateral was taken, calculated in accordance with Division 2 of this Part;

(c) H_E = haircut applicable to cash lent or the type of securities lent or posted as set out in Table 7J-1 and paragraph 2.3 of Annex 7J, subject to paragraph 2.5 of Annex 7J;

(d) C = fair value of the eligible financial collateral or eligible IRBA collateral received;

(e) H_C = haircut appropriate to the collateral received as set out in Table 7J-1, subject to paragraph 2.5 of Annex 7J, in the case of eligible financial collateral, or Table 7-23 in the case of eligible IRBA collateral;

(f) H_{FX} = haircut appropriate for currency mismatch between the collateral and exposure as set out in paragraph 2.4 of Annex 7J, subject to paragraph 2.5 of Annex 7J;

(g) LGD_S = LGD applicable to the type of collateral received in the transaction, as set out in Table 7-23; and

(h) $C(1 - H_C - H_{FX})$ is capped at $E(1 + H_E)$.

7.4.76 The following table sets out the applicable LGD values and haircuts for eligible financial collateral and eligible IRBA collateral:

Table 7-23: Applicable LGD values and Haircuts for Portion of IRBA Exposures secured by Eligible Financial Collateral and Eligible IRBA Collateral

Eligible Financial collateral and Eligible IRBA Collateral	LGD	Haircut
Eligible financial collateral	0	Applicable haircuts based on Table 7J-1
Eligible receivables	0.2	0.4
Eligible CRE or eligible RRE	0.2	
Eligible physical collateral	0.25	

7.4.77 A Reporting Bank must not recognise the effects of CRM of a junior charge on an eligible CRE, eligible RRE or eligible physical collateral that is an industrial property unless –

[MAS Notice 637 (Amendment) 2024]

(a) in the case of eligible CRE or eligible RRE, all the senior charges ranking above the junior charge in question are held by one or more of the following persons:

(i) the Reporting Bank;

(ii) CPF;

(iii) HDB;

[MAS Notice 637 (Amendment) 2024]

(aa) in the case of eligible physical collateral that is an industrial property, all the senior charges ranking above the junior charge in question are held by one or more of the following persons:

(i) the Reporting Bank;

(ii) JTC; and

[MAS Notice 637 (Amendment) 2024]

(b) there is no doubt that the junior charge is legally enforceable and constitutes an efficient credit risk mitigant.

7.4.78 A Reporting Bank which recognises the effects of CRM of a junior charge on an eligible CRE, eligible RRE or eligible physical collateral that is an industrial property, taken for an IRBA exposure (other than an exposure that is expressly subordinated to another facility) categorised under the IRBA wholesale asset class for which the Reporting Bank is using the F-IRBA to calculate the credit risk-weighted exposure amount, must apply the

following treatment for the purposes of calculating LGD* in accordance with paragraph 7.4.75:

[MAS Notice 637 (Amendment) 2024]

(a) $C(1 - H_C - H_{FX})$ must be reduced by the sum of all loans or claims, as the case may be, with charges (including principal and accrued interest) that rank higher than the junior charge on the eligible CRE, eligible RRE or eligible physical collateral that is an industrial property. In cases where there are charges held by third parties that rank pari passu with the charge held by the Reporting Bank, $C(1 - H_C - H_{FX})$ must be further reduced based on the proportion of the collateral that is attributable to the Reporting Bank;

[MAS Notice 637 (Amendment) 2024]

(b) E must be calculated as the sum of fair value of all the exposures secured by all the junior and senior charges held by the Reporting Bank on the eligible CRE, eligible RRE or eligible physical collateral that is an industrial property.

[MAS Notice 637 (Amendment) 2024]

7.4.79 Where a Reporting Bank has taken a mix of eligible financial collateral and eligible IRBA collateral, including different types of eligible IRBA collateral, for an IRBA exposure categorised under the IRBA wholesale asset class for which it is using the F-IRBA to calculate the credit risk-weighted exposure amount, the Reporting Bank may recognise the effects of CRM of the eligible financial collateral and eligible IRBA collateral. To recognise the effects of CRM, the Reporting Bank must recognise each individual type of collateral sequentially beginning with the type of collateral with the lowest LGD and haircuts, and reduce the unsecured portion of the IRBA exposure by the adjusted value of the type of the collateral for which the effects of CRM is recognised, and therefore calculate LGD* as follows:

$$LGD^* = LGD_U \times \frac{E\,(1+H_E) - \sum_i C_i(1-H_{Ci}-H_{FXi})}{E\,(1+H_E)} + \sum_i LGD_{Si} \times \frac{C_i(1-H_{Ci}-H_{FXi})}{E\,(1+H_E)}$$

where –

(a) LGD_U = LGD applicable to the unsecured exposure set out in paragraph 7.4.73;

(b) E = fair value of the exposure of the transaction, as though no collateral was taken, calculated in accordance with Division 2 of this Part;

(c) C_i = fair value of the type of collateral received;

(d) H_E = haircut applicable to cash lent or the type of securities lent or posted as set out in Table 7J-1 and paragraph 2.3 of Annex 7J, subject to paragraph 2.5 of Annex 7J;

(e) H_{Ci} = haircut appropriate to the type of collateral received, as set out in Table 7J-1, subject to paragraph 2.5 of Annex 7J, in the case of eligible financial collateral, or Table 7-23 in the case of eligible IRBA collateral;

(f) HF_{Xi} = haircut appropriate for currency mismatch between the type of collateral received and exposure based on paragraph 2.4 of Annex 7J, subject to paragraph 2.5 of Annex 7J;

(g) LGD_{Si} = LGD applicable to the type of collateral received in the transaction, as set out in Table 7-23; and

(h) $\sum_i C_i \left(1 - H_{Ci} - H_{FXi}\right)$ is capped at $E(1 + H_E)$.

7.4.80 For an IRBA exposure for which a Reporting Bank is using the A-IRBA to calculate the credit risk-weighted exposure amount, and for the purposes of calculating K_{corp}, K_{sm}, K_{sl} and K_{hv} pursuant to paragraphs 7.4.62 to 7.4.68 and calculating EL amount in paragraph 7.4.132, –

(a) where a Reporting Bank has taken collateral for an IRBA exposure which is fully secured by the collateral (i.e. the value of the collateral after haircuts exceeds the EAD calculated in accordance with Division 2 of this Part), the Reporting Bank must apply –

(i) LGD = 0.1, where the LGD is less than 0.1 for the portion of the IRBA exposure secured by eligible receivables, eligible CRE or eligible RRE; and

(ii) LGD = 0.15 where the LGD is less than 0.15 for the portion of the IRBA exposure secured by other eligible physical collateral.

To avoid doubt,

(A) the Reporting Bank need not apply any floor to the LGD for the portion of the IRBA exposure secured by eligible financial collateral; and

(B) where the collateral consist of a mix of collateral, the Reporting Bank must calculate the floor applicable by recognising each individual type of collateral sequentially beginning with the type of collateral with the lowest floor to the LGD i.e. reduce the unsecured portion of the IRBA exposure by the value of the collateral after haircuts for eligible financial collateral, followed by eligible receivables, eligible CRE or eligible RRE, and other eligible physical collateral;

(b) where a Reporting Bank has not taken any eligible financial collateral or eligible IRBA collateral for an IRBA exposure, the Reporting Bank must apply LGD = 0.25 where the LGD is less than 0.25; and

(c) where a Reporting Bank has taken collateral for an IRBA exposure which is not fully secured by the collateral (i.e. the value of the collateral after haircuts does not equal to or exceed the EAD calculated in accordance with Division 2 of this Part) –

(i) the Reporting Bank may apply paragraph 7.4.75 or 7.4.79 to calculate LGD* for the IRBA exposure, but for the unsecured portion, substitute LGD estimated by the Reporting Bank for the unsecured exposure, for LGD_U, provided that all of the following conditions are met:

(A) the Reporting Bank meets the minimum requirements for estimating LGD in accordance with Annex 7X for the unsecured portion of an exposure;

(B) the Reporting Bank does not have sufficient data for estimating LGD to meet the minimum requirements in paragraph 1.3(b) of Annex 7W for the secured portion of the exposure;

(C) the exposure is secured by eligible financial collateral or eligible IRBA collateral;

(D) LGD estimated by the Reporting Bank for the unsecured portion does not incorporate any effect of collateral recovery; and

(ii) in all other cases, the Reporting Bank must calculate LGD flr_{PS}, which is the LGD floor applicable to a collateralised transaction, as the exposure-weighted average of the LGD floor applicable to the unsecured portion of the exposure and the LGD floor applicable to the secured portion of the exposure. The Reporting Bank must calculate LGD flr_{PS} as follows:

$$\text{LGD } flr_{PS} = \text{LGD } flr_{U} \times \frac{E\,(1+H_E) - C(1-H_C-H_{FX})}{E\,(1+H_E)} + \text{LGD } flr_{S} \times \frac{C(1-H_C-H_{FX})}{E\,(1+H_E)}$$

where –

(A) LGD flr_U = 0.25;

(B) E = fair value of the exposure of the transaction, as though no collateral was taken, calculated in accordance with Division 2 of this Part;

(C) H_E = haircut applicable to cash lent or the type of securities lent or posted as set out in Table 7J-1 and paragraph 2.3 of Annex 7J, subject to paragraph 2.5 of Annex 7J;

(D) C = fair value of the collateral received;

(E) H_C = haircut appropriate to the collateral received as set out in Table 7J-1, subject to paragraph 2.5 of Annex 7J, in the case of eligible financial collateral, Table 7-23 in the case of eligible IRBA collateral, or 1 in the case of any other collateral;

(F) H_{FX} = haircut appropriate for currency mismatch between the collateral and exposure based on paragraph 2.4 of Annex 7J, subject to paragraph 2.5 of Annex 7J;

(G) LGD flr_S = 0 where the IRBA exposure is secured by eligible financial collateral, 0.1 where the IRBA exposure is secured by eligible receivables, eligible CRE or eligible RRE, 0.15 where the IRBA exposure is secured by other eligible physical collateral, or 0.25 in the case of any other collateral. Where a Reporting Bank has taken a mix of collateral, the Reporting Bank must calculate LGD flr_S as the weighted average of the floor applicable to each type of collateral based on the $C(1 - H_C - H_{FX})$ specific to the collateral; and

(H) $C(1 - H_C - H_{FX})$ is capped at $E(1 + H_E)$,

and apply LGD = LGD $flr_{PS,}$ where the LGD is less than LGD $flr_{PS.}$

Effective Maturity, M

7.4.81 A Reporting Bank must calculate M in accordance with Annex 7V.

Sub-division 9: Calculation of K for IRBA Retail Asset Class

Calculation of K_{mort}

7.4.82 A Reporting Bank must calculate K_{mort} for an IRBA exposure in the residential mortgage asset sub-class using the following formula:

Correlation (R) = 0.15

Capital requirement (K_{mort})

$$= \left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \times G(0.999)\right] - PD \times LGD\right]$$

Illustrative risk weights are set out in Annex 7AA.

7.4.83 Despite paragraph 7.4.82, for an IRBA exposure in the residential mortgage asset sub-class where the exposure is to an obligor who has mortgaged more than 2 non-owner occupied residential property units to a Reporting Bank, the Reporting Bank must calculate K_{mort} using the following formula if the Reporting Bank has assessed that the servicing of the exposure and prospects for recovery in the event of default materially depend on the cash flows generated by the residential property securing the exposure rather than on the underlying capacity of the obligor to service the exposure from other sources:

Correlation (R) = $0.12 \times \frac{(1-e^{-50 \times PD})}{(1-e^{-50})} + 0.24 \times (1 - \frac{(1-e^{-50 \times PD})}{(1-e^{-50})})$

Maturity adjustment (b) = $[0.11852 - 0.05478 \times \ln(PD)]^2$

Capital requirement (K_{mort})
= $\left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \times G(0.999)\right] - PD \times LGD\right] \times \frac{(1+(M-2.5)\times b)}{(1-1.5\times b)}$

Illustrative risk weights are set out in Annex 7AA.

To avoid doubt, the Reporting Bank must calculate K_{mort} under paragraph 7.4.82 for an exposure secured by a residential property that is owner-occupied and is the obligor's primary residence.

7.4.84 For the purposes of paragraph 7.4.83 –

(a) where the obligor has mortgaged more than one residential property units to a Reporting Bank, the Reporting Bank must count only up to one residential property unit as owner-occupied, and count any mortgages on other residential property units as mortgages on non-owner occupied residential property units; and

(b) a Reporting Bank must calculate M in accordance to paragraph 1.1 or 5.1 of Annex 7V.

Calculation of K_{qrre}

7.4.85 A Reporting Bank must calculate K_{qrre} for an IRBA exposure in the QRRE asset sub-class using the following formula:

Correlation (R) = 0.04

Capital requirement (K_{qrre})
= $\left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \times G(0.999)\right] - PD \times LGD\right]$

Illustrative risk weights are set out in Annex 7AA.

Calculation of K_{oret}

7.4.86 A Reporting Bank must calculate K_{oret} for an IRBA exposure in the other retail exposures asset sub-class using the following formula:

$$\text{Correlation (R)} = 0.03 \times \frac{(1-e^{-35 \times PD})}{(1-e^{-35})} + 0.16 \times \left(1 - \frac{(1-e^{-35 \times PD})}{(1-e^{-35})}\right)$$

$$\text{Capital requirement } (K_{oret}) = \left[LGD \times N\left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \times G(0.999)\right] - PD \times LGD\right]$$

Illustrative risk weights are set out in Annex 7AA.

Probability of Default, PD

7.4.87 For the purposes of paragraphs 7.4.82 to 7.4.86, PD of an exposure in the IRBA retail asset class refers to the PD associated with the pool of exposures to which the IRBA exposure is assigned and estimated in accordance with Annex 7X. PD is measured as a decimal.

7.4.88 For the purposes of calculating K_{mort} pursuant to paragraphs 7.4.82 to 7.4.84, and K_{oret} pursuant to paragraph 7.4.86, a Reporting Bank must apply PD = 0.0005 where the PD is less than 0.0005. For the purposes of calculating K_{qrre} pursuant to paragraph 7.4.85, the Reporting Bank must apply PD = 0.0005 where the PD is less than 0.0005 for a QRRE transactor and PD = 0.001 where the PD is less than 0.001 for a QRRE revolver.

Loss Given Default, LGD

7.4.89 For the purposes of paragraphs 7.4.82 to 7.4.86, LGD of an exposure in the IRBA retail asset class refers to the LGD associated with the pool of exposures to which the IRBA exposure is assigned and estimated in accordance with Annex 7X. LGD is measured as a decimal.

7.4.90 For the purposes of calculating K_{mort} pursuant to paragraphs 7.4.82 to 7.4.84, a Reporting Bank must apply LGD = 0.1 where the LGD is less than 0.1. To avoid doubt, the Reporting Bank must apply the LGD floor irrespective of the level of collateral provided by the residential property. Regardless of whether the Reporting Bank applies the LGD floor, the Reporting Bank must comply with the requirements on LGD estimation as set out in Annex 7X.

7.4.91 For the purposes of calculating K_{qrre} pursuant to paragraph 7.4.85, the Reporting Bank must apply LGD = 0.5 where the LGD is less than 0.5.

7.4.92 For the purposes of calculating K_{oret} pursuant to paragraph 7.4.86 –

(a) where a Reporting Bank has taken collateral for an IRBA exposure which is fully secured by the collateral (i.e. the value of the collateral after

haircuts exceeds the EAD calculated in accordance with Division 2 of this Part), the Reporting Bank must apply –

(i) LGD = 0.1 where the LGD is less than 0.1 for the portion of the IRBA exposure secured by eligible receivables, eligible CRE or eligible RRE; and

(ii) LGD = 0.15 where the LGD is less than 0.15 for the portion secured by other eligible physical collateral.

To avoid doubt –

(A) the Reporting Bank need not apply any floor to LGD for the portion of the IRBA exposure secured by eligible financial collateral; and

(B) where the collateral consists of a mix of collateral, the Reporting Bank must calculate the floor applicable by recognising each individual type of collateral sequentially beginning with the type of collateral with the lowest floor to the LGD i.e. reduce the unsecured portion of the IRBA exposure by the value of the collateral after haircuts for eligible financial collateral, followed by eligible receivables, eligible CRE or eligible RRE, and other eligible physical collateral;

(b) where a Reporting Bank has not taken any eligible financial collateral or eligible IRBA collateral for an IRBA exposure, the Reporting Bank must apply LGD = 0.3 where the LGD is less than 0.3; and

(c) where a Reporting Bank has taken collateral for an IRBA exposure which is not fully secured by the collateral (i.e. the value of the collateral after haircuts does not exceed the EAD calculated in accordance with Division 2 of this Part), the Reporting Bank must calculate LGD flr_{PS}, which is the LGD floor applicable to a collateralised transaction, as the exposure-weighted average of the LGD floor applicable to the unsecured portion of the exposure and the LGD floor applicable to the secured portion of the exposure. The Reporting Bank must calculate LGD flr_{PS} as follows:

$$\text{LGD } flr_{PS} = \text{LGD } flr_{U} \times \frac{E\,(1+H_E) - C(1-H_C-H_{FX})}{E\,(1+H_E)} + \text{LGD } flr_{S} \times \frac{C(1-H_C-H_{FX})}{E\,(1+H_E)}$$

where –

(i) LGD flr_U = 0.3;

(ii) E = fair value of the exposure of the transaction, as though no collateral was taken, calculated in accordance with Division 2 of this Part;

(iii) H_E = haircut applicable to cash lent or the type of securities lent or posted as set out in Table 7J-1 and paragraph 2.3 of Annex 7J, subject to paragraph 2.5 of Annex 7J;

(iv) C = fair value of the collateral received;

(v) H_C = haircut appropriate to the collateral received as set out in Table 7J-1, subject to paragraph 2.5 of Annex 7J, in the case of eligible financial collateral, Table 7-23 in the case of eligible IRBA collateral, or 1 in the case of any other collateral;

(vi) H_{FX} = haircut appropriate for currency mismatch between the collateral and exposure based on paragraphs 2.4 and 2.5 of Annex 7J;

(vii) LGD flr_S = 0 where the IRBA exposure is secured by eligible financial collateral, 0.1 where the IRBA exposure is secured by eligible receivables, eligible CRE or eligible RRE, 0.15 where the IRBA exposure is secured by other eligible physical collateral, or 0.3 in the case of any other collateral. Where a Reporting Bank has taken a mix of collateral, the Reporting Bank must calculate LGD flr_S as the weighted average of the floor applicable to each type of collateral based on the $C(1 - H_C - H_{FX})$ specific to the collateral;

(viii) $C(1 - H_C - H_{FX})$ is capped at $E(1 + H_E)$;

and apply LGD = LGD flr_{PS} where the LGD is less than LGD flr_{PS}.

Sub-division 10: Calculation of K for Eligible Purchased Receivables Asset Class

7.4.93 A Reporting Bank must calculate K_{cp} for an IRBA exposure in the purchased corporate receivables asset sub-class using the following formula:

$$K_{cp} = [K_{df,\,cp} + K_{dil,\,cp}]$$

where "$K_{df,\,cp}$" refers to the capital requirement for the default risk of purchased corporate receivables and "$K_{dil,\,cp}$" refers to the capital requirement for the dilution risk[273] of purchased corporate receivables. A Reporting Bank need not calculate $K_{dil,\,cp}$ if the Reporting Bank demonstrates to the satisfaction of the Authority that dilution risk is immaterial.

7.4.94 A Reporting Bank must calculate K_{sp} for an IRBA exposure in the purchased corporate small business receivables asset sub-class using the following formula:

[273] Examples include offsets or allowances arising from returns of goods sold, disputes regarding product quality, possible debts of the seller of the receivables to an obligor of the receivables, and any payment or promotional discounts offered by the seller of the receivables (e.g. a credit for cash payments within 30 days).

$$K_{sp} = [K_{df, sp} + K_{dil, sp}]$$

where "$K_{df, sp}$" refers to the capital requirement for the default risk of purchased corporate small business receivables and "$K_{dil, sp}$" refers to the capital requirement for the dilution risk of purchased corporate small business receivables. A Reporting Bank need not calculate $K_{dil, sp}$ if the Reporting Bank demonstrates to the satisfaction of the Authority that dilution risk is immaterial.

7.4.95 A Reporting Bank must calculate K_{rp} for an IRBA exposure in the purchased retail receivables asset sub-class using the following formula:

$$K_{rp} = [K_{df, rp} + K_{dil, rp}]$$

where "$K_{df, rp}$" refers to the capital requirement for the default risk of purchased retail receivables and "$K_{dil, rp}$" refers to the capital requirement for the dilution risk of purchased retail receivables. A Reporting Bank need not calculate $K_{dil, rp}$ if the Reporting Bank demonstrates to the satisfaction of the Authority that dilution risk is immaterial.

Calculation of Capital Requirements for Default Risk, K_{df}

7.4.96 Subject to paragraph 7.4.98, a Reporting Bank must calculate –

(a) $K_{df, cp}$ by applying the formula set out in paragraph 7.4.62 or 7.4.63 as appropriate for all underlying obligors of purchased corporate receivables and using the F-IRBA or the A-IRBA as appropriate, subject to the Reporting Bank receiving approval to adopt the F-IRBA or the A-IRBA for the corporate asset sub-class;

(b) $K_{df, sp}$ by applying the formula set out in paragraph 7.4.65 or 7.4.66 as appropriate for all underlying obligors of purchased corporate small business receivables and using the F-IRBA or the A-IRBA as appropriate, subject to the Reporting Bank receiving approval to adopt the F-IRBA or the A-IRBA for the corporate small business asset sub-class; and

(c) $K_{df, rp}$ by applying the formula set out in paragraph 7.4.82, 7.4.83, 7.4.85 or 7.4.86 (depending on whether the purchased receivables meet the criteria for categorisation under the residential mortgage asset sub-class, QRRE asset sub-class or other retail exposures asset sub-class), subject to the Reporting Bank receiving approval to adopt the IRBA for the applicable retail asset sub-class. For the purposes of calculating $K_{df, rp}$, a Reporting Bank must not have regard to any assumption of recourse or guarantees from the seller or other parties if it uses external or internal reference data to derive the estimates of PD and LGD. If the purchased receivables meet the criteria for categorisation under the residential mortgage asset sub-class or QRRE asset sub-class but the Reporting Bank

has not received approval to adopt the IRBA for those asset sub-classes, the Reporting Bank must calculate $K_{df,\ rp}$ by applying the formula set out in paragraph 7.4.86, subject to the Reporting Bank receiving approval to adopt the IRBA for the other retail exposures asset sub-class.

7.4.97 For the purposes of paragraph 7.4.96, in the case where the purchased receivables is a hybrid pool containing a mix of purchased receivables that can be categorised under 2 or more asset sub-classes and where a Reporting Bank cannot separate the purchased receivables by asset sub-class, the Reporting Bank must apply the formula for the asset sub-class that results in the highest K_{df} for the purposes of calculating the credit risk-weighted exposure amount for the pool pursuant to Sub-division 4 or 5 of Division 1 of this Part.

7.4.98 Subject to approval by the Authority, a Reporting Bank may calculate $K_{df,\ cp}$ and $K_{df,\ sp}$ using a top-down approach as set out in Annex 7T. The top-down approach allows the Reporting Bank to derive estimates of IRBA parameters on a pooled basis. A Reporting Bank seeking approval from the Authority to use the top-down approach must satisfy all of the following conditions:

(a) the receivables are purchased from third party sellers, and not from related corporations or affiliates of the Reporting Bank, and as such the Reporting Bank has not originated the receivables either directly or indirectly;

(b) the receivables are generated on an arm's-length basis between the seller and the obligor of the receivables. Inter-company accounts receivable and receivables subject to contra-accounts[274] between firms that buy and sell to each other are not eligible for the top-down treatment;

(c) the Reporting Bank has a claim on all proceeds from the pool of receivables or a pro rata interest in the proceeds. The existence of full or partial recourse to the seller is allowed as long as the cash flows from the purchased receivables are the primary protection against default risk as determined in accordance with paragraphs 2.10 to 2.15 of Annex 7T and the Reporting Bank meets the eligibility criteria in this Sub-division and Annex 7T, and the operational requirements in Section 2 of Annex 7T;

(d) the Reporting Bank demonstrates to the satisfaction of the Authority that the pool of receivables is sufficiently diversified;

(e) the Reporting Bank has earmarked the purchased receivables for securitisation or sale to be completed within 6 months from the date of purchase;

(f) the Reporting Bank meets the requirements in Annex 7T.

[274] Contra-accounts involve a customer buying from and selling to the same firm. The risk is that debts may be settled through payments in kind rather than cash. Invoices between the companies may be offset against each other instead of being paid. This practice can defeat a security interest when challenged in court.

7.4.99 For the purposes of paragraph 7.4.98(c), where a Reporting Bank has a claim on tranches of the proceeds[275], it must apply the treatment in Sub-division 7 of Division 1 of this Part and Division 6 of this Part, for securitisation exposures.

7.4.100 For the purposes of paragraph 7.4.98(d), in assessing whether to grant approval for a Reporting Bank to use the top-down approach as set out in Annex 7T, the Authority will consider, among other things, whether there is concentration in any single receivable or group of receivables (to a group of underlying obligors or guaranteed by the same seller) that is more than 3.5% of the EAD of the pool of purchased corporate receivables or purchased corporate small business receivables. To avoid doubt, this does not preclude the Authority from applying additional concentration limits.

7.4.101 If a Reporting Bank fails to comply with the conditions set out in paragraph 7.4.98 after approval has been granted for it to adopt the top-down approach, the Authority may revoke its approval for the Reporting Bank to use the top-down approach, in which case the Reporting Bank must calculate $K_{df,\ cp}$, $K_{df,\ sp}$ or both in accordance with paragraphs 7.4.96 and 7.4.97. Actions taken by the Authority may include subjecting the Reporting Bank to higher bank-specific capital requirements pursuant to section 10(3) of the Banking Act.

Calculation of Capital Requirements for Dilution Risk, K_{dil}

7.4.102 A Reporting Bank must calculate $K_{dil,\ cp}$, $K_{dil,\ sp}$ and $K_{dil,\ rp}$, regardless of whether it is using the top-down approach, using the following formula:

Correlation (R_{dil}) = $0.12 \times \frac{(1-e^{-50 \times PD_{dil}})}{(1-e^{-50})} + 0.24 \times (1 - \frac{(1-e^{-50 \times PD_{dil}})}{(1-e^{-50})})$

Maturity adjustment (b) = $[0.11852 - 0.05478 \times \ln(PD_{dil})]^2$

Capital requirement ($K_{dil,\ cp}$, $K_{dil,\ sp}$ or $K_{dil,\ rp}$)

= $\left[LGD_{dil} \times N\left[\frac{G(PD_{dil})}{\sqrt{(1-R_{dil})}} + \sqrt{\frac{R_{dil}}{1-R_{dil}}} \times G(0.999)\right] - PD_{dil} \times LGD_{dil}\right] \times \frac{(1+(M_{dil}-2.5)\times b)}{(1-1.5\times b)}$

where –

(a) "PD_{dil}" refers to the estimated one-year EL arising from dilution risk expressed as a percentage of the amount of receivables in the relevant pool. A Reporting Bank may use external and internal reference data to derive the estimate of EL. The Reporting Bank must calculate the estimate without regard to any assumption of recourse or guarantees from the seller or other parties;

(b) LGD_{dil} = 100%; and

(c) "M_{dil}" is –

[275] Claims on tranches refer to first loss position, second loss position, etc.

(i) the average effective maturity calculated in accordance with Annex 7V for the relevant pool of receivables; or

(ii) one year if the Reporting Bank demonstrates to the satisfaction of the Authority that the Reporting Bank is able to monitor the dilution risk and has a track record of resolving incidents of dilution or dilution events within one year.

7.4.103 Where $K_{dil,\ cp}$, $K_{dil,\ sp}$ or $K_{dil,\ rp}$ for any IRBA exposure calculated in accordance with paragraph 7.4.102 is less than zero, the Reporting Bank must apply $K_{dil} = 0$ for the purposes of calculating K_{cp}, K_{sp} or K_{rp}, as the case may be, for that IRBA exposure pursuant to paragraph 7.4.93, 7.4.94 or 7.4.95.

7.4.104 Subject to approval by the Authority, a Reporting Bank may calculate $K_{dil,\ cp}$, $K_{dil,\ sp}$ and $K_{dil,\ rp}$ using a top-down approach which allows the Reporting Bank to derive estimates of IRBA parameters on a pooled basis. A Reporting Bank seeking approval from the Authority to use the top-down approach must satisfy the conditions set out in paragraph 7.4.98.

7.4.105 If a Reporting Bank fails to comply with the conditions set out in paragraph 7.4.104 after approval has been granted for it to adopt the top-down approach, the Authority may revoke its approval for the Reporting Bank to use the top-down approach. The Reporting Bank may also be subjected to higher bank-specific capital requirements pursuant to section 10(3) of the Banking Act, or other actions by the Authority.

Treatment of purchase price discounts for receivables

7.4.106 Where the purchase price of the purchased receivables reflect a discount that provides first loss protection for default losses, dilution losses or both, and a portion of such a purchase price discount is to be refunded to the seller based on the performance of the receivables –

(a) a Reporting Bank which has purchased the receivables may treat the amount to be refunded as first loss protection and may calculate the capital requirements for the purchased receivables in accordance with Sub-divisions 4 to 7 of Division 6 of this Part; and

(b) a Reporting Bank which has sold the receivables and provided the refundable purchase price discount must treat the refundable amount as a first loss position and must calculate the capital requirements for the purchase price discount in accordance with Division 6 of this Part.

7.4.107 Non-refundable purchase price discounts for receivables do not affect either the EL provision calculation in Sub-division 14 of this Division or the calculation of credit risk-weighted exposure amounts.

7.4.108 Where collateral or partial guarantees obtained on the purchased receivables provide first loss protection, and these collateral or partial guarantees cover default losses, dilution losses or both, a Reporting Bank may treat them as first loss protection, and may calculate the capital requirements for the purchased receivables in accordance with Division 6 of this Part. When the collateral or partial guarantees cover both default losses

and dilution losses, a Reporting Bank using the SEC-IRBA must calculate the exposure-weighted average LGD in accordance with paragraph 7.6.39.

Sub-division 11: Treatment of Credit Protection

Treatment of Eligible Credit Protection Bought

7.4.109 A Reporting Bank which has bought eligible credit protection for an IRBA exposure categorised under the IRBA wholesale asset class for which it is using the F-IRBA to calculate the credit risk-weighted exposure amount may recognise the effects of CRM of the eligible credit protection as follows:

(a) break down the IRBA exposure into –

(i) a protected portion with EAD equal to the notional amount of the eligible credit protection, subject to any adjustments due to a currency mismatch or a maturity mismatch set out in Annex 7H; and

(ii) an unprotected portion with EAD equal to the EAD of the IRBA exposure, less the notional amount of the eligible credit protection adjusted for any currency mismatch or maturity mismatch set out in Annex 7H; and

(b) calculate the credit risk-weighted exposure amount pursuant to Sub-division 4 or 5 of Division 1 of this Part as follows:

(i) for the protected portion –

(A) use all of the following:

(I) the formula for calculating K that is applicable to the eligible protection provider;

(II) the PD associated with the obligor grade to which the eligible protection provider is assigned that is estimated in accordance with Annex 7X;

(III) the LGD of the underlying transaction or the LGD applicable to the eligible credit protection taking into account seniority and any collateralisation of the credit protection[276]; or

(B) in the case where the Reporting Bank is using the SA(CR) for direct exposures to the eligible protection provider, apply the scope of eligible protection providers under the SA(CR) and apply the risk weight under the SA(CR) to the eligible protection provider; and

[276] For example, where a Reporting Bank has a subordinated claim on the obligor but the eligible credit protection represents a senior claim on the eligible protection provider, the Reporting Bank may use an LGD applicable for a senior claim in accordance with paragraph 7.4.73(b).

(ii) for the unprotected portion, use all of the following:

(A) the formula for calculating K that is applicable to the underlying obligor;

(B) the PD associated with the obligor grade to which the underlying obligor is assigned and estimated in accordance with Annex 7X;

(C) the LGD of the underlying transaction.

7.4.110 A Reporting Bank which has bought eligible credit protection for an IRBA exposure for which it is using the A-IRBA or the IRBA for the IRBA retail asset class to calculate the credit risk-weighted exposure amount may recognise the effects of CRM of the eligible credit protection as follows:

(a) in the case where the Reporting Bank is using the SA(CR) for direct exposures to the eligible protection provider recognised in accordance with paragraph 5.8(c) of Annex 7X, the Reporting Bank must –

(i) break down the IRBA exposure into a protected portion in accordance with the treatment set out in paragraph 7.3.112(a)(i) and an unprotected portion in accordance with the treatment set out in paragraph 7.3.112(a)(ii);

(ii) apply the risk weight applicable under the SA(CR) to the eligible protection provider to the protected portion of the IRBA exposure; and

(iii) apply the treatment set out in paragraph 7.4.109(b)(ii) for the unprotected portion of the IRBA exposure. The Reporting Bank must not recognise the effects of CRM of the eligible credit protection in its estimates of PD and LGD for the unprotected portion of the IRBA exposure;

(b) in the case where the Reporting Bank is using the F-IRBA for direct exposures to the eligible protection provider recognised in accordance with paragraph 5.8(d) of Annex 7X, the Reporting Bank must –

(i) break down the IRBA exposure into a protected portion in accordance with the treatment set out in paragraph 7.4.109(a)(i) and an unprotected portion in accordance with the treatment set out in paragraph 7.4.109(a)(ii);

(ii) apply the treatment set out in paragraph 7.4.109(b)(i)(A) for the protected portion; and

(iii) apply the treatment set out in paragraph 7.4.109(b)(ii) for the unprotected portion of the IRBA exposure. The Reporting Bank must not recognise the effects of CRM of the eligible credit protection in

its estimates of PD and LGD for the unprotected portion of the IRBA exposure;

(c) in all other cases, the Reporting Bank must either –

(i) adopt the treatment set out in paragraph 7.4.109. For the purposes of this sub-paragraph, where the protection provider or the underlying obligor belongs to the IRBA retail asset class, the Reporting Bank must –

(A) in the case where the protection provider belongs to the IRBA retail asset class, substitute "the PD associated with the pool to which the protection provider is assigned", for "the PD associated with the obligor grade to which the protection provider is assigned" in paragraph 7.4.109(b)(i)(A)(II); and

(B) in the case where the underlying obligor belongs to the IRBA retail asset class, substitute "the PD associated with the pool to which the underlying obligor is assigned", for "the PD associated with the obligor grade to which the underlying obligor is assigned" in paragraph 7.4.109(b)(ii)(B); or

(ii) adjust either its estimates of PD or LGD. The Reporting Bank must ensure that any adjustments to estimates of PD or LGD –

(A) are done in a consistent manner for a given type of credit protection; and

(B) do not recognise the effect of double default. To avoid doubt, the adjusted credit risk-weighted exposure amount must not be less than the credit risk-weighted exposure amount had the exposure been a direct exposure to the eligible protection provider.

7.4.111 Despite paragraphs 7.4.109(b) and 7.4.110, a Reporting Bank must apply a 1250% risk weight to an IRBA exposure below a materiality threshold for which no payment will be made by the protection provider in the event of loss on the IRBA exposure as such an exposure is equivalent to a retained first loss position.

7.4.112 To avoid doubt, for the purposes of determining the PD and LGD applicable for the protected portion in paragraphs 7.4.109(b)(i), 7.4.110(b)(ii), and 7.4.110(c)(i), where the eligible protection provider is an entity belonging to the sovereign asset sub-class, the Reporting Bank must not apply the values of PD and LGD set out in paragraphs 7.4.71, 7.4.80(b), 7.4.88, 7.4.90, 7.4.91 and 7.4.92(b).

7.4.113 A Reporting Bank must apply the relevant provisions in Annex 7I for the purposes of determining the protected portion in cases of proportional cover, principal-only cover, partially eligible credit derivatives, tranched cover and basket credit derivatives.

7.4.114 In the case of an IRBA exposure within the IRBA eligible purchased receivables asset class, a Reporting Bank must consider the availability of credit protection for default risk and dilution risk separately. For this purpose –

(a) if a guarantee covers both default risk and dilution risk, the Reporting Bank must substitute the capital requirement for an exposure to the guarantor for the total capital requirement for default risk and dilution risk applicable to the pool of receivables;

(b) if a guarantee covers only default risk or dilution risk, but not both, a Reporting Bank must substitute the capital requirement for an exposure to the guarantor for the capital requirement for the corresponding risk component that is covered (default risk or dilution risk), and aggregate this capital requirement with the capital requirement for the other component; and

(c) if a guarantee covers only a portion of the default risk or dilution risk, the Reporting Bank must aggregate the capital requirements of the uncovered portion with the capital requirement of the covered portion.

Treatment of Credit Protection Sold

7.4.115 A Reporting Bank which has sold unfunded credit protection acquires exposure to the reference asset. If such exposure is an IRBA exposure, the Reporting Bank must calculate the credit risk-weighted exposure amount for the exposure pursuant to Sub-division 4 of Division 1 of this Part using the formula for calculating K that is applicable to the obligor of the reference asset.

7.4.116 If the unfunded credit protection has more than one reference asset, the credit risk-weighted exposure amount for the credit protection is the sum of the credit risk-weighted exposure amounts in respect of each reference asset calculated using the relevant formulae for calculating K that are applicable to the obligors of the respective reference assets.

7.4.117 A Reporting Bank which has sold funded credit protection acquires exposure to both the reference asset and the protection buyer. If such exposures are IRBA exposures, the Reporting Bank must calculate the credit risk-weighted exposure amount for the credit protection as the sum of –

(a) the credit risk-weighted exposure amount for the exposure to the reference asset calculated in accordance with paragraphs 7.4.115 and 7.4.116, as applicable; and

(b) the credit risk-weighted exposure amount for the exposure to the protection buyer, using –

(i) EAD = the carrying amount of the collateral placed with the protection buyer; and

(ii) the formula for calculating K that is applicable to the protection buyer.

7.4.118 The capital requirement for the credit protection calculated in accordance with paragraphs 7.4.116 and 7.4.117 must not exceed the notional amount of the credit protection, i.e. the maximum possible payout under the credit protection.

7.4.119 Where a Reporting Bank has provided credit protection (whether funded or unfunded) through a proportionate structure, i.e. where the maximum possible payout in respect of any particular reference asset is capped at a pre-determined proportion of the notional amount of the credit protection, the Reporting Bank must distinguish individual sub-exposures equal to the proportionate amount of credit protection in respect of each reference asset for the purposes of calculating the credit risk-weighted exposure amount applicable to the credit protection sold.

7.4.120 Where a Reporting Bank has provided credit protection for a basket of reference exposures through a first-to-default credit derivative, the Reporting Bank must calculate the credit risk-weighted exposure amount applicable to the credit protection sold by aggregating the risk weights that would be assigned to the reference exposures, subject to a cap of 1250%, and multiplying the aggregate with the nominal amount of the protection provided by the credit derivative.

7.4.121 Where a Reporting Bank has provided credit protection for a basket of reference exposures through a nth-to-default credit derivative, the Reporting Bank must calculate the credit risk-weighted exposure amount applicable to the credit protection sold by applying the treatment referred to in paragraph 7.4.120, except that in aggregating the risk weights, the risk weights assigned to the n-1 assets in the basket of reference exposures with the lowest credit risk-weighted exposure amount may be excluded.

Sub-division 12: Calculation of K for Defaulted Assets

7.4.122 A Reporting Bank must calculate K_{def} using the following formula:

$$\text{Capital requirement } (K_{def}) = LGD - EL_{est}$$

where –

(a) "LGD" refers to the LGD for the IRBA exposure; and

(b) "EL_{est}" refers to the best estimate of expected loss for that IRBA exposure by the Reporting Bank.

A Reporting Bank must use a PD of one for obligors assigned to a default grade. In the case where a Reporting Bank is using the F-IRBA for its IRBA exposures under the IRBA wholesale asset class, EL_{est} = LGD for the IRBA exposure i.e. K_{def} = 0.

7.4.123 Where K_{def} for any IRBA exposure calculated in accordance with paragraph 7.4.122 is less than zero, a Reporting Bank must apply K = 0 for the purposes of calculating the credit risk-weighted exposure amount for that IRBA exposure pursuant to Sub-division 4 or 5 of Division 1 of this Part.

Sub-division 13: Supervisory Slotting Criteria

7.4.124 A Reporting Bank using the supervisory slotting criteria for IRBA exposures belonging to the SL asset sub-class or HVCRE asset sub-class or both must assign such exposures to internal obligor grades based on its own criteria, systems and processes. The Reporting Bank must then map these internal obligor grades into the supervisory rating categories[277] in Annex 7S according to the general assessment factors and characteristics exhibited by the exposures.

7.4.125 Subject to paragraph 7.4.126, a Reporting Bank which has bought eligible credit protection for an IRBA exposure belonging to the SL or HVCRE asset sub-class, for which it is using the supervisory slotting criteria to calculate the credit risk-weighted exposure amount, may recognise the effects of CRM of the eligible credit protection as follows:

(a) break down the IRBA exposure into –

(i) a protected portion with EAD equal to the notional amount of the eligible credit protection, subject to any adjustments due to a currency mismatch or a maturity mismatch set out in Annex 7H; and

(ii) an unprotected portion with EAD equal to the EAD of the IRBA exposure, less the notional amount of the eligible credit protection adjusted for any currency mismatch or maturity mismatch set out in Annex 7H;

(b) calculate the credit risk-weighted exposure amount pursuant to Sub-division 4 or Sub-division 5 of Division 1 of this Part follows:

(i) for the protected portion –

(A) use all of the following:

(I) the formula for calculating K that is applicable to the eligible protection provider;

(II) the PD associated with the obligor grade to which the eligible protection provider is assigned that is estimated in accordance with Annex 7X;

(III) the LGD of the underlying transaction or the LGD applicable to the eligible credit protection taking into

[277] Each supervisory rating category for IRBA exposures belonging to the SL asset sub-class or the HVCRE asset sub-class broadly corresponds to a range of external credit assessments by recognised ECAIs as follows:

(a) "Strong" to "BBB-/Baa3 or better";

(b) "Good" to "BB+/Ba1 to BB/Ba2";

(c) "Satisfactory" to "BB-/Ba3 to B+/B1";

(d) "Weak" to "B/B2 to C-".

account seniority and any collateralisation of the credit protection[278]; or

(B) in the case where the Reporting Bank is using the SA(CR) for direct exposures to the eligible protection provider, apply the scope of eligible protection providers under the SA(CR) and apply the risk weight applicable under the SA(CR) to the eligible protection provider;

(ii) for the unprotected portion, apply the risk weight applicable to the underlying obligor in accordance with paragraphs 7.4.127 to 7.4.130.

7.4.126 A Reporting Bank may only apply the treatment in paragraph 7.4.125 if the Reporting Bank has not taken into consideration the CRM of the eligible credit protection that the Reporting Bank bought in assigning the exposure to internal obligor grades as set out in paragraph 7.4.124.

7.4.127 Subject to paragraph 7.4.128, a Reporting Bank using the supervisory slotting criteria for IRBA exposures belonging to the SL asset sub-class must risk-weight those exposures in accordance with Table 7-24.

Table 7-24: Risk Weight for Exposures in SL Asset Sub-Class

Category	Strong	Good	Satisfactory	Weak	Default
RW_{slot}	70%	90%	115%	250%	0%

7.4.128 A Reporting Bank may apply a risk weight of 50% to any IRBA exposure belonging to the SL asset sub-class that is categorised as "strong" and a risk weight of 70% to any IRBA exposure belonging to the SL asset sub-class that is categorised as "good", provided such exposures have a remaining maturity of less than 2.5 years.

7.4.129 Subject to paragraph 7.4.130, a Reporting Bank using the supervisory slotting criteria for IRBA exposures belonging to the HVCRE asset sub-class must risk-weight those exposures in accordance with Table 7-25.

Table 7-25: Risk Weight for Exposures in HVCRE Asset Sub-Class

Category	Strong	Good	Satisfactory	Weak	Default
RW_{slot}	95%	120%	140%	250%	0%

7.4.130 A Reporting Bank may apply a risk weight of 70% to any IRBA exposure belonging to the HVCRE asset sub-class that is categorised as "strong" and a risk weight of 95% to any IRBA exposure belonging to the HVCRE asset sub-class that is categorised as "good", provided such exposures have a remaining maturity of less than 2.5 years.

Sub-division 14: Calculation of EL Amount

7.4.131 Subject to paragraph 7.4.133, a Reporting Bank must ensure that the EL amount for an IRBA exposure belonging to the IRBA wholesale asset class (other than an

[278] For example, where a Reporting Bank has a subordinated claim on the obligor but the eligible credit protection represents a senior claim on the eligible protection provider, the Reporting Bank may use an LGD applicable for a senior claim in accordance with paragraph 7.4.73(b).

exposure belonging to the SL asset sub-class or HVCRE asset sub-class for which the Reporting Bank is using the supervisory slotting criteria) or the IRBA retail asset class that is in default in accordance with the definition of default in Annex 7L is equal to the best estimate of expected loss by the Reporting Bank.

7.4.132 A Reporting Bank must calculate the EL amount for an IRBA exposure belonging to the IRBA wholesale asset class (other than an exposure belonging to the SL asset sub-class or HVCRE asset sub-class for which the Reporting Bank is using the supervisory slotting criteria) or the IRBA retail asset class that is not in default in accordance with the definition of default in Annex 7L using the following formula:

EL amount = PD x LGD x EAD

where –

(a) PD = PD associated with the obligor grade or pool to which the IRBA exposure is assigned and estimated in accordance with Annex 7X;

(b) LGD = LGD associated with the facility grade or pool to which the IRBA exposure is assigned and estimated in accordance with Annex 7X; and

(c) EAD = EAD for the IRBA exposure calculated in accordance with the exposure measurement requirements in Division 2 of this Part.

7.4.133 For a Reporting Bank using the F-IRBA, the Reporting Bank must ensure that the EL amount for an IRBA exposure belonging to the IRBA wholesale asset class (other than an exposure belonging to the SL asset sub-class or HVCRE asset sub-class for which the Reporting Bank is using the supervisory slotting criteria) that is in default in accordance with the definition of default in Annex 7L is equal to the supervisory LGD set out in paragraph 7.4.73 multiplied by the EAD of the IRBA exposure calculated in accordance with the exposure measurement requirements in Division 2 of this Part.

7.4.134 Subject to paragraph 7.4.135, a Reporting Bank using the supervisory slotting criteria for IRBA exposures belonging to the SL asset sub-class or HVCRE asset sub-class must calculate the EL amount for an IRBA exposure belonging to either of these sub-classes using the following formula:

EL amount = 8% x RW x EAD

where –

(a) RW = risk weight determined in accordance with Table 7-26 for an exposure belonging to the SL asset sub-class and Table 7-27 for an exposure belonging to the HVCRE asset sub-class; and

(b) EAD = EAD, or where applicable EAD*, for the exposure calculated in accordance with Division 2 of this Part.

Table 7-26: Risk Weight for Calculating the EL Amount of Exposures in SL Asset Sub-Class

Category	Strong	Good	Satisfactory	Weak	Default
RW_{slot}	5%	10%	35%	100%	625%

Table 7-27: Risk Weight for Calculating the EL Amount of Exposures in HVCRE Asset Sub-Class

Category	Strong	Good	Satisfactory	Weak	Default
RW_{slot}	5%	5%	35%	100%	625%

7.4.135 A Reporting Bank may apply a risk weight of 0% to any IRBA exposure belonging to the SL asset sub-class that is categorised as "strong" and a risk weight of 5% to any IRBA exposure belonging to the SL asset sub-class that is categorised as "good", provided such exposures have a remaining maturity of less than 2.5 years.

7.4.136 A Reporting Bank must aggregate the EL amount calculated for IRBA exposures pursuant to paragraphs 7.4.131 to 7.4.135 to obtain a total EL amount. To avoid doubt, a Reporting Bank must ensure that securitisation exposures do not contribute to the total EL amount.

Division 5: Equity Investments in Funds

Sub-division 1: Introduction

7.5.1 A Reporting Bank must calculate the credit risk-weighted exposure amount of its equity investments in funds[279] using the methods set out in paragraphs 7.5.4 to 7.5.15, which vary in their risk sensitivity and conservatism, and in accordance with the following hierarchy:

(a) the look-through approach ("LTA");

(b) the mandate-based approach ("MBA"); or

(c) the fall-back approach ("FBA").

7.5.2 For the purposes of this Division –

(a) a Reporting Bank must include its equity investments in all types of funds, including an off-balance sheet exposure to a fund[280];

(b) a Reporting Bank must not include any exposure, including any underlying exposure held by a fund, that is required to be deducted in the calculation of CET1 Capital, AT1 Capital or Tier 2 Capital;

(c) "funds" includes collective investment schemes and closed-end funds, except for real estate investment trusts as defined under section 2 of the Securities and Futures Act 2001 and business trusts as defined under the Business Trusts Act 2004; and

(d) a Reporting Bank must treat its holdings of units in real estate investment trusts as defined under section 2 of the Securities and Futures Act 2001 and business trusts as defined under the Business Trusts Act 2004 as holdings in a single equity security for the purposes of risk-weighting.

7.5.3 Illustrative examples of the requirements set out in this Division are set out in Annex 7AB.

Sub-division 2: Look-Through Approach (LTA)

7.5.4 A Reporting Bank must use the LTA to calculate the credit risk-weighted exposure amount of an equity investment in a fund if the following conditions are satisfied:

(a) the Reporting Bank is provided sufficient and frequent information regarding the underlying exposures of the fund, whereby the frequency of financial reporting of the fund is the same as, or more frequent than the frequency of financial reporting of the Reporting Bank and the granularity

[279] This refers to equity investments in funds that are held in the banking book, as set out in paragraph 7.1.1(c).

[280] An example is an unfunded commitment to subscribe to a fund's future capital calls.

of the financial information of the fund is sufficient for the Reporting Bank to calculate the corresponding risk weights;

(b) the Reporting Bank has ensured that such information is verified by an independent third party[281].

7.5.5 A Reporting Bank using the LTA must calculate the credit risk-weighted exposure amount of an equity investment in a fund using the following formula[282]:

$$\text{Credit RWE}_{\text{LTA}} = \min[\text{Avg RW}_{\text{fund}} * \text{Lvg}, 1250\%] * E$$

where –

(a) "Credit RWE_{LTA}" refers to the credit risk-weighted exposure amount of an equity investment in a fund calculated using the LTA;

(b) "Avg RW_{fund}" refers to the average risk weight of the fund, which is calculated by the following formula:

$$\text{Avg RW}_{\text{fund}} = \text{RWE}_{\text{fund}} / \text{Total Assets}_{\text{fund}}$$

where –

(i) "RWE_{fund}" is the total credit risk-weighted exposure amount of the underlying exposures of the fund computed in accordance with paragraphs 7.5.7 to 7.5.10; and

(ii) "$\text{Total Assets}_{\text{fund}}$" is the total assets of the fund;

(c) "Lvg" refers to the leverage of the fund, which is defined as the ratio of total assets of the fund to total equity of the fund[283]; and

(d) "E" is the exposure amount calculated in accordance with paragraph 7.1.12(a).

7.5.6 For the purposes of paragraph 7.5.4(b), an external audit of the information is not required.

7.5.7 A Reporting Bank using the LTA must calculate RWE_{fund} of a fund by aggregating the credit risk-weighted exposure amount of each underlying exposure of the fund in accordance with Sub-divisions 3, 4, 5 and 7 of Division 1 of this Part, and the CCP RWA of each underlying exposure of the fund in accordance with Division 7 of this Part, whichever is applicable, as if the exposures were directly held by the Reporting Bank. The Reporting Bank must include any underlying exposure arising from the fund's derivative transactions, where the underlying exposure is assigned a risk weight in accordance with Divisions 3, 4 and 7 of this Part, whichever is applicable, and the associated pre-settlement counterparty exposures. The Reporting Bank is not required to calculate the CVA risk capital

[281] For example, the depository or the custodian bank, or where applicable, the management company.

[282] An example of the calculation of the Credit RWE_{LTA} for an equity investment using the LTA is set out in Section 1 of Annex 7AB.

[283] An example of the calculation of the leverage adjustment is set out in Section 3 of Annex 7AB.

requirements as set out in Division 5 of Part VIII for the fund's derivative transactions. The Reporting Bank must multiply the pre-settlement counterparty exposure amounts arising from a fund's derivative transactions by a factor of 1.5 before applying the risk weight assigned to the counterparty in accordance with Divisions 3, 4 and 7 of this Part, for derivative transactions within the scope of the CVA risk capital requirements as set out in Division 5 of Part VIII.

7.5.8 Where a Reporting Bank uses the SA(CR) to calculate the credit risk-weighted exposure amount for the underlying exposures of funds as if the exposures were directly held by the Reporting Bank pursuant to Division 3 of this Part, the Reporting Bank using the LTA must calculate the credit risk-weighted exposure amount of the underlying exposures of a fund using the SA(CR) in accordance with Sub-divisions 3 or 5 of Division 1 of this Part. To avoid doubt, for underlying exposures of the fund which are equity exposures, a Reporting Bank must calculate the credit risk-weighted exposure amount of such exposures using the SA(CR) in accordance with Sub-division 3 of Division 1 of this Part.

7.5.9 Where a Reporting Bank uses the IRBA pursuant to Division 4 of this Part to calculate the credit risk-weighted exposure amount for the underlying exposures of funds as if the exposures were directly held by the Reporting Bank, the Reporting Bank using the LTA must –

(a) subject to sub-paragraphs (b) and (c), calculate the IRBA parameters including PD and, where applicable, LGD and EAD, associated with the underlying exposures of the fund, and must calculate the credit risk-weighted exposure amount of the underlying exposures of the fund using the IRBA in accordance with Sub-divisions 4 or 5 of Division 1 of this Part, whichever is applicable;

(b) where the Reporting Bank is unable to calculate the IRBA parameters including PD and, where applicable, LGD and EAD, associated with the underlying exposures of the fund[284] –

(i) for underlying securitisation exposures of the fund, calculate the credit risk-weighted exposure amount for such exposures using the SEC-ERBA or SEC-SA in accordance with Sub-division 7 of Division 1 of this Part, according to the hierarchy of approaches determined by paragraphs 7.6.16 to 7.6.18. The Reporting Bank must apply a risk weight of 1250% to underlying securitisation exposures of the fund to which the SEC-ERBA and SEC-SA cannot be applied; and

(ii) for all other underlying exposures of the fund, calculate the credit risk-weighted exposure amount of such underlying exposures using the SA(CR) in accordance with Sub-divisions 3 or 5 of Division 1 of this Part; and

(c) where the Reporting Bank has the approval of the Authority to use the SA(CR), to calculate the credit risk-weighted exposure amounts for certain exposures in accordance with paragraph 7.4.24.

[284] For example, where the Reporting Bank is unable to assign the necessary IRBA parameters to the underlying exposures in a manner consistent with its own underwriting standards.

7.5.10 A Reporting Bank may rely on third party calculations for determining the risk weights to be applied to the underlying exposures of a fund, if it does not have adequate data or information to perform its own calculations, subject to the following conditions:

(a) the Reporting Bank must ensure that the third party applies the risk weights under the SA(CR) in accordance with Division 3 of this Part to the underlying exposures of the fund, except for underlying securitisation exposures;

(b) for underlying securitisation exposures of the fund, the Reporting Bank must ensure that the third party applies the risk weights under the SEC-ERBA or SEC-SA in accordance with Division 6 of this Part to the underlying securitisation exposures of the fund, according to the hierarchy of approaches determined by paragraphs 7.6.16 to 7.6.18. The Reporting Bank must apply a risk weight of 1250% to underlying securitisation exposures of the fund to which the SEC-ERBA and SEC-SA cannot be applied;

(c) the Reporting Bank must ensure that, in all cases, the applicable risk weights are 1.2 times higher than the risk weights that would have been applicable as if the underlying exposures of the fund were held directly by the Reporting Bank.[285]

Sub-division 3: Mandate-Based Approach (MBA)

7.5.11 Where a Reporting Bank does not satisfy the conditions under paragraph 7.5.4 for the use of the LTA, the Reporting Bank may use the MBA to calculate the credit risk-weighted exposure amount of an equity investment in a fund if it is able to determine the credit risk-weighted exposure amount for the equity investments in the fund in the manner set out in paragraphs 7.5.12 to 7.5.14.

7.5.12 Under the MBA, the Reporting Bank must determine the credit risk-weighted exposure amount for an equity investment in a fund by using the information contained in the fund's mandate, in the national regulations governing such investment funds or in other disclosures of the fund. For the purposes of this Sub-division, "national regulations" refers to laws, regulations, rulings and treaties of a country or jurisdiction.

7.5.13 A Reporting Bank using the MBA must calculate the credit risk-weighted exposure amount of an equity investment in a fund using the following formula[286]:

$$\text{Credit RWE}_{\text{MBA}} = \min[\text{Avg RW}_{\text{fund}} * \text{Lvg}, 1250\%] * E$$

where –

[285] For instance, where the LTA is performed by a third party, the Reporting Bank must apply a risk weight of 24% (i.e. 1.2*20%) to an exposure that is subject to a 20% risk weight under the SA(CR) as if the exposures were held directly by the Reporting Bank.

[286] An example of the calculation of the Credit RWE_{MBA} for an equity investment in a fund using the MBA is set out in Section 2 of Annex 7AB.

(a) "Credit RWE_{MBA}" refers to the credit risk-weighted exposure amount of an equity investment in a fund calculated using the MBA;

(b) "Avg RW_{fund}" refers to the average risk weight of the fund, which is calculated by the following formula:

$$\text{Avg } RW_{fund} = RWE_{fund} / \text{Total Assets}_{fund}$$

where –

(i) "RWE_{fund}" is the total credit risk-weighted exposure amount of the underlying exposures of the fund computed in accordance with paragraph 7.5.14; and

(ii) "$\text{Total Assets}_{fund}$" is the total assets of the fund;

(c) "Lvg" refers to the leverage of the fund, which is defined as the maximum financial leverage permitted in the fund's mandate or in the national regulation governing the fund[287]; and

(d) "E" is the exposure amount calculated in accordance with paragraph 7.1.12(a).

7.5.14 A Reporting Bank using the MBA[288] must calculate RWE_{fund} of a fund as the sum of –

(a) for the balance sheet exposures of the fund, the credit risk-weighted exposure amounts using the SA(CR), SEC-ERBA or SEC-SA in accordance with Sub-divisions 3 and 7 of Division 1 of this Part, and CCP RWA in accordance with Division 7 of this Part, whichever is applicable, as follows:

(i) the Reporting Bank must assume that the fund first invests, to the maximum extent allowed under the fund's mandate, in the asset class attracting the highest capital requirement, and then continues making investments in descending order until the maximum total investment level is reached;

(ii) if more than one risk weight can be applied to a given exposure, the Reporting Bank must apply the maximum risk weight[289];

(iii) for underlying securitisation exposures of the fund, the Reporting Bank must calculate the credit risk-weighted exposure amount for such exposures using the SEC-ERBA or SEC-SA in accordance with Sub-division 7 of Division 1 of this Part, according to the hierarchy of approaches determined by paragraphs 7.6.16 to 7.6.18. The

[287] An example of the calculation of the leverage adjustment is set out in Section 3 of Annex 7AB.

[288] This requirement ensures that all underlying risks, including counterparty credit risk, are taken into account, and that the credit risk-weighted exposure amount calculated for the Reporting Bank's equity investments in funds held in the banking book using the MBA is not less than the credit risk-weighted exposure amount calculated using the LTA.

[289] For instance, a Reporting Bank must apply a risk weight of 150% for underlying exposures of funds in corporate bonds, in the case where there are no rating restrictions in the fund's mandate.

Reporting Bank must apply a risk weight of 1250% to underlying securitisation exposures of the fund to which the SEC-ERBA and SEC-SA cannot be applied;

(b) the credit risk-weighted exposure amount for the underlying exposures arising from the fund's derivative transactions or off-balance sheet exposures of the fund, calculated by applying the risk weights associated with the underlying of the fund's derivative transaction positions or the off-balance sheet exposures to their notional amounts, where the underlying risk of the fund's derivative transaction or off-balance sheet item receives a risk-weighting treatment in accordance with Divisions 3, 6 and 7 of this Part, whichever is applicable. The Reporting Bank must use the full notional amount of the derivative position if the underlying is unknown. The Reporting Bank must use the maximum notional amount of derivatives allowed under the mandate if the notional amount of the derivative position is unknown; and

(c) the credit risk-weighted exposure amount for the pre-settlement counterparty exposures associated with the fund's derivative transactions calculated in accordance with the SA-CCR set out in Annex 7D and by applying the risk weights assigned for the counterparty under the SA(CR) in accordance with Division 3 of this Part or for CCPs in accordance with Division 7 of this Part, whichever is applicable, as follows:

(i) where the replacement cost is unknown, the Reporting Bank must calculate the pre-settlement counterparty exposure amount in a conservative manner by using the sum of the notional amounts of the derivative transactions in the netting set as a proxy for the replacement cost and by using a multiplier set to one in the calculation of the amount for potential future exposure;

(ii) where the amount for potential future exposure is unknown, the Reporting Bank must calculate the amount for potential future exposure as 15% of the sum of the notional amounts of the derivative transactions in the netting set;

(iii) where both the replacement cost and add-on components are unknown, the Reporting Bank must calculate the pre-settlement counterparty exposure amount associated with the fund's derivative transactions as 1.4 * (sum of notional amounts of the derivative transactions in the netting set + 0.15 * sum of notional amounts of the derivative transactions in the netting set);

(iv) the Reporting Bank is not required to calculate the CVA risk capital requirements as set out in Division 5 of Part VIII for the fund's derivative transactions. The Reporting Bank must multiply the pre-settlement counterparty exposure amounts arising from a fund's derivative transactions calculated under sub-paragraphs (c)(i) to (c)(iii) by a factor of 1.5 for derivative transactions within the scope of the CVA risk capital requirements as set out in Division 5 of Part VIII;

(v) the Reporting Bank must apply the risk weight assigned for the counterparty under the SA(CR) in accordance with Division 3 of this Part or for CCPs in accordance with Division 7 of this Part, whichever is applicable, to the sum of the replacement cost and the amount for potential future exposure calculated under sub-paragraphs (c)(i) to (c)(iv).

Sub-division 4: Fall-Back Approach (FBA)

7.5.15 Where a Reporting Bank does not satisfy the conditions under paragraph 7.5.4 for the use of the LTA and is unable to use the MBA, the Reporting Bank must use the FBA. A Reporting Bank using the FBA must calculate the credit risk-weighted exposure amount of an equity investment in a fund by applying a 1250% risk weight to the exposure amount calculated in accordance with paragraph 7.1.12(a).

Sub-division 5: Treatment of Funds that Invest in Other Funds

7.5.16 Where a Reporting Bank has an equity investment in a fund (for example, Fund A), which it has identified using either the LTA or MBA, and that fund (that is, Fund A) itself has an investment in another fund (for example, Fund B), the Reporting Bank may apply the LTA, MBA or FBA to determine the credit risk-weighted exposure amount for the investment of the first fund in the other fund (that is, Fund A's investment in Fund B). For all subsequent layers (for example, Fund B's investments in Fund C and so forth), the Reporting Bank may use the LTA to determine the credit risk-weighted exposure amount for the investment in the other funds (for example, Fund C), subject to the condition that the Reporting Bank also used the LTA to determine the credit risk-weighted exposure amount for its equity investment in the fund at the previous layer (for example, Fund B). In all other cases, the Reporting Bank must use the FBA.

Sub-division 6: Partial Use of an Approach

7.5.17 A Reporting Bank may use any combination of the 3 methods i.e. LTA, MBA or FBA, for determining the credit risk-weighted exposure amount for an equity investment in an individual fund, provided that the conditions set out in paragraphs 7.5.1 to 7.5.16 are satisfied.

Division 6: Securitisation

Sub-division 1: Introduction

7.6.1 A Reporting Bank must apply the provisions of Sub-division 7 of Division 1 of this Part, and of this Division for determining regulatory capital requirements on exposures arising from traditional and synthetic securitisation or similar structures that contain features common to both. As securitisations may be structured in many different ways, the Reporting Bank must determine the capital treatment of a securitisation on the basis of its economic substance rather than its legal form.

7.6.2 A Reporting Bank must consult the Authority if it is uncertain whether a given transaction should be considered a securitisation, and whether a given exposure should be considered a securitisation exposure or a resecuritisation exposure.

Sub-division 2: Requirements for the Recognition of Risk Transference

7.6.3 This Sub-division is applicable only to securitised exposures held in the banking book.

Requirements for Traditional Securitisation

7.6.4 A Reporting Bank which is an ABCP programme sponsor or originator of a traditional securitisation may exclude securitised exposures from the calculation of credit RWA only if all of the requirements in Section 1 of Annex 7AC have been complied with. A Reporting Bank meeting these requirements must still hold regulatory capital against any securitisation exposures it retains.

Requirements for Synthetic Securitisation

7.6.5 Subject to paragraphs 7.6.106 and 7.6.107, a Reporting Bank which is an ABCP programme sponsor or originator of a synthetic securitisation may recognise the effects of CRM of the synthetic securitisation in its calculation of credit RWA only if –

(a) all of the requirements in Section 2 of Annex 7AC have been complied with; and

(b) the effects of CRM are obtained through eligible credit protection or eligible financial collateral, or both, in accordance with Annex 7H. A Reporting Bank may recognise the effects of CRM of eligible financial collateral pledged by any SPE, but it must not recognise the effect of CRM of any eligible credit protection issued by any SPE.

7.6.6 A Reporting Bank meeting the conditions in paragraph 7.6.5 must still hold regulatory capital against any securitisation exposures it retains.

Sub-division 3: Treatment of Securitisation Exposures

7.6.7 A Reporting Bank must include in its calculation of credit RWA all of its securitisation exposures held in the banking book.

7.6.8 For a Reporting Bank to apply the SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA to its securitisation exposures held in the banking book, the Reporting Bank must –

(a) have, on an on-going basis, a comprehensive understanding of the risk characteristics of its individual securitisation exposures, whether on- or off-balance sheet, as well as the risk characteristics of the pools underlying its securitisation exposures;

(b) be able to access performance information[290] on the pools underlying its securitisation exposures on an on-going basis and in a timely manner. For resecuritisations, the Reporting Bank must have information on the underlying securitisation tranches including the issuers' names and credit quality, and the characteristics and performance of the pools underlying the securitisation tranches; and

(c) have a thorough understanding of all structural features of a securitisation transaction that would materially impact the performance of the Reporting Bank's exposures to the transaction, including the contractual waterfall and waterfall-related triggers, credit enhancements, liquidity enhancements, market value triggers, and deal-specific definitions of default.

7.6.9 A Reporting Bank which is an originator of a securitisation may offset a securitisation exposure to the securitisation that is risk-weighted at 1250% by reducing the securitisation exposure amount by the amount of specific allowances on underlying assets of that transaction and non-refundable purchase price discounts on such underlying assets.

Treatment of Overlapping Exposures

7.6.10 Despite paragraph 7.6.7, where a Reporting Bank is able to verify that it can preclude any loss for a securitisation exposure (exposure B) under all circumstances by fulfilling its obligations with respect to another securitisation exposure (exposure A), i.e. exposure A overlaps exposure B in all circumstances[291], the Reporting Bank may exclude exposure B from the calculation of credit RWA.

[290] Such information may include exposure type, percentage of loans 30, 60 and 90 days past due, default rates, prepayment rates, loans in foreclosure, property type, occupancy, average credit score or other measures of creditworthiness, average loan-to-value ratio, and industry and geographic diversification.

[291] For example, where a Reporting Bank provides full credit support to some notes and holds a portion of these notes, its full credit support obligation precludes any loss from its exposure to the notes.

7.6.11 A Reporting Bank may split or expand its exposures[292] to arrive at an overlap for the purposes of calculation of credit RWA.

7.6.12 For the purposes of paragraphs 7.6.10 and 7.6.11, a Reporting Bank may also recognise overlap between relevant capital charges for exposures in the trading book and capital charges for exposures in the banking book, provided that the Reporting Bank is able to calculate and compare the capital charges for the relevant exposures.

Hierarchy of Approaches

7.6.13 Subject to Sub-division 7 of this Division and paragraphs 7.6.14, 7.6.15, 7.6.86 and 7.6.87, a Reporting Bank must use the SEC-IRBA to calculate the credit risk-weighted exposure amount for a securitisation exposure of an IRB pool.

7.6.14 Where a Reporting Bank is unable to use the SEC-IRBA to calculate the credit risk-weighted exposure amount for a securitisation exposure for which the Reporting Bank has approval from the Authority under Sub-division 3 of Division 4 of this Part to calculate capital requirements using the IRBA for the entire pool of underlying exposures to the securitisation[293], the Reporting Bank need not comply with paragraph 7.6.13 but the Reporting Bank must demonstrate to the Authority why it is unable to do so if requested by the Authority.

7.6.15 Where the Authority prohibits a Reporting Bank from using the SEC-IRBA for a particular IRB pool in the case of particular structures and transactions, including transactions with highly complex loss allocations, tranches whose credit enhancement could be eroded for reasons other than portfolio losses, and tranches of portfolios with high internal correlations[294], the Reporting Bank must not use the SEC-IRBA to calculate the credit risk-weighted exposure amount for a securitisation exposure of that IRB pool.

7.6.16 A Reporting Bank must use the SEC-ERBA to calculate the credit risk-weighted exposure amount for a securitisation exposure of an SA pool if –

(a) the exposure has an external credit assessment that meets the operational requirements for the use of external credit assessments in Section 1 of Annex 7AD; or

(b) the exposure has an inferred credit assessment that meets the operational requirements for the use of inferred credit assessments in Section 2 of Annex 7AD.

7.6.17 Subject to the approval of the Authority, a Reporting Bank may use the SEC-IAA to calculate the credit risk-weighted exposure amount for an unrated securitisation exposure of an SA pool within an ABCP programme.

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[292] That is, splitting exposures into portions that overlap with another exposure held by the Reporting Bank and other portions that do not overlap; and expanding exposures by assuming for capital purposes, that obligations with respect to one of the overlapping exposures are larger than those established contractually, for instance, by expanding the trigger events to exercise the facility, expanding the extent of the obligation, or both.

[293] For example, due to a lack of sufficient information.

[294] For example, portfolios with high exposure to single sectors or with high geographical concentration.

7.6.18 Subject to paragraph 7.6.19, a Reporting Bank which is not able to or not permitted to use the SEC-ERBA or the SEC-IAA to calculate the credit risk-weighted exposure amount for a securitisation exposure of an SA pool, must use the SEC-SA to do so.

7.6.19 A Reporting Bank must apply a risk weight of 1250% to a securitisation exposure to which the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied.

Sub-division 4: Internal Ratings-Based Approach (SEC-IRBA)

7.6.20 A Reporting Bank using the SEC-IRBA to calculate capital requirements for a securitisation exposure to an IRB pool must calculate the following inputs: K_{IRB}, the tranche attachment point and detachment point, the effective number of exposures and the LGD of the pool, in accordance with paragraphs 7.6.21 to 7.6.41.

K_{IRB}

7.6.21 A Reporting Bank must calculate K_{IRB} as the ratio of (a) the IRBA capital requirement for the underlying exposures in the pool as if the exposures were held directly by the Reporting Bank, to (b) the exposure amount of the underlying pool, expressed as a decimal between zero and one. The Reporting Bank must calculate the IRBA capital requirement by including the unexpected loss and expected loss of underlying exposures, including defaulted exposures, and where applicable, dilution risk in accordance with paragraph 7.6.31. In cases where only the drawn balances of revolving loans have been securitised, the Reporting Bank must not include the undrawn balances of such loans in the calculation of $K_{IRB.}$

7.6.22 A Reporting Bank must reflect the effects of CRM that is applied to the underlying exposures (either individually or to the entire pool), and hence benefits all of the securitisation exposures, in its calculation of K_{IRB} in paragraph 7.6.21.

7.6.23 For structures involving an SPE, a Reporting Bank must treat all of the SPE's exposures related to the securitisation as exposures in the pool[295].

7.6.24 For the purposes of paragraph 7.6.23, in the case of swaps other than credit derivatives, a Reporting Bank must include, in the computation of the IRBA capital requirement of the underlying pool used in calculating $K_{IRB,}$ the positive current market value of such swaps multiplied by the risk weight of the swap provider and by 8%. The Reporting Bank must not include such swaps in the computation of the exposure amount of the underlying pool used in calculating $K_{IRB.}$

7.6.25 Despite paragraph 7.6.23, a Reporting Bank may exclude the SPE's exposures from the pool for capital calculation purposes if the Reporting Bank can demonstrate to

[295] Such exposures related to the securitisation include reserve accounts, such as cash collateral accounts, and claims against counterparties resulting from interest swaps or currency swaps.

the Authority that the risk associated with the exposures does not affect its particular securitisation exposure or that the risk is immaterial[296].

7.6.26 For funded synthetic securitisations, a Reporting Bank must include in the calculation of K_{IRB} any proceeds of the issuances of credit-linked notes or any other funded obligations of the SPE which serve as collateral for the repayment of the securitisation exposure if –

(a) the Reporting Bank cannot demonstrate to the Authority that these are immaterial; and

(b) the default risk of such collateral is subject to the tranched loss allocation in the securitisation transaction.

7.6.27 For the purposes of paragraph 7.6.26, the Reporting Bank must include, in the computation of the IRBA capital requirement of the underlying pool used in calculating K_{IRB}, the exposure amount of the collateral multiplied by its risk weight and 8%. The Reporting Bank must not include such collateral in the computation of the exposure amount of the underlying pool used in calculating K_{IRB}.

7.6.28 A Reporting Bank must meet all minimum requirements for the use of IRBA to calculate K_{IRB} for a securitisation exposure. Notwithstanding, a Reporting Bank may, subject to the Authority's approval, use the top-down approach as set out in Sub-division 10 of Division 4 of this Part, subject to the modifications set out in paragraph 7.6.29 to calculate K_{IRB} for a securitisation exposure if –

(a) for non-retail assets, it would be an undue burden on the Reporting Bank to assess the default risk of individual obligors; and

(b) for retail assets, the Reporting Bank is unable to primarily rely on internal data.

7.6.29 A Reporting Bank when applying the requirements in Sub-division 10 of Division 4 of this Part and Annex 7T to securitisation exposures using a top-down approach must apply the requirements with the following modifications:

(a) "eligible purchased receivables", "purchased receivables", "purchased corporate receivables", "purchased corporate small business receivables", "purchased retail receivables" and "receivables" in Sub-division 10 of Division 4 of this Part and Annex 7T, is read as referring to assets underlying a securitisation;

(b) the requirement in paragraph 7.4.98(c) for the Reporting Bank to have a claim on all proceeds from the pool of receivables or a pro rata interest in the proceeds does not apply. Instead, the Reporting Bank must have a

[296] For example, the Reporting Bank demonstrates that the risk has been mitigated. In the case of swaps, certain best market practices can eliminate or at least significantly reduce the potential risk from a default of a swap provider. Such features could include cash collateralisation of the market value in combination with an agreement of prompt additional payments in case of an increase of the market value of the swap, and minimum credit quality of the swap provider with the obligation to post collateral or present an alternative swap provider without any cost for the SPE in the event of a credit deterioration on the part of the original swap provider.

claim on all proceeds from the pool of assets underlying a securitisation that have been allocated to the Reporting Bank's exposure to the securitisation in accordance with the terms of the related securitisation documentation;

(c) if the Reporting Bank cannot itself meet the requirements in paragraphs 2.2 to 2.9 of Annex 7T, it must instead ensure that it meets these requirements through a party to the securitisation acting for and in the interest of the investors in the securitisation, in accordance with the terms of the related securitisation documents. In particular, the Reporting Bank must ensure that requirements for effective control and ownership are met for all proceeds from the pool of assets underlying the securitisation that have been allocated to the Reporting Bank's exposure to the securitisation. The Reporting Bank must ensure the securitisation itself (rather than the Reporting Bank) has the relevant policies, procedures, and where applicable, information systems referred to in paragraph 2.7(a) of Annex 7T.

7.6.30 Where a Reporting Bank has set aside a specific allowance or has a non-refundable purchase price discount on an exposure in the underlying pool, the Reporting Bank must calculate K_{IRB} using the gross amount of the exposure without taking into account the specific allowance or the non-refundable purchase price discount.

7.6.31 A Reporting Bank must recognise dilution risk in a securitisation in the calculation of K_{IRB} if the Reporting Bank is unable to demonstrate to the Authority that such dilution risk is immaterial.

7.6.32 Where default risk and dilution risk are treated in an aggregate manner[297], the Reporting Bank must determine K_{IRB} for dilution risk and default risk respectively, and combine them into a single K_{IRB} prior to applying the SEC-IRBA. Where default risk and dilution risk are subject to separate waterfalls, the Reporting Bank must consult the Authority as to how K_{IRB} must be calculated[298].

Tranche Attachment Point and Detachment Point

7.6.33 The tranche attachment point, A, represents the threshold at which losses within the underlying pool are first allocated to securitisation exposures in that tranche, and is a decimal value between zero and one. A Reporting Bank must calculate A as the greater of –

(a) zero; and

(b) the ratio of –

(i) the outstanding balance of all underlying assets in the securitisation minus the outstanding balance of all tranches in the securitisation that rank senior or pari passu to the tranche that contains the

[297] For example, where an identical reserve or overcollateralisation is available to cover losses for both risks.

[298] Annex 7AG provides illustrative examples of how the requirements set out in paragraphs 7.6.31 and 7.6.32 are to be met.

securitisation exposure of the Reporting Bank (including the exposure itself); to

(ii) the outstanding balance of all underlying assets in the securitisation.

7.6.34 The tranche detachment point, D, represents the threshold at which losses within the underlying pool result in a total loss of principal for securitisation exposures in that tranche, and is a decimal value between zero and one. A Reporting Bank must calculate D as the greater of –

(a) zero; and

(b) the ratio of –

(i) the outstanding balance of all underlying assets in the securitisation minus the outstanding balance of all tranches in the securitisation that rank senior to the tranche that contains the securitisation exposure of the Reporting Bank; to

(ii) the outstanding balance of all underlying assets in the securitisation.

7.6.35 In a Reporting Bank's calculation of A and D, the Reporting Bank must –

(a) recognise overcollateralisation and the loss-absorbing part of funded reserve accounts that provide credit enhancement as tranches; and

(b) recognise the assets forming the loss-absorbing part of such funded reserve accounts that provide credit enhancement as underlying assets.

7.6.36 A Reporting Bank must not include in its calculation of A and D –

(a) unfunded reserve accounts[299];

(b) assets that do not provide credit enhancement[300]; or

(c) cash collateral accounts related to instruments listed in sub-paragraphs (a) and (b).

7.6.37 In applying paragraphs 7.6.35 and 7.6.36, a Reporting Bank must consider the economic substance of the credit enhancement provided by an asset or reserve account within the securitisation transaction to a tranche conservatively, for the purposes of determining whether the asset or reserve account should be included in the calculation of A and D for that tranche. Where the credit enhancement provided by an asset or reserve account referred to in paragraphs 7.6.35 and 7.6.36 to a tranche is uncertain, the Reporting Bank must exclude the asset or reserve account in the calculation of A and D for that tranche.

[299] For example, reserve accounts that are to be funded from future receipts from the underlying exposures.
[300] For example, pure liquidity support, or currency or interest rate swaps.

N and LGD

7.6.38 A Reporting Bank must calculate the effective number of exposures in the underlying pool, N, as –

$$N = \frac{(\sum_i EAD_i)^2}{\sum_i EAD_i^2}$$

where EAD_i represents the exposure-at-default associated with the i^{th} instrument in the pool. The Reporting Bank must consolidate and treat multiple exposures to the same obligor as a single instrument.

7.6.39 A Reporting Bank must calculate the exposure-weighted average LGD of the underlying pool as –

$$LGDavg = \frac{\sum_i (LGD_i \cdot EAD_i)}{\sum_i EAD_i}$$

where LGD_i represents the average LGD associated with all exposures to the i^{th} obligor represented in the underlying pool. Where default risk and dilution risk are treated in an aggregate manner[301] within a securitisation transaction, the Reporting Bank must calculate the LGD_{avg} input as a weighted average of the LGD for default risk and the 100% LGD for dilution risk. The weights to be applied are the stand-alone IRBA capital requirements for default risk and dilution risk respectively.

7.6.40 If the largest exposure in the underlying pool constitutes not more than 3% of the underlying exposures, a Reporting Bank may, for the purposes of the SEC-IRBA, apply a simplified method for computing N and LGD as follows –

$$N = \left(C_1 \cdot C_m + \left(\frac{C_m - C_1}{m-1}\right) \times \max\{1 - m \times C_1, 0\}\right)^{-1}$$

$$LGD_{avg} = 0.5$$

where C_m is the proportion of the underlying exposures constituted by the sum of the largest m exposures in the underlying pool, with the value of m determined by the Reporting Bank, and C_1 is the proportion of the underlying exposures constituted by the largest exposure in the underlying pool.

7.6.41 For the purposes of paragraph 7.6.40, if only C_1 is available and this amount is no more than 0.03, a Reporting Bank may compute N as $1/C_1$ and LGD_{avg} as 0.5.

Supervisory Parameter

7.6.42 A Reporting Bank must calculate the supervisory parameter p under the SEC-IRBA as –

$$p = \max\left[0.3, \left(A + \frac{B}{N} + (C \times K_{IRB}) + \left(D \times LGD_{avg}\right) + (E \times M_T)\right)\right]$$

where –

[301] For example, where an identical reserve or overcollateralisation is available to cover losses for both risks.

(a) 0.3 is the floor of the supervisory parameter p;

(b) N is the effective number of exposures in the underlying pool calculated in accordance with paragraphs 7.6.38, 7.6.40 and 7.6.41;

(c) K_{IRB} is the IRBA capital requirement of the entire portfolio of underlying exposures per dollar value of exposure calculated in accordance with paragraphs 7.6.21 to 7.6.32;

(d) LGD_{avg} is the exposure-weighted average LGD of the underlying pool calculated in accordance with paragraphs 7.6.39 to 7.6.41;

(e) M_T is the tranche maturity calculated in accordance with Section 6 of Annex 7V; and

(f) the parameters A, B, C, D and E are determined according to Table 7-28.

Table 7-28: Parameters for Calculation of Supervisory Parameter under SEC-IRBA

Characteristics of Securitisation Exposure and Underlying Pool		A	B	C	D	E
Wholesale	Senior, granular (N ≥ 25)	0	3.56	-1.85	0.55	0.07
	Senior, non-granular (N < 25)	0.11	2.61	-2.91	0.68	0.07
	Non-senior, granular (N ≥ 25)	0.16	2.87	-1.03	0.21	0.07
	Non-senior, non-granular (N < 25)	0.22	2.35	-2.46	0.48	0.07
Retail	Senior	0	0	-7.48	0.71	0.24
	Non-senior	0	0	-5.78	0.55	0.27

7.6.43 If the underlying pool consists of both retail and wholesale exposures, a Reporting Bank must divide the pool into one retail sub-pool and one wholesale sub-pool, and calculate a separate p-parameter for each sub-pool. Subsequently, the Reporting Bank must calculate a weighted average p-parameter for the transaction based on the p-parameters of each sub-pool and the exposure amount in each sub-pool.

7.6.44 If a Reporting Bank applies the SEC-IRBA to a mixed pool as described in Sub-division 8 of this Division, the Reporting Bank must calculate the p-parameter based on the underlying pool used in calculating K_{IRB} only.

Capital Requirements and Risk Weights under SEC-IRBA

7.6.45 A Reporting Bank using the SEC-IRBA must calculate the capital requirement per dollar value of securitisation exposure using the following formula:

$$K_{SSFA(K_{IRB})} = \frac{e^{a \cdot u} - e^{a \cdot l}}{a(u - l)}$$

where e is the base of the natural logarithms (approximately equal to 2.71828) and the variables a, u, and l are defined as follows –

(a) $a = -(\frac{1}{p \times K_{IRB}})$;

(b) $u = D - K_{IRB}$; and

(c) $l = max\ (A - K_{IRB}, 0)$

7.6.46 A Reporting Bank using the SEC-IRBA must calculate the risk weight assigned to a securitisation exposure as follows, subject to a floor of 15% for the resultant risk weight and paragraph 7.6.47:

(a) when the tranche detachment point, D, for a securitisation exposure is less than or equal to K_{IRB}, the risk weight is 1250%;

(b) when the tranche attachment point, A, for a securitisation exposure is greater than or equal to K_{IRB}, the risk weight of the exposure, expressed as a percentage, is $\boldsymbol{K_{SSFA(K_{IRB})}}$ multiplied by 12.5;

(c) when K_{IRB} is more than A but less than D, the risk weight is the weighted average of 1250% and $\boldsymbol{K_{SSFA(K_{IRB})}}$ multiplied by 12.5 according to the following formula –

$$RW = \left[\left(\frac{K_{IRB} - A}{D - A}\right) \times 12.5\right] + \left[\left(\frac{D - K_{IRB}}{D - A}\right) \times 12.5 \times K_{SSFA(K_{IRB})}\right]$$

7.6.47 A Reporting Bank must infer the risk weight for market risk hedges, including currency or interest rate swaps, from a securitisation exposure that is pari passu to the hedge instrument or, if such an exposure does not exist, from the next subordinated tranche.

Sub-division 5: External Ratings-Based Approach (SEC-ERBA)

Short-Term External Credit Assessment

7.6.48 A Reporting Bank using the SEC-ERBA must assign a securitisation exposure for which –

(a) a short-term external credit assessment; or

(b) an inferred credit assessment based on a short-term credit assessment,

is available and which meets the operational requirements in Annex 7AD pursuant to paragraph 7.6.16, to a credit quality grade in accordance with Table 7M-4. Subject to paragraph 7.6.54, the Reporting Bank must risk-weight the securitisation exposure in accordance with Table 7-29 and paragraph 7.6.53. The Reporting Bank must subject the resulting risk weight to a floor of 15%.

Table 7-29: SEC-ERBA Risk Weights for Short-Term External Credit Assessment

Credit Quality Grade	I	II	III	All other credit assessments
Risk weight	15%	50%	100%	1250%

Long-Term External Credit Assessment

7.6.49 A Reporting Bank using the SEC-ERBA must assign a securitisation exposure for which –

(a) a long-term external credit assessment; or

(b) an inferred credit assessment based on a long-term external credit assessment,

is available and which meets the operational requirements in Annex 7AD pursuant to paragraph 7.6.16, to a credit quality grade in accordance with Table 7M-3. Subject to paragraph 7.6.54, the Reporting Bank must risk-weight the securitisation exposure in accordance with Table 7-30 and paragraph 7.6.53, with the risk weight adjusted for tranche maturity and tranche thickness (for non-senior tranches) in accordance with paragraphs 7.6.50 to 7.6.52. The Reporting Bank must subject the resulting risk weight to a floor of 15%.

Table 7-30: SEC-ERBA Risk Weights for Long-Term External Credit Assessment

Credit Quality Grade	Senior Tranche		Non-Senior Tranche	
	Tranche Maturity (M_T)		Tranche Maturity (M_T)	
	1 Year	5 Year	1 Year	5 Year
1	15%	20%	15%	70%
2	15%	30%	15%	90%
3	25%	40%	30%	120%
4	30%	45%	40%	140%
5	40%	50%	60%	160%
6	50%	65%	80%	180%
7	60%	70%	120%	210%
8	75%	90%	170%	260%
9	90%	105%	220%	310%
10	120%	140%	330%	420%
11	140%	160%	470%	580%
12	160%	180%	620%	760%
13	200%	225%	750%	860%
14	250%	280%	900%	950%
15	310%	340%	1050%	1050%
16	380%	420%	1130%	1130%
17	460%	505%	1250%	1250%
18	1250%	1250%	1250%	1250%

7.6.50 To account for the tranche maturity of a securitisation exposure, a Reporting Bank must use linear interpolation between the appropriate risk weights provided in Table 7-30 for a one-year maturity and a 5-year maturity, as follows –

$$RW_{M\ adj.} = RW_{(M=1)} + \left(RW_{(M=5)} - RW_{(M=1)}\right) \cdot \left(\frac{M_T - 1}{5 - 1}\right)$$

where –

(a) $RW_{M\ adj.}$ is the risk weight of the securitisation exposure after accounting for tranche maturity;

(b) $RW_{(M=1)}$ is the applicable risk weight for the securitisation exposure, assuming it has a tranche maturity of one year;

(c) $RW_{(M=5)}$ is the applicable risk weight for the securitisation exposure, assuming it has a tranche maturity of 5 years; and

(d) M_T is the tranche maturity of the securitisation exposure calculated in accordance with Section 6 of Annex 7V.

7.6.51 A Reporting Bank must calculate the risk weight of a senior securitisation exposure as –

$$RW = RW_{M\ adj.}$$

where –

(a) $RW_{M\ adj.}$ is the risk weight of the securitisation exposure after accounting for tranche maturity; and

(b) RW is the risk weight of the senior securitisation exposure assigned under the SEC-ERBA.

7.6.52 To account for the tranche thickness of a non-senior securitisation exposure, a Reporting Bank must calculate the risk weight of a non-senior tranche as follows –

$$RW = RW_{M\ adj.} \cdot [1 - \min(T, 0.5)]$$

where –

(a) T is the thickness of the tranche where the non-senior securitisation exposure resides, and is calculated as (D – A), as D and A are defined in paragraphs 7.6.33 to 7.6.37;

(b) $RW_{M\ adj.}$ is the risk weight as determined in accordance with paragraph 7.6.50; and

(c) RW is the risk weight of the non-senior securitisation exposure assigned under the SEC-ERBA.

7.6.53 A Reporting Bank must infer the risk weight for market risk hedges[302] from a securitisation exposure that is pari passu to the hedge instrument or, if such an exposure does not exist, from the next subordinated tranche.

7.6.54 When a Reporting Bank applies the SEC-ERBA to a non-senior exposure in a transaction where the relatively more senior exposures (i.e. securitisation exposures with precedence in claims on the cash flows from the underlying exposures) are rated, the Reporting Bank must not apply a risk weight under the SEC-ERBA for the non-senior

[302] For example, currency or interest rate swaps.

exposure which is lower than the risk weight for an exposure to the immediately preceding more senior exposure of the same securitisation with the same rating and maturity.

Sub-division 6: Internal Assessment Approach (SEC-IAA)

7.6.55 Subject to the written approval of the Authority, a Reporting Bank may use the SEC-IAA to determine its capital requirement for unrated securitisation exposures[303] to an ABCP programme, provided that –

(a) the Reporting Bank has obtained the Authority's approval to adopt the IRBA for least one asset class; and

(b) the internal assessment process of the Reporting Bank meets the operational requirements set out in paragraph 7.6.59.

7.6.56 Despite paragraph 7.6.55, the Authority may require the Reporting Bank to apply an approach other than the SEC-IAA to the unrated securitisation exposures that the Reporting Bank extends to the ABCP programme, in order to ensure an appropriate level of capital requirements.

7.6.57 The Authority may subsequently withdraw its approval of a Reporting Bank's use of the SEC-IAA to determine its capital requirement for unrated securitisation exposures to an ABCP programme, whether such exposures are existing or newly originated, if the Authority is not satisfied that the Reporting Bank meets the requirements in paragraph 7.6.59, until the Reporting Bank has remedied the deficiencies and met the requirements in paragraph 7.6.59.

7.6.58 If a Reporting Bank does not have the Authority's approval to apply the SEC-IAA, it must use the SEC-SA to determine its capital requirement for unrated securitisation exposures to an ABCP programme.

7.6.59 A Reporting Bank using the SEC-IAA to determine its capital requirement for unrated securitisation exposures to an ABCP programme must ensure that all of the following conditions are met:

(a) the Reporting Bank must ensure that the commercial paper issued by the ABCP programme is rated by a recognised ECAI, and the Reporting Bank must use the SEC-ERBA to risk-weight any exposures it has to the commercial paper;

(b) the Reporting Bank must consider all publicly available assessment methodologies of recognised ECAIs for the type of asset purchased by the programme in developing its internal assessments. For the purposes of this sub-paragraph –

(i) subject to sub-paragraph (b)(ii), if all the assessment methodologies of recognised ECAIs for an asset are not publicly available, then the Reporting Bank must not use the SEC-IAA;

[303] Examples of such exposures are liquidity facilities and credit enhancements that the Reporting Bank provides to the ABCP programme.

(ii) the Reporting Bank may discuss a specific transaction[304] with the Authority to determine whether the SEC-IAA may be applied; and

(iii) the Reporting Bank must not use the assessment methodology of a recognised ECAI to derive an internal assessment if this assessment methodology is not publicly available[305];

(c) the Reporting Bank must –

(i) base the internal assessment of the credit quality of a securitisation exposure to the ABCP programme on the assessment criteria of recognised ECAIs for the type of asset purchased by the ABCP programme and ensure that this internal assessment is the equivalent of a credit quality grade of "10" or better in accordance with Table 7M-3 when the Reporting Bank initially assigns this internal assessment to the securitisation exposure; and

(ii) demonstrate to the satisfaction of the Authority that its internal assessments correspond with the relevant standard of the recognised ECAI[306];

(d) the Reporting Bank must use the internal assessment of the credit quality of a securitisation exposure to the ABCP programme in the internal risk management processes of the Reporting Bank, including its management information and economic capital systems, and ensure that this internal assessment meets all the relevant requirements of the IRBA framework set out in Annex 7X;

(e) the Reporting Bank must identify gradations of risk in its internal assessment process and ensure that the internal ratings based on its internal assessment process correspond to the external credit assessments of recognised ECAIs;

(f) the Reporting Bank must ensure that its internal assessment process, particularly the stress factors for determining credit enhancement requirements, is at least as conservative as the publicly available assessment criteria of recognised ECAIs that have rated the commercial paper issued by the ABCP programme, for the asset type being purchased by the ABCP programme, and –

(i) in the case where the commercial paper issued by an ABCP programme is externally rated by 2 or more recognised ECAIs and

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304 For example, such transactions could be new or uniquely structured transactions which are not currently addressed by the credit assessment criteria of a recognised ECAI assessing the ABCP programme.

305 However, the Reporting Bank should also consider non-publicly available assessment methodologies of recognised ECAIs, to the extent that it has access to such information, in developing its internal assessments, particularly if it leads to more conservative credit assessments than the publicly available methodologies.

306 In the case of the Reporting Bank's calculation of the credit enhancement level using the SEC-IAA, the Authority may disallow, on a full or partial basis, any recourse guarantees provided by the ABCP transaction seller or excess spread, or any other first loss credit enhancements that provide limited credit protection to the Reporting Bank.

the benchmark stress factors of the different ECAIs require different levels of credit enhancement to achieve the equivalent external credit assessment, the Reporting Bank must apply the stress factor that requires the most conservative or highest level of credit protection[307];

(ii) when selecting recognised ECAIs to externally rate the commercial paper issued by an ABCP programme, the Reporting Bank must not choose only those ECAIs that generally have relatively less restrictive assessment methodologies; and

(iii) if there are changes in the assessment methodology of a selected ECAI, including the stress factors, that adversely affect the external credit assessment of the commercial paper issued by the ABCP programme, the Reporting Bank must consider the revised assessment methodology in evaluating whether the internal assessments assigned to the Reporting Bank's securitisation exposures to the ABCP programme are in need of revision;

(g) the Reporting Bank must ensure that –

(i) IA, external auditors, a recognised ECAI, or the internal credit review or risk management function of the Reporting Bank performs reviews of the internal assessment process at least annually and assess the validity of the internal assessments of the Reporting Bank; and

(ii) if the IA, internal credit review function, or risk management function of the Reporting Bank performs the reviews of the internal assessment process, such a function is independent of the ABCP programme business line and the underlying customer relationships;

(h) the Reporting Bank must track the performance of its internal assessments over time to evaluate the performance of the assigned internal assessments and make adjustments to its assessment process when the performance of its securitisation exposures to the ABCP programme routinely diverges from the assigned internal assessments on those exposures;

(i) the Reporting Bank must ensure that the ABCP programme has credit and investment guidelines which cover underwriting standards[308];

(j) the Reporting Bank must perform a credit analysis of the risk profile of the ABCP transaction seller, which includes –

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[307] For example, if one ECAI required credit enhancement of 2.5 to 3.5 times historical losses for a type of asset and another ECAI required 2 to 3 times historical losses, to assign a single "A" credit assessment, the Reporting Bank must use the stress factors utilised by the ECAI that would require the higher range of credit enhancements provided by the ABCP transaction seller.

[308] In the consideration of an asset purchase, the ABCP programme administrator should develop an outline of the structure of the purchase transaction and consider the following: the type of asset being purchased, the type and monetary value of the exposures arising from the provision of liquidity facilities and credit enhancements, the loss waterfall, and the legal and economic isolation of the transferred assets from the entity selling the assets.

(i) consideration of past and expected future financial performance, current market position, expected future competitiveness, leverage, cash flow and interest coverage and debt rating; and

(ii) a review of the ABCP transaction seller's underwriting standards, servicing capabilities, and collection processes;

(k) the Reporting Bank must ensure that the underwriting policy of the ABCP programme establishes asset eligibility criteria that includes prohibitions on the purchase of assets that are significantly past due or defaulted, limits on excess concentration to an individual obligor or a geographic region and limits on the tenor of the assets to be purchased;

(l) the Reporting Bank must ensure that the ABCP programme establishes collection processes that consider the operational capability and credit quality of the servicer, and mitigates seller risk and servicer risk[309];

(m) the Reporting Bank, in its aggregate estimate of loss on an asset pool that the ABCP programme is considering purchasing, must take into account all sources of potential risk, including credit risk and dilution risk[310];

(n) the Reporting Bank must ensure that the ABCP programme incorporates structural features into the purchase of assets in order to mitigate potential credit deterioration of the underlying portfolio[311].

7.6.60 For the purposes of paragraph 7.6.59(d), a Reporting Bank must inform the Authority prior to the use of the SEC-IAA, if its internal assessments are unable to meet any of the use test requirements set out in paragraph 2.7(a) of Annex 7X, read with the following modifications:

(a) "IRBA" is read as referring to the SEC-IAA;

(b) "internal ratings and estimates of IRBA parameters" is read as referring to SEC-IAA internal ratings.

7.6.61 A Reporting Bank using the SEC-IAA must calculate the credit risk-weighted exposure amount for an unrated securitisation exposure to an ABCP programme by –

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309 This can be achieved through various methods, such as setting triggers based on the credit quality of the seller or the servicer, prohibiting the commingling of funds or imposing lockbox arrangements, so as to help ensure the continuity of payments from the underlying pool to the ABCP programme.

310 For the purposes of this sub-paragraph –
(a) if the credit enhancement provided by the ABCP transaction seller is sized based on only credit-related losses and dilution risk is material for the particular exposure pool, the Reporting Bank should establish a separate reserve for dilution risk;
(b) in sizing the required credit enhancement level, the Reporting Bank should review several years of historical information, including losses, delinquencies, dilutions, and the turnover rate of the receivables; and
(c) the Reporting Bank should evaluate the characteristics of the underlying asset pool, for example, weighted average credit score, and the granularity of the asset pool, and identify any concentrations to an individual obligor or geographic region.

311 Such features may include wind-down triggers specific to a pool of exposures.

(a) assigning an internal rating, mapped to an equivalent short-term external credit assessment or long-term external credit assessment, to the unrated securitisation exposure;

(b) allocating the risk weight appropriate to the equivalent short-term external credit assessment or long-term external credit assessment assigned to that exposure in accordance with Table 7-29 or 7-30 respectively, except where the equivalent short-term external credit assessment does not map to a short-term credit quality grade of "III" or better as set out in Table 7M-4, or where the equivalent long-term external credit assessment does not map to a credit quality grade of "10" or better as set out in Table 7M-3, in which case the Reporting Bank must apply a 1250% risk weight to the unrated securitisation exposure; and

(c) applying the formula in paragraph 7.1.14.

Sub-division 7: Standardised Approach (SEC-SA)

7.6.62 A Reporting Bank using the SEC-SA to calculate capital requirements for a securitisation exposure to an SA pool must calculate the following inputs: K_{SA}, ratio of total delinquent underlying exposures to total underlying exposures in the pool (W), and tranche attachment point (A) and detachment point (D), in accordance with paragraphs 7.6.63 to 7.6.79.

K_{SA}

7.6.63 K_{SA} is the weighted-average capital requirement of the entire portfolio of underlying exposures per dollar value of exposure, calculated by applying the SA(CR) as if the underlying exposures had not been securitised, multiplied by 8%.

7.6.64 A Reporting Bank must calculate K_{SA} according to the following formula, expressed as a decimal between zero and one –

$$K_{SA} = \frac{SA(CR)\ RWA_{\ Underlying} + CCR - SA\ RWA_{Underlying}}{SA(CR)\ Exposure_{\ Underlying} + CCR\ Exposure_{Underlying}} \cdot 8\%$$

The Reporting Bank must calculate SA(CR) RWA according to paragraph 7.1.3 and CCR-SA RWA according to paragraph 7.1.9.

7.6.65 A Reporting Bank must reflect the effects of CRM that is applied to the underlying exposures (either individually or to the entire pool) in its calculation of K_{SA}.

7.6.66 For structures involving an SPE, a Reporting Bank must treat all of the SPE's exposures related to the securitisation as exposures in the pool. A Reporting Bank must include reserve accounts, cash collateral accounts and claims against counterparties resulting from interest rate swaps or currency swaps as exposures related to the securitisation. In the case of swaps other than credit derivatives, the Reporting Bank must include, in the computation of $CCR - SA\ RWA_{Underlying}$ used in calculating $K_{SA,}$ the positive current market value multiplied by the risk weight of the swap provider and by 8%. The Reporting Bank must not include such swaps in the computation of $CCR\ Exposure_{Underlying}$

used in calculating K_{SA}, as such a swap would not provide a credit enhancement to any tranche. The Reporting Bank may exclude the SPE's exposures from the pool for capital calculation purposes if the Reporting Bank can demonstrate to the Authority that the risk associated with the exposures does not affect its particular securitisation exposure or that the risk is not material[312].

7.6.67 For funded synthetic securitisations, a Reporting Bank must include in the calculation of K_{SA} any proceeds of the issuances of credit-linked notes or other funded obligations of the SPE which serve as collateral for the repayment of the securitisation exposure if –

(a) the Reporting Bank cannot demonstrate to the Authority that these are not material; and

(b) the default risk of the collateral is subject to the tranched loss allocation in the securitisation transaction.

7.6.68 For the purposes of paragraph 7.6.64, a Reporting Bank must include in the computation of $SA(CR)\ RWA_{Underlying}$ and $CCR-SA\ RWA_{Underlying}$ used in calculating K_{SA} the exposure amount of the collateral multiplied by its risk weight and by 8%. The Reporting Bank must not include such collateral in the computation of $SA(CR)\ Exposure_{Underlying}$ and $CCR\ Exposure_{Underlying}$ used in calculating K_{SA}.

7.6.69 Where a Reporting Bank has set aside a specific allowance or has a non-refundable purchase price discount on an exposure in the underlying pool, the Reporting Bank must calculate K_{SA} using the gross amount of the exposure without taking into account the specific allowance or the non-refundable purchase price discount.

W

7.6.70 A Reporting Bank must calculate W, the ratio of the sum of the nominal amount of delinquent underlying exposures to the total nominal amount of underlying exposures in the pool. Delinquent underlying exposures are underlying exposures that are 90 days or more past due, subject to bankruptcy or insolvency proceedings, in the process of foreclosure, held as real estate owned or in default, where default is defined within the securitisation deal documents.

Tranche Attachment Point and Detachment Point

7.6.71 A Reporting Bank must calculate the tranche attachment point, A, and the tranche attachment point, D, in accordance with paragraphs 7.6.33 to 7.6.37.

7.6.72 Where the only difference between exposures to a transaction is related to maturity, A and D are the same.

[312] For example, the Reporting Bank demonstrates that the risk has been mitigated.

Capital Requirements and Risk Weights under SEC-SA

7.6.73 A Reporting Bank must calculate K_A, using the inputs K_{SA} and W, as follows:

$$K_A = (1 - W) \times K_{SA} + W \times 0.5$$

7.6.74 If a Reporting Bank does not know the delinquency status, as defined in paragraph 7.6.70, for no more than 5% of underlying exposures in the pool (calculated by E, as defined in Division 2 of this Part), the Reporting Bank may use the SEC-SA by adjusting its calculation of K_A as follows:

$$K_A = \left(\frac{E_{Subpool\ 1\ where\ W\ is\ known}}{E_{Total}} \times K_A^{Subpool\ 1\ where\ W\ is\ known}\right) + \frac{E_{Subpool\ 2\ where\ W\ is\ unknown}}{E_{Total}}$$

If the Reporting Bank does not know the delinquency status for more than 5% of underlying exposures in the pool (calculated by E, as defined in Division 2 of this Part), the Reporting Bank must risk-weight the securitisation exposure at 1250%.

7.6.75 A Reporting Bank using the SEC-SA must calculate the capital requirement per dollar value of securitisation exposure using the following formula:

$$K_{SSFA(K_A)} = \frac{e^{a \cdot u} - e^{a \cdot l}}{a(u - l)}$$

where e is the base of the natural logarithms (approximately equal to 2.71828) and the variables a, u, and l are defined as follows:

(a) $a = -(\frac{1}{p \times K_A})$;

(b) $u = D - K_A$; and

(c) $l = max\ (A - K_A, 0)$.

7.6.76 For the purposes of paragraph 7.6.75, the supervisory parameter p under the SEC-SA is one for a securitisation exposure that is not a resecuritisation exposure.

7.6.77 Subject to paragraph 7.6.79, a Reporting Bank must risk-weight any securitisation exposure for which it is using the SEC-SA in accordance with sub-paragraphs (a), (b), and (c), and paragraph 7.6.78. The Reporting Bank must subject the resulting risk weight to a floor of 15%.

(a) when the tranche detachment point, D for a securitisation exposure is less than or equal to K_A, the risk weight is 1250%;

(b) when the tranche attachment point, A for a securitisation exposure is greater than or equal to K_A, the risk weight of the exposure, expressed as a percentage, is $K_{SSFA(K_A)}$ multiplied by 12.5;

(c) when K_A is more than A but less than D, the risk weight is the weighted average of 1250% and $K_{SSFA(K_A)}$ multiplied by 12.5 according to the following formula:

$$RW = \left[\left(\frac{K_A - A}{D - A}\right) \times 12.5\right] + \left[\left(\frac{D - K_A}{D - A}\right) \times 12.5 \times K_{SSFA(K_A)}\right]$$

7.6.78 A Reporting Bank must infer the risk weight for market risk hedges[313] from a securitisation exposure that is pari passu to the hedge instrument or, if such an exposure does not exist, from the next subordinated tranche.

7.6.79 When a Reporting Bank applies the SEC-SA to an unrated non-senior exposure in a transaction where the relatively more senior exposures (i.e. securitisation exposures with precedence in claims on the cash flows from the underlying exposures) are rated, the Reporting Bank must not apply a risk weight under SEC-SA for the unrated non-senior exposure which is lower than the risk weight for the immediately preceding more senior rated exposure.

Sub-division 8: Treatment of Mixed Pools

7.6.80 Where a Reporting Bank is able to calculate K_{IRB} on at least 95% of the underlying exposure amounts of a securitisation, the Reporting Bank must apply the SEC-IRBA calculating the capital requirement for the underlying pool as –

$$d \times K_{IRB} + (1 - d) \times K_{SA}$$

where d is the percentage of the exposure amount of underlying exposures for which the Reporting Bank is able to calculate K_{IRB} over the exposure amount of all underlying exposures, K_{IRB} is defined in paragraphs 7.6.21 to 7.6.32, and K_{SA} is defined in paragraphs 7.6.63 to 7.6.69.

7.6.81 Where a Reporting Bank is not able to calculate K_{IRB} on at least 95% of the underlying amounts of a securitisation, the Reporting Bank must use the hierarchy for securitisation exposures of SA pools as set out in paragraphs 7.6.16 to 7.6.19.

Sub-division 9: Treatment of Resecuritisation Exposures

7.6.82 A Reporting Bank must risk-weight any resecuritisation exposure by applying the SEC-SA, with the following adjustments and subject the resulting risk weight to a floor of 100%:

(a) the capital requirement of the resecuritisation's underlying securitisation exposures (K_{SA}) is calculated using the securitisation framework in this Division instead of the SA(CR) and CCR-SA;

(b) delinquencies (W) are set to zero for any exposure to a securitisation tranche in the underlying pool;

(c) the supervisory parameter p is set equal to 1.5, rather than 1.

313 For example, currency or interest rate swaps.

7.6.83 If the underlying portfolio of a resecuritisation consists of a pool with exposures to securitisation tranches and exposures to other non-securitised assets, a Reporting Bank must separate the portfolio into 2 subsets, one consisting of securitisation tranches, and one consisting of exposures to other non-securitised assets. The Reporting Bank must calculate K_A separately for each subset, with separate K_{SA} and W parameters. The Reporting Bank must calculate W in accordance with paragraph 7.6.70 in the subset where the exposures are to non-securitised assets, and set W to zero where the exposures are to securitisation tranches. The Reporting Bank must then calculate K_A for the resecuritisation exposure as the nominal exposure weighted-average of the K_A for each subset.

Sub-division 10: Treatment of Securitisations of NPL Securitisations

7.6.84 A Reporting Bank must risk-weight any securitisation exposure to an NPL securitisation in accordance with this Sub-division.

7.6.85 An NPL securitisation is a securitisation that meets all of the following criteria:

(a) at the origination date, and at any subsequent date on which exposures are added to or removed from the underlying pool due to replenishment, restructuring, or any other reason that the Authority may specify, the value of W calculated in accordance with paragraph 7.6.70 is equal to or higher than 90%;

(b) the underlying pool of the securitisation only comprises loans, loan-equivalent financial instruments, or tradable instruments used for the sole purposes of loan sub-participation as referred to in paragraph 1.1(i) of Annex 7AC. For the purposes of this sub-paragraph, "loan-equivalent financial instruments" include bonds not listed on any trading venue;

(c) the underlying pool of the securitisation does not include any securitisation exposures.

7.6.86 Subject to paragraph 7.6.87, a Reporting Bank must calculate the credit risk-weighted exposure amount for an exposure to an NPL securitisation, according to the hierarchy of approaches determined by paragraphs 7.6.13 to 7.6.19 and 7.1.15.

7.6.87 A Reporting Bank using the F-IRBA to calculate K_{IRB}, as set out in paragraph 7.6.21, of the underlying pool of an NPL securitisation must not apply the SEC-IRBA to a securitisation exposure to an NPL securitisation.

7.6.88 A Reporting Bank using the SEC-IRBA, SEC-SA or the "look-through" approach set out in paragraph 7.1.15 must apply a floor of 100% to the risk weight assigned to an exposure to an NPL securitisation.

7.6.89 A Reporting Bank using the SEC-IRBA or the SEC-SA may assign a risk weight of 100% to a senior securitisation exposure to an NPL securitisation where –

(a) the NPL securitisation is a traditional securitisation; and

(b) the sum of the non-refundable purchase price discounts is equal to or higher than 50% of the outstanding amount of the pool of exposures.

7.6.90 For the purposes of paragraph 7.6.89(b), "non-refundable purchase price discounts" refer to the difference between the outstanding balance of the exposures in the underlying pool and the price at which such exposures are sold by the originator to the securitisation entity, where neither the originator nor the original lender are reimbursed for this difference. In cases where the originator underwrites tranches of the NPL securitisation for subsequent sale, "non-refundable purchase price discounts" may also include the differences between the nominal amount of the tranches and the price at which these tranches are first sold to unrelated third parties. To avoid doubt, in determining non-refundable purchase price discounts, a Reporting Bank must only consider the initial sale of any given piece of a securitisation tranche and must not consider the purchase prices of subsequent re-sales of such exposures.

7.6.91 A Reporting Bank may cap the risk-weighted exposure amount for the securitisation exposures it holds in the same NPL securitisation in accordance with paragraphs 7.1.18 to 7.1.20, where the Reporting Bank is acting as –

(a) an originator; or

(b) an investor, provided that the Reporting Bank is using the SEC-IRBA for an exposure to the NPL securitisation.

7.6.92 A Reporting Bank must not execute an NPL securitisation transaction for the purposes of reducing capital requirements on non-delinquent exposures in the underlying pool.

Sub-division 11: Treatment of Simple, Transparent and Comparable ("STC") Securitisations

Scope and Identification of STC Securitisations

7.6.93 A Reporting Bank may apply the provisions in paragraphs 7.6.97 and 7.6.98 for a securitisation exposure only if –

(a) the securitisation exposure arises from a traditional securitisation; and

(b) the Reporting Bank has assessed that –

(i) in the case of a securitisation exposure arising from a securitisation which is not an ABCP programme, the securitisation meets all the criteria in Annex 7AE ("STC Criteria") on an ongoing basis;

(ii) in the case of a securitisation exposure to an ABCP conduit of an ABCP programme[314], the securitisation meets all the conduit level and transaction level criteria under the Short-Term STC Criteria in Annex 7AF on an ongoing basis; and

[314] For example, exposure arising from investing in commercial papers issued under an ABCP programme or sponsoring arrangements at the ABCP programme level.

(iii) in the case of a securitisation exposure to an ABCP transaction of an ABCP programme, the securitisation meets all the transaction level criteria under the Short-Term STC Criteria in Annex 7AF on an ongoing basis.

7.6.94 For the purposes of paragraph 7.6.93(b), in assessing that a securitisation meets all the STC Criteria or relevant Short-term STC Criteria, as the case may be, a Reporting Bank must –

(a) if it is an investor in the securitisation, make its own assessment based on the information provided by the originator of the securitisation; and

(b) if it is an originator of the securitisation, make its own assessment for the purposes of calculating regulatory capital for securitisation exposures it retains in the securitisation, where such retained positions meet the requirements in paragraph 1.1(a) of Annex 7AC.

7.6.95 A Reporting Bank that is an originator of a securitisation must disclose to investors all necessary information at the transaction level to allow investors to determine whether the securitisation meets all the STC Criteria or relevant Short-term STC Criteria, as the case may be.

7.6.96 A Reporting Bank must assess that the securitisation meets the STC Criteria or relevant Short-term STC Criteria, as the case may be, on an ongoing basis and take into account developments that may invalidate its previous assessment[315] which are relevant to the STC Criteria or relevant Short-term STC Criteria, as the case may be. In cases where the STC Criteria or relevant Short-term STC Criteria, as the case may be, refer to the underlying assets of the securitisation, including but not limited to paragraphs 4.1 and 4.2 of Annex 7AE, and the pool is dynamic, the Reporting Bank must conduct checks every time that assets are added to such pool to assess compliance with the STC Criteria or relevant Short-term STC Criteria, as the case may be.

Overview of Alternative Capital Treatment for STC Securitisations

7.6.97 A Reporting Bank, in respect of a securitisation exposure which meets the requirements of paragraph 7.6.93, may calculate the credit risk-weighted exposure amount for a securitisation exposure –

(a) when the SEC-IRBA is used, by applying the provisions in paragraph 7.6.99 instead of paragraph 7.6.42;

(b) when the SEC-ERBA is used, by applying the provisions in paragraphs 7.6.100 and 7.6.101 instead of paragraphs 7.6.48 and 7.6.49 respectively;

(c) when the SEC-IAA is used, by applying the provisions in paragraph 7.6.102 instead of paragraph 7.6.61; and

[315] For example, deficiencies in the frequency and content of the investor reports, deficiencies in the alignment of interest, or changes in the transaction documentation.

(d) when the SEC-SA is used, by applying the provisions in paragraphs 7.6.103 and 7.6.104 instead of paragraphs 7.6.76 and 7.6.77 respectively.

7.6.98 Under the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA, the resulting risk weight is subject to a minimum risk weight of 10% for senior securitisation tranches, and 15% for non-senior securitisation tranches.

Alternative Capital Treatment for STC Securitisations under the SEC-IRBA

7.6.99 A Reporting Bank must calculate the supervisory parameter p for a securitisation exposure which meets the requirements of paragraph 7.6.93 under the SEC-IRBA as –

$$p = \max\left[0.3, 0.5 \times \left(A + \frac{B}{N} + (C \times K_{IRB}) + \left(D \times LGD_{avg}\right) + (E \times M_T)\right)\right]$$

where –

(a) 0.3 denotes the floor of the supervisory parameter p;

(b) N is the effective number of exposures in the underlying pool calculated in accordance with paragraphs 7.6.38, 7.6.40 and 7.6.41;

(c) K_{IRB} is the IRBA capital requirement of the entire portfolio of underlying exposures per dollar value of exposure calculated in accordance with paragraphs 7.6.21 to 7.6.32;

(d) LGD_{avg} is the exposure-weighted average LGD of the underlying pool calculated in accordance with paragraphs 7.6.39 to 7.6.41;

(e) M_T is the tranche maturity calculated in accordance with Section 6 of Annex 7V; and

(f) the parameters A, B, C, D and E are determined according to Table 7-31.

Table 7-31: Parameters for Calculation of Supervisory Parameter for STC Securitisations under SEC-IRBA

Characteristics of Securitisation Exposure and Underlying Pool		A	B	C	D	E
Wholesale	Senior, granular (N ≥ 25)	0	3.56	-1.85	0.55	0.07
	Senior, non-granular (N < 25)	0.11	2.61	-2.91	0.68	0.07
	Non-senior, granular (N ≥ 25)	0.16	2.87	-1.03	0.21	0.07
	Non-senior, non-granular (N < 25)	0.22	2.35	-2.46	0.48	0.07
Retail	Senior	0	0	-7.48	0.71	0.24
	Non-senior	0	0	-5.78	0.55	0.27

Alternative Capital Treatment for STC Securitisations under the SEC-ERBA

Short-Term External Credit Assessments

7.6.100 A Reporting Bank using the SEC-ERBA for a securitisation exposure which meets the requirements of paragraph 7.6.93 must assign a securitisation exposure for which a short-term external credit assessment or an inferred credit assessment based on a short-term external credit assessment is available, to a credit quality grade in accordance with Table 7M-4. Subject to paragraph 7.6.54, the Reporting Bank must risk-weight the securitisation exposure in accordance with Table 7-32 and paragraph 7.6.53. The Reporting Bank must subject the resulting risk weight to a floor of 10% for senior securitisation tranches, and 15% for non-senior securitisation tranches.

Table 7-32: SEC-ERBA Risk Weights for STC Securitisations with Short-Term External Credit Assessments

Credit Quality Grade	I	II	III	All other credit assessments
Risk weight	10%	30%	60%	1250%

Long-Term External Credit Assessments

7.6.101 A Reporting Bank using the SEC-ERBA for a securitisation exposure which meets the requirements of paragraph 7.6.93 must assign a securitisation exposure for which a long-term external credit assessment or an inferred credit assessment based on a long-term external credit assessment is available, to a credit quality grade in accordance with Table 7M-3. Subject to paragraph 7.6.54, the Reporting Bank must risk-weight the securitisation exposure in accordance with Table 7-33 and paragraph 7.6.53, with the risk weight adjusted for tranche maturity and tranche thickness (for non-senior tranches) in accordance with paragraphs 7.6.50 to 7.6.52. The Reporting Bank must subject the resulting risk weight to a floor of 10% for senior securitisation tranches, and 15% for non-senior securitisation tranches.

Table 7-33: SEC-ERBA Risk Weights for STC Securitisations with Long-Term External Credit Assessment

Credit Quality Grade	Senior Tranche		Non-Senior Tranche	
	Tranche Maturity (M_T)		Tranche Maturity (M_T)	
	1 Year	5 Year	1 Year	5 Year
1	10%	10%	15%	40%
2	10%	15%	15%	55%
3	15%	20%	15%	70%
4	15%	25%	25%	80%
5	20%	30%	35%	95%
6	30%	40%	60%	135%
7	35%	40%	95%	170%
8	45%	55%	150%	225%
9	55%	65%	180%	255%
10	70%	85%	270%	345%
11	120%	135%	405%	500%
12	135%	155%	535%	655%
13	170%	195%	645%	740%
14	225%	250%	810%	855%
15	280%	305%	945%	945%
16	340%	380%	1015%	1015%
17	415%	455%	1250%	1250%
18	1250%	1250%	1250%	1250%

Alternative Capital Treatment for STC Securitisations under the SEC-IAA

7.6.102 A Reporting Bank using the SEC-IAA for a securitisation exposure which meets the requirements of paragraph 7.6.93 must calculate the credit risk-weighted exposure amount for an unrated securitisation exposure to an ABCP programme by –

(a) assigning an internal rating, mapped to an equivalent short-term external credit assessment or long-term external credit assessment, to the unrated securitisation exposure;

(b) allocating the risk weight appropriate to the equivalent short-term external credit assessment or long-term external credit assessment assigned to that exposure in accordance with Table 7-32 or 7-33 respectively, except where the equivalent short-term external credit assessment does not map to a short-term credit quality grade of "III" or better as set out in Table 7M-4 or where the equivalent long-term external credit assessment does not map to a credit quality grade of "10" or better as set out in Table 7M-3, in which case the Reporting Bank must apply a 1250% risk weight to the unrated securitisation exposure; and

(c) applying the formula in paragraph 7.1.14.

Alternative Capital Treatment for STC Securitisations under the SEC-SA

7.6.103 For the purposes of paragraph 7.6.97, the supervisory parameter p for a securitisation exposure which meets the requirements of paragraph 7.6.93 under the SEC-SA is 0.5.

7.6.104 Subject to paragraph 7.6.79, a Reporting Bank must risk-weight any securitisation exposure for which it is using the SEC-SA in accordance with paragraph 7.6.78 and the following:

(a) when the tranche detachment point, D for a securitisation exposure is less than or equal to K_A, the risk weight is 1250%;

(b) when the tranche attachment point, A for a securitisation exposure is greater than or equal to K_A, the risk weight of the exposure, expressed as a percentage, is $K_{SSFA(K_A)}$ multiplied by 12.5;

(c) when K_A is more than A but less than D, the risk weight is the weighted average of 1250% and $K_{SSFA(K_A)}$ multiplied by 12.5 according to the following formula:

$$RW = \left[\left(\frac{K_A - A}{D - A}\right) \times 12.5\right] + \left[\left(\frac{D - K_A}{D - A}\right) \times 12.5 \times K_{SSFA(K_A)}\right]$$

The Reporting Bank must then subject the resulting risk weight to a floor of 10% for senior securitisation tranches, and 15% for non-senior securitisation tranches.

Sub-division 12: Implicit Support

7.6.105 When a Reporting Bank provides implicit support to a securitisation, it must –

(a) include all the underlying exposures of the securitisation in its calculation of credit RWA as if those exposures had not been securitised;

(b) deduct from CET1 capital any increase in equity capital due to a gain on sale, in accordance with paragraph 6.1.5(f); and

(c) publicly disclose that it has provided non-contractual support and the capital impact of doing so.

Sub-division 13: Treatment of Credit Risk Mitigation

7.6.106 A Reporting Bank may recognise the effects of CRM of eligible financial collateral pledged by any SPE, but it must not recognise any SPE as an eligible protection provider.

7.6.107 A Reporting Bank that synthetically securitises exposures held on its balance sheet by purchasing tranched credit protection must treat currency mismatches and

maturity mismatches[316] between the synthetic securitisation and the underlying exposures in the following manner:

(a) for securitisation exposures that are assigned a risk weight of 1250%, currency mismatches and maturity mismatches are not taken into account;

(b) for all other securitisation exposures, the Reporting Bank must treat a currency mismatch or a maturity mismatch between the underlying exposure being hedged and the CRM obtained through the synthetic securitisation in accordance with Annex 7H. In the case where the exposures in the underlying pool have different maturities, the Reporting Bank must use the longest maturity of all the exposures in the underlying pool as the maturity of the pool.

Recognition of Eligible Financial Collateral under FC(SA)

7.6.108 A Reporting Bank which has taken eligible financial collateral must ensure that the eligible financial collateral is pledged for at least the life of the exposure, and must mark-to-market and revalue the eligible financial collateral at least on a 6-monthly basis, or more frequently if specified by the Authority, before recognising the effects of CRM of the eligible financial collateral under the FC(SA). A Reporting Bank which has taken eligible financial collateral for an SEC-ERBA, SEC-IAA or SEC-SA exposure and is using the FC(SA) may recognise the effects of CRM of the eligible financial collateral in the following manner:

(a) break down the securitisation exposure into –

(i) a collateralised portion with E equal to the latest fair market value of the eligible financial collateral; and

(ii) an uncollateralised portion with E equal to the E of the securitisation exposure less the latest fair market value of the eligible financial collateral;

(b) apply the risk weight that is applicable to the eligible financial collateral, to the collateralised portion calculated in accordance with sub-paragraph (a)(i) to calculate the credit risk-weighted exposure amount of the collateralised portion as though the Reporting Bank had a direct exposure to the eligible financial collateral;

(c) apply the risk weight that is applicable to the securitisation exposure, calculated in accordance with paragraph 7.1.23, to the uncollateralised portion calculated in accordance with sub-paragraph (a)(ii) to calculate the credit risk-weighted exposure amount of the uncollateralised portion.

[316] For example, maturity mismatches may arise when a Reporting Bank uses credit derivatives to transfer part or all of the credit risk of a specific pool of assets to third parties. When the credit derivatives unwind, the transaction terminates. This implies that the effective maturity of the tranches of the synthetic securitisation may differ from that of the underlying exposures.

Treatment of Eligible Credit Protection Bought

7.6.109 A Reporting Bank which has bought eligible credit protection for a securitisation exposure from an eligible protection provider may recognise the effects of CRM of the eligible credit protection in the following manner:

(a) break down the securitisation exposure into –

(i) a protected portion with E or EAD equal to the notional amount of the eligible credit protection; and

(ii) an unprotected portion with E or EAD equal to the value of the securitisation exposure measured in accordance with Division 2 of this Part less the notional amount of the eligible credit protection;

(b) apply the risk weight that is applicable to the eligible protection provider to the protected portion calculated in accordance with sub-paragraph (a)(i) to calculate the credit risk-weighted exposure amount of the protected portion;

(c) apply the risk weight, calculated in accordance with paragraph 7.1.23, that is applicable to the securitisation exposure to the unprotected portion calculated in accordance with sub-paragraph (a)(ii) to calculate the credit risk-weighted exposure amount of the unprotected portion.

7.6.110 A Reporting Bank must apply a 1250% risk weight to a securitisation exposure below a materiality threshold[317] for which no payment will be made by the protection provider in the event of loss on a securitisation exposure.

7.6.111 For the purposes of paragraph 7.6.109, a Reporting Bank must apply the relevant provisions in Annex 7I for the purposes of determining the protected portion and capital requirement in cases of proportional cover, principal-only cover, partially eligible credit derivatives, tranched cover and basket credit derivatives.

7.6.112 For the purposes of paragraph 7.6.109, a Reporting Bank must treat the protected portion of a securitisation exposure which has a currency mismatch or a maturity mismatch in accordance with Annex 7H. In the case where the underlying exposure in the protected portion of a securitisation has different maturities, the Reporting Bank must use the longest maturity as the maturity of the protected portion.

Treatment of Credit Protection Sold

7.6.113 Where a Reporting Bank provides full (or pro rata) unfunded credit protection to a securitisation exposure, the Reporting Bank must calculate the credit risk-weighted exposure amount for the covered portion of the securitisation exposure as if it were directly holding that portion of the exposure. Where a Reporting Bank provides tranched cover to a securitisation exposure, the Reporting Bank must calculate the credit risk-weighted exposure amount for the covered portion of the securitisation exposure in accordance with paragraphs 1.5 to 1.11 of Annex 7I.

[317] An exposure below such threshold is equivalent to a retained first loss position.

7.6.114 Where a Reporting Bank provides funded credit protection to a securitisation exposure, the Reporting Bank must calculate the credit risk-weighted exposure amount for the credit protection as the sum of –

(a) the credit risk-weighted exposure amount for the covered securitisation exposure calculated in accordance with paragraph 7.6.113; and

(b) the credit risk-weighted exposure amount for the exposure to the protection buyer calculated using the risk weight which is applicable to the protection buyer,

subject to the condition that the minimum capital requirements for the sum of the credit risk-weighted exposure amounts calculated in sub-paragraphs (a) and (b) must not exceed the notional amount of the credit protection, which is the maximum possible payout under the credit protection.

Division 7: Exposures to Central Counterparties

Sub-division 1: Overview

7.7.1 Subject to paragraph 7.7.2, a Reporting Bank must include in the calculation of its CCP RWA exposures to CCPs arising from all of the following transactions:

(a) OTC derivative transactions;

(b) exchange-traded derivative transactions;

(c) SFTs;

(d) long settlement transactions.

Where the clearing member-to-client leg of an exchange-traded derivative transaction is conducted under a bilateral agreement, a Reporting Bank must, whether it is a clearing member or a client in the transaction, or a lower level client or higher level client in the case of a multi-level client structure, capitalise that transaction as an OTC derivative transaction in accordance with Sub-division 5 of Division 1 of this Part and calculate CVA RWA for such exposures in accordance with Division 5 of Part VIII.

7.7.2 A Reporting Bank must not include, in the calculation of its CCP RWA, exposures arising from the settlement of cash transactions[318], which are subject to the requirements in Division 8 of this Part.

7.7.3 A Reporting Bank must ensure that the CCP meets all of the following requirements in order to be treated as a qualifying CCP:

(a) the CCP holds a licence to operate as a CCP (including a licence granted by way of confirming an exemption), and is permitted by a financial services regulatory authority to operate as a CCP with respect to the products it offers;

(b) the CCP is based and subject to prudential standards and supervision in a country or jurisdiction where the financial services regulatory authority has established, and publicly indicated that the financial services regulatory authority applies to the CCP on an ongoing basis, domestic rules and regulations that are consistent with the CPSS-IOSCO Principles for Financial Market Infrastructures;

(c) the requirements in paragraph 7.7.37(a) and (b) are met, to permit the Reporting Bank to calculate its capital requirement for default fund exposures to the CCP.

7.7.4 Subject to paragraph 7.7.5, for exposures to a qualifying CCP, a Reporting Bank must calculate the CCP RWA for exposures to the CCP as the sum of –

(a) RWA for CCP trade exposures calculated in accordance with Sub-division 2 of this Division; and

[318] Examples include equity, fixed income, spot foreign exchange and spot commodity transactions.

(b) RWA for default fund exposures, calculated as the capital requirement calculated in accordance with Sub-division 3 of this Division, multiplied by 12.5. To avoid doubt, the Reporting Bank must apply a 0% risk weight to its contributions to pre-funded default funds covering settlement-risk-only products.

7.7.5 Where a Reporting Bank's CCP RWA (calculated in accordance with paragraph 7.7.4) for CCP trade exposures and default fund contribution to a qualifying CCP is higher than the CCP RWA (calculated in accordance with paragraph 7.7.6) that would apply if the CCP is a non-qualifying CCP, the Reporting Bank must calculate its CCP RWA for CCP trade exposures and default fund contribution to the qualifying CCP in accordance with paragraph 7.7.6.

7.7.6 For exposures to a CCP which is not a qualifying CCP, a Reporting Bank must calculate the CCP RWA for exposures to the CCP as the sum of –

(a) RWA for CCP trade exposures calculated by applying the steps set out in paragraph 7.1.9(a) to (e); and

(b) 1250% of default fund exposures, including all pre-funded contributions and unfunded contributions which are liable to be paid by the Reporting Bank should the CCP so require. To avoid doubt, the Reporting Bank must apply a 0% risk weight to its contributions to pre-funded default funds covering settlement-risk-only products.

7.7.7 To avoid doubt, a Reporting Bank must not include the RWA for CCP trade exposures mentioned in paragraph 7.7.6(a) within the CCR-SA RWA of the Reporting Bank.

7.7.8 For the purposes of paragraph 7.7.6(b), where there is unlimited liability for unfunded contributions arising from unlimited binding commitments of a Reporting Bank to the default fund of any CCP, the Reporting Bank must ensure that the amount of unfunded commitments to which the 1250% risk weight applies is determined by the Authority.

7.7.9 For exposures to a CCP which operates in a country or jurisdiction that does not have a financial services regulatory authority applying the CPSS-IOSCO Principles for Financial Market Infrastructures, a Reporting Bank must calculate the CCP RWA for exposures to the CCP in accordance with paragraph 7.7.6, unless the Authority determines otherwise.

7.7.10 Where a CCP (for which CCP RWA had been calculated in accordance with paragraph 7.7.4) ceases to meet the requirements to be treated as a qualifying CCP set out in paragraph 7.7.3, a Reporting Bank must, within 3 months of the CCP ceasing to meet the requirements to be treated as a qualifying CCP set out in paragraph 7.7.3, calculate the CCP RWA for exposures to the CCP in accordance with paragraph 7.7.4, unless the Authority requires otherwise. After the 3 months, the Reporting Bank must calculate the CCP RWA for exposures to the CCP in accordance with paragraph 7.7.6.

7.7.11 Despite paragraphs 7.7.3, 7.7.4 and 7.7.6 and regardless of whether a CCP is treated as a qualifying CCP, a Reporting Bank must ensure that it maintains adequate capital for its exposures to a CCP and must consider as part of its ICAAP under Part X if it

should hold capital in excess of the requirements set out in paragraphs 7.7.4 and 7.7.6, including where –

(a) its transactions with the CCP give rise to exposures that pose higher risks;

(b) given the context of that Reporting Bank's dealings with the CCP, it is unclear that the CCP meets the requirements specified in paragraph 7.7.3; or

(c) an external assessment[319] has found shortcomings in the CCP or the regulation of CCPs, and the CCP or the financial services regulatory authority supervising the CCP has not since publicly addressed the issues identified.

7.7.12 Where a Reporting Bank acts as a clearing member of a CCP, it must assess through appropriate scenario analysis and stress testing whether the level of capital held against exposures to a CCP adequately addresses the inherent risks of those transactions. The Reporting Bank must include, in the assessment, potential future or contingent exposures resulting from future drawings on default fund commitments, and from secondary commitments to take over or replace offsetting transactions from clients of another clearing member in case of that clearing member defaulting or becoming insolvent.

7.7.13 A Reporting Bank must monitor and report to senior management and the appropriate committee of the Board of the Reporting Bank on a regular basis all its exposures to CCPs, which must include exposures arising from trading through a CCP and exposures arising from CCP membership obligations, including default fund contributions.

7.7.14 In the case where a CCP (i.e. second CCP) is treated as a clearing member of another CCP (i.e. first CCP), a Reporting Bank must determine whether the second CCP's collateral contribution to the first CCP is treated as initial margin or a default fund contribution based upon the legal arrangement between the CCPs, and must consult the Authority on its determination.

Sub-division 2: CCP Trade Exposures to Qualifying CCPs

Exposures to a CCP where a Reporting Bank is a Clearing Member

7.7.15 Where a Reporting Bank acts as a clearing member of a CCP for its own purposes, the Reporting Bank must calculate its RWA for CCP trade exposures as 2% of E or EAD, whichever is applicable, of the Reporting Bank's CCP trade exposures to the CCP. Where a Reporting Bank which acts as a clearing member of a CCP offers clearing services to clients, the Reporting Bank must calculate its RWA for CCP trade exposures as 2% of E or EAD, whichever is applicable, of the Reporting Bank's CCP trade exposures to the CCP, that arises when the Reporting Bank is obligated to reimburse the client for any losses due to changes in the value of its transactions in the event that the CCP defaults. The Reporting Bank must calculate its RWA for collateral posted to the CCP in accordance with paragraphs 7.7.25 to 7.7.33.

[319] For example, a Financial Sector Assessment Program by the International Monetary Fund.

7.7.16 For the purposes of paragraphs 7.7.15 and 7.7.20 to 7.7.23, a Reporting Bank must calculate E or EAD, whichever is applicable, of the CCP trade exposures in accordance with paragraphs 7.7.17 to 7.7.19.

7.7.17 A Reporting Bank must calculate E or EAD, whichever is applicable, of the CCP trade exposures in accordance with Sub-divisions 6, 7 or 8, whichever is applicable, and Sub-division 9 of Division 2 of this Part. A Reporting Bank must apply the method for calculating E or EAD, whichever is applicable, of CCP trade exposures consistently as that applied for the Reporting Bank's measurement of its other pre-settlement counterparty exposures.

7.7.18 A Reporting Bank that is calculating E or EAD, whichever is applicable in accordance with paragraph 7.7.17 must comply with all the following requirements:

(a) where the number of transactions exceeds 5,000 at any point during a quarter, the Reporting Bank must not apply the 20-business day floor for the margin period of risk and the minimum holding period for a netting set as set out in paragraph 6.2 of Annex 7E and Table 7J-3, if there are no disputed transactions within the netting set and the netting set does not contain any illiquid collateral or exotic transactions;

(b) the Reporting Bank must, in all cases, apply a minimum margin period of risk of 10 business days to the calculation of RWA for CCP trade exposures for OTC derivative transactions;

(c) where CCPs retain variation margin against certain transactions and collateral posted by a clearing member is not protected against the insolvency of the CCP, the Reporting Bank must ensure that the minimum time risk horizon applied to the Reporting Bank's CCP trade exposures on such trades is the lesser of one year and the remaining maturity of the transaction, subject to a floor of 10 business days.

7.7.19 Where the settlement of transactions is legally enforceable on a net basis in an event of default, regardless of whether the counterparty is insolvent or bankrupt, a Reporting Bank may calculate the total replacement cost of all contracts relevant to the calculation of E or EAD, whichever is applicable, of CCP trade exposures as a net replacement cost if the applicable close-out netting sets meet the requirements set out in Annex 7G, applied to any netting agreement that provides legally enforceable rights of set-off[320]. If the Reporting Bank is not able to ensure that the netting agreements meet these requirements, the Reporting Bank must regard each single transaction as a netting set of its own for the calculation of CCP trade exposures.

Exposures to a CCP where a Reporting Bank is a Client of a Clearing Member

7.7.20 Where a Reporting Bank is a client of a clearing member or a lower level client in a multi-level client structure, and enters into a transaction with the clearing member or a higher level client acting as a financial intermediary (i.e. the clearing member or higher

[320] This takes into account that for netting agreements employed by CCPs, no standardisation has currently emerged that would be comparable to level of standardisation with respect to netting agreements for bilateral trading of OTC derivative transactions.

level client completes an offsetting transaction with a CCP or clearing member), or enters into a transaction with a CCP with a clearing member or higher level client guaranteeing the performance of the Reporting Bank, the Reporting Bank must treat the exposure arising from the transaction as a CCP trade exposure and calculate the RWA for such CCP trade exposures in accordance with paragraphs 7.7.15 to 7.7.19 if the following conditions are met:

(a) the Reporting Bank must confirm that the offsetting transaction is identified by the CCP as a client transaction;

(b) the Reporting Bank must obtain a written independent legal opinion which concludes[321] that –

(i) the collateral is held by the CCP or the clearing member, or both, to support the offsetting transaction, under one or more arrangements that prevent any losses to the Reporting Bank due to –

(A) the default or insolvency of the clearing member;

(B) the default or insolvency of the other clients of the clearing member; and

(C) the joint default or insolvency of the clearing member and any of its other clients;

(ii) under the arrangements in sub-paragraph (b)(i), upon the insolvency of the clearing member, there is no legal impediment (other than the need to obtain a court order to which the client is entitled) to the transfer of the collateral belonging to clients of a defaulting clearing member of the CCP, to one or more other surviving clearing members of the CCP, or to clients or their respective nominees;[322] and

(iii) the arrangements in sub-paragraph (b)(i) are binding on all relevant parties and legally enforceable in all relevant countries or jurisdictions within the meaning of paragraph 3.1(a) of Annex 7G;

(c) the Reporting Bank must ensure that the arrangements in sub-paragraph (b)(i) do not cease to be enforceable and there continues to be no legal impediment under sub-paragraph (b)(ii);

(d) the Reporting Bank must ensure that the laws, regulation, rules, contractual arrangements and administrative arrangements, that govern the transaction between the Reporting Bank and the clearing member, higher level client or CCP, as the case may be –

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321 While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, the Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating the transactions which the Reporting Bank enters into with a clearing member, higher level client or CCP as specified in paragraph 7.7.20.

322 The Reporting Bank should consult the Authority to determine if this is achieved based on particular facts.

(i) provide that the offsetting transaction with a clearing member that has defaulted, or an insolvent clearing member, will continue to be indirectly transacted through the CCP, or by the CCP, should the clearing member default or become insolvent; and

(ii) allow for the Reporting Bank's positions and collateral placed with the CCP to be transferred at market value unless the Reporting Bank requests to close out at market value.

7.7.21 For the purposes of paragraph 7.7.20(d), a Reporting Bank must consider all of the following factors when assessing if offsetting transactions will continue to be indirectly transacted:

(a) whether there is a precedent for transactions being ported to another clearing member of the CCP;

(b) whether there is any reason for the Reporting Bank to believe that the industry practice for such precedent to continue, will be changed.

The Reporting Bank must not determine that the criteria in paragraph 7.7.20(d)(i) and (ii) are met solely on the basis that there is no prohibition against the porting of client trades in any documentation provided by the CCP, including in rules imposed by or agreements entered into with, the CCP, that govern transactions transacted with or through the CCP.

7.7.22 Where a Reporting Bank is a lower level client in a multi-level client structure, the Reporting Bank must apply the capital treatment specified in paragraph 7.7.20 to exposures arising from transactions with the higher level client acting as a financial intermediary or exposures arising from transactions with a CCP with a higher level client guaranteeing the performance of the Reporting Bank, if the conditions set out in paragraph 7.7.20(a) to (d) are met by all the client levels in-between the Reporting Bank and the clearing member.

7.7.23 Despite paragraph 7.7.20, where a Reporting Bank is a client of a clearing member or lower level client in a multi-level client structure, the Reporting Bank must calculate the RWA for CCP trade exposures to the clearing member or to the higher level client as 4% of E or EAD, whichever is applicable, of the CCP trade exposures if all conditions set out in paragraph 7.7.20, other than paragraph 7.7.20(b)(i)(C), are met.

7.7.24 Where a Reporting Bank is a client of a clearing member or lower level client in a multi-level client structure and cannot meet the conditions to apply the treatment in paragraphs 7.7.20 and 7.7.23, the Reporting Bank must capitalise its exposure to the clearing member or to the higher level client as a bilateral trade and must calculate the RWA for such exposures in accordance with Sub-division 5 of Division 1 of this Part and calculate CVA RWA for such exposures in accordance with Division 5 of Part VIII.

Treatment of Collateral Posted

7.7.25 Where a Reporting Bank acts as a clearing member of a CCP, the Reporting Bank must not be subject to a capital requirement for counterparty credit risk for

collateral[323] posted by the Reporting Bank that is included in the definition of CCP trade exposure, is held by a custodian[324] and is bankruptcy remote from the CCP.

7.7.26 Where a Reporting Bank acts as a clearing member of a CCP, and posts collateral with the CCP that is included in the definition of CCP trade exposure, is held at the CCP and is not held in a bankruptcy remote manner, the Reporting Bank must calculate the CCP RWA for such CCP trade exposures as 2% of E or EAD, whichever is applicable, of the collateral posted. However, where a Reporting Bank acts as a clearing member of a CCP and collects collateral from a client and posts it to a CCP, and the collateral is not held in a bankruptcy remote manner, the Reporting Bank is not subject to capital requirements for the posted collateral if the Reporting Bank is not obligated to reimburse the client for any loss of such posted collateral in the event that the CCP defaults.

7.7.27 Where a Reporting Bank posts collateral as a client of a clearing member of a CCP and the collateral is included in the definition of CCP trade exposure, is held by a custodian and is bankruptcy remote from the CCP, the clearing member and other clients, the Reporting Bank need not calculate a capital requirement for counterparty credit risk for the collateral posted.

7.7.28 Where a Reporting Bank posts collateral as a client of a clearing member of the CCP and the collateral is included in the definition of CCP trade exposure, is held at the CCP on the Reporting Bank's behalf and is not held in a bankruptcy remote manner, the Reporting Bank must calculate the RWA for such CCP trade exposures as –

(a) 2% of E or EAD, whichever is applicable, of the collateral posted if the conditions set out in paragraph 7.7.20 are met; or

(b) 4% of E or EAD, whichever is applicable, of the collateral posted if all conditions set out in paragraph 7.7.20, other than paragraph 7.7.20(b)(i)(C), are met.

7.7.29 Where a Reporting Bank posts collateral with a CCP that does not meet the definition of CCP trade exposure and is not posted as a default fund contribution, the Reporting Bank must include such exposure to the CCP in the calculation of SA(CR) RWA, CCR-SA RWA, IRBA RWA or CCR-IRBA RWA, whichever is applicable, and must calculate the RWA for such exposures to the CCP in accordance with Sub-division 3, 4 or 5 of Division 1 of this Part based on the creditworthiness of the CCP.

7.7.30 Where a Reporting Bank posts collateral as a client of a clearing member of the CCP and the collateral is included in the definition of CCP trade exposure and is held at the CCP on the Reporting Bank's behalf, the Reporting Bank must capitalise its exposure to the clearing member as a bilateral trade and must calculate the RWA for such exposures as the product of the risk weight of the clearing member and E or EAD, whichever is applicable, of the collateral posted if –

(a) the collateral is not held in a bankruptcy remote manner; and

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[323] Collateral may include cash, securities, other pledged assets, and excess initial or variation margin (or overcollateralisation).

[324] Custodian may include a trustee, agent, pledgee, secured creditor or any other person that holds property in a way that does not give such person a beneficial interest in such property and will not result in such property being subject to legally-enforceable claims by the creditors of such persons, or to a court-ordered stay of the return of such property, should such person become insolvent or bankrupt.

(b) the Reporting Bank cannot meet the conditions to apply the treatment in paragraph 7.7.28(a) and (b).

7.7.31 Where a Reporting Bank posts collateral as a client of a clearing member of the CCP and the collateral is held at the clearing member and is not held in a bankruptcy remote manner, the Reporting Bank must calculate the SA(CR) RWA, IRBA RWA, CCR-SA RWA or CCR-IRBA RWA for such exposures to the clearing member by applying the steps set out in Sub-division 3, 4 or 5 of Division 1 of this Part based on the creditworthiness of the clearing member, to recognise credit risk based upon the collateral being exposed to risk of loss.

7.7.32 For the purposes of paragraphs 7.7.25 to 7.7.31, where a Reporting Bank uses the SA-CCR to calculate E or EAD, whichever is applicable, for pre-settlement counterparty exposures, the Reporting Bank must include collateral that is posted and not held in a bankruptcy remote manner in the NICA term in accordance with Annex 7D. Where a Reporting Bank uses the CCR Internal Models Method to calculate E or EAD, whichever is applicable, for pre-settlement counterparty exposures, the Reporting Bank must apply α to the E or EAD measurement of collateral that is posted and not held in a bankruptcy remote manner.

7.7.33 To avoid doubt, for any asset posted as collateral by a Reporting Bank under paragraphs 7.7.25 to 7.7.31, the Reporting Bank must also apply the appropriate capital treatment that applies to such asset under this Part or Part VIII, as if it had not been posted to the CCP.

Clearing Member Exposures to Clients

7.7.34 To avoid doubt, a Reporting Bank that is a clearing member of a CCP must capitalise its exposures to clients as bilateral transactions in accordance with Sub-division 5 of Division 1 of this Part and calculate CVA RWA for such exposures in accordance with Division 5 of Part VIII, regardless of whether the Reporting Bank guarantees the trade or acts as a financial intermediary between its client and a CCP. To recognise the shorter close-out period for cleared transactions, a Reporting Bank that is a clearing member of a CCP may capitalise its exposure to its clients applying a margin period of risk of at least 5 business days in the CCR Internal Models Method or SA-CCR to calculate E or EAD, whichever is applicable, for its pre-settlement counterparty exposures to clients in the calculation of credit RWA under Sub-division 5 of Division 1 of this Part and the CVA risk capital requirement under Division 5 of Part VIII.

7.7.35 Where a Reporting Bank provides clearing services to clients and passes collateral collected from a client to the CCP for trades cleared through a CCP, the Reporting Bank may recognise the effects of CRM for such collateral in both capitalisation of exposures to the client and the capitalisation of exposures to the CCP. Where the Reporting Bank is part of a multi-level client structure, the Reporting Bank may apply the same treatment for such collateral to transactions between both lower level clients and higher level clients. To avoid doubt, a Reporting Bank may, in calculating E or EAD of the collateralised transactions with their clients, recognise the effects of CRM of the initial margin posted by their clients.

Sub-division 3: Default Fund Exposures

7.7.36 A Reporting Bank must calculate its capital requirement for default fund exposures to a qualifying CCP in accordance with paragraphs 7.7.37 to 7.7.45.

7.7.37 A Reporting Bank must ensure that the following requirements are met in relation to the calculation of the hypothetical capital requirement of a CCP ("K_{CCP}"), the total prefunded default fund contributions from all clearing members ("DF_{CM}^{pref}"), the CCP's prefunded own resources which are contributed to the default waterfall, where these are junior or *pari passu* to prefunded default fund contributions of the CCP's clearing members ("DF_{CCP}") and the Reporting Bank's capital requirement for default fund exposures to the CCP ("$K_{CM(Bank)}$") –

(a) the CCP, the financial services regulatory authority supervising the CCP or any other entity with access to the required data calculates K_{CCP}, DF_{CM}^{pref} and DF_{CCP}, and where the calculation is performed by the CCP or any other entity, the CCP or any other entity confirms to the Reporting Bank that the calculation is performed in a manner to permit the financial services regulatory authority supervising the CCP to oversee the calculation;

(b) the CCP, the financial services regulatory authority supervising the CCP or any other entity performing the calculations makes available sufficient information of the calculation results to the Reporting Bank to permit the Reporting Bank to calculate its capital requirement for default fund exposures to a CCP ($K_{CM(Bank)}$) and to permit the Authority to review and confirm such calculations;

(c) the CCP, the financial services regulatory authority supervising the CCP or any other entity performing the calculations, calculates K_{CCP}, DF_{CM}^{pref} and DF_{CCP} quarterly at a minimum, or more frequently if so required by the Authority in case of material changes[325];

(d) the CCP, the financial services regulatory authority supervising the CCP or any other entity performing the calculations, makes available to the Authority sufficient aggregate information about the composition of the CCP's exposures to its clearing members and the information provided to the clearing member for the purposes of the calculation of K_{CCP}, DF_{CM}^{pref} and DF_{CCP}, at least quarterly or more frequently if the Authority so requires;

(e) where the Reporting Bank is a subsidiary of a banking institution incorporated outside Singapore, the CCP, the financial services regulatory authority supervising the CCP or any other entity performing the calculations, makes available to the Authority and to the home bank regulatory agency of the Reporting Bank, sufficient aggregate information about the composition of the CCP's exposures to its clearing members and the information provided to the clearing member for the purposes of the calculation of K_{CCP}, DF_{CM}^{pref} and DF_{CCP}, at least quarterly or more frequently if the Authority or the home bank regulatory agency of the Reporting Bank so requires; and

[325] For example, the clearing of a new product by the CCP.

(f) the CCP, the financial services regulatory authority supervising the CCP or any other entity performing the calculations must calculate K_{CCP}, DF_{CM}^{pref}, DF_{CCP} and $K_{CM(Bank)}$ at least quarterly, and whenever there are material changes to the number or exposures of transactions cleared by the CCP or material changes to the financial resources of the CCP.

7.7.38 Where a default fund of a CCP is shared between products or types of business with settlement risk only[326] and products or types of business which give rise to CCR (i.e. OTC derivative transactions, exchange-traded derivative transactions, SFTs or long settlement transactions), a Reporting Bank must calculate the capital requirement for all default fund exposures of the Reporting Bank to the CCP in accordance with paragraphs 7.7.40 to 7.7.45, without apportioning to the different classes or types of business or products.

7.7.39 Where the contributions from clearing members to a default fund of a CCP are segregated by product types and only accessible for specific product types, a Reporting Bank must calculate the capital requirement for the default fund exposures of the Reporting Bank to the CCP in accordance with paragraphs 7.7.40 to 7.7.45 for each specific product giving rise to CCR. A Reporting Bank must obtain a confirmation from the CCP, the financial services regulatory authority supervising the CCP or any other entity performing the calculations of K_{CCP}, DF_{CM}^{pref} and DF_{CCP} that in the case where the CCP's prefunded own resources are shared among the specific product types, the CCP has allocated those funds to each of the calculations of K_{CCP}, DF_{CM}^{pref} and DF_{CCP}, in proportion to the respective product-specific EAD.

7.7.40 The calculation of a Reporting Bank's capital requirement for default fund exposures to a CCP, $K_{CM(Bank)}$, using the formulae[327] in paragraphs 7.7.41 to 7.7.45 may be performed by the Reporting Bank, the CCP, the financial services regulatory authority supervising the CCP or any other entity with access to the required data, where the requirements in paragraph 7.7.37 are met.

Calculation of the CCP's Hypothetical Capital Requirement

7.7.41 A Reporting Bank must ensure that K_{CCP} is calculated in accordance with the following formula:

$$K_{CCP} = \sum_i EAD_i \times 20\% \times 8\%$$

where –

[326] For example, equities and bonds.

[327] The formulae considers the size and quality of a qualifying CCP's financial resources, the counterparty credit risk exposures of such CCP, and the application of such resources via the CCP's loss bearing waterfall, in the case of one or more clearing member defaults.

(a) K_{CCP} is the hypothetical capital requirement of the CCP due to its counterparty credit risk exposures to all its clearing members and their clients[328]; and

(b) EAD_i is the exposure value of the CCP to clearing member 'i', including both the clearing member's own transactions and client transactions guaranteed by the clearing member, and all values of collateral held by the CCP (including the clearing member's prefunded default fund contribution) against these transactions, relating to the valuation at the end of the reporting date set out in Part XII before the margin called on the final margin call of that day is exchanged. The Reporting Bank must ensure that the exposure value of the CCP is calculated by aggregating all clearing member accounts.

7.7.42 For the purposes of paragraph 7.7.41 –

(a) where a clearing member provides client clearing services, and client transactions and collateral are held in separate (individual or omnibus) sub-accounts to the clearing member's proprietary business, the transactions and collateral in each such client sub-account must be included in the sum of EAD_i separately. The exposure value of the CCP to a clearing member "i" is the sum of the exposure values of the client sub-accounts and the exposure value of any house sub-account.[329] If any of these sub-accounts contains both derivative transactions and SFTs, the exposure value of that sub-account is the sum of the exposure values of the derivative transactions and the exposure values of the SFTs;

(b) where collateral is held by the CCP against a clearing member account or client sub-account containing both derivative transactions and SFTs, the prefunded initial margin provided by the clearing member or client of a clearing member must be allocated to the exposure values of the SFTs and derivative transactions in proportion to the respective product specific exposure values, calculated in accordance with –

(i) paragraphs 1.3 to 1.5 of Annex 7J, and applying the standard supervisory haircuts in paragraphs 2.1 and 2.5 of Annex 7J for SFTs; and

(ii) SA-CCR under Annex 7D without including the recognition of the effect of collateral, for derivative transactions;

(c) where the default fund contributions of a clearing member are not split with regards to client sub-accounts and house sub-accounts, such default fund contributions are to be allocated per sub-account according to the respective fraction the initial margin of the sub-account has in relation to the total initial margin posted by or for the account of the clearing member;

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[328] K_{CCP} is calculated on a consistent basis for the sole purpose of determining the capitalisation of clearing member default fund contributions; it does not represent the actual capital requirements for a CCP which may be determined by a CCP and its supervisor.

[329] This ensures that the collateral posted by the client and held at the CCP cannot be used to offset the CCP's exposures to clearing members' proprietary activity in the calculation of K_{CCP}.

(d) the netting sets that are applicable to regulated clearing members are the same as those referred to in paragraph 7.7.19. For unregulated clearing members, the netting rules of the CCP notified to its clearing members must apply. The Authority may from time to time, specify more granular netting sets than laid out by the CCP; and

(e) the Authority may from time to time, specify a risk weight higher than 20% taking into account, among other things, the creditworthiness of the clearing members of the CCP[330]. The Reporting Bank must communicate any such increase in risk weight to the CCP, the financial services regulatory authority supervising the CCP or any other entity performing the calculation of K_{CCP}.

7.7.43 For the purposes of paragraph 7.7.41(b) –

(a) EAD_i for derivative transactions is calculated using the SA-CCR in accordance with Annex 7D as the bilateral trade exposure the CCP has against the clearing member 'i';

(b) in applying the SA-CCR –

(i) a margin period of risk of 10 business days must apply. To avoid doubt, the 20 business days floor on the margin period of risk for netting sets where the number of trades exceeds 5,000 at any point in a quarter, does not apply; and

(ii) all collateral held by the CCP to which the CCP has a legal claim in the event of the default of clearing member 'i' or its client, including default fund contributions of clearing member 'i', may be used to offset the CCP's exposure to clearing member 'i' or its client through inclusion in the multiplier set out in paragraph 3.1 of Annex 7D; and

(c) EAD_i for SFTs is equal to $\max(EBRM_i - IM_i - DF_i; 0)$,

where –

(i) $EBRM_i$ is the exposure value to clearing member 'i' before credit risk mitigation, in accordance with paragraphs 1.3 to 1.5 of Annex 7J, and applying the standard supervisory haircuts in paragraphs 2.1 and 2.5 of Annex 7J for SFTs. For the purposes of this calculation, variation margin that has been exchanged (before the margin called on the final margin call of that day) enters into the mark-to-market value of the transactions;

(ii) IM_i is the initial margin collateral posted by the clearing member 'i' with the CCP; and

(iii) DF_i is the prefunded default fund contribution by the clearing member 'i' that will be applied upon the default of the clearing

[330] An increase in such risk weight may be considered if, for example, the clearing members in a CCP are not highly rated.

member, either along with or immediately following the initial margin posted by the clearing member, to reduce the CCP's loss.

Calculation of the Capital Requirement for a Reporting Bank's default fund exposures to a CCP

7.7.44 A Reporting Bank must calculate its capital requirement for default fund exposures to a CCP in accordance with the following formula, where a 2% risk weight floor is applied to the default fund exposure:

$$K_{CM(Bank)} = \max\left(K_{CCP} \times \frac{DF^{pref}_{CM\ (Bank)}}{DF_{CCP} + DF^{pref}_{CM}}; 8\% \times 2\% \times DF^{pref}_{CM\ (Bank)}\right)$$

where –

(a) $K_{CM(Bank)}$ is the Reporting Bank's capital requirement for default fund exposures to the CCP;

(b) DF^{pref}_{CM} is the total prefunded default fund contributions from all clearing members;

(c) DF_{CCP} is the CCP's prefunded own resources, comprising contributed capital, retained earnings and other resources approved by the financial services regulatory authority supervising the CCP, which are contributed to the default waterfall, where these are junior or pari passu to prefunded default fund contributions of the CCP's clearing members; and

(d) $DF^{pref}_{CM(Bank)}$ is the prefunded default fund contribution of the Reporting Bank.

7.7.45 A Reporting Bank need not subject its exposures for collateral posted as default fund contributions to a qualifying CCP to haircuts for the purposes of calculating the Reporting Bank's capital requirements for default fund exposures to the CCP as defined in paragraph 7.7.44.

Division 8: UST Exposures

Sub-division 1: Overview

7.8.1 A Reporting Bank must hold capital for any UST exposure, whether it arises from an unsettled DvP transaction or an unsettled non-DvP transaction, irrespective of the accounting of the transaction.[331]

7.8.2 A Reporting Bank must closely monitor any UST exposure starting from the first day it becomes unpaid or undelivered.

7.8.3 A Reporting Bank must apply Sub-division 2 of this Division to calculate the credit RWA for UST exposures arising from unsettled DvP transactions. A Reporting Bank must apply Sub-division 3 of this Division to calculate the credit RWA for UST exposures arising from unsettled non-DvP transactions.

Sub-division 2: Calculation of Credit RWA for UST Exposures Arising from Unsettled DvP Transactions

7.8.4 To calculate its UST-DvP RWA, a Reporting Bank must –

(a) calculate the credit risk-weighted exposure amount for each UST exposure arising from an unsettled DvP transaction, using the following formula:

Credit RWE = Exposure x RW

where –

(i) "Credit RWE" refers to the credit risk-weighted exposure amount for the UST exposure arising from that unsettled DvP transaction;

(ii) "Exposure" refers to E_{DvP} for the UST exposure arising from that unsettled DvP transaction determined in accordance with paragraph 7.8.5;

(iii) "RW" refers to the applicable risk weight for the UST exposure arising from that unsettled DvP transaction, determined in accordance with paragraph 7.8.6; and

(b) add the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (a) for all its UST exposures arising from unsettled DvP transactions.

7.8.5 A Reporting Bank must determine E_{DvP} for a UST exposure arising from an unsettled DvP transaction as the difference between the transaction valued at the agreed settlement price and the transaction valued at current market price (i.e. positive current exposure), or in the case where the difference is negative, a value of zero. Where such a

[331] The Authority may disapply the applicable capital treatment in this Division if there has been a system-wide failure of a settlement system, clearing system or CCP that causes significant disruption to normal settlement and clearing processes.

UST exposure does not appear on the balance sheet of a Reporting Bank due to the use of settlement date accounting, the Reporting Bank must determine E_{DvP} by multiplying –

(a) the difference between the transaction valued at the agreed settlement price and the transaction valued at current market price, or in the case where the difference is negative, a value of zero; and

(b) a CCF of 100%.

7.8.6 A Reporting Bank must apply a risk weight to any UST exposure arising from an unsettled DvP transaction if the payments have not yet taken place, based on the number of business days after the settlement date, in accordance with Table 7-34.

Table 7-34: Risk Weights for Unsettled DvP Transactions

Number of Business Days after Agreed Settlement Date	Risk Weight
From 0 to 4	0%
From 5 to 15	100%
From 16 to 30	625%
From 31 to 45	937.5%
46 or more	1250%

Sub-division 3: Calculation of Credit RWA for UST Exposures Arising from Unsettled Non-DvP Transactions

7.8.7 A Reporting Bank must calculate capital requirements for any UST exposure arising from an unsettled non-DvP transaction, and treat the exposure as a loan exposure to its counterparty, if the Reporting Bank has fulfilled its obligation under the first contractual payment or delivery leg and the second leg has not been received by the end of the business day.

7.8.8 To calculate its UST-non-DvP RWA, a Reporting Bank must –

(a) calculate the credit risk-weighted exposure amount for each UST exposure arising from an unsettled non-DvP transaction, in accordance with –

(i) paragraphs 7.8.10 to 7.8.16, up to and including the fourth business day after the second contractual payment or delivery date; and

(ii) paragraph 7.8.17, 5 or more business days after the second contractual payment or delivery date; and

(b) add the credit risk-weighted exposure amounts calculated in accordance with sub-paragraph (a) for all its UST exposures arising from unsettled non-DvP transactions.

7.8.9 For the purposes of paragraphs 7.8.7 and 7.8.8, if the dates when 2 payment legs are made are the same according to the time zones where each payment is made, the Reporting Bank must deem them to have been settled on the same day.[332]

Calculation of credit risk-weighted exposure amount up to and including the fourth business day after the second contractual payment or delivery date

7.8.10 For the purposes of paragraphs 7.8.11 and 7.8.12 –

(a) "IRBA exposure" refers to any UST exposure that belongs to a class of exposures for which the Reporting Bank has obtained IRBA approval under paragraph 7.4.11; and

(b) "SA(CR) exposure" refers to any UST exposure in any other case.

7.8.11 For a UST exposure arising from an unsettled non-DvP transaction which is an SA(CR) exposure, a Reporting Bank must calculate the credit risk-weight exposure amount by –

(a) allocating an applicable credit quality grade and risk weight for the SA(CR) exposure in accordance with Sub-divisions 2 and 3 respectively of Division 3 of this Part, based on the counterparty to the non-DvP transaction; and

(b) calculating the credit risk-weighted exposure amount for the SA(CR) exposure using the following formula:

Credit RWE = Exposure x RW

where –

(i) "Credit RWE" refers to the credit risk-weighted exposure amount for that SA(CR) exposure;

(ii) "Exposure" refers to $E_{non\text{-}DvP}$ for that SA(CR) exposure, determined in accordance with paragraph 7.8.16; and

(iii) "RW" refers to the applicable risk weight for that SA(CR) exposure determined in accordance with sub-paragraph (a).

7.8.12 For a UST exposure arising from an unsettled non-DvP transaction which is an IRBA exposure, a Reporting Bank must calculate the credit risk-weighted exposure amount by either –

(a) calculating the credit risk-weighted exposure amount for the UST exposure in accordance with paragraph 7.8.11(a) and (b); or

(b) calculating the credit risk-weighted exposure amount for the IRBA exposure as follows:

[332] For example, if a bank in Tokyo transfers Yen on day X (Japan Standard Time) and receives corresponding USD via the Clear House Interbank Payments System on day X (US Eastern Standard Time), the settlement is deemed to have taken place on the same date.

(i) if the Reporting Bank is using or would have used the supervisory slotting criteria to calculate the credit risk-weighted exposure amount –

(A) determining RW_{slot} for that IRBA exposure in accordance with the supervisory slotting criteria set out in Annex 7S and Sub-division 13 of Division 4 of this Part, based on the counterparty to the non-DvP transaction; and

(B) calculating the credit risk-weighted exposure amount using the following formula:

Credit RWE = Exposure x RW_{slot}

where –

(I) "Credit RWE" refers to the credit risk-weighted exposure amount for that IRBA exposure;

(II) "Exposure" refers to $E_{non\text{-}DvP}$ for that IRBA exposure, determined in accordance with paragraph 7.8.16; and

(III) "RW_{slot}" refers to RW_{slot} determined in accordance with sub-paragraph (b)(i)(A);

(ii) in any other case –

(A) calculating K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{oret}, K_{sl}, or K_{hv}, whichever is applicable to the IRBA exposure in accordance with Sub-division 8 and 9 of Division 4 of this Part, based on the counterparty to the non-DvP transaction; and

(B) calculating the credit risk-weighted exposure amount using the following formula:

Credit RWE = Exposure x K x 12.5

where –

(I) "Credit RWE" refers to the credit risk-weighted exposure amount for that IRBA exposure;

(II) "Exposure" refers to $E_{non\text{-}DvP}$ for that IRBA exposure, determined in accordance with paragraph 7.8.16;

(III) "K" refers to K_{corp}, K_{sm}, K_{sov}, K_{bank}, K_{oret}, K_{sl}, or K_{hv}, whichever is applicable to that IRBA exposure, calculated in accordance with sub-paragraph (b)(ii)(A).

7.8.13 A Reporting Bank adopting the treatment set out in paragraph 7.8.12(a) must do so consistently for all such exposures.

7.8.14 For the purposes of paragraph 7.8.12(b)(ii), a Reporting Bank may –

(a) assign a PD for that IRBA exposure on the basis of the counterparty's external credit assessment by recognised ECAIs if the Reporting Bank does not have any other banking book exposure to the counterparty to which IRBA is applied; or

(b) where the Reporting Bank is using the A-IRBA, assign an LGD of 45% for that IRBA exposure subject to this being applied consistently to all A-IRBA exposures arising from unsettled non-DvP transactions.

7.8.15 Despite paragraphs 7.8.11 and 7.8.12, where the UST exposures arising from unsettled non-DvP transactions of a Reporting Bank are not material in aggregate, the Reporting Bank may calculate the credit risk-weighted exposure amount for the UST exposure arising from every unsettled non-DvP transaction by using the following formula:

Credit RWE = Exposure x 100%

where –

(a) "Credit RWE" refers to the credit risk-weighted exposure amount for that UST exposure arising from an unsettled non-DvP transaction;

(b) "Exposure" refers to $E_{non\text{-}DvP}$ for that UST exposure arising from an unsettled non-DvP transaction, determined in accordance with paragraph 7.8.16.

7.8.16 Up to and including the fourth business day after the second contractual payment or delivery date, a Reporting Bank must determine $E_{non\text{-}DvP}$ for a UST exposure arising from an unsettled non-DvP transaction as the full amount of cash paid or deliverables delivered. Where such a UST exposure does not appear on the balance sheet of a Reporting Bank due to the use of settlement date accounting, the Reporting Bank must determine $E_{non\text{-}DvP}$ by multiplying –

(a) the full amount of cash paid or deliverables delivered; and

(b) a CCF of 100%.

Calculation of credit risk-weighted exposure amount 5 or more business days after the second contractual payment or delivery date

7.8.17 If the second leg of a non-DvP transaction has not been received 5 business days after the second contractual payment or delivery date, the Reporting Bank must calculate the credit risk-weighted exposure amount for a UST exposure arising from such an unsettled non-DvP transaction, until the second payment or delivery leg is effectively made, using the following formula:

Credit RWE = Exposure x 1250%

where –

(a) "Credit RWE" refers to the credit risk-weighted exposure amount for that UST exposure arising from an unsettled non-DvP transaction;

(b) "Exposure" refers to $E_{non\text{-}DvP}$ for that UST exposure arising from an unsettled non-DvP transaction calculated as the full amount of cash paid or deliverables delivered, plus the replacement cost, if any. Where such a UST exposure does not appear on the balance sheet of a Reporting Bank due to the use of settlement date accounting, the Reporting Bank must determine $E_{non\text{-}DvP}$ by multiplying –

(i) the full amount of cash paid or deliverables delivered, plus replacement cost, if any; and

(ii) a CCF of 100%.

7.8.18 For the purposes of paragraphs 7.8.5, 7.8.16 and 7.8.17(b), a Reporting Bank must calculate E_{DvP} or $E_{non\text{-}DvP}$, as the case may be, net of any specific allowance attributable to such a UST exposure.

Annex 7A

QUALIFYING ON-BALANCE SHEET NETTING AGREEMENTS

Section 1: Introduction

1.1 A qualifying on-balance sheet netting agreement is a netting agreement covering loans and deposits (collectively "Transactions") between a Reporting Bank and a counterparty for which the requirements set out in Sections 2 to 4 of this Annex are complied with.

Section 2: Requirements for On-Balance Sheet Netting Agreements

2.1 A Reporting Bank must –

(a) have a well-founded legal basis to conclude that the netting agreement is legally enforceable in all relevant countries or jurisdictions regardless of whether the counterparty is liquidated, insolvent or bankrupt or other similar circumstances;

(b) obtain a written independent legal opinion [333] that satisfies the requirements set out in paragraphs 3.1 and 3.2 of this Annex, confirming that the netting agreement is valid, effective and enforceable for each of the following countries or jurisdictions:

(i) the country or jurisdiction in which the counterparty is incorporated or established;

(ii) if a foreign branch of the Reporting Bank or the counterparty has entered or will be entering into the Transaction, the country or jurisdiction in which the branch of the Reporting Bank or the counterparty, as the case may be, is located;

(iii) the country or jurisdiction whose law governs the netting agreement;

(iv) the country or jurisdiction whose law governs any Transaction in relation to the netting agreement if different from sub-paragraph (b)(iii),

(referred to as "relevant countries or jurisdictions" in this Annex) and which satisfies the requirements set out in Section 3 of this Annex; and

(c) provide to the Authority the information and documents set out in paragraphs 2.2 and 2.3 of this Annex.

[333] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, a Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating transactions covered by the on-balance sheet netting agreement.

2.2 A Reporting Bank must provide to the Authority, upon request, a summary listing[334] of the source and date of each legal opinion obtained for the purposes of paragraph 2.1(b) of this Annex, stating in each case, whether such legal opinion was commissioned specifically by the Reporting Bank, by the Reporting Bank collectively with any other party, or by some other third party.

2.3 The Authority may, where it considers it necessary, require a Reporting Bank to provide copies of, or access to, the netting agreement and the legal opinions obtained for the purposes of paragraph 2.1(b) of this Annex.

Section 3: Legal Opinions obtained for the purposes of paragraph 2.1(b) of this Annex

3.1 The Reporting Bank must ensure that the legal opinion –

(a) is in the form of a memorandum of law and addressed directly to the Reporting Bank or the sponsors of a particular netting agreement or form of netting agreement; or

(b) is the product of a number of parties (including the Reporting Bank) pooling together to seek a collective opinion on a particular netting agreement.

3.2 The Reporting Bank must ensure that the legal opinion, at the minimum –

(a) confirms that in an event of default as defined under the netting agreement, including liquidation, bankruptcy, insolvency or other similar circumstances of either the counterparty or the Reporting Bank, the courts and administrative authorities[335] of the relevant country or jurisdiction will find that the claims and obligations of the Reporting Bank pursuant to the relevant Transactions would be limited to a net sum calculated in accordance with the netting agreement under the law of the relevant country or jurisdiction;

(b) highlights the material clauses in the netting agreement that provide for the netting of Transactions ("material netting clauses");

(c) confirms that the unenforceability or illegality of any clause (other than a material netting clause) in the netting agreement is unlikely to undermine the material netting clauses referred to in sub-paragraph (b);

(d) states the circumstances under which the netting agreement may be relied upon, including –

(i) the legal form of, or activities conducted by, the counterparty; and

[334] This can be prepared by either an in-house or external legal counsel of the Reporting Bank.

[335] This includes a court-appointed administrator and an administrator appointed by a regulatory authority.

(ii) whether certain counterparties[336] may be subject to special rules relating to insolvency as a result of the legal form of, or activities conducted by, the counterparties;

(e) states whether the netting or other default provisions in the netting agreement are enforceable or enforceable differently (and if so, the extent of the difference) in a non-liquidation event[337];

(f) states to what extent, if at all, the netting needs to be reflected in the records of the counterparties in order for it to be valid, effective and enforceable;

(g) states whether a court or administrative authority in the country or jurisdiction covered by the legal opinion would uphold the rate chosen for the conversion of foreign currency obligations for the purposes of calculating the net amount and whether there are any statutory or other applicable rules that may affect this aspect of the netting agreement;

(h) states whether, under the law of the country or jurisdiction covered by the legal opinion, it is necessary for the enforceability of the netting that all Transactions be regarded as part of a single agreement, and if so, whether there is anything in the netting methodology which may be held to be inconsistent with the treatment of all Transactions as part of a single agreement and the effect it may have on the netting;

(i) states whether there is any reason to believe that the netting agreement would be unenforceable because of the law of another country or jurisdiction;

(j) states whether there are legal problems in exercising any discretion or flexibility provided for in the netting agreement, and if so, whether such problems affect the enforceability of the netting agreement; and

(k) if other clauses are added to a standard form agreement, confirms that such additional clauses do not throw any reasonable doubt or affect the overall validity, effectiveness or enforceability of the netting agreement.

3.3 The Authority is aware that it may not be possible for a Reporting Bank to obtain a legal opinion that provides a definitive view on the validity, effectiveness and enforceability of the netting agreement without certain assumptions or qualifications. The presence per se of assumptions and qualifications within the legal opinion will not render the legal opinion unsatisfactory for the purposes of this Notice. However, the Reporting Bank must ensure that assumptions underlying the legal opinion are not unduly restrictive, and are specific, of a factual nature and adequately explained within the legal opinion. Where qualifications are made, the Reporting Bank must ensure that such qualifications are specific and their effect is adequately explained within the legal opinion. A Reporting Bank must examine and assess the assumptions and qualifications in the legal opinion.

[336] For example, banks, insurance companies, or local authorities.

[337] For example, administration, judicial management, receivership, voluntary arrangement, or a scheme of arrangement.

3.4 If the Reporting Bank determines that –

(a) the absence of any of the information listed in paragraph 3.2 of this Annex; or

(b) any of the assumptions or qualifications in the legal opinion,

gives rise to reasonable doubt as to the validity, effectiveness or enforceability of the netting agreement, the Reporting Bank must not treat the netting agreement as a qualifying on-balance sheet netting agreement.

3.5 In this regard, where there is more than one relevant country or jurisdiction in relation to a netting agreement, the Reporting Bank must not treat the netting agreement as a qualifying on-balance sheet netting agreement, if the Reporting Bank has any reasonable doubt, based on its own evaluation of the legal opinions, as to whether the netting agreement is valid, effective and enforceable in any relevant country or jurisdiction considering the potential for conflicts of laws and whether action may be taken by insolvency officials in other countries or jurisdictions.

3.6 The Reporting Bank must review each legal opinion and obtain updates as necessary, including in the form of a fresh legal opinion, confirming that the opinion on the validity, effectiveness and enforceability of the netting agreement remains unchanged. The Reporting Bank must also document the sources of the legal opinions, and the expertise of the persons giving the legal opinions.

3.7 Despite paragraph 2.1(b) of this Annex, where any relevant country or jurisdiction does not recognise netting or recognises netting only in a limited form, the Reporting Bank must report Transactions for which that country or jurisdiction is a relevant country or jurisdiction on a gross basis. The Reporting Bank may report all other Transactions under the same netting agreement on a net basis.

3.8 Where a Reporting Bank is aware that a supervisory authority of the counterparty of the Reporting Bank (whether the supervisory authority is the home or host supervisor) is not satisfied that a netting agreement is legally valid, effective or enforceable under the law of the country or jurisdiction of that supervisory authority, the Reporting Bank must not treat the netting agreement as a qualifying on-balance sheet netting agreement, despite any legal opinion obtained by the Reporting Bank.

Section 4: Policies, Systems and Controls

4.1 A Reporting Bank must have in place a netting policy that sets out, at a minimum, all of the following:

(a) the person responsible for setting and reviewing the policy on netting;

(b) the frequency of review of the netting policy;

(c) the person responsible for approving the application of a netting agreement to any Transaction (including determining whether the netting agreement is covered by an existing legal opinion or whether separate legal opinions are required);

(d) how the Reporting Bank monitors legal developments affecting its netting agreements and the need to obtain additional legal opinions;

(e) what the Reporting Bank is to include in its netting agreements to ensure that its interests, rights and obligations are duly reflected;

(f) the processes for determining and reporting net exposures to individual counterparties.

4.2 The Reporting Bank must also have in place adequate systems and controls to monitor the Transactions, including systems and controls to ensure that –

(a) only Transactions entered into by the Reporting Bank with a counterparty that are covered by a netting agreement are netted, and such Transactions can be determined at any time;

(b) net exposures arising from such Transactions subject to netting, including net exposures of each branch of the Reporting Bank against each branch of the counterparty, where applicable, are monitored and controlled, and accurately determined and reported;

(c) documentary evidence of the Transactions subject to netting are maintained and appropriately safeguarded and the Reporting Bank is able to produce such documentary evidence, if required by the Authority;

(d) the legal opinions are not superceded by subsequent changes in the laws of the relevant countries or jurisdictions, and that all of the following are duly documented and updated, as necessary, to ensure the continued legal enforceability of such netting agreements:

(i) the types of counterparties and Transactions covered by each netting agreement;

(ii) the relevant countries or jurisdictions for each netting agreement to which the Reporting Bank is a party. The Reporting Bank must note any country or jurisdiction for which any doubt may exist as to the legal validity, effectiveness or enforceability of netting and what action the Reporting Bank has taken as a result;

(e) counterparty limits are monitored in terms of such net exposures; and

(f) roll-off risks are monitored and controlled. The Reporting Bank must only net from the loan exposures the amount of deposits which –

(i) withdrawal is conditional upon the loan exposures being repaid; and

(ii) the condition is stipulated in the contractual agreement[338] with the counterparty.

[338] Such withdrawal restrictions are intended to safeguard against the withdrawal of deposits prior to a default, which would increase the risk of under-capitalisation by a Reporting Bank.

4.3 For the calculation of the net exposure of loans and deposits, a Reporting Bank must apply any applicable currency mismatch haircut or maturity mismatch adjustment set out in paragraph 7.2.10(b)(ii) and (iii) to the deposit amount, subject to withdrawal conditions.

4.4 A Reporting Bank must maintain adequate documentation in relation to meeting the requirements in Sections 2 and 3 of this Annex at all times.

Annex 7B

CCF FOR OFF-BALANCE SHEET ITEMS OTHER THAN CCR EXPOSURES

1.1 Table 7B-1 sets out the CCFs for off-balance sheet items (other than CCR exposures).

1.2 Where a Reporting Bank undertakes to provide a commitment on another off-balance sheet item, a Reporting Bank must apply the lower of the applicable CCFs set out in Table 7B-1.[339]

Table 7B-1 – CCFs for off-balance sheet items

	Description of Off-balance Sheet Item	Standardised CCF	A-IRBA CCF
(a)	Direct credit substitutes[340]	100%	100%
(b)	Sale and repurchase agreements and asset sales with recourse, where the credit risk remains with the Reporting Bank	100%	100%
(c)	Commitments with certain drawdown, including forward purchases, forward deposits, and partly paid shares and securities	100%	100%
(d)	Credit substitutes which are not explicitly included in (a) to (c)	100%	100%
(e)	Note issuance facilities and revolving underwriting facilities, regardless of the maturity of the underlying facility	50%	Internal estimates if 7.2.13(a) met, 50% otherwise
(f)	Certain transaction-related contingent items[341]	50%	Internal estimates if 7.2.13(a) met, 50% otherwise
(g)	Other commitments, regardless of the maturity of the underlying facility, unless such other commitments fall within the scope of item (h) or (i)	40%	Internal estimates if 7.2.13(a) met, 40% otherwise

339 For example, if a Reporting Bank has a commitment to open short-term self-liquidating trade letters of credit arising from the movement of goods, a 20% CCF must be applied (instead of a 40% CCF). If a Reporting Bank has an unconditionally cancellable commitment to issue direct credit substitutes, a 10% CCF must be applied (instead of a 100% CCF).

340 For example, general guarantees of indebtedness (including standby letters of credit serving as financial guarantees for loans and securities), or acceptances (including endorsements with the character of acceptances).

341 For example, performance bonds, bid bonds, warranties, or standby letters of credit related to particular transactions.

(h)	Self-liquidating trade-related contingent items[342] arising from the movement of goods with an original maturity of below one year. This paragraph is applicable where the Reporting Bank is the issuing bank or the confirming bank, of such commitments	20%	Internal estimates if 7.2.13(a) met, 20% otherwise
(i)	Commitments which are unconditionally cancellable at any time by the Reporting Bank without prior notice, or that effectively provide for automatic cancellation due to deterioration in an obligor's creditworthiness	10%	Internal estimates if 7.2.13(a) met, 10% otherwise

1.3 For any item referred to in item (b) of Table 7B-1, the Reporting Bank must risk-weight the item according to the type of asset and not according to the type of counterparty with whom the transaction has been entered into.

1.4 Where the item referred to in item (c) of Table 7B-1 is a forward purchase, forward deposit or partly paid security, the Reporting Bank must risk-weight the item according to the type of asset and not according to the type of counterparty with whom the transaction has been entered into.

1.5 Where the Reporting Bank makes a commitment to provide a loan that is to be drawn down in a number of tranches, the Reporting Bank must classify the commitment under item (g) of Table 7B-1 and apply 40% CCF to the full undisbursed portion of the loan, regardless of whether the commitment falls within the scope of another item in Table 7B-1.

1.6 For any item referred to in item (i) of Table 7B-1, where the Authority assesses that a 10% CCF does not adequately capture the exposure arising from such a commitment, the Authority may direct the Reporting Bank to apply a higher CCF to the commitment.

[342] For example, documentary credits collateralised by the underlying shipments.

Annex 7C

CCF FOR OFF-BALANCE SHEET SECURITISATION EXPOSURES

	Description of Off-balance Sheet Item	CCF
(a)	Undrawn portion of servicer cash advances or facilities[343], that are unconditionally cancellable without prior notice A Reporting Bank must be able to demonstrate to the satisfaction of the Authority that it has adopted an appropriately conservative method to measure the amount of the undrawn portion.	10%
(b)	Undrawn portion of other servicer cash advances or facilities	100%
(c)	Other facilities which are not credit risk mitigants	100%

[343] For example, a Reporting Bank acting as a servicer may advance cash to ensure an uninterrupted flow of payments to investors of a securitisation, where the Reporting Bank is entitled to full reimbursement and this right is senior to other claims on cash flows from the underlying pool of exposures.

Annex 7D

STANDARDISED APPROACH FOR COUNTERPARTY CREDIT RISK (SA-CCR)

Section 1: Overview

1.1 Subject to Section 4 of this Annex, a Reporting Bank using the SA-CCR must calculate E or EAD, whichever is applicable, for the pre-settlement counterparty exposure to a single counterparty arising from OTC derivative transactions or exchange-traded derivative transactions, or long settlement transactions separately for each margined and unmargined netting set as follows:

$$E \text{ or } EAD = alpha \times (RC + PFE)$$

where –

(a) $alpha$ = 1.4;

(b) RC = the replacement cost calculated in accordance with Section 2 of this Annex; and

(c) PFE = the amount for potential future exposure calculated in accordance with Section 3 of this Annex.

1.2 A Reporting Bank may set E or EAD, whichever is applicable, to zero only for sold options that are not under a qualifying bilateral netting agreement and margin agreement.

1.3 A Reporting Bank that is a protection seller may cap E or EAD, whichever is applicable, to the amount of unpaid premia for credit derivatives that are not under a qualifying bilateral netting agreement and margin agreement. A Reporting Bank that is a protection seller may remove credit derivatives that are under a qualifying bilateral netting agreement from the netting set and treat them as individual unmargined transactions in order to apply the cap.

1.4 A Reporting Bank must calculate RC and PFE differently for margined and unmargined netting sets in accordance with Sections 2 to 4 of this Annex. A Reporting Bank must cap the E or EAD, whichever is applicable, for a margined netting set, at the E or EAD, whichever is applicable of the same netting set, calculated based on the formulas for unmargined transactions.

1.5 If the Authority is not satisfied that the use of the SA-CCR by a Reporting Bank captures the risk inherent in the Reporting Bank's transactions (as could be the case with structured and more complex OTC derivative transactions), the Authority may require the Reporting Bank to apply the SA-CCR on a transaction-by-transaction basis (i.e. with no recognition of netting).

1.6 For the purposes of this Annex, "derivative transactions" or "derivatives" include long settlement transactions.

Section 2: Replacement Cost

2.1 For unmargined transactions (that is, where variation margin is not exchanged, but collateral other than variation margin may be present), a Reporting Bank must calculate RC for each netting set using the following formula:

$$RC = max\{V - C; 0\}$$

where –

(a) V is the current market value of the derivative transactions in the netting set; and

(b) C is the haircut value of net collateral held, which in the case of unmargined transactions, is NICA adjusted by applying the standard supervisory haircuts in Annex 7J such that the value of non-cash collateral posted by the Reporting Bank to its counterparty is increased, and the value of non-cash collateral received by the Reporting Bank from its counterparty is decreased.

2.2 For the purposes of paragraph 2.1 of this Annex, a Reporting Bank must calculate the haircut applicable in the calculation of RC using the formula specified in paragraph 3.4 of Annex 7J, applying the minimum holding period for the transaction set out in paragraphs 3.1 to 3.3 of Annex 7J. In applying the formula, the Reporting Bank must use the maturity of the longest transaction in the netting set as the value for N_R, capped at 250 days, in order to scale haircuts for unmargined transactions. The Reporting Bank must cap the haircut calculated at 100%.

2.3 A Reporting Bank must treat bilateral transactions with a one-way margining agreement in favour of the Reporting Bank's counterparty (that is, where the Reporting Bank posts but does not collect variation margin) as unmargined transactions.

2.4 For margined transactions, a Reporting Bank must calculate *RC* for each netting set using the following formula:

$$RC = max\{V - C; TH + MTA - NICA; 0\}$$

where –

(a) V is the current market value of the derivative transactions in the netting set;

(b) C is the haircut value of net collateral held, including both variation margin and NICA adjusted by applying the standard supervisory haircuts in Annex 7J such that the value of non-cash collateral posted by the Reporting Bank to its counterparty is increased, and the value of non-cash collateral received by the Reporting Bank from its counterparty is decreased;

(c) TH is the positive margin threshold where the counterparty would post collateral to the Reporting Bank;

(d) MTA is the minimum transfer amount applicable to the counterparty; and

(e) $NICA$ is the net independent collateral amount.

2.5 For the purposes of paragraph 2.4 of this Annex, a Reporting Bank must calculate the haircut applicable in the calculation of *RC* using the formula specified in paragraph 3.4 of Annex 7J, applying the minimum holding period for the transaction set out in paragraphs 3.1 to 3.3 of Annex 7J, and using the margin period of risk of the transaction as the value for N_R.

Section 3: Potential Future Exposure

3.1 A Reporting Bank must calculate PFE using the following formula:

$$PFE = multiplier \times AddOn^{aggregate}$$

where –

(a) $AddOn^{aggregate}$ is the aggregate add-on calculated in accordance with paragraph 3.2 of this Annex; and

(b) $multiplier$ is calculated using the following formula:

$$multiplier = min\left\{1; Floor + (1 - Floor) \times exp\left(\frac{V - C}{2 \times (1 - Floor) \times AddOn^{aggregate}}\right)\right\}$$

where –

(i) $exp(\ldots)$ is the exponential function;

(ii) $Floor$ = 5%; and

(iii) V and C are calculated as set out in paragraph 2.1 of this Annex for unmargined netting sets or paragraph 2.4 of this Annex for margined netting sets, whichever is applicable.

Aggregate add-on across asset classes

3.2 A Reporting Bank must calculate the aggregate add-on, $AddOn^{aggregate}$, using the following formula:

$$AddOn^{aggregate} = \sum_{asset\ class} AddOn^{asset\ class}$$

where $AddOn^{asset\ class}$ is the respective add-on for each asset class calculated in accordance with paragraphs 3.13 to 3.24 of this Annex.

3.3 A Reporting Bank must not recognise diversification benefits across asset classes when computing the aggregate add-on.

Allocation of transactions to one or more asset classes

3.4 Subject to paragraph 3.6 of this Annex, a Reporting Bank must allocate each transaction to one of the 5 asset classes (that is, interest rate, foreign exchange, credit, equity, commodity) on the basis of the primary risk factor of the transaction, defined by the transaction's underlying instrument[344].

3.5 For more complex transactions that have more than one risk factor[345], a Reporting Bank must take sensitivities and volatilities of the underlying instrument into account for determining the primary risk factor.

3.6 The Authority may require a Reporting Bank to allocate more complex transactions to more than one asset class, resulting in the same position being included in multiple asset classes. Where the Authority requires a Reporting Bank to allocate a transaction to more than one asset class, the Reporting Bank must determine appropriately the sign and supervisory delta adjustment of the relevant risk factor for each asset class to which the transaction is allocated.

Hedging sets within each asset class

3.7 Subject to paragraphs 3.8 to 3.12 of this Annex, a Reporting Bank must group transactions into hedging sets within each asset class as follows:

(a) interest rate derivatives into separate hedging sets for each currency;

(b) foreign exchange derivatives into separate hedging sets for each currency pair;

(c) credit derivatives into a single hedging set;

(d) equity derivatives into a single hedging set;

(e) commodity derivatives into 4 separate hedging sets according to the following categories of commodity derivatives:

(i) energy;

(ii) metals;

(iii) agricultural commodities;

(iv) other commodities.

[344] For example, an interest rate curve is the primary risk factor for an interest rate swap, a reference entity is the primary risk factor for a credit default swap, and a foreign exchange rate is the primary risk factor for a foreign exchange call option.

[345] For example, multi-asset derivative transactions or hybrid derivative transactions.

3.8 A Reporting Bank must group transactions that reference the basis between 2 risk factors and are denominated in a single currency (that is, basis transactions) into separate hedging sets within the corresponding asset class[346].

3.9 A Reporting Bank must have a separate hedging set for each pair of risk factors (that is, for each specific basis) and must determine the long and short positions within the hedging set with respect to the basis.

3.10 A Reporting Bank must treat derivative transactions with 2 floating legs that are denominated in different currencies, including cross-currency swaps, as non-basis foreign exchange transactions, and not as basis transactions.

3.11 A Reporting Bank must group transactions that reference the volatility of a risk factor (that is, volatility transactions [347]) into separate hedging sets within the corresponding asset class. The Reporting Bank must apply the same hedging set construction set out in paragraph 3.7 of this Annex to volatility hedging sets[348].

3.12 A Reporting Bank must treat inflation derivative transactions in the same manner as interest rate derivative transactions and must allocate inflation derivative transactions into separate hedging sets for each currency. To avoid doubt, a Reporting Bank must form separate hedging sets for inflation derivative transactions and interest rate derivative transactions for the same currency.

Add-on for interest rate derivatives

3.13 A Reporting Bank must allocate the interest rate derivative transactions in each hedging set to one of the following 3 maturity buckets based on E_i of the derivative transaction as defined in paragraph 3.28(a)(i) of this Annex:

(a) Maturity Bucket 1, for transactions of E_i less than one year;

(b) Maturity Bucket 2, for transactions of E_i between one year and 5 years;

(c) Maturity Bucket 3, for transactions of E_i greater than 5 years.

3.14 A Reporting Bank must calculate the add-on for interest rate derivatives, $AddOn^{IR}$, as the sum of the add-ons for each hedging set of interest rate derivatives transacted with a counterparty in a netting set, as follows:

$$AddOn^{IR} = \sum_j AddOn_j^{IR}$$

where $AddOn_j^{IR}$ is the hedging set-level add-on for hedging set 'j' calculated using the following formula:

[346] Examples of specific bases include 3-month Libor versus 6-month Libor, 3-month Libor versus 3-month T-Bill, one-month Libor versus OIS rate, and Brent Crude oil versus Henry Hub gas.

[347] Examples of volatility transactions include variance and volatility swaps, and options on realised or implied volatility.

[348] For example, all equity volatility transactions form a single hedging set.

$$AddOn_j^{IR} = SF_j^{IR} \times EffectiveNotional_j^{IR}$$

where –

(a) SF_j^{IR} is the supervisory factor calculated in accordance with paragraph 3.41 of this Annex; and

(b) $EffectiveNotional_j^{IR}$ is the hedging set-level effective notional for hedging set 'j' calculated by aggregating across maturity buckets for each hedging set using one of the following formulas:

(i) Formula 1:

$$EffectiveNotional_j^{IR} = \left[\left(D_{j1}^{IR}\right)^2 + \left(D_{j2}^{IR}\right)^2 + \left(D_{j3}^{IR}\right)^2 + 1.4 \times D_{j1}^{IR} \times D_{j2}^{IR} + 1.4 \times D_{j2}^{IR} \times D_{j3}^{IR} + 0.6 \times D_{j1}^{IR} \times D_{j3}^{IR}\right]^{\frac{1}{2}};$$

(ii) in the case where the Reporting Bank chooses not to recognise offset across maturity buckets, Formula 2:

$$EffectiveNotional_j^{IR} = \left|D_{j1}^{IR}\right| + \left|D_{j2}^{IR}\right| + \left|D_{j3}^{IR}\right|$$

where D_{jk}^{IR} is the effective notional for currency 'j' and maturity bucket 'k' calculated using the following formula:

$$D_{jk}^{IR} = \sum_{i \epsilon \{Currency_j, Maturity\ Bucket_k\}} \delta_i \times d_i^{IR} \times MF_i^{type}$$

where –

(A) $i \epsilon \{Currency_j, Maturity\ Bucket_k\}$ refers to transactions of currency 'j' that belong to maturity bucket 'k';

(B) d_i^{IR} is the appropriate trade-level adjusted notional amount calculated in accordance with paragraphs 3.28(a), 3.29 and 3.30 of this Annex;

(C) δ_i is the appropriate supervisory delta adjustment calculated in accordance with paragraphs 3.31 to 3.35 of this Annex;

(D) MF_i^{type} is the appropriate maturity factor calculated in accordance with paragraphs 3.36 to 3.39 of this Annex; and

(E) $\delta_i \times d_i^{IR} \times MF_i^{type}$ is the effective notional of each derivative transaction in the hedging set.

3.15 A Reporting Bank must use the supervisory factor, SF_j^{IR} when calculating the add-on for inflation derivative transactions and aggregate the add-on for inflation derivative transactions with the add-on for interest rate derivative transactions, $AddOn^{IR}$.

Add-on for foreign exchange derivatives

3.16 A Reporting Bank must calculate the add-on for foreign exchange derivatives, $AddOn^{FX}$, as the sum of the add-ons for each hedging set of foreign exchange derivatives transacted with a counterparty in a netting set, as follows:

$$AddOn^{FX} = \sum_j AddOn_j^{FX}$$

where $AddOn_j^{FX}$ is the hedging set-level add-on for hedging set 'j' calculated using the following formula:

$$AddOn_j^{FX} = SF_j^{FX} \times \left| EffectiveNotional_j^{FX} \right|$$

where –

(a) SF_j^{FX} is the supervisory factor calculated in accordance with paragraph 3.41 of this Annex; and

(b) $EffectiveNotional_j^{FX}$ is the hedging set-level effective notional for hedging set 'j' calculated using the following formula:

$$Effective\ Notional_j^{FX} = \sum_{i \epsilon Hedging\ Set_j} \delta_i \times d_i^{FX} \times MF_i^{type}$$

where –

(i) $i \epsilon Hedging\ Set_j$ refers to transactions of hedging set 'j';

(ii) d_i^{FX} is the appropriate trade-level adjusted notional amount calculated in accordance with paragraphs 3.28(b) and 3.30 of this Annex;

(iii) δ_i is the appropriate supervisory delta adjustment calculated in accordance with paragraphs 3.31 to 3.35 of this Annex;

(iv) MF_i^{type} is the appropriate maturity factor calculated in accordance with paragraphs 3.36 to 3.39 of this Annex; and

(v) $\delta_i \times d_i^{FX} \times MF_i^{type}$ is the effective notional of each derivative transaction in the hedging set.

3.17 A Reporting Bank must use the same ordering convention for each currency pair consistently across the Reporting Bank. The Reporting Bank must choose the ordering

convention that corresponds to the market practice for how derivatives in the respective currency pair are quoted and traded.

Add-on for credit derivatives

3.18 A Reporting Bank must calculate the add-on for credit derivatives, $AddOn^{Credit}$, as follows:

$$AddOn^{Credit} = \left[\left(\sum_k \rho_k^{Credit} \times AddOn(Entity_k)\right)^2 + \sum_k \left(1 - \left(\rho_k^{Credit}\right)^2\right) \times (AddOn(Entity_k))^2\right]^{\frac{1}{2}}$$

where –

(a) ρ_k^{Credit} is the appropriate credit correlation factor corresponding to entity '*k*' specified in Table 7D-1;

(b) $AddOn(Entity_k)$ is the add-on for entity 'k' calculated using the following formula:

$$AddOn(Entity_k) = SF_k^{Credit} \times EffectiveNotional_k^{Credit}$$

where –

(i) SF_k^{Credit} is the supervisory factor calculated in accordance with paragraphs 3.41 and 3.42 of this Annex; and

(ii) $EffectiveNotional_k^{Credit}$ is the effective notional for entity '*k*' calculated using the following formula:

$$Effective\ Notional_k^{Credit} = \sum_{i \epsilon Entity_k} \delta_i \times d_i^{Credit} \times MF_i^{type}$$

where –

(A) $i \epsilon Entity_k$ refers to transactions relating to entity '*k*';

(B) d_i^{Credit} is the appropriate trade-level adjusted notional amount calculated in accordance with paragraphs 3.28(a), 3.29 and 3.30 of this Annex;

(C) δ_i is the appropriate supervisory delta adjustment calculated in accordance with paragraphs 3.31 to 3.35 of this Annex;

(D) MF_i^{type} is the appropriate maturity factor calculated in accordance with paragraphs 3.36 to 3.39 of this Annex; and

(E) $\delta_i \times d_i^{Credit} \times MF_i^{type}$ is the effective notional of each derivative transaction in the hedging set.

3.19 A Reporting Bank must treat a derivative referencing a credit index or a basket of underlying names as a separate entity with '*k*' uniquely defined. The Reporting Bank must ensure that the supervisory parameters applicable to a derivative referencing a basket of underlying names are the same as the supervisory parameters applicable to a derivative referencing a credit index.

Add-on for equity derivatives

3.20 A Reporting Bank must calculate the add-on for equity derivatives, $AddOn^{Equity}$, as follows:

$$AddOn^{Equity} = \left[\left(\sum_k \rho_k^{Equity} \times AddOn(Entity_k)\right)^2 + \sum_k \left(1 - \left(\rho_k^{Equity}\right)^2\right) \times (AddOn(Entity_k))^2\right]^{\frac{1}{2}}$$

where –

(a) ρ_k^{Equity} is the appropriate equity correlation factor corresponding to entity '*k*' specified in Table 7D-1;

(b) $AddOn(Entity_k)$ is the add-on for entity '*k*' calculated using the following formula:

$$AddOn(Entity_k) = SF_k^{Equity} \times EffectiveNotional_k^{Equity}$$

where –

(i) SF_k^{Equity} is the supervisory factor calculated in accordance with paragraph 3.41 of this Annex; and

(ii) $EffectiveNotional_k^{Equity}$ is the effective notional for entity '*k*' calculated using the following formula:

$$Effective\ Notional_k^{Equity} = \sum_{i \epsilon Entity_k} \delta_i \times d_i^{Equity} \times MF_i^{type}$$

where –

(A) $i \epsilon Entity_k$ refers to trades relating to entity '*k*';

(B) d_i^{Equity} is the appropriate trade-level adjusted notional amount calculated in accordance with paragraphs 3.28(c) and 3.30 of this Annex;

(C) δ_i is the appropriate supervisory delta adjustment calculated in accordance with paragraphs 3.31 to 3.35 of this Annex;

(D) MF_i^{type} is the appropriate maturity factor calculated in accordance with paragraphs 3.36 to 3.39 of this Annex; and

(E) $\delta_i \times d_i^{Equity} \times MF_i^{type}$ is the effective notional of each derivative transaction in the hedging set.

3.21 A Reporting Bank must treat a derivative referencing an equity index or a basket of equities as a separate entity with '*k*' uniquely defined. The Reporting Bank must ensure that the supervisory parameters applicable to a derivative referencing a basket of underlying equities are the same as the supervisory parameters applicable to a derivative referencing an equity index.

Add-on for commodity derivatives

3.22 For the calculation of the add-on for commodity derivatives, a Reporting Bank may only offset fully long and short positions for commodity derivatives where the long and short positions reference the same type of underlying commodity. The Reporting Bank may only partially offset commodity derivatives referencing different types of underlying commodities if they are in the same hedging set. The Reporting Bank must not offset commodity derivatives if they are in different hedging sets[349].

3.23 A Reporting Bank must calculate the add-on for commodity derivatives, $AddOn^{Com}$, as the sum of the add-ons for each hedging set of commodity derivatives transacted with a counterparty in a netting set, as follows:

$$AddOn^{Com} = \sum_j AddOn_j^{Com}$$

where $AddOn_j^{Com}$ is the hedging set-level add-on for hedging set 'j' calculated using the following formula:

$$AddOn_j^{Com} = \left[\left(\rho_j^{Com} \times \sum_k AddOn(Type_k^j)\right)^2 + \left(1 - \left(\rho_j^{Com}\right)^2\right) \times \sum_k \left(AddOn(Type_k^j)\right)^2\right]^{\frac{1}{2}}$$

where –

(a) ρ_j^{Com} is the appropriate commodity correlation factor corresponding to hedging set '*j*' specified in Table 7D-1; and

[349] For example, a Reporting Bank must not offset a forward contract on crude oil against a forward contract on corn.

(b) $AddOn(Type_k^j)$ refers to the add-on for commodity type 'k' in hedging set 'j' calculated using the following formula:

$$AddOn(Type_k^j) = SF_{Type_k^j}^{Com} \times EffectiveNotional_k^{Com}$$

where –

(i) $SF_{Type_k^j}^{Com}$ is the supervisory factor calculated in accordance with paragraph 3.41 of this Annex; and

(ii) $EffectiveNotional_k^{Com}$ is the effective notional for commodity type 'k' calculated using the following formula:

$$Effective\ Notional_k^{Com} = \sum_{i \epsilon Type_k^j} \delta_i \times d_i^{Com} \times MF_i^{type}$$

where –

(A) $i \epsilon Type_k^j$ refers to transactions of commodity type 'k' in hedging set 'j';

(B) d_i^{Com} is the appropriate trade-level adjusted notional amount calculated in accordance with paragraphs 3.28(c) and 3.30 of this Annex;

(C) δ_i is the appropriate supervisory delta adjustment calculated in accordance with paragraphs 3.31 to 3.35 of this Annex;

(D) MF_i^{type} is the appropriate maturity factor calculated in accordance with paragraphs 3.36 to 3.39 of this Annex; and

(E) $\delta_i \times d_i^{Com} \times MF_i^{type}$ is the effective notional of each derivative transaction in the hedging set.

3.24 For the purposes of the calculation in paragraph 3.23 of this Annex, a Reporting Bank must assess that the commodities referenced by the derivative transactions grouped under each commodity type demonstrate stable and meaningful joint dynamics. If the commodities referenced by the derivative transactions grouped under each commodity type do not demonstrate stable and meaningful joint dynamics, and if the Reporting Bank is significantly exposed to the basis risk of different products within the commodity types, the Reporting Bank must use more refined definitions of commodity types.[350] The Authority may require the Reporting Bank to use more refined definitions of commodity types.

[350] For example, with regard to characteristics such as location and quality. To illustrate, the energy hedging set may contain commodity types such as crude oil, electricity, natural gas and coal. However, crude oil as a commodity type within the energy hedging set, could omit a substantial basis risk between different types of crude oil products such as West Texas Intermediate, Brent, Saudi Light, etc.

Effective notional for options

3.25 For the purposes of paragraphs 3.14, 3.16, 3.18, 3.20 and 3.23 of this Annex, a Reporting Bank must calculate the effective notional of an option in accordance with paragraphs 3.26 and 3.27 of this Annex.

3.26 For the purposes of calculating the effective notional of an option, a Reporting Bank must –

(a) in the case of a single-payment option where the option's payoff can be represented as a payoff of a combination of European option[351], treat each European option component as a separate transaction; and

(b) in the case of a multiple-payment option, treat the option as a combination of single-payment options[352], and for each single-payment option, define S_i and T_i as the time periods starting from the current date to the start of the coupon period and E_i as the time period starting from the current date to the end of the coupon period.

3.27 A Reporting Bank must calculate the effective notional of a bought or sold digital option that has strike price equal to K_i as the lower of –

(a) the effective notional of a "collar" combination of bought and sold European options of the same type (call or put) with the strikes set equal to $0.95.K_i$ and $1.05.K_i$ where –

(i) the size of the "collar" components referred to in sub-paragraph (a) are such that the payoff of the digital option is reproduced exactly outside the region between the 2 strike prices; and

(ii) the effective notional for the bought and sold European option components that make up the "collar" referred to in sub-paragraph (a) are calculated separately, and using the exercise date T_i and the current value of the underlying P_i of the digital option as inputs for the calculation of the supervisory delta adjustment in accordance with paragraph 3.31 of this Annex; and

(b) the ratio of the payoff of the digital option to the relevant supervisory factor.

Trade-level adjusted notional amount

3.28 For the purposes of paragraphs 3.14, 3.16, 3.18, 3.20 and 3.23 of this Annex, a Reporting Bank must calculate the trade-level adjusted notional amount for interest rate, foreign exchange, credit, equity and commodity derivatives, as follows:

[351] Examples include collars, butterfly/calendar spreads, straddles, and strangles.

[352] For example, a Reporting Bank must treat an interest rate cap or floor as individual caplets or floorlets, respectively, each of which is a European option on the floating interest rate over a specific coupon period.

(a) for interest rate and credit derivatives, the product of the trade notional amount converted to the domestic currency of the Reporting Bank, and the supervisory duration SD_i, which is calculated using the following formula:

$$SD_i = \frac{\exp(-0.05 \times S_i) - \exp(-0.05 \times E_i)}{0.05}$$

where –

(i) S_i and E_i (expressed in years) are the periods of time (starting from the current reporting date) until the start and end, respectively, of the time period referenced by the interest rate or credit derivative, as applicable. Where the start date has occurred[353], the Reporting Bank must set S_i to zero; and

(ii) SD_i is subject to a minimum of 10 business days;

(b) for foreign exchange derivatives, the trade notional amount of the foreign currency leg of the contract converted to the domestic currency of the Reporting Bank, or where both legs of a foreign exchange derivative are denominated in currencies other than the domestic currency of the Reporting Bank, the higher of the trade notional amount of each leg converted to the domestic currency of the Reporting Bank;

(c) for equity and commodity derivatives, the product of the current price of one unit of the stock or commodity[354] and the number of units referenced by the trade. For equity and commodity volatility transactions, the Reporting Bank must replace the unit price by the underlying volatility or variance referenced by the transaction, and the number of units by the contractual notional.

3.29 For the purposes of determining S_i and E_i in paragraph 3.28(a) of this Annex, a Reporting Bank must make a distinction between the time period of the underlying instrument and the remaining maturity of the derivative transaction. If the derivative transaction references the value of another interest rate or credit instrument[355], the Reporting Bank must determine S_i and E_i on the basis of the underlying instrument[356]. In the case of Bermudan swaptions, the Reporting Bank must set S_i as the time period (starting from the current reporting date) until the earliest contractual exercise date and E_i as the time period (starting from the current reporting date) until the end date of the underlying swap.

3.30 For the purposes of calculating the trade-level adjusted notional amount in paragraph 3.28 of this Annex, a Reporting Bank must use the trade notional amount stated in the contract in the case where it is stated clearly and fixed until maturity. Otherwise, the Reporting Bank must determine the trade notional amount as follows:

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353 For example, an ongoing interest rate swap.

354 For example, a share of equity or barrel of oil.

355 For example, in the case of swaption or bond option.

356 For example, a European interest rate swaption with expiry of one year and the term of the underlying swap of 5 years has S_i = 1 year and E_i = 6 years.

(a) for transactions where the notional is a formula of market values, the Reporting Bank must calculate the trade notional amount by inputting current market values into the formula;

(b) for all interest rate and credit derivatives with variable notional amounts specified in the contract[357], the Reporting Bank must calculate the trade notional amount as the time-weighted average notional over the remaining life of the derivative. To avoid doubt, this treatment does not apply to transactions where the trade notional amount varies due to price changes[358];

(c) for leveraged swaps, the Reporting Bank must calculate the trade notional amount by converting the stated notional amount into the notional amount of an equivalent unleveraged swap. Where all rates in a swap are multiplied by a factor, the Reporting Bank must calculate the trade notional amount as the product of the stated notional amount and the factor on the rates;

(d) for transactions with multiple exchanges of principal, the Reporting Bank must calculate the trade notional amount as the product of the stated notional amount and the remaining number of exchanges of principal in the derivative contract.

Supervisory delta adjustment

3.31 For the purposes of paragraphs 3.14, 3.16, 3.18, 3.20 and 3.23 of this Annex, a Reporting Bank must calculate the appropriate supervisory delta adjustment for transaction 'i', δ_i, for interest rate, foreign exchange, credit, equity and commodity derivatives, to reflect its direction and non-linearity (if applicable) as follows:

	Long in the primary risk factor	**Short in the primary risk factor**
Instruments that are not options or collateralised debt obligation ("CDO") tranches, and options or CDO tranches that are not amenable to be treated under the formulas for options and CDO tranches	$\delta_i = +1$	$\delta_i = -1$
where: "Long in the primary risk factor" means that the market value of the instrument increases when the value of the primary risk factor increases; and "Short in the primary risk factor" means that the market value of the instrument decreases when the value of the primary risk factor increases.		

[357] Examples include amortising and accreting swaps.
[358] Examples include foreign exchange, equity, and commodity derivatives.

	Bought	Sold
Call options	$\delta_i = +\Phi\left(\frac{\ln\left(\frac{P_i+\lambda_j}{K_i+\lambda_j}\right)+0.5\times\sigma_i^2\times T_i}{\sigma_i\times\sqrt{T_i}}\right)$	$\delta_i = -\Phi\left(\frac{\ln\left(\frac{P_i+\lambda_j}{K_i+\lambda_j}\right)+0.5\times\sigma_i^2\times T_i}{\sigma_i\times\sqrt{T_i}}\right)$
Put options	$\delta_i = -\Phi\left(-\frac{\ln\left(\frac{P_i+\lambda_j}{K_i+\lambda_j}\right)+0.5\times\sigma_i^2\times T_i}{\sigma_i\times\sqrt{T_i}}\right)$	$\delta_i = +\Phi\left(-\frac{\ln\left(\frac{P_i+\lambda_j}{K_i+\lambda_j}\right)+0.5\times\sigma_i^2\times T_i}{\sigma_i\times\sqrt{T_i}}\right)$

where:
Φ represents the standard normal cumulative distribution function;
P_i is the underlying price[359];
K_i is the strike price;
T_i is the period of time (starting from the current reporting date) until the latest contractual exercise date of the option, expressed in years;
σ_i is the appropriate supervisory option volatility specified in Table 7D-1; and
λ_j –

(a) where P_i/K_i is zero or negative, or where K_i is zero, for any interest rate option in currency j, is the shift in the underlying price and strike price and must be calculated for all interest rate options in currency j using the steps below –
  (i) the Reporting Bank must determine L, which is the lowest value of P_i and K_i of all interest rate options in currency j;
  (ii) the Reporting Bank must calculate λ_j for currency j using the formula $\lambda_j = \text{Threshold} - \text{L}$; and
  (iii) the Reporting Bank must use a value greater than 0, and smaller or equal to 10 basis points for the value of Threshold in sub-paragraph (ii); and

(b) in all other cases, is zero.

	Purchased (long protection)	Sold (short protection)
CDO tranches	$\delta_i = +\frac{15}{(1+14\times A_i)\times(1+14\times D_i)}$	$\delta_i = -\frac{15}{(1+14\times A_i)\times(1+14\times D_i)}$

where:
A_i is the attachment point of the CDO tranche; and
D_i is the detachment point of the CDO tranche.

3.32 For the purposes of the calculation of λ_j in paragraph 3.31, a Reporting Bank must update the value of L at least semi-annually. The Reporting Bank must determine the parameter L using the lowest value of P_i and K_i of all interest rate options in currency j at the point of time when performing the update.

3.33 For the purposes of calculating the supervisory delta adjustment for European, Asian, American and Bermudan call and put options, a Reporting Bank must –

[359] For example, the spot, forward or average value of the underlying. Where appropriate, the Reporting Bank should use the forward value instead of the spot value of the underlying in the supervisory delta adjustment formula in order to account for the risk-free rate and for possible cash flows prior to the option expiry such as dividends.

(a) use the formula for call and put options specified in paragraph 3.31 of this Annex. To avoid doubt, for American and Bermudan options, T_i is the period of time (starting from the current reporting date) until the latest allowed contractual exercise date of the option; and

(b) for Asian call and put options, set P_i referred to in paragraph 3.31 of this Annex to the current value of the average used in the payoff.

3.34 A Reporting Bank must treat an nth-to-default transaction on a pool of m reference names as a CDO tranche for the purposes of calculating the supervisory delta adjustment for the transaction. The Reporting Bank must use an attachment point of A=(n-1)/m and a detachment point of D=n/m to calculate the supervisory delta adjustment for the transaction in accordance with the formula applicable to CDO tranches in paragraph 3.31 of this Annex.

3.35 Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024 –

(a) any approval granted under section 10(3) of the Banking Act to vary the capital adequacy requirement imposed by paragraph 3.17 of Annex 7O of that Notice, is treated as an approval granted under section 10(3) of the Banking Act to vary the capital adequacy requirement imposed by paragraph 3.31 of Annex 7D of this Notice; and

(b) any condition or restriction imposed by the Authority pursuant to paragraph 3.17 of Annex 7O of that Notice will continue to apply as though it were imposed under paragraph 3.31 of Annex 7D of this Notice.

Time risk horizon

3.36 A Reporting Bank must calculate the appropriate maturity factor for transaction 'i', MF_i^{type}, reflecting the time risk horizon appropriate for the type of transaction (that is, unmargined or margined), as follows:

(a) for unmargined transactions, using the following formula:

$$MF_i^{unmargined} = \sqrt{\frac{\min\{M_i; 1\ year\}}{1\ year}}$$

where M_i (expressed in years) is the remaining maturity of transaction 'i'[360], and is based on the time period (starting from the current reporting date) until the latest date when the transaction may still be active, and M_i is subject to a minimum of 10 business days;

(b) for margined transactions, using the following formula:

[360] For example, for a one-month option on a 10-year Treasury bond, M_i of the transaction is one month, (i.e. the one-month to expiration date of the derivative contract), and E_i of the transaction is based on the 10-year remaining maturity on the Treasury bond, and is 10 years.

$$MF_i^{margined} = \frac{3}{2}\sqrt{\frac{MPOR_i}{1\ year}}$$

where $MPOR_i$ is the margin period of risk appropriate for the margin agreement containing transaction 'i', and $MPOR_i$ is subject to the minimum margin period of risk that applies under paragraph 6.2 of Annex 7E or paragraph 7.7.34, whichever is applicable.

3.37 For the purposes of the calculation of the maturity factor for a transaction pursuant to paragraph 3.36(a) or (b) of this Annex, a Reporting Bank must use standard market convention to convert business days into years, and vice versa.[361]

3.38 If a derivative transaction has another derivative transaction as its underlying[362] and may be physically exercised into the underlying derivative transaction (that is, a position in the underlying derivative transaction would be assumed by the Reporting Bank upon exercise), a Reporting Bank must set M_i referred to in paragraph 3.36(a) of this Annex as the time period (starting today) until final settlement date of the underlying derivative transaction.

3.39 For a transaction that is structured to settle outstanding exposures on specified payment dates and where the terms are reset such that the fair value of the contract is zero on these specified dates, a Reporting Bank must –

(a) treat the transaction as an unmargined transaction;

(b) set M_i referred to in paragraph 3.36(a) of this Annex to be equal to the time until the next reset date; and

(c) subject M_i to a minimum of 10 business days.

Supervisory parameters

3.40 Table 7D-1 and paragraph 3.41 of this Annex set out the supervisory parameters for the supervisory factor, correlation factor and supervisory option volatility.

3.41 For the purposes of paragraphs 3.14, 3.16, 3.18, 3.20 and 3.23 of this Annex, a Reporting Bank must apply the appropriate supervisory factor in Table 7D-1, except in either of the following cases:

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[361] For example –
(a) for unmargined transactions, the maturity parameter (M_i) referred to in paragraph 3.36(a) of this Annex is expressed in years but is subject to a floor of 10 business days. A Reporting Bank should calculate the floor for M_i as 10/250 years, where a year is represented by 250 business days; and
(b) for margined transactions, the margin period of risk ($MPOR_i$) is often expressed in days, but the calculation of the maturity factor for margined netting sets as referred to in paragraph 3.36(b) of this Annex references one year in the denominator. When calculating the maturity factor in paragraph 3.36(b) of this Annex, a Reporting Bank may represent the denominator as 250 business days; or alternatively, represent $MPOR_i$ expressed in business days in the numerator in years by dividing it by 250.

[362] For example, swaptions.

(a) a hedging set consisting of basis transactions, in which case the Reporting Bank must adjust the appropriate supervisory factor in Table 7D-1 by multiplying it by a factor of 0.5;

(b) a hedging set consisting of volatility transactions, in which case the Reporting Bank must adjust the appropriate supervisory factor in Table 7D-1 by multiplying it by a factor of 5.

3.42 For determining the supervisory factor for the credit asset class in Table 7D-1, a Reporting Bank must assign a reference entity a credit quality grade based on the external credit assessment that is applicable to the reference entity in accordance with Table 7M-1. For a reference entity which does not have an external credit assessment by a recognised ECAI, the Reporting Bank must map the internal rating under the IRBA, of the reference entity to the appropriate credit quality grade, if the Reporting Bank has received approval from the Authority to adopt the IRBA pursuant to Division 4 of Part VII. In all other cases, the Reporting Bank must apply a supervisory factor of 1.06%.

3.43 For the purposes of paragraphs 3.14, 3.16, 3.18, 3.20, 3.23 and 3.31 of this Annex, a Reporting Bank must not make any modelling assumptions in the calculation of the add-on for each asset class and must use the supervisory parameters set out in Table 7D-1 and paragraph 3.41 of this Annex.

Table 7D-1 – Supervisory Parameters

Asset Class		Subclass	Supervisory factor	Correlation factor	Supervisory option volatility
Interest rate			0.5%	N/A	50%
Foreign exchange			4%	N/A	15%
Credit	Single name	Credit Quality Grade 1	0.38%	50%	100%
		Credit Quality Grade 2	0.42%	50%	100%
		Credit Quality Grade 3	0.54%	50%	100%
		Credit Quality Grade 4	1.06%	50%	100%
		Credit Quality Grade 5	1.6%	50%	100%
		Credit Quality Grade 6	6%	50%	100%
	Index	Credit Quality Grade 1 to 3	0.38%	80%	80%
		Credit Quality Grade 4 to 6	1.06%	80%	80%
Equity	Single name		32%	50%	120%
	Index		20%	80%	75%

Commodity	Electricity	40%	40%	150%
	Oil/Gas	18%	40%	70%
	Metals	18%	40%	70%
	Agricultural commodities	18%	40%	70%
	Other	18%	40%	70%

3.44 Table 7D-2 sets out example transactions and the related maturity Maturity M_i, Start Date S_i, and End Date E_i of each transaction, in accordance with paragraphs 3.28(a), 3.29, 3.36(a), 3.38 and 3.39 of this Annex.

Table 7D-2 – Example Transactions and Related Maturity M_i, Start Date S_i, and End Date E_i

Instrument	M_i	S_i	E_i
Interest rate or credit default swap maturing in 10 years	10 years	0	10 years
10-year interest rate swap, forward starting in 5 years	15 years	5 years	15 years
Forward rate agreement for time period starting in 6 months and ending in 12 months	1 year (assuming payment is made at the end of the period) 0.5 year (if payment is made at the beginning of the period[363])	0.5 year	1 year
Cash-settled European swaption referencing 5-year interest rate swap with exercise date in 6 months	0.5 year	0.5 year	5.5 years
Physically-settled European swaption referencing 5-year interest rate swap with exercise date in 6 months	5.5 years	0.5 year	5.5 years
10-year Bermudan swaption with annual exercise dates	10 years	1 year	10 years
Interest rate cap or floor specified for semi-annual interest rate with maturity 5 years	5 years	0	5 years
Option on a bond maturing in 5 years with the latest exercise date in one year	1 year	1 year	5 years

[363] M_i of one year assumes that payment is made at the end of the period (similar to vanilla interest rate swaps). If the payment is made at the beginning of the period, as is typically the case according to market convention, M_i is 0.5 years.

3-month Eurodollar futures that matures in one year	1 year	1 year	1.25 years
Futures on 20-year treasury bond that matures in 2 years	2 years	2 years	22 years
6-month option on 2-year futures on 20-year treasury bond	2 years	2 years	22 years

Section 4: Treatment of Multiple Margin Agreements and Multiple Netting Sets

4.1 In the case where multiple margin agreements apply to a single netting set, a Reporting Bank must divide the netting set into sub-netting sets that align with their respective margin agreements. The Reporting Bank must –

(a) calculate the RC for the entire netting set in accordance with paragraph 2.4 of this Annex where –

(i) V is the current market value of all margined and unmargined derivative transactions in the netting set;

(ii) C is the haircut value of net collateral (including both variation margin and NICA) held by the Reporting Bank for all derivative transactions in the netting set, adjusted by applying the standard supervisory haircuts in Annex 7J for the margin period of risk of the transactions, such that the value of non-cash collateral posted by the Reporting Bank to its counterparty is increased, and the value of non-cash collateral received by the Reporting Bank from its counterparty is decreased;

(iii) TH is the sum of the counterparty thresholds across all variation margin agreements within the netting set; and

(iv) MTA is the sum of the minimum transfer amounts across all variation margin agreements within the netting set; and

(b) calculate the PFE of the entire netting set as the product of the aggregate add-on and the multiplier where –

(i) the multiplier is calculated in accordance with paragraph 3.1(b) of this Annex, with the inputs V and C calculated in accordance with sub-paragraphs (a)(i) and (a)(ii); and

(ii) the aggregate add-on is calculated as the sum of the aggregated add-ons for each sub-netting set where –

(A) all unmargined transactions within the netting set form a single sub-netting set; and

(B) all margined transactions within the netting set that share the same $MPOR$ form a single sub-netting set.

4.2 In the case where a single margin agreement applies to multiple netting sets, a Reporting Bank must –

(a) calculate the replacement cost for the entire margin agreement, RC_{MA}, as follows[364]:

$$RC_{MA} = max\left\{\sum_{NS \in MA} max\{V_{NS}; 0\} - max\{C_{MA}; 0\}; 0\right\} + max\left\{\sum_{NS \in MA} min\{V_{NS}; 0\} - min\{C_{MA}; 0\}; 0\right\}$$

where the summation $\mathrm{NS} \in \mathrm{MA}$ is across the netting sets covered by the margin agreement, $\mathrm{V_{NS}}$ is the current mark-to-market value of netting set 'NS' and $\mathrm{C_{MA}}$ is the haircut value of net collateral (including both variation margin and NICA) held under the margin agreement 'MA', adjusted by applying the standard supervisory haircuts in Annex 7J for the margin period of risk of the transactions, such that the value of non-cash collateral posted by the Reporting Bank to its counterparty is increased, and the value of non-cash collateral received by the Reporting Bank from its counterparty is decreased;

(b) allocate the available collateral *C* to the netting sets, for the calculation of the multiplier, as follows:

(i) if the Reporting Bank is a net receiver of collateral ($C>0$), all individual collateral amounts that are allocated to the individual netting sets must be positive or zero. The Reporting Bank must first allocate to netting sets with positive market values, collaterals up to the amount of the market values of the respective netting sets. The Reporting Bank may attribute surplus collateral freely among all other netting sets only after all the netting sets with positive market values have been compensated;

(ii) if the Reporting Bank is a net provider of collateral ($C<0$), all individual collateral amounts that are allocated to the individual netting sets must be negative or zero. The Reporting Bank must first allocate to netting sets with negative market values, collaterals up to the amount of the market values of the respective netting sets. If the collateral provided is larger than the sum of the negative market values of the netting sets, the Reporting Bank must set all multipliers to one;

[364] The first term is equal to the unmargined current exposure of the Reporting Bank to the counterparty aggregated across all netting sets under the margin agreement reduced by the positive current net collateral (that is, collateral is subtracted only when the Reporting Bank is a net holder of collateral). The second term is equal to the current net posted collateral (if any) reduced by the unmargined current exposure of the counterparty to the Reporting Bank aggregated across all netting sets under the margin agreement (that is, it is non-zero only when the Reporting Bank is a net poster of collateral).

(iii) the Reporting Bank must ensure that the allocated collaterals add up to the total amount of collaterals available for the margin agreement; and

(c) calculate the amount for potential future exposure for the entire margin agreement, PFE_{MA}, as the sum of netting set-level PFEs calculated using the formulas for unmargined transactions, as follows:

$$PFE_{MA} = \sum_{NS \in MA} PFE_{NS}^{unmargined}$$

where $PFE_{NS}^{(unmargined)}$ is the PFE for netting set '*NS*' calculated using the formulas for unmargined transactions.

Section 5: Treatment of collateral taken outside of netting sets

5.1 A Reporting Bank must treat eligible collateral, which is taken outside a netting set that is unmargined but is available to the Reporting Bank to offset losses due to counterparty default on one netting set only, as an independent collateral amount associated with the netting set and used within the calculation of the RC in accordance with paragraph 2.1 of this Annex.

5.2 A Reporting Bank must treat eligible collateral, which is taken outside a netting set that is margined but is available to the Reporting Bank to offset losses due to counterparty default on one netting set only, as an independent collateral amount associated with the netting set and used within the calculation of the RC in accordance with paragraph 2.4 of this Annex.

5.3 A Reporting Bank must treat eligible collateral, which is taken outside a netting set but is available to the Reporting Bank to offset losses due to counterparty default on more than one netting set, as collateral taken under a margin agreement applicable to multiple netting sets and calculate RC and PFE in accordance with paragraph 4.2 of this Annex.

5.4 In cases where the eligible collateral is available to offset losses on non-derivative as well as exposures determined using the SA-CCR, a Reporting Bank must use only the portion of the collateral assigned to the derivatives to reduce the derivatives exposure.

Annex 7E

CCR INTERNAL MODELS METHOD

Section 1: Application to Adopt CCR Internal Models Method

1.1 A Reporting Bank must apply in writing for approval from the Authority if it intends to adopt the CCR internal models method.

1.2 The Authority may grant approval for a Reporting Bank to adopt the CCR internal models method subject to such conditions or restrictions as the Authority may impose.[365] The Authority may require a period of initial monitoring and live testing of the Reporting Bank's models under the CCR internal models method before approving the Reporting Bank's adoption of the CCR internal models method for regulatory capital purposes.

1.3 Subject to paragraph 1.2 of this Annex, a Reporting Bank may use the CCR internal models method to calculate E or EAD, whichever is applicable, for the pre-settlement counterparty exposure in any of the following transaction types:

(a) any OTC derivative transaction;

(b) any exchange-traded derivative transaction;

(c) any long settlement transaction;

(d) any SFT.

1.4 A Reporting Bank which has received approval to adopt the CCR internal models method for a particular transaction type must apply the method to all relevant exposures within that transaction type, except those that are immaterial in size and risk or unless a phased rollout is permitted by the Authority.

1.5 A Reporting Bank must not adopt the CCR internal models method to a centrally cleared version of a transaction type for which the Reporting Bank had received approval for application of the CCR internal models method, without prior approval from the Authority.

1.6 Despite paragraph 1.4 of this Annex, the Authority may allow a phased rollout of the CCR internal models method within a particular transaction type in the initial implementation phase and allow a Reporting Bank to use the SA-CCR for a portion of its business in the initial implementation phase. The Reporting Bank must submit a plan to the Authority to bring all material exposures within the transaction type under the CCR internal models method.

1.7 A Reporting Bank which has adopted the CCR internal models approach must continue to adopt the CCR internal models method. The Reporting Bank must not revert

[365] Factors considered in the Authority's assessment include the characteristics of the Reporting Bank's portfolio of exposures that give rise to CCR, in particular, the diversification and number of risk factors the portfolio is exposed to, the correlation of default across counterparties, and the number and granularity of counterparties.

to using the SA-CCR to calculate E or EAD, whichever is applicable, for all or part of its exposures, unless permitted by the Authority, and such permission shall be given only in exceptional circumstances or for immaterial exposures. The Authority will not normally grant such approval unless the Reporting Bank is able to demonstrate good cause for the change and that such change is not intended to avoid or reduce regulatory capital which the Reporting Bank would otherwise be required to maintain.

1.8 The model used by a Reporting Bank within its CCR internal models method may be a simulation model, an analytical model or other forms of model. A Reporting Bank which intends to adopt a model that is not a simulation model must be able to demonstrate to the satisfaction of the Authority, that such a model meets all relevant requirements in this Annex.

1.9 If a Reporting Bank becomes aware that it does not comply with all the requirements in this Annex or the conditions or restrictions imposed by the Authority pursuant to paragraph 1.2 of this Annex, it must –

(a) inform the Authority in writing as soon as practicable and, in any case, no later than 5 business days of the Reporting Bank becoming aware, of the failure to meet any requirement, or any non-compliance with the conditions or restrictions, as the case may be;

(b) assess the effect of the failure to meet the requirement(s), or non-compliance with the conditions or restrictions, as the case may be, in terms of the risk(s) posed to the Reporting Bank (if any);

(c) prepare a plan to rectify the issues that led to the failure to meet the requirement(s) or non-compliance with the conditions or restrictions, as the case may be, and inform the Authority of its plan (including its target completion date for the plan) as soon as practicable; and

(d) undertake prompt corrective action in accordance with the plan prepared pursuant to sub-paragraph (c).

1.10 If a Reporting Bank fails to comply with paragraph 1.9 of this Annex or if the Authority is of the view that a Reporting Bank's estimates of E or EAD, whichever is applicable, or estimates of alpha, under the CCR internal models method does not adequately reflect its CCR exposures, the Authority shall take appropriate actions, which may include revoking its approval for the Reporting Bank to adopt the CCR internal models method. The Reporting Bank may also be required to revise its estimates or apply a higher estimate of E or EAD, whichever is applicable, or a higher estimate of alpha for the purposes of calculating regulatory capital requirements.

Section 2: Exposure Measurement

2.1 Under the CCR internal models method, a Reporting Bank must calculate E or EAD, whichever is applicable, at the level of the netting set.

2.2 A Reporting Bank must have internal procedures in place to verify that, prior to including a transaction in a netting set, the transaction is covered by a qualifying bilateral netting agreement or a qualifying cross-product netting agreement.

2.3 A Reporting Bank must ensure that its model under the CCR internal models method specifies the forecasting distribution for changes in the market value of the netting set attributable to changes in market variables[366] so that the Reporting Bank can compute E or EAD, whichever is applicable, for the netting set at each future date given the changes in the market variables.

2.4 A Reporting Bank which has taken eligible financial collateral for any CCR exposure may recognise the effects of CRM of such collateral in accordance with paragraphs 2.5 to 2.7 of this Annex, subject to paragraphs 8.30 and 8.31 of this Annex. A Reporting Bank which recognises the effects of CRM of collateral must have internal procedures to verify that, prior to recognising the effects of CRM of collateral, the requirements in Annex 7H are met.

2.5 A Reporting Bank may include eligible financial collateral in its forecasting distributions for changes in the fair value of the netting set, provided the quantitative, qualitative and data requirements set out in sections for the use of the CCR internal models method are met for the collateral. A Reporting Bank which recognises the effects of CRM of collateral must have internal procedures to verify that, prior to recognising the effects of CRM of collateral, the requirements in Annex 7H are met.

2.6 For margined counterparties, a Reporting Bank may capture future collateral movements in its model.

2.7 If a Reporting Bank has recognised the effects of CRM of eligible financial collateral in E or EAD, whichever is applicable, through the CCR internal models method, it must not take into account the effects of CRM of such eligible financial collateral when deriving estimates of LGD. In such instances, the Reporting Bank must use the LGD of an otherwise similar uncollateralised facility (i.e. the Reporting Bank must use an LGD that does not include collateral that is already included in EAD).

2.8 A Reporting Bank which has not recognised the effect of eligible financial collateral through the CCR internal models method may do so by applying the relevant rules on the treatment of collateral under the FC(CA).

2.9 A Reporting Bank must calculate E or EAD, whichever is applicable, as follows (except for counterparties that have been identified as having explicit specific wrong-way risk, where the Reporting Bank must compute E or EAD, whichever is applicable, in accordance with paragraphs 8.23 to 8.25 of this Annex):

$$\text{E or EAD} = \alpha \times \text{effective EPE}$$

where α is set at 1.4, or any higher amount specified by the Authority[367], and effective EPE is determined in accordance with Section 3 of this Annex.

[366] Examples include interest rates and foreign exchange rates.

[367] In requiring a higher α to be applied, the Authority will consider factors such as the extent to which a Reporting Bank meets the model validation requirements in Section 7 of this Annex, the granularity of counterparties, exposures to general wrong-way risk, correlation of market values across counterparties and other factors specific to the CCR exposures of the Reporting Bank. The Authority will consider a Reporting Bank to be eligible for an α of 1.4 only if the Reporting Bank fully complies with the model validation requirements in Section 7 of this Annex.

2.10 A Reporting Bank must calculate the effective EPE based on current market data and the effective EPE based on a stress calibration[368], in accordance with Section 3 of this Annex. A Reporting Bank must apply the effective EPE which will result in a higher portfolio-level credit RWA (not including the CVA RWA) for exposures calculated using the CCR internal models method, by using the greater of effective EPE based on current market data and the effective EPE based on a stress calibration, determined on a total portfolio level, instead of on a counterparty by counterparty basis.

2.11 Despite paragraphs 2.9 and 2.10 of this Annex, a Reporting Bank may use a measure that is more conservative than effective EPE to estimate E or EAD, whichever is applicable, for each counterparty, subject to the approval of the Authority. These measures include the use of peak exposure, the use of an EPE model as set out in Section 4 of this Annex or the use of VaR models as set out in Annex 7F.

Section 3: Effective EPE

3.1 A Reporting Bank must compute effective EPE by estimating expected exposure (EE_t)[369] as the average exposure at future date t, where the average is taken across possible future values of relevant market risk factors[370]. The model estimates EE at a series of future dates t_1, t_2, t_3 and so on.

3.2 A Reporting Bank must compute effective EE recursively as –

$$\text{Effective EE}_{t_k} = \max\{\text{Effective EE}_{t_{k-1}}, EE_{t_k}\}$$

where the current date is denoted as t_0 and $\text{Effective EE}_{t_0}$ equals current exposure.

3.3 A Reporting Bank must compute effective EPE as a weighted average of effective EE as follows:

$$\text{Effective EPE} = \sum_{k=1}^{\min(1\text{ year},\ \text{maturity})} \text{Effective EE}_{t_k} \times \Delta t_k$$

where $\Delta t_k = t_k - t_{k-1}$.

Section 4: Own estimates for α

4.1 A Reporting Bank may seek approval from the Authority in its application to adopt the CCR internal models method, to compute internal estimates of α[371], subject to

[368] The Reporting Bank should use a single consistent stress calibration for the whole portfolio of counterparties.

[369] A Reporting Bank should calculate EE or any peak exposure measures based on a distribution of exposures that accounts for the possible non-normality of the distribution of exposures, including the existence of leptokurtosis, where appropriate.

[370] Examples include interest rates and foreign exchange rates.

[371] Where appropriate, a Reporting Bank should condition volatilities and correlations of market risk factors used in the joint simulation of market and credit risk on the credit risk factor to reflect potential increases in volatility or correlation in an economic downturn. The Reporting Bank should also take into account the granularity of exposures in its internal estimates of α.

a floor of 1.2, where α equals the ratio of economic capital from a full simulation of counterparty exposures across counterparties (numerator) and economic capital based on EPE (denominator).

4.2 A Reporting Bank must meet all the requirements in Sections 7 and 8 of this Annex and must be able to demonstrate that its internal estimates of α capture in the numerator the material sources of stochastic dependency of distributions of fair values of transactions or of portfolios of transactions across counterparties[372]. In the denominator, the Reporting Bank must use EPE as if it were a fixed outstanding loan amount.

4.3 A Reporting Bank must ensure that the numerator and denominator of α are computed in a consistent fashion with respect to the modeling methodology, parameter specifications and portfolio composition. The Reporting Bank must use an approach that is based on the internal economic capital approach of the Reporting Bank. The Reporting Bank must ensure that the approach is well-documented and subject to independent validation. In addition, the Reporting Bank must review its estimates on at least a quarterly basis, and more frequently when the composition of the portfolio varies over time. The Reporting Bank must also assess the model risk, including an assessment of potential significant variations in estimates of alpha that arise from the possibility of mis-specification in the models used for the numerator, especially where convexity is present.

Section 5: Maturity Adjustment

5.1 A Reporting Bank must apply the formula in Section 3 of Annex 7V to calculate M for netting sets in which the original maturity of the longest-dated contract within the set is greater than one year.

5.2 Despite paragraph 5.1 of this Annex, a Reporting Bank which uses an internal model to calculate a one-sided CVA may seek approval in its application to adopt the CCR internal models method, to use the effective credit duration estimated by the model as M.

5.3 A Reporting Bank must apply the formula in Section 1 or 2 of Annex 7V for M for netting sets in which all contracts have an original maturity of less than one year, with the exception of short-term exposures listed in paragraph 4.2 of Annex 7V, in which case the Reporting Bank must apply calculate M in accordance with paragraph 4.1 or 4.5 of Annex 7V.

Section 6: Margin Agreements

6.1 Where a netting set is subject to a margin agreement and the Reporting Bank is able to capture the effects of margining when estimating EE, the model's EE measure may be used directly in the equation in paragraph 3.2 of this Annex, provided that approval from the Authority has been obtained for this purpose. The Reporting Bank must ensure that the EPE model also includes transaction-specific information in order to capture the effects of margining, and takes into account both the current amount of margin and margin that would be passed between counterparties in the future. The Reporting Bank must ensure that the EPE model accounts for the nature of margin agreements (unilateral or bilateral), the frequency of margin calls, the margin period of risk, the thresholds of

[372] For example, the correlation of defaults across counterparties and between market risk and default.

unmargined exposure the Reporting Bank is willing to accept, and the minimum transfer amount. The Reporting Bank must ensure that the EPE model either models the mark-to-market change in the value of collateral posted or applies the relevant rules on the treatment of collateral under the FC(CA).

6.2 For modeling EAD with margin agreements, a Reporting Bank must –

(a) for transactions subject to daily re-margining and mark-to-market valuation –

(i) apply a floor on the margin period of risk of each netting set in accordance with the following table:

Table 7E-1 – Floors on Margin Period of Risk for Netting Sets

Type of netting set	Floor (in business days)
Netting set consisting only of repo-style transactions	5
Netting set where the number of transactions exceeds 5,000 at any point during a quarter	20 (for the following quarter)
Netting set containing one or more transactions involving either illiquid collateral or an OTC derivative transaction that cannot be easily replaced, determined in the context of stressed market conditions[373]. This does not apply in the case of any transitional illiquidity of collateral and OTC derivative transactions that reference a new benchmark rate, for up to one year after the discontinuation of an old benchmark rate. Stressed market conditions are characterised by the absence of continuously active markets where a counterparty would, within 2 or fewer business days, obtain multiple price quotations that would not move the market or represent a price reflecting a market discount (in the case of collateral) or premium (in the case of an OTC derivative transaction).	20
All other netting sets	10

(ii) in relation to any quarter ("relevant quarter"), use a margin period of risk that appropriately reflects the duration of margin call disputes over 2 quarters immediately preceding the relevant quarter, and which is at least double the floor set out in Table 7E-1 for the relevant quarter and the next quarter after the relevant quarter for a netting set where there are more than 2 margin call disputes over the 2

[373] Examples of situations where transactions are deemed illiquid for this purpose include, but are not limited to, transactions that are not marked daily, and transactions that are subject to specific accounting treatment for valuation purposes (e.g. transactions referencing securities whose fair value is determined by models with inputs that are not observed in the market).

quarters immediately preceding the relevant quarter that have lasted longer than the applicable floors set out in Table 7E-1;

(iii) count every instance of a margin call being disputed, regardless of the size of the margin call disputed; and

(iv) consider whether transactions or securities it holds as collateral are concentrated in a particular counterparty and if that counterparty exited the market precipitously, whether the Reporting Bank would be able to replace its transactions; and

(b) for transactions subject to re-margining with a periodicity of N-days, use a margin period of risk at least equal to the floor plus N days minus one day:

Margin period of risk = F + N -1

where –

(i) F is the floor; and

(ii) N is the periodicity.

6.3 For the purposes of paragraph 6.2 of this Annex, in the case of non-centrally cleared derivative transactions that are subject to the Guidelines on Margin Requirements for Non-Centrally Cleared OTC Derivatives Contracts [SFA 15-G03], a Reporting Bank, when determining the margin period of risk in accordance with paragraph 6.2(a)(ii) of this Annex or counting instances where margin calls are disputed in accordance with paragraph 6.2(a)(iii) of this Annex, must include only variation margin call disputes.

6.4 A Reporting Bank using the internal models method must not capture the effect of a reduction of E or EAD, whichever is applicable, due to any clause in a collateral agreement that requires receipt of collateral when counterparty credit quality deteriorates.

Section 7: Model Validation Requirements

7.1 A Reporting Bank intending to adopt an internal model for estimating EPE arising from CCR for regulatory capital purposes must –

(a) conduct a regular programme of backtesting, i.e. an ex-post comparison of the risk measures generated by the model against realised risk measures, as well as a comparison of hypothetical changes based on static positions with realised measures;

(b) carry out an initial validation and an ongoing periodic review, independent of the model developers, of its model and risk measures generated by the model;

(c) closely integrate its internal risk measurement exposure model into its day-to-day risk management process, where the model output forms an

integral part of the process of planning, monitoring and controlling the counterparty credit risk profile of the Reporting Bank;

(d) use its risk measurement system in conjunction with internal trading and exposure limits, where exposure limits must be related to the risk measurement model in a manner that is consistent over time and that is well understood by traders, the credit function and senior management;

(e) have a routine in place for ensuring compliance with a well-documented set of internal policies, controls and procedures concerning the operation of the risk measurement system, and have a well-documented risk measurement system[374];

(f) carry out an independent review of the risk measurement system and of the overall risk management process regularly as part of the internal audit process, including both the activities of the business trading units and of the independent risk control unit. The review of the overall risk management process[375] must at least address the –

(i) adequacy of the documentation of the risk management system and process;

(ii) organisation of the risk control unit;

(iii) integration of CCR measures into daily risk management;

(iv) approval process for models used in the calculation of CCR used by front office and back office personnel;

(v) validation of any significant change in the risk measurement process;

(vi) scope of CCR captured by the risk measurement model;

(vii) integrity of the management information system;

(viii) accuracy and completeness of position data;

(ix) verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources;

(x) accuracy and appropriateness of volatility and correlation assumptions;

(xi) accuracy of valuation and risk transformation calculations; and

[374] For example, through a risk management manual that describes the basic principles of the risk management system and that provides an explanation of the empirical techniques used to measure counterparty credit risk.

[375] A Reporting Bank should review the overall risk management process at least once a year.

(xii) verification of model accuracy as described in sub-paragraphs (g) to (k);

(g) document –

(i) the process for initial and ongoing validation of its model to a level of detail that would enable a third party to recreate the analysis;

(ii) the calculation of risk measures generated by the models to a level of detail that would enable a third party to recreate the risk measures;

(iii) the frequency with which backtesting analysis and any other ongoing validation will be conducted;

(iv) how the validation is conducted with respect to data flows and portfolios; and

(v) the analyses that are used;

(h) define and document in a written policy, criteria with which to assess its EPE models and the models that input into the calculation of EPE, and have in the written policy, a description of the process by which unacceptable performance shall be determined and remedied;

(i) define how representative counterparty portfolios are constructed for the purposes of validating an EPE model and its risk measures;

(j) assess more than a single statistic of the model distribution, when validating EPE models and its risk measures that produce forecast distributions; and

(k) meet all of the following requirements as part of the initial and ongoing validation of its models and its risk measures:

(i) carry out backtesting using historical data on movements in market risk factors prior to supervisory approval;

(ii) in the backtesting process, consider a number of distinct prediction time horizons out to at least one year, over a range of various start dates and covering a wide range of market conditions;

(iii) backtest the performance of its EPE model and the relevant risk measures, as well as the market risk factor predictions that support EPE;

(iv) include, in the backtest for collateralised trades, prediction time horizons that reflect typical margin periods of risk applied in collateralised/margined trading, and long time horizons of at least one year;

(v) test the pricing models used to calculate CCR exposure for a given scenario of future shocks to market risk factors;

(vi) capture transaction specific information within the EPE model to aggregate exposures at the level of the netting set and verify that transactions are assigned to the appropriate netting set within the model;

(vii) include static, historical backtesting at regular intervals on representative counterparty portfolios, chosen based on their sensitivity to the material risk factors and correlations to which the Reporting Bank is exposed;

(viii) conduct backtesting that is designed to test the key assumptions of the EPE model and the relevant risk measures[376];

(ix) correct any significant differences between realised exposures and the forecast distribution that are indicative of problems with the model or the underlying data;

(x) subject the performance of EPE models and its risk measures to a backtesting programme that is capable of identifying poor performance in the risk measures of an EPE model;

(xi) validate its EPE models and all relevant risk measures out to time horizons commensurate with the maturity of trades for which exposure is calculated using the CCR internal models method;

(xii) regularly test the pricing models used to calculate counterparty exposure against appropriate independent benchmarks as part of the ongoing model validation process;

(xiii) include an assessment of recent performance in the ongoing validation of its EPE models and the relevant risk measures;

(xiv) assess the frequency with which parameters of an EPE model are updated;

(xv) cover all counterparties for which the models are used, in the ongoing assessment of model performance;

(xvi) assess the appropriateness of exposure calculations of EPE at the level of the Reporting Bank and the netting set;

(xvii) where a Reporting Bank has approval of the Authority to use a measure that is more conservative than alpha times effective EPE to estimate E or EAD, whichever is applicable, for each counterparty, regularly validate the conservatism of this measure, and demonstrate to the satisfaction of the Authority the degree of relative conservatism of the measure upon initial supervisory approval and at the supervisory reviews of the EPE models.

[376] For example, the modelled relationship between tenors of the same risk factor, or the modelled relationships between risk factors.

7.2 For the purposes of paragraph 7.1 of this Annex, risk measures refer not only to effective EPE, but also to the other risk measures used in the calculation of effective EPE including the exposure distribution at a series of future dates, the positive exposure distribution at a series of future dates, the market risk factors used to derive the exposures and the values of the constituent trades of a portfolio.

7.3 For the purposes of paragraph 7.1(k)(v) of this Annex, the pricing models may be different from those used by the Reporting Bank to calculate market risk over a short horizon. The Reporting Bank must ensure that the pricing models for options account for the nonlinearity of option value with respect to market risk factors.

7.4 For the purposes of paragraph 7.1(k)(ix) of this Annex, the Authority may, among other things, require additional capital to be held under such circumstances as the Authority may determine, while the problems mentioned in paragraph 7.1(k)(ix) of this Annex are being solved.

7.5 A Reporting Bank must ensure that the Board and senior management are actively involved in the risk control process and that sufficient resources are devoted to the credit and counterparty credit risk control function.

7.6 A Reporting Bank must ensure a level of management with sufficient seniority and authority to –

(a) enforce both reduction of positions taken by individual traders and reductions in the Reporting Bank's overall risk exposure;

(b) review the daily reports prepared by the independent risk control unit; and

(c) periodically review the ongoing validation of models and backtesting and decide the course of action that will be taken to address model weaknesses.

Section 8: Operational Requirements

8.1 A Reporting Bank intending to adopt an internal model for estimating EPE arising from CCR for regulatory capital purposes must meet the operational requirements set out in paragraphs 8.2 to 8.33 of this Annex.

Qualifying Standards on CCR Management

8.2 A Reporting Bank must adhere to sound practices for the management of CCR, including those set out in Annex 10A.

8.3 At a minimum, the Reporting Bank must have a control unit[377] which is adequately staffed, independent from the business and trading functions and reports directly to senior management, responsible for all of the following:

(a) the design and implementation of the CCR management framework of the Reporting Bank, including the initial and ongoing validation of the CCR internal model;

(b) the integrity of the input data;

(c) the generation of daily reports and analysis of the output of the Reporting Bank's CCR internal model, including an evaluation of the relationship between measures of E or EAD, whichever is applicable, and credit and trading limits.

8.4 A Reporting Bank using the CCR internal models method must have a collateral management unit which is responsible for all of the following:

(a) the calculation and making of margin calls;

(b) the management of margin call disputes;

(c) the generation of accurate daily reports on levels of independent amounts, initial margins and variation margins;

(d) the control of the integrity of the data used to make margin calls, ensuring that it is consistent and reconciled regularly with all relevant sources of data within the Reporting Bank;

(e) the tracking of the extent of reuse of collateral, both cash and non-cash, and the rights that the Reporting Bank gives away to its respective counterparties for the collateral that it posts;

(f) the tracking of concentration to individual collateral asset classes accepted by the Reporting Bank;

(g) the generation of reports which indicate the categories of collateral assets that are reused, and the terms of such reuse including instrument, credit quality and maturity;

(h) the production and maintenance of appropriate collateral management information that is reported on a regular basis to senior management, including information on the type of collateral (both cash and non-cash) received and posted, the size, aging and cause for margin call disputes, and trends in these figures.

[377] A Reporting Bank should ensure that the work of the control unit responsible for the design and implementation of the CCR management framework is closely integrated into the day-to-day credit risk management process of the Reporting Bank, and its output is an integral part of the process of planning, monitoring and controlling the Reporting Bank's credit and overall risk profile.

8.5 A Reporting Bank must ensure that the senior management allocates sufficient resources to the collateral management unit to ensure an appropriate level of operational performance, as measured by the timeliness and accuracy of outgoing calls and response time to incoming calls. A Reporting Bank must ensure that the senior management adequately staffs the collateral management unit to process calls and disputes in a timely manner, even during a severe market crisis and to enable the Reporting Bank to limit its number of large disputes caused by trade volumes.

8.6 A Reporting Bank adopting the CCR internal models method must ensure that its cash management policies account simultaneously for the liquidity risks of potential incoming margin calls arising from the –

(a) exchanges of variation margin or other margin types[378] under adverse market shocks;

(b) potential incoming calls for the return of excess collateral posted by counterparties; and

(c) calls resulting from a potential downgrade of its own public rating.

8.7 A Reporting Bank adopting the CCR internal models method must ensure that the nature and horizon of collateral reuse is consistent with its liquidity needs and does not jeopardise its ability to post or return collateral in a timely manner.

Use Test

8.8 A Reporting Bank must not design and implement its models exclusively for the purposes of qualifying for the CCR internal models method.

8.9 A Reporting Bank must ensure that the distribution of exposures generated by the model used to calculate effective EPE, based on current market data, and not based on a stress calibration, is closely integrated into the day-to-day CCR management process of the Reporting Bank. The Reporting Bank must ensure that the model's output accordingly plays an essential role in the credit approval, CCR management, internal capital allocation, and corporate governance of the Reporting Bank.[379]

8.10 A Reporting Bank must have a credible track record in the use of models that generate a distribution of exposures to CCR. In this regard, the Reporting Bank must demonstrate that it has been using an internal model to calculate the distributions of exposures upon which the EPE calculation is based that meets, broadly, the minimum requirements set out in this Annex for at least one year before applying to the Authority for approval to use its internal model for estimating EPE.

[378] For example, initial or independent margin.

[379] For example, a Reporting Bank may use the peak exposure from the distributions for counterparty credit limits or EPE for the Reporting Bank's internal allocation of capital.

8.11 A Reporting Bank must –

(a) ensure that the model used to generate the distribution of CCR exposures is part of a CCR management framework that includes the identification, measurement, management, approval and internal reporting of CCR;

(b) ensure that the CCR management framework includes the measurement of usage of credit lines (aggregating CCR exposures with other credit exposures) and economic capital allocation;

(c) measure and manage current exposures in addition to EPE; and

(d) measure current exposure gross and net of collateral held, where appropriate.

8.12 The Authority will normally regard the use of other CCR measures by the Reporting Bank[380] based on the distribution of CCR exposures that are generated by the same model used to compute EPE as having satisfied the use test.

8.13 A Reporting Bank must have the systems capability to estimate EE daily, if necessary, unless it is able to demonstrate to the satisfaction of the Authority that its CCR exposures, warrant less frequent calculation. The Reporting Bank must compute EE along a time profile of forecasting horizons that adequately reflects the time structure of future cash flows and maturity of the contracts and that is consistent with the materiality and composition of the exposures.[381]

8.14 A Reporting Bank must measure, monitor and control its CCR exposures over the life of all contracts in the netting set and not just to the one-year horizon. The Reporting Bank must have procedures in place to identify and control the risks for counterparties where the CCR exposures rises beyond the one-year horizon. In addition, the Reporting Bank must ensure that this forecasted increase in CCR exposures is an input into the economic capital model of the Reporting Bank.

Stress Test

8.15 A Reporting Bank must have in place sound stress testing processes for use in the assessment of capital adequacy. The Reporting Bank must ensure that these stress measures are compared against the measure of EPE and considered by the Reporting Bank as part of its ICAAP as set out in Annex 10A.

8.16 A Reporting Bank must ensure that its stress testing involves identifying possible events or future changes in economic conditions that could have unfavourable effects on its CCR exposures and assessing its ability to withstand such changes.[382]

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380 Examples include peak exposure and potential future exposure.

381 For example, the Reporting Bank may compute EE on a daily basis for the first 10 days, once a week out to one month, once a month out to eighteen months, once a quarter out to 5 years and beyond 5 years in a manner that is consistent with the materiality and composition of the exposure.

382 Examples of possible scenarios that could be used include economic or industry downturns, market place events, and decreased liquidity conditions.

8.17 A Reporting Bank must have a comprehensive stress testing programme for CCR that includes –

(a) complete trade capture and exposure aggregation across all forms of CCR, not just OTC derivative transactions, at the counterparty-specific level in a sufficient time frame to conduct regular stress testing;

(b) exposure stress testing for all counterparties of principal market risk factors, at least monthly[383], in order to proactively identify, and where necessary, reduce outsized concentrations to specific directional sensitivities;

(c) multi-factor stress testing, which may be part of bank-wide stress testing, that addresses scenarios of –

(i) severe economic or market events;

(ii) significant decrease in broad market liquidity; and

(iii) the market impact of liquidating positions of a large financial intermediary;

(d) the application of multifactor stress testing and assessment of material non-directional risks[384] at least quarterly;

(e) the application of stressed market movements which have an impact not only on counterparty exposures, but also on the credit quality of counterparties; and at least quarterly, the conduct of stress testing applying stressed conditions to the joint movement of exposures and counterparty creditworthiness;

(f) the application of exposure stress testing (including single factor, multi-factor and material non-directional risks) and joint stress testing of exposure and creditworthiness at both of the following levels[385]:

(i) counterparty-specific;

(ii) aggregate bank-wide CCR;

(g) for the purposes of evaluating solvency under stress, the application of factor shocks which are severe enough to capture historical extreme market environments and extreme but plausible stressed market conditions, and evaluation of the impact of such shocks on capital resources, capital requirements and earnings; and for the purposes of day-to-day portfolio monitoring, hedging and management of concentrations, the application of scenarios that are of lesser severity but higher probability;

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383 For example, interest rates, foreign exchange, equities, credit spreads, or commodity prices.

384 For example, yield curve exposure or basis risks.

385 A Reporting Bank should also apply such stress testing at the level of groupings of counterparties based on the industry or region in which the counterparties operate.

(h) reverse stress testing to identify extreme but plausible scenarios that could result in significant adverse outcomes; and

(i) stress tests and scenario analyses that are designed to identify risk factors that are positively correlated with counterparty creditworthiness and to address the possibility of severe shocks occurring when relationships between risk factors have changed.

8.18 The Reporting Bank must integrate stress test results into regular reporting to senior management. The Reporting Bank must ensure that the analysis captures –

(a) the largest counterparty-level impacts across the portfolio;

(b) material concentrations within segments of the portfolio[386]; and

(c) relevant portfolio and counterparty specific trends.

8.19 The Reporting Bank must ensure that senior management takes a lead role in the integration of stress testing into the risk management framework and risk culture of the Reporting Bank and ensure that the results are meaningful and proactively used to manage CCR. The Reporting Bank must ensure that the results of stress testing are compared to the risk appetite of the Reporting Bank and elevated for discussion and action when excessive or concentrated risks are present.

Wrong-way Risk

8.20 A Reporting Bank must identify CCR exposures that give rise to a significant degree of general wrong-way risk. A Reporting Bank must monitor general wrong-way risk by product, region, industry and other categories that are germane to the business.

8.21 A Reporting Bank must have procedures in place to identify, monitor and control cases of specific wrong-way risk, beginning at the inception of a trade and continuing through the life of the transaction.

8.22 On a regular basis, a Reporting Bank must provide senior management and the Board with reports that communicate wrong-way risks and the steps that the Reporting Bank is taking to manage that risk.

8.23 A Reporting Bank must not include the instruments for which there exists a legal connection between the counterparty and the underlying issuer, and for which specific wrong-way risk has been identified, in the same netting set as other transactions with the counterparty.

8.24 For single-name credit default swaps where there exists a legal connection between the counterparty and the issuer of the underlying reference asset, and where specific wrong-way risk has been identified, a Reporting Bank must –

[386] For example, within the same industry or region.

(a) calculate E or EAD for such swap counterparty exposure as the full expected loss in the remaining fair value of the underlying reference asset assuming the issuer of the underlying reference asset is in default or liquidation (i.e. assuming that the underlying reference asset has a PD of 100%);

(b) where the Reporting Bank is applying the IRBA in respect of the swap counterparty exposure and a non-zero recovery is assumed for the underlying reference asset, set LGD as 100% for the netting set assigned to the single-name credit default swap.

(c) where the Reporting Bank is applying the SA(CR) in respect of the CCR exposure, treat the swap counterparty exposure as unsecured; and

(d) calculate the capital requirement for the exposure to the underlying reference asset without recognising the effects of CRM of a single-name credit default swap which introduces specific wrong-way risk.

8.25 For transactions other than single-name credit default swaps[387], where there exists a legal connection between the counterparty and the underlying entity, and where specific wrong-way risk has been identified, a Reporting Bank must calculate E or EAD, as the value of the transaction under the assumption of a jump-to-default of the underlying reference asset. In as much this makes use of existing market risk calculations for IRC that already contain a LGD assumption, the Reporting Bank must ensure LGD is set as 100%.

Integrity of Modelling Process

8.26 A Reporting Bank must ensure that it has the internal controls needed to ensure the integrity of its model inputs. At a minimum, the Reporting Bank must comply with the requirements set out in paragraphs 8.27 to 8.32 of this Annex.

8.27 A Reporting Bank must ensure that, in respect of its transaction data, that –

(a) the internal model reflects the transaction terms and specifications, including, but not limited to, transaction notional amounts, maturity, reference assets, margin thresholds, margining arrangements and netting agreements, in a timely, complete and conservative manner;

(b) the transaction terms and specifications are maintained in a secure database that is subject to formal and periodic audit;

(c) the process for recognising netting agreements involves a signoff by legal staff verifying the legal enforceability of netting and input of transaction terms and specifications into the database by an independent unit;

(d) the transmission of transaction terms and specifications data to the model is subject to internal audit; and

[387] For example, equity derivatives, bond options or SFTs referencing a single entity.

(e) there are formal reconciliation processes in place between the internal model and source data systems to verify on an ongoing basis that transaction terms and specifications are being reflected in EPE correctly or at least conservatively.

8.28 A Reporting Bank must, when calibrating its effective EPE model using historical market data –

(a) employ current market data, regardless of whether it is directly observed or implied by other observable prices as at valuation date, to compute current exposures;

(b) estimate model parameters using at least 3 years of either –

(i) historical market data; or

(ii) market implied data; and

(c) update such data quarterly or more frequently if market conditions warrant.

8.29 A Reporting Bank must, when calculating its effective EPE calculation using a stress calibration –

(a) use either –

(i) 3 years of historical market data that includes a period of stress to the credit default spreads of its counterparties; or

(ii) market implied data from a suitable period of stress;

(b) demonstrate, at least quarterly, that the stress period coincides with a period of increased credit default swap spreads or other credit spreads[388] for a representative selection of its counterparties with traded credit spreads;

(c) map each counterparty to specific credit spread data based on region, internal rating and business types for counterparties where there is no adequate credit spread data;

(d) for the exposure model for all counterparties, use either historic or implied data that includes the data from the stressed credit period, and in a manner consistent with the method used by the Reporting Bank for the calibration of the effective EPE model to current data;

(e) evaluate the effectiveness of its stress calibration for effective EPE by creating several benchmark portfolios that are vulnerable to the same main risk factors to which the Reporting Bank is exposed, and calculate the exposure to these benchmark portfolios using –

[388] For example, loan or corporate bond spreads.

(i) current positions at current market prices, and stressed volatilities, stressed correlations and other relevant stressed exposure model inputs from the 3-year stress period; and

(ii) current positions at end of stress period market prices, and stressed volatilities, stressed correlations and other relevant stressed exposure model inputs from the 3-year stress period; and

(f) adjust the stress calibration appropriately if the exposures of these benchmark portfolios deviate substantially.

8.30 For OTC derivative transactions, if a Reporting Bank recognises in its calculations of E or EAD, whichever is applicable, the effect of collateral other than cash of the same currency as the exposure itself, and it is not able to model collateral jointly with the exposure, it must use the standard supervisory haircuts under Annex 7J. For mixed currency exposures, the Reporting Bank must apply the FX haircut to collateral that is provided in a different currency to the exposure.

8.31 If the internal model of the Reporting Bank includes the effect of collateral on changes in the market value of the netting set, the Reporting Bank must model collateral, other than cash of the same currency as the exposure itself, jointly with the exposure in its calculations of E or EAD, whichever is applicable, for SFTs.

8.32 A Reporting Bank must ensure that the EPE model (and modifications made to it) is subject to a validation process that –

(a) is clearly articulated in the policies and procedures of the Reporting Bank;

(b) specifies the kind of testing needed to ensure model integrity;

(c) identifies conditions under which assumptions are violated and may result in an understatement of EPE; and

(d) includes a review of the comprehensiveness of the EPE model[389].

8.33 A Reporting Bank must demonstrate to the satisfaction of the Authority that it meets the minimum criteria for approval to adopt the IMA to calculate market RWA set out in paragraph 8.3.12, but in the context of assessing CCR. In particular, a Reporting Bank must ensure that –

(a) the Reporting Bank's risk management process and system for assessing CCR is conceptually sound and is implemented with integrity;

(b) the Reporting Bank has sufficient numbers of staff skilled in the use of sophisticated models not only in the trading area but also in the risk control, audit, and if necessary, back office areas;

(c) the Reporting Bank's models have a proven track record of reasonable accuracy in measuring CCR; and

[389] For example, whether the EPE model covers all products that have a material contribution to CCR.

(d) the Reporting Bank regularly conducts stress tests in accordance with the requirements set out in paragraphs 8.15 to 8.19 of this Annex.

Annex 7F

CALCULATION OF EAD* USING VAR MODELS FOR SFTs

1.1 A Reporting Bank that uses the IRBA and has received approval from the Authority to use the IMA for calculating market RWA for one or more trading desks may use VaR models to calculate EAD* for SFTs in accordance with paragraph 1.2 of this Annex. A Reporting Bank must notify the Authority at least 3 months prior to the use of such VaR models.

1.2 A Reporting Bank using VaR models must calculate EAD*, using the following formula:

EAD* = max {0, [$(\sum EAD - \sum C)$ + Add-on]}

where –

(a) EAD* = exposure value after credit risk mitigation;

(b) EAD = fair value of all cash and collateral lent, sold with an agreement to repurchase or otherwise posted to the counterparty;

(c) C = fair value of all cash and collateral borrowed, purchased with an agreement to resell or otherwise held by the Reporting Bank; and

(d) Add-on = calculated using VaR models in accordance with paragraph 1.4 of this Annex.

1.3 A Reporting Bank using VaR models must –

(a) ensure that the collateral is revalued on a daily basis;

(b) ensure that the collateral is not a securitisation exposure;

(c) calculate VaR at a 99th percentile to calculate the counterparty credit risk for SFTs, even though the Reporting Bank must compute ES at a 97.5th percentile for the calculation of IMA capital requirements. To avoid doubt, the Reporting Bank need not calculate the default risk charge set out in paragraphs 8.3.213 to 8.3.240 as part of the calculation of VaR;

(d) ensure that the VaR model satisfies the backtesting requirements and the PLA test set out in paragraph 8.3.17 on an ongoing basis; and

(e) use a minimum holding period of 10-business days except in the case of margined repo-style transactions, for which it must use a minimum holding period of 5 business days[390].

[390] A Reporting Bank should adjust the minimum holding period upwards for any financial instrument where the specified holding period would be inappropriate given the liquidity of the instrument concerned.

1.4 For the purposes of calculating the add-on in paragraph 1.2 of this Annex, a Reporting Bank must –

(a) identify a sample of 20 counterparties, on an annual basis, which must include the 10 largest counterparties as determined by the Reporting Bank according to its own exposure measurement approach and 10 others selected at random;

(b) determine the number of exceptions for the sample of 20 counterparties in accordance with paragraph 8.3.154; and

(c) calculate the following:

Add-on = (VaR output) x (VaR multiplier),

where the VaR multiplier is determined by the number of exceptions in sub-paragraph (b) using Table 7F-1[391]**:**

Table 7F-1 – VaR multiplier

Zone	Number of exceptions	Multiplier
Green	0-19	1.00
	20-39	1.00
	40-59	1.00
	60-79	1.00
	80-99	1.00
Yellow	100-119	1.13
	120-139	1.17
	140-159	1.22
	160-179	1.25
	180-199	1.28
Red	200 or more	1.33

[391] When the outcome of the model consistently results in a large number of exceptions, either overall or for one significant counterparty, the Reporting Bank should review the model assumptions and make modifications as appropriate.

Annex 7G

QUALIFYING BILATERAL NETTING AGREEMENTS AND QUALIFYING CROSS-PRODUCT NETTING AGREEMENTS

Section 1: Introduction

1.1 A qualifying bilateral netting agreement is a bilateral netting agreement in respect of which the requirements set out in Sections 3 to 5 of this Annex are complied with.

1.2 A qualifying cross-product netting agreement is a cross-product netting agreement in respect of which the requirements set out in Sections 3 to 6 of this Annex are complied with.

Section 2: Scope of Application

2.1 A qualifying bilateral netting agreement involves a group of transactions between a Reporting Bank and a counterparty containing transactions in only one of the following product categories (collectively "Transactions"):

(a) OTC derivative transaction or long settlement transaction;

(b) repo, reverse repo, securities or commodities lending transaction and securities or commodities borrowing transaction;

(c) margin lending transaction.

2.2 A qualifying cross-product netting agreement involves a group of transactions between a Reporting Bank and a counterparty containing transactions in 2 or more of the product categories set out in paragraph 2.1 of this Annex.

Section 3: Requirements for Netting Agreements

3.1 A Reporting Bank must –

(a) obtain a written independent legal opinion [392] that satisfies the requirements set out in paragraphs 4.1 and 4.2 of this Annex confirming that the netting agreement is valid, effective and enforceable for each of the following countries or jurisdictions:

(i) the country or jurisdiction in which the counterparty is incorporated or established;

[392] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, a Reporting Bank should ensure that the in-house legal counsel is independent of the parties originating transactions covered by the netting agreement.

(ii) if a foreign branch of the Reporting Bank or the counterparty has entered or will be entering into the Transaction, the country or jurisdiction in which the branch of the Reporting Bank or the counterparty, as the case may be, is located;

(iii) the country or jurisdiction whose law governs the netting agreement;

(iv) the country or jurisdiction whose law governs any Transaction in relation to the netting agreement if different from sub-paragraph (a)(iii),

(referred to as "relevant countries or jurisdictions" in this Annex) and which satisfies the requirements set out in Section 4 of this Annex; and

(b) in relation to a netting agreement containing Transactions in paragraph 2.1(b) and (c) of this Annex, ensure that –

(i) the netting agreement –

(A) provides the non-defaulting party the right to terminate and close out in a timely manner all Transactions upon the occurrence of a termination event as defined in the netting agreement, including the default or insolvency of the defaulting party; and

(B) allows for the prompt liquidation or set-off of collateral upon the event of default; and

(ii) where the netting agreement covers Transactions in both the banking book and trading book, –

(A) the Transactions are marked-to-market daily; and

(B) the collateral in the Transactions are recognised as eligible financial collateral in the banking book in accordance with Annex 7H; and

(c) provide to the Authority the information and documents set out in paragraphs 3.2 and 3.3 of this Annex.

3.2 A Reporting Bank must provide to the Authority a summary listing[393] of the source and date of each legal opinion obtained for the purposes of paragraph 3.1(a) of this Annex, stating in each case, whether such legal opinion was commissioned specifically by the Reporting Bank, by the Reporting Bank collectively with any other party, or by some other third party. The Reporting Bank must provide to the Authority the summary listing no later than 15 months from the previous submission.

[393] This can be prepared by either the in-house or external legal counsel of the Reporting Bank. A Reporting Bank should provide the summary listing to the Authority at least once every 12 months.

3.3 The Authority may, where it considers it necessary, require a Reporting Bank to provide copies of, or access to, the netting agreement and the legal opinions obtained for the purposes of paragraph 3.1(a) of this Annex.

Section 4: Legal Opinions obtained for the purposes of paragraph 3.1(a) of this Annex

4.1 The Reporting Bank must ensure that the legal opinion –

(a) is in the form of a memorandum of law and addressed directly to the Reporting Bank or the sponsors of a particular netting agreement or form of netting agreement[394]; or

(b) is the product of a number of parties (including the Reporting Bank) pooling together to seek a collective opinion on a particular netting agreement.

4.2 The Reporting Bank must ensure that the legal opinion, at a minimum[395] –

(a) confirms that in an event of default as defined under the netting agreement, including liquidation, bankruptcy or other similar circumstances of either the counterparty or the Reporting Bank, the courts and administrative authorities[396] of the relevant country or jurisdiction will find that the claims and obligations of the Reporting Bank pursuant to the relevant Transactions would be limited to a net sum calculated in accordance with the netting agreement under the law of the relevant country or jurisdiction;

(b) highlights the material clauses in the netting agreement that provide for the netting of Transactions ("material netting clauses");

(c) confirms that the unenforceability or illegality of any clause (other than a material netting clause) in the netting agreement is unlikely to undermine the material netting clauses referred to in sub-paragraph (a);

(d) states the circumstances under which the netting agreement may be relied upon, including –

(i) the legal form of, or activities conducted by, the counterparty; and

(ii) whether certain counterparties[397] may be subject to special rules relating to insolvency as a result of the legal form of, or activities conducted by, the counterparties;

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394 The Authority would normally consider independent legal opinions commissioned and collated by ISDA as complying with the requirements set out in paragraphs 4.1 to 4.5 of this Annex.

395 This is not intended to be an exhaustive list of all the matters that should be covered in a legal opinion obtained for the purposes of paragraph 3.1(a) of this Annex.

396 This includes a court-appointed administrator and an administrator appointed by a regulatory authority.

397 For example, banks, insurance companies, or local authorities.

(e) states whether the netting or other default provisions in the netting agreement are enforceable or enforceable differently (and if so, the extent of the difference) in a non-liquidation event[398];

(f) states to what extent, if at all, the netting needs to be reflected in the records of the counterparties in order for it to be valid, effective and enforceable;

(g) states whether a court or administrative authority in the country or jurisdiction covered by the legal opinion would uphold the rate chosen for the conversion of foreign currency obligations for the purposes of calculating the close-out amount and whether there are any statutory or other applicable rules that may affect this aspect of the netting agreement;

(h) states whether, under the law of the country or jurisdiction covered by the legal opinion, it is necessary for the enforceability of the netting that all Transactions be regarded as part of a single agreement, and if so, whether there is anything in the close-out methodology which may be held to be inconsistent with the treatment of all Transactions as part of a single agreement and the effect it may have on the netting;

(i) states whether there is any reason to believe that the netting agreement would be unenforceable because of the law of another country or jurisdiction;

(j) states whether there is any preference specified in the netting agreement for automatic rather than optional close-out, and if so, whether such preference would affect the enforceability of the netting agreement;

(k) states whether there are legal problems in exercising any discretion or flexibility provided for in the netting agreement, and if so, whether such problems affect the enforceability of the netting agreement; and

(l) if other clauses are added to a standard form agreement, confirms that such additional clauses do not throw any reasonable doubt or affect the overall validity, effectiveness or enforceability of the netting agreement.

4.3 The Authority is aware that it may not be possible for a Reporting Bank to obtain a legal opinion that provides a definitive view on the validity, effectiveness and enforceability of the netting agreement without certain assumptions or qualifications. The presence *per se* of assumptions and qualifications within the legal opinion will not render the legal opinion unsatisfactory for the purposes of this Notice. However, the Reporting Bank must ensure that assumptions underlying the legal opinion are not unduly restrictive, and are specific, of a factual nature and adequately explained within the legal opinion. Where qualifications are made, the Reporting Bank must ensure that such qualifications are specific and their effect is adequately explained within the legal opinion. A Reporting Bank must examine and assess the assumptions and qualifications in the legal opinion.

[398] For example, administration, judicial management, receivership, voluntary arrangement, or scheme of arrangement.

4.4 If the Reporting Bank determines that –

(a) the absence of any of the information listed in paragraph 4.2 of this Annex; or

(b) any of the assumptions or qualifications in the legal opinion,

gives rise to reasonable doubt as to the validity, effectiveness or enforceability of the netting agreement, the Reporting Bank must not treat the netting agreement as a qualifying bilateral netting agreement or a qualifying cross-product netting agreement, as the case may be.

4.5 In this regard, where there is more than one relevant country or jurisdiction in relation to a netting agreement, the Reporting Bank must not treat the netting agreement as a qualifying bilateral netting agreement or a qualifying cross-product netting agreement, as the case may be, if the Reporting Bank has any reasonable doubt, based on its own evaluation of the legal opinions, as to whether the netting agreement is valid, effective and enforceable in any relevant country or jurisdiction considering the potential for conflicts of laws and whether action may be taken by insolvency officials in other countries or jurisdictions.

4.6 The Reporting Bank must review each legal opinion[399] and obtain updates thereto, either in the form of a fresh legal opinion or a letter from an external firm of lawyers confirming that the opinion on the validity, effectiveness and enforceability of the netting agreement remains unchanged. The Reporting Bank must review each legal opinion no later than 15 months from the previous review. The Reporting Bank must also document the sources of the legal opinions, and the expertise of the persons giving the legal opinions.

4.7 Despite paragraph 3.1(a) of this Annex, where any relevant country or jurisdiction does not recognise netting or recognises netting only in a limited form, the Reporting Bank must report Transactions for which that country or jurisdiction is a relevant country or jurisdiction on a gross basis. The Reporting Bank may report all other Transactions under the same netting agreement on a net basis.

4.8 The Reporting Bank must alert the Authority immediately when it becomes aware of any relevant country or jurisdiction that does not recognise netting or recognises netting only in a limited form (whether as to certain products, or with counterparties of certain legal forms or counterparties performing certain activities).

4.9 Where a Reporting Bank is aware that a supervisory authority of the counterparty of the Reporting Bank (whether the supervisory authority is the home or host supervisor) is not satisfied that a netting agreement is legally valid, effective or enforceable under the law of the country or jurisdiction of that supervisory authority, the Reporting Bank must not treat the netting agreement as a qualifying bilateral netting agreement or a qualifying cross-product netting agreement, as the case may be, despite any legal opinion obtained by the Reporting Bank.

[399] A Reporting Bank should review each legal opinion at least once every 12 months.

Section 5: Policies, Systems and Controls

5.1 A Reporting Bank must have in place a netting policy that sets out, at a minimum, all of the following:

(a) the person responsible for setting and reviewing the policy on netting;

(b) the frequency of review of the netting policy;

(c) the person responsible for approving the application of a netting agreement to any Transaction (including determining whether the netting agreement is covered by an existing legal opinion or whether separate legal opinions are required);

(d) how the Reporting Bank monitors legal developments affecting its netting agreements and the need to obtain additional legal opinions;

(e) what the Reporting Bank is to include in its netting agreements to ensure that its interests, rights and obligations are duly reflected;

(f) the processes for determining and reporting net exposures to individual counterparties.

5.2 The Reporting Bank must also have in place adequate systems and controls to monitor the Transactions, including systems and controls to ensure that **–**

(a) only Transactions entered into by the Reporting Bank with a counterparty that are covered by a netting agreement are netted;

(b) net exposures arising from such Transactions, including net exposures of each branch of the Reporting Bank against each branch of the counterparty, where applicable, are accurately determined and reported;

(c) documentary evidence of the Transactions subject to netting are maintained and appropriately safeguarded and the Reporting Bank is able to produce such documentary evidence, if required by the Authority;

(d) the legal opinions are not superceded by subsequent changes in the laws of the relevant countries or jurisdictions and that all of the following are duly documented and updated no later than 15 months from the previous update[400]:

(i) the types of counterparties and Transactions covered by each netting agreement;

(ii) the relevant countries or jurisdictions for each netting agreement to which the Reporting Bank is a party. The Reporting Bank must note any country or jurisdiction for which any doubt may exist as to the legal validity, effectiveness or enforceability of netting and what action the Reporting Bank has taken as a result;

[400] A Reporting Bank should review each legal opinion at least once every 12 months.

(e) counterparty limits are monitored in terms of such net exposures; and

(f) potential roll-off exposures, which occur upon maturity of short-dated obligations that are netted against longer dated claims, are monitored.

5.3 A Reporting Bank must maintain adequate documentation in relation to meeting the requirements in Sections 3 and 4 of this Annex at all times.

Section 6: Qualifying Cross-Product Netting Agreement

6.1 A Reporting Bank may recognise the effect of a qualifying cross-product netting agreement only if it has received approval to use the CCR internal models method for estimating its pre-settlement counterparty exposures.

6.2 A Reporting Bank must have a legally valid, effective and enforceable cross-product netting agreement in place with its counterparty in respect of which the requirements set out in Sections 3 and 4 of this Annex are complied with.

6.3 A Reporting Bank must also have in place adequate policies, systems and controls to monitor the Transactions under a cross-product netting agreement and must comply with the requirements in Section 5 of this Annex.

6.4 In addition to Sections 3 to 5 of this Annex, a Reporting Bank must ensure the following:

(a) the cross-product netting agreement clearly specifies all included bilateral master agreements and Transactions;

(b) the cross-product netting agreement provides that in the event of default including liquidation, bankruptcy and other similar circumstances of either counterparty or upon the occurrence of a termination event as defined in the cross-product netting agreement, the values of all included Transactions must be combined and reduced to a single payable sum;

(c) the legal opinion referred to in Section 4 of this Annex addresses the validity, effectiveness and enforceability of the entire cross-product netting agreement under its terms and the impact of the cross-product netting agreement on the material provisions of any included bilateral master agreement;

(d) the net sum referred to in paragraph 4.2(a) of this Annex is the net sum of the positive and negative close-out values of any included individual bilateral master agreement and of the positive and negative marked-to-market value of the individual Transactions;

(e) procedures are put in place pursuant to paragraph 5.2(d) of this Annex to verify that any included Transaction is covered by a legal opinion which complies with the requirements set out in Sections 3, 4 and 6 of this Annex;

(f) all included bilateral master agreements and transactions comply with the requirements set out in Sections 3 and 4 of this Annex, and paragraphs 1.1 and 1.2 of Annex 7H.

6.5 A Reporting Bank must manage its CCR by factoring the effects of netting in its measurement of the aggregate credit risk exposure of each counterparty.

6.6 A Reporting Bank must aggregate exposures to each counterparty to arrive at a single exposure across Transactions and to factor this aggregation into its internal credit limit setting and monitoring processes for each counterparty. A Reporting Bank must also incorporate the aggregated exposure for each counterparty into its internal economic capital process.

Annex 7H

CRM

Section 1: General Requirements

1.1 A Reporting Bank may recognise the effects of CRM only if –

(a) all documentation relating to that CRM is binding on all relevant parties and legally enforceable in all relevant countries or jurisdictions;

(b) the Reporting Bank conducts sufficient legal review to verify all the matters mentioned in sub-paragraph (a), including by obtaining a written independent legal opinion, to confirm the matters mentioned in sub-paragraph (a) and to ensure that the documentation mentioned in sub-paragraph (a) does not cease to be enforceable[401] ;

(c) the Reporting Bank complies with the requirements[402] set out in Sections 2 to 8 of this Annex, as applicable;

(d) the Reporting Bank complies with the public disclosure requirements in Part XI; and

(e) where that CRM is a guarantee or credit derivative and the Reporting Bank is using SA(CR), F-IRBA or the supervisory slotting criteria, the CRM is provided by an eligible protection provider.

1.2 A Reporting Bank must keep, for 5 years, and make available at the request of the Authority, a record of the review mentioned in paragraph 1.1(b) of this Annex.

1.3 Where a Reporting Bank uses multiple CRM for a single exposure, the Reporting Bank must sub-divide the exposure into portions covered by each CRM[403] and must calculate the credit risk-weighted exposure amount of each portion separately. A Reporting Bank must apply the same approach when recognising eligible credit protection by a single protection provider where the eligible credit protection has differing maturities.

1.4 If the Authority is not satisfied that paragraph 1.1 of this Annex has been complied with, or with the robustness, suitability or application of a Reporting Bank's CRM

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401 A Reporting Bank should ensure that –
(a) the review covers relevant countries or jurisdictions such as the country or jurisdiction whose law governs the credit protection or collateral agreement and the country or jurisdiction whose law governs the transaction in relation to the credit protection or collateral agreement; and
(b) there should be sufficient written documentary evidence to adequately support the conclusion drawn and rebut any legal challenge.
While a Reporting Bank may use either an in-house or external legal counsel, it should consider whether or not an in-house counsel opinion is appropriate. A Reporting Bank should ensure that an officer of the Reporting Bank who is legally qualified and independent of the parties originating the transaction reviews the legal opinion and confirms that he is satisfied that an adequate review has been completed and that he agrees with the conclusions drawn.

402 A Reporting Bank should comply with the guidelines set out in Sections 2 to 8 of this Annex, as applicable.

403 For example, for an exposure covered by both collateral and a guarantee, the exposure is divided into a portion covered by collateral, and a portion covered by a guarantee.

management policies and procedures, or where residual risks are not adequately controlled, the Authority may take certain actions, including any or all of the following:

(a) requiring the Reporting Bank to make adjustments to the assumptions on holding periods, supervisory haircuts under Annex 7J;

(b) prohibiting the Reporting Bank from fully recognising the effects of CRM, either on the entire credit portfolio or by specific asset classes or product lines;

(c) requiring the Reporting Bank to maintain additional capital.

1.5 A Reporting Bank must not do any of the following:

(a) double count the effects of CRM;

(b) recognise the effects of CRM if such CRM is already reflected in the issue-specific external credit assessment of the exposure;

(c) use a principal-only external credit assessment (i.e. an external credit assessment that does not reflect the entire amount of credit risk exposure that the Reporting Bank has with regard to all payments owed to it) for the recognition of the effects of CRM.

1.6 A Reporting Bank must not recognise the effects of CRM if the credit quality of the counterparty has a material positive correlation with the CRM technique used or with the resulting residual risks set out in paragraph 8.1 of this Annex[404].

Section 2: Recognition of Collateral

Types of Collateral

2.1 A Reporting Bank must ensure that the relevant requirements in paragraphs 2.13 to 2.25, and Section 3 of this Annex are complied with before it recognises the effects of CRM of the types of collateral set out in paragraphs 2.2 to 2.12 of this Annex.

2.2 For a Reporting Bank using the SA(CR) and the FC(SA), eligible financial collateral excludes any CET1 capital instrument, AT1 capital instrument or Tier 2 capital instrument issued by the Reporting Bank which is held by the Reporting Bank as collateral, and comprises –

(a) cash and certificates of deposit or other instruments similar to certificates of deposit issued by the Reporting Bank, but excluding structured deposits as defined under regulation 2 of the Financial Advisers (Structured Deposits – Prescribed Investment Product and Exemption) Regulations;

(b) gold;

[404] For example, securities issued by the counterparty or any related group entity must not qualify as eligible financial collateral.

(c) any debt security, which includes any structured note –

(i) with an original maturity of one year or less that has a credit quality grade of "III" or better as set out in Table 7M-2, where the credit quality grade is determined in accordance with paragraph 7.3.30 and based on an issue-specific external credit assessment of the debt security or an issuer external credit assessment in accordance with paragraph 2.3 of this Annex;

(ii) with an original maturity of more than one year that has a credit quality grade of "4" or better as set out in Table 7M-1 if it is issued by a central government or central bank, where the credit quality grade is determined in accordance with paragraph 7.3.30 and based on an issue-specific external credit assessment of the debt security or an issuer external credit assessment (where paragraph 2.3 of this Annex applies); or

(iii) with an original maturity of more than one year that has a credit quality grade of "3" or better as set out in Table 7M-1 if it is issued by any entity other than a central government or central bank, where the credit quality grade is determined based on an issue-specific external credit assessment of the debt security and in accordance with paragraph 7.3.30;

(d) any equity security (including convertible bonds) that is included in a main index; and

(e) any unit in a collective investment scheme where –

(i) a price for the units is publicly quoted daily; and

(ii) the collective investment scheme is limited to investing in the instruments listed in this paragraph.

2.3 For the purposes of paragraph 2.2(c) of this Annex, when determining the credit quality grade of a debt security issued by a central government, central bank or PSE which is being risk-weighted under paragraph 7.3.48 and Table 7-3, where no issue-specific external credit assessment is available, the Reporting Bank may –

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(a) rely on the issuer external credit assessment to determine the credit quality grade of the debt security; and

(b) where no issuer external credit assessment is available for a central bank, rely on the issuer external credit assessment of the central government of the country or jurisdiction of the central bank, to determine the credit quality grade of the debt security issued by the central bank.

2.4 To avoid doubt, a debt security issued by a PSE which is risk-weighted at 0% or 20% under the SA(CR) pursuant to paragraph 7.3.48 and Table 7-3 is an eligible

financial collateral pursuant to paragraph 2.2(c)(iii) of this Annex if such a debt security has a credit quality grade of "3" or better.

2.5 For the purposes of paragraph 2.2(e) of this Annex, the use or potential use by a collective investment scheme of derivative instruments solely to hedge investments in instruments listed in paragraph 2.2 of this Annex does not prevent units in that collective investment scheme from being recognised by the Reporting Bank as eligible financial collateral under paragraph 2.2(e) of this Annex.

2.6 Resecuritisations, irrespective of any credit ratings, are not eligible financial collateral. This prohibition applies whether the Reporting Bank is using the supervisory haircuts method, the repo VaR method or the internal model method.

2.7 For the purposes of paragraph 2.2(a) of this Annex, where cash-funded credit-linked notes issued by the Reporting Bank against exposures in the banking book fulfil the criteria for eligible credit derivatives, except for the criteria in paragraph 1.1(e) of this Annex for the CRM to be provided by an eligible protection provider in the case where the Reporting Bank is using the SA(CR), the F-IRBA or the supervisory slotting criteria, the Reporting Bank must treat such instruments as cash collateralised transactions.

2.8 For a Reporting Bank using the SA(CR) and the FC(CA), or the F-IRBA, eligible financial collateral excludes any CET1 capital instrument, AT1 capital instrument or Tier 2 capital instrument issued by the Reporting Bank which is held by the Reporting Bank as collateral, and comprises –

(a) any instrument listed in paragraph 2.2 of this Annex;

(b) any equity security (including convertible bonds) that is listed on any approved exchange or overseas exchange; and

(c) any unit in a collective investment scheme where a price for the units is publicly quoted daily and the collective investment scheme is limited to investing in instruments listed in paragraph 2.2 of this Annex and in this paragraph.

2.9 For the purposes of paragraph 2.8(c) of this Annex, the use or potential use by a collective investment scheme of derivative instruments solely to hedge investments in instruments listed in paragraph 2.8 of this Annex does not prevent units in that collective investment scheme from being recognised by the Reporting Bank as eligible financial collateral under paragraph 2.8(c) of this Annex.

2.10 Despite paragraphs 2.2 and 2.8 of this Annex, in the case of any pre-settlement counterparty exposures arising from a repo-style transaction which is included in the trading book, eligible financial collateral includes all instruments which a Reporting Bank may include in the trading book (except resecuritisation exposures).

2.11 For a Reporting Bank adopting the F-IRBA, eligible IRBA collateral comprises –

(a) eligible CRE and eligible RRE;

(b) eligible receivables; and

(c) eligible physical collateral comprising –

(i) all industrial properties in Singapore;

(ii) land in Singapore;

(iii) land in another country or jurisdiction where the bank regulatory agency has recognised such land as eligible physical collateral;

(iv) ships;

(v) aircraft;

(vi) commodities; and

(vii) such other collateral which is approved by the Authority.

2.12 For the purposes of paragraph 2.11 of this Annex, "commodity" means –

(a) any produce, item, good or article; or

(b) any index, right or interest in any produce, item, good or article.

Requirements for Recognition of Collateral

2.13 A Reporting Bank must ensure that all of the following requirements are complied with, before it recognises the effects of CRM of any collateral and on an ongoing basis for as long as it continues, to recognise the effects of CRM of any collateral:

(a) the legal mechanism by which collateral is pledged, assigned or transferred must confer on the Reporting Bank the right to liquidate or take legal possession of the collateral, in a timely manner, in the event of the default, insolvency or bankruptcy (or one or more otherwise-defined credit events set out in the transaction documentation) of the counterparty (and, where applicable, of the custodian holding the collateral);

(b) the Reporting Bank has taken all steps necessary to fulfil those requirements under the law applicable to the Reporting Bank's interest in the collateral for obtaining and maintaining an enforceable security interest[405] or for exercising a right to net or set off in relation to title transfer collateral;

(c) the Reporting Bank has implemented clear and robust procedures for the timely liquidation of collateral to ensure that any legal conditions required for declaring default of counterparty and liquidating the collateral are observed, and that the collateral can be liquidated promptly;

[405] For example, by registering it with a registrar.

(d) where the collateral is held by a custodian, the Reporting Bank has taken reasonable steps to ensure that the custodian segregates the collateral from its own assets.

2.14 In addition to the requirements in paragraph 2.13 of this Annex, a Reporting Bank must ensure that all of the following requirements are complied with, before it recognises CRE or RRE held as collateral as eligible CRE or eligible RRE and on an ongoing basis for as long as it continues, to recognise CRE or RRE held as collateral as eligible CRE or eligible RRE:

(a) the repayment of the facility is not materially dependent on any cash flow generated by the CRE or RRE, but rather on the underlying capacity of the obligor to repay the facility from other sources;

(b) the value of the CRE or RRE that is pledged is not materially dependent on the performance of the obligor;

(c) any claim on collateral is properly filed on a timely basis;

(d) collateral interests reflect a perfected charge wherein all legal requirements for establishing the claim are fulfilled;

(e) the collateral agreement and the process for enforcement of the agreement allow the Reporting Bank to realise the value of such collateral within a reasonable timeframe;

(f) the CRE or RRE is valued at or less than the fair value at which the property could be sold under a private contract between a willing seller and an arm's-length buyer on the date of valuation;

(g) the Reporting Bank obtains a formal valuation by an independent accredited valuer at origination and revalues the CRE or RRE at least on an annual basis thereafter;

(h) where the Reporting Bank has a junior charge over the CRE or RRE, the conditions under paragraph 7.4.77 are satisfied;

(i) the Reporting Bank clearly documents the types of CRE or RRE accepted by the Reporting Bank as collateral and lending policies[406] when such collateral may be taken;

(j) the Reporting Bank ensures that the CRE or RRE is adequately insured against damage or deterioration;

(k) the Reporting Bank monitors the extent of any permissible prior claims[407] on the CRE or RRE on an ongoing basis;

[406] For example, advance rates.
[407] For example, tax.

(l) the Reporting Bank appropriately monitors the risk of environmental liability arising in respect of the CRE or RRE[408].

2.15 For the purposes of paragraph 2.14 of this Annex, a Reporting Bank must not recognise any IPRE that is part of the SL asset sub-class as eligible CRE or eligible RRE.

2.16 The requirement in paragraph 2.14(b) of this Annex does not prevent the Reporting Bank from recognising CRE or RRE held as collateral as eligible CRE or eligible RRE, where purely macro-economic factors affect both the value of the CRE or RRE held as collateral and the performance of the obligor.

2.17 For the purposes of paragraph 2.14(g) of this Annex, the Reporting Bank must –

(a) have in place policies addressing matters including the frequency of revaluation, the procedures for revaluation under various market circumstances, and the revaluation methods and approaches to be used in each circumstance which may include statistical methods[409] or a formal revaluation by an independent accredited valuer[410]; and

(b) obtain a formal revaluation by an independent accredited valuer on the valuation of the CRE or RRE if the Reporting Bank assesses that the value of the CRE or RRE may have declined materially relative to general market prices or when a credit event[411] occurs.

2.18 In addition to the requirements in paragraph 2.13 of this Annex, a Reporting Bank must ensure that all of the following requirements are complied with, before it recognises any financial receivables as eligible receivables and on an ongoing basis for as long as it continues, to recognise any financial receivables as eligible receivables:

(a) the financial receivables have an original maturity of one year or less;

(b) the repayment occurs through the commercial or financial flows related to the underlying assets of the obligor which include both self-liquidating debt arising from the sale of goods or services linked to a commercial transaction and general amounts owed by buyers, suppliers, renters, national and local governmental authorities, or other non-affiliated parties not related to the sale of goods or services linked to a commercial transaction, but excludes receivables associated with securitisation, sub-participations or credit derivatives;

(c) the legal mechanism by which collateral is given is robust and ensures that the Reporting Bank has clear rights over the proceeds from the collateral;

(d) framework, policies and procedures to ensure that the Reporting Bank has a perfected first charge over the collateral is in place;

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408 For example, the presence of toxic material on a property.

409 For example, reference to property indices and sampling.

410 A Reporting Bank should regularly backtest and benchmark statistical methods, where possible, so that the results obtained are robust. A Reporting Bank may also use statistical methods to identify real estate that may have declined in value and that may need revaluation. In general, a Reporting Bank should undertake a formal revaluation regularly.

411 For example, default.

(e) collateral arrangements are properly documented, and clear and robust procedures for the timely collection of collateral proceeds[412] are in place[413];

(f) a sound process for determining the credit risk in the receivables is in place[414]. Where the Reporting Bank relies on the obligor to ascertain the credit risk of the obligor's customers in respect of the receivables, it must review the obligor's credit policy to ascertain its soundness and credibility;

(g) the margin between the amount of the exposure and the value of the receivables reflects all appropriate factors, including the cost of collection, concentration within the receivables pool pledged by an individual obligor, and potential concentration risk within the total exposures of the Reporting Bank;

(h) a continuous monitoring process[415] that is appropriate for the specific exposures (either immediate or contingent) attributable to the collateral is in place;

(i) the receivables pledged by an obligor are diversified and are not unduly correlated[416] with the obligor;

(j) the receivables are not from any of the following:

(i) related corporations of the obligor;

(ii) associates of the obligor;

(iii) officers of the obligor;

(iv) employees of the obligor;

(v) entities which the obligor is an associate of.

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412 A Reporting Bank should have procedures in place to ensure that all legal conditions required for declaring the default of the obligor and timely collection of collateral are observed. In the event of the financial distress or default of the obligor, the Reporting Bank should have legal authority to sell or assign the receivables to other parties without the consent of the receivables' obligors.

413 A Reporting Bank should have a documented process for collecting receivable payments in distressed situations. A Reporting Bank should ensure that the requisite facilities for collection are in place, even when the Reporting Bank normally looks to the obligor for collections.

414 Such a process should include analyses of the obligor's business and industry (e.g. effects of the business cycle) and the types of customers with whom the obligor does business.

415 This process may include, as appropriate and relevant, ageing reports, control of trade documents, borrowing base certificates, frequent audits of collateral, confirmation of accounts, control of the proceeds of accounts paid, analyses of dilution and regular financial analysis of both the obligor and the issuers of the receivables, especially in the case when a small number of large-sized receivables are taken as collateral. A Reporting Bank should monitor whether its overall concentration limits are being observed. A Reporting Bank should also review on a regular basis the compliance with loan covenants, environmental restrictions and other legal requirements.

416 Where the correlation is high, such as where some issuers of the receivables are reliant on the obligor for their viability or the obligor and the issuers belong to a common industry, the attendant risks should be taken into account in the setting of margins for the collateral pool as a whole.

2.19 In addition to the requirements in paragraph 2.13, paragraph 2.14(c) to (g) and paragraph 2.14(i) to (l) of this Annex, a Reporting Bank must ensure that all of the following requirements are complied with, before it recognises any physical collateral as eligible physical collateral and on an ongoing basis for as long as it continues, to recognise any physical collateral as eligible physical collateral:

(a) the Reporting Bank has first charge over the collateral, except in the case of an industrial property where the conditions under paragraph 7.4.77 are satisfied and the Reporting Bank has a junior charge over the industrial property;

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(b) the facility agreement includes detailed descriptions of the collateral and provides the Reporting Bank with the right to examine and revalue the collateral whenever it is deemed necessary by the Reporting Bank;

(c) the types of physical collateral accepted by the Reporting Bank and policies and practices in respect of the appropriate amount of each type of collateral relative to the exposure amount is clearly documented in its internal credit policies and procedures, and available for examination and audit review;

(d) the credit policies of a Reporting Bank with regard to the transaction structure addresses appropriate collateral requirements relative to the exposure amount, the ability to liquidate the collateral readily, the ability to establish objectively a price or market value, the frequency with which the value can readily be obtained (including a professional appraisal or valuation), and the volatility of the value of the collateral;

(e) the periodic revaluation process involves a review of "fashion-sensitive" collateral to ensure that valuations are appropriately adjusted downward for fashion or model-year obsolescence as well as physical obsolescence or deterioration, and includes physical inspection of the collateral where inventories[417] and equipment are involved;

(f) the Reporting Bank is able to demonstrate to the satisfaction of the Authority that there exists liquid markets for the disposal of the collateral in an expeditious and economically efficient manner;

(g) the Reporting Bank is able to demonstrate to the satisfaction of the Authority that there exists publicly available market prices for the collateral which are generally relied upon by the market, and that the amount received by the Reporting Bank when the collateral is realised does not deviate significantly from these market prices;

(h) steps are taken to adequately insure the collateral against damage or deterioration.

[417] For example, raw materials, work-in-progress, finished goods, or dealers' inventories of automobiles.

2.20 For the purposes of paragraph 2.19 of this Annex, a Reporting Bank must read references to CRE or RRE in paragraph 2.14(c) to (g) and paragraph 2.14(i) to (l) of this Annex as being applicable to physical collateral.

2.21 In cases where –

(a) a Reporting Bank has a registered claim over an obligor's assets provided by a General Security Agreement or other form of floating charge; and

(b) the registered claim mentioned in sub-paragraph (a) includes both assets that are not eligible as collateral under the F-IRBA, and assets that are eligible under the F-IRBA,

a Reporting Bank may recognise the assets that are eligible under the F-IRBA, provided that the claims meet the requirements set out in paragraphs 2.13 to 2.20 of this Annex.

2.22 The Reporting Bank must perform a reassessment of the condition set out in paragraph 2.19(f) of this Annex periodically and when information indicates material changes in the market.

2.23 For the purposes of paragraph 2.19(h) of this Annex, where a Reporting Bank has recognised ships as eligible physical collateral, the Reporting Bank must ensure that the insurance taken out on such assets is assigned to the Reporting Bank. Where a Reporting Bank has recognised aircrafts as eligible physical collateral, the Reporting Bank must ensure that the insurance taken out on such assets names the Reporting Bank as the sole loss payee.

2.24 A Reporting Bank must treat the CRM of any leased asset that does not expose the Reporting Bank to residual value risk, in the same manner as exposures collaterialised by the same type of collateral and comply with the minimum requirements for the collateral type. In addition to the requirements in paragraph 2.13 of this Annex, a Reporting Bank must ensure that all of the following requirements are complied with, before it recognises the effects of CRM of any leased asset, where such a leased asset has been pledged as collateral in respect of lease payments due to the Reporting Bank as a lessor, and on an ongoing basis for as long as it continues, to recognise the effect of CRM of any such leased asset:

(a) the requirements in paragraph 2.14 or 2.19 of this Annex, as the case may be, are complied with;

(b) the Reporting Bank exercises robust risk management with respect to the location of the leased asset, the use to which it is put, its age, and planned obsolescence;

(c) there is a robust legal framework to establish the legal ownership of the leased asset by the Reporting Bank and its ability to exercise its rights as owner in a timely fashion;

(d) the difference between the rate of depreciation of the leased asset and the rate of amortisation of the lease payments is not so large as to overstate the effects of CRM attributed to the leased assets.

2.25 In addition to the requirements in paragraph 2.13 of this Annex, a Reporting Bank must ensure that all of the following requirements are complied with, before it recognises the effects of CRM of any collateral for OTC derivative transactions and SFTs and on an ongoing basis for as long as it continues, to recognise the effects of CRM of any collateral for OTC derivative transactions and SFTs:

(a) a Reporting Bank must ensure that sufficient resources are devoted to the orderly operation of margin agreements with counterparties in OTC derivative transactions and SFTs, as measured by the timeliness and accuracy of its outgoing calls and response time to incoming calls;

(b) a Reporting Bank must have collateral management policies in place to control, monitor and report –

(i) the risk to which margin agreements expose them including the volatility and liquidity of the securities exchanged as collateral;

(ii) the concentration risk to particular types of collateral;

(iii) the reuse of collateral (both cash and non-cash), including the potential liquidity shortfalls resulting from the reuse of collateral received from counterparties; and

(iv) the surrender of rights on collateral posted to counterparties.

Section 3: Recognition of collateral for certain non-centrally cleared SFTs

Scope

3.1 Subject to paragraph 3.4 of this Annex, the Reporting Bank must apply the haircut floors in this Section to all of the following transactions:

(a) non-centrally cleared SFTs in which a Reporting Bank provides financing (i.e. lends cash) against collateral other than securities issued by –

(i) the counterparties referred to in paragraph 7.3.1(b);

(ii) a PSE, where such exposure would qualify for a 0% or 20% risk weight pursuant to paragraph 7.3.48 and Table 7-3 under the SA(CR); or

(iii) a qualifying MDB,

or commodities, to entities which are not supervised by a regulator that imposes prudential requirements consistent with international norms;

(b) collateral upgrade transactions with entities which are not supervised by a regulator that imposes prudential requirements consistent with international norms.

3.2 For the purposes of paragraph 3.1(a) and (b) of this Annex, "entity" excludes individuals.

3.3 For the purposes of paragraph 3.1(b) of this Annex, a collateral upgrade transaction is one where a Reporting Bank lends a security to its counterparty and the counterparty pledges a lower quality security as collateral, thus allowing the counterparty to exchange a lower quality security for a higher quality security. A lower quality security refers to one with a higher haircut floor under Table 7H-1 than the security being compared to.

3.4 A Reporting Bank must not apply the haircut floors in this section to SFTs where –

(a) the counterparty is a central bank;

(b) in the case of an SFT referred to in paragraph 3.1(a) of this Annex –

(i) the counterparty lends the security to a Reporting Bank at a specific maturity, and reinvests or employs the cash received at the same or a shorter maturity, therefore not giving rise to material maturity or liquidity mismatch;

(ii) the counterparty lends the security to a Reporting Bank at call or at a specific maturity, reinvests the cash received into a reinvestment fund or account subject to regulations or regulatory guidance meeting the minimum standards for reinvestment of cash collateral by securites lenders set out in Section 3.1 of "Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos" issued by FSB on 29 August 2013[418]; or

(c) in the case of a collateral upgrade transaction referred to in paragraph 3.1(b) of this Annex, the counterparty is unable to re-use, or provide representations to a Reporting Bank that it does not and will not re-use, the security it has received as collateral against the securities lent to the Reporting Bank.

3.5 For the purposes of paragraph 3.4(b)(ii) of this Annex, the Reporting Bank may rely on representations by their counterparties that their reinvestment of the cash received meets the minimum standards.

3.6 For the purposes of this Section, "in-scope SFTs" refers to SFTs specified in paragraph 3.1 of this Annex, excluding SFTs set out in paragraph 3.4 of this Annex.

Haircut floors

3.7 A Reporting Bank must apply the following haircut floors to in-scope SFTs:

[418] "Strengthening oversight and regulation of shadow banking, Policy framework for addressing shadow banking risks in securities lending and repos" issued by FSB on 29 August 2013, which is accessible at www.fsb.org/wp-content/uploads/r_130829b.pdf.

Table 7H-1 – Haircut floors

Eligible financial collateral	Haircut level	
	Corporate and other issuers	Securitised products
Any debt security with a residual maturity of ≤ 1 year, or any floating rate note	0.005	0.01
Any debt security with a residual maturity of > 1 year or ≤ 5 years	0.015	0.04
Any debt security with a residual maturity of > 5 years or ≤ 10 years	0.03	0.06
Any debt security with a residual maturity of > 10 years	0.04	0.07
Any equity in a main index	0.06	
Any other eligible financial collateral	0.1	

Single in-scope SFTs

3.8 For a single in-scope SFT which is not included in a netting set, a Reporting Bank must –

(a) determine the haircut, *H*, and the haircut floor, *f*, of the SFT transaction in accordance with paragraph 3.9 of this Annex;

(b) compare the haircut of the transaction, *H*, with the haircut floor of the transaction, *f*; and

(c) where *H* is smaller than *f*, treat the in-scope SFT as an unsecured loan to the counterparty (i.e. the Reporting Bank must not recognise any effects of CRM for the transaction).

3.9 For the purposes of paragraph 3.8(a) of this Annex, a Reporting Bank must determine the haircut, *H*, and the haircut floor, *f*, of the SFT transaction as follows:

(a) in the case of a single SFT where cash is lent by the Reporting Bank for collateral[419] –

(i) *H* is the fair value of the collateral received by the Reporting Bank in excess of the cash lent, expressed as a percentage of the amount of cash lent; and

(ii) *f* is the haircut floor applicable to the collateral received by the Reporting Bank as set out in Table 7H-1;

[419] For example, in the case of an in-scope SFT, where the Reporting Bank lends $100 cash against $101 of a corporate debt security with a 12-year maturity, H is (101/100)-1 = 0.01, and f is 0.04. Since H<f, the Reporting Bank must treat the in-scope SFT as an unsecured loan of $100 cash to the counterparty.

(b) in the case of a single collateral-for-collateral SFT, where a Reporting Bank lends collateral A and receives collateral B[420] –

(i) *H* is the fair value of the collateral received by the Reporting Bank in excess of the fair value of the collateral lent; and

(ii) *f* is computed using the following formula:

$$f = \left[\left(\frac{1}{1+f_A}\right)\Big/\left(\frac{1}{1+f_B}\right)\right] - 1 = \frac{1+f_B}{1+f_A} - 1$$

where –

(A) f_A refers to the haircut floor applicable to collateral A as set out in Table 7H-1; and

(B) f_B refers to the haircut floor applicable to collateral B as set out in Table 7H-1.

For the purposes of this paragraph, collateral that is called by either a Reporting Bank or its counterparty may be treated as collateral received from the moment that it is called, i.e. the treatment is independent of the settlement period.

Netting set of SFTs[421]

3.10 For a netting set of SFTs, which can comprise SFTs which are in-scope SFTs or otherwise, a Reporting Bank must –

(a) determine the haircut of the portfolio, $H_{portfolio}$, and the haircut floor of the portfolio, $f_{portfolio}$, in accordance with paragraph 3.11 of this Annex;

(b) compare the haircut of the portfolio, $H_{portfolio}$, with the haircut floor of the portfolio, $f_{portfolio}$; and

(c) where $H_{portfolio} < f_{portfolio}$ for a netting set of SFTs[422], treat the in-scope SFTs within the netting set as unsecured loans to the counterparty in accordance with paragraph 3.12 of this Annex.

3.11 For the purposes of paragraph 3.10(a) of this Annex, a Reporting Bank must determine the haircut of the portfolio, $H_{portfolio}$, and the haircut floor of the portfolio, $f_{portfolio}$, as follows:

[420] For example, in the case of an in-scope SFT where the Reporting Bank lends $102 of a corporate debt security with a 10-year maturity, against $104 of a main index equity, H is (104/102)-1 = 0.0196, and f is (1.06/1.03)-1 = 0.0291. Since H<f, the Reporting Bank must treat the in-scope SFT as an unsecured loan of $102 in the corporate debt security to the counterparty.

[421] An example on how the SFT haircut floors applies to a hypothetical portfolio is available in Annex 7K.

[422] The portfolio does not breach the floor where $H_{portfolio} \geq f_{portfolio}$.

(a) $H_{portfolio}$ is computed using the following formula:

$$H_{portfolio} = \frac{\sum C_t - \sum E_s}{\sum E_s}$$

(b) $f_{portfolio}$ is computed using the following formula, which calculates a weighted average floor of the portfolio:

$$f_{portfolio} = \left[\frac{\sum_s \frac{E_s}{1+f_s}}{\sum_s E_s} \Big/ \frac{\sum_t \frac{C_t}{1+f_t}}{\sum_t C_t} \right] - 1$$

where –

(i) E_s refers to the fair value of the net position in each security (or cash) that is net lent by the Reporting Bank;

(ii) C_t refers to the fair value of the net position in each security that is net borrowed by the Reporting Bank; and

(iii) f_s and f_t refers to the haircut floors applicable to securities that are net lent and net borrowed by the Reporting Bank, respectively, as set out in Table 7H-1.

For the purposes of this paragraph, collateral that is called by either a Reporting Bank or its counterparty may be treated as collateral received from the moment that it is called, i.e. the treatment is independent of the settlement period.

3.12 For the purposes of paragraph 3.10(c) of this Annex, a Reporting Bank must –

(a) identify the securities within the netting set for which the Reporting Bank is a net receiver, and which is listed in Table 7H-1; and

(b) treat every in-scope SFT, for which the Reporting Bank is a receiver of one of those securities identified in sub-paragraph (a), as an unsecured loan (i.e. the Reporting Bank must not recognise any effects of CRM for the transaction).

Section 4: Recognition of Guarantees

4.1 A Reporting Bank must ensure that all of the following requirements are complied with, before it recognises the effects of CRM of a guarantee and on an ongoing basis for as long as it continues, to recognise the effects of CRM of a guarantee:

(a) the guarantee is an explicitly documented obligation assumed by the guarantor;

(b) the guarantee represents a direct claim on the guarantor;

(c) explicitly referenced to specific exposure or pool of exposures so that the extent of the credit protection cover is clearly defined and incontrovertible;

(d) other than in the event of non-payment by the Reporting Bank of money due in respect of the guarantee, there is an irrevocable obligation on the part of the guarantor to pay out a pre-determined amount upon the occurrence of a credit event, as defined under the guarantee;

(e) the guarantee does not contain any clause that –

(i) would allow the guarantor to unilaterally cancel the guarantee, unless the guarantee includes a cancellation clause where it is provided that any obligation incurred or transaction entered into prior to any cancellation, unilateral or otherwise, continues to be guaranteed by the guarantor;

(ii) would increase the effective cost of the guarantee as a result of deteriorating credit quality of the underlying exposure;

(iii) depends on factors outside the direct control of the Reporting Bank for its fulfilment, which could prevent the guarantor from being obliged to pay out in a timely manner in the event that the underlying obligor fails to make any payment due; or

(iv) could allow the maturity of the guarantee agreed ex-ante to be reduced ex-post by the guarantor;

(f) subject to paragraph 4.2 of this Annex, the Reporting Bank is able in a timely manner to pursue the guarantor for any monies outstanding under the documentation governing the transaction on the default of, or non-payment by, the underlying obligor[423], and has the right to receive such payments from the guarantor without first having to take legal actions to pursue the obligor for payment;

(g) the guarantee covers all types of payments that the underlying obligor is expected to make under the documentation governing the transaction[424]. Where a guarantee covers payment of principal only, a Reporting Bank must treat interests and other uncovered payments as an unsecured amount in accordance with paragraph 1.2 of Annex 7I .

4.2 For the purposes of paragraph 4.1(f) of this Annex, for exposures to protection providers under the A-IRBA or IRBA for retail asset class, a Reporting Bank may recognise the effects of CRM of a guarantee that only covers the loss remaining after the Reporting Bank has first pursued the original obligor for payment and has completed the workout process.

[423] The guarantee payments may be in the form of the guarantor making a lump sum payment of all monies to the Reporting Bank or the guarantor assuming the future payment obligations of the counterparty covered by the guarantee, as specified in the relevant documentation governing the guarantee.

[424] For example, notional amounts, or margin payments.

4.3 Where a Reporting Bank has an exposure that is protected by a guarantee which is counter-guaranteed by a central government or central bank, a Reporting Bank may treat the exposure as being protected by a direct guarantee from the central government or central bank in question, provided the following requirements are complied with:

(a) the counter-guarantee covers all credit risk elements of the exposure;

(b) both the original guarantee and the counter-guarantee comply with all the requirements for guarantees set out in this Annex, except that the counter-guarantee need not be direct and explicit with respect to the original exposure;

(c) the Reporting Bank demonstrates to the satisfaction of the Authority that the cover is robust and that there is no evidence to suggest that the coverage of the counter-guarantee is less than equivalent in effect to that of a direct guarantee from the central government or central bank in question.

Section 5: Recognition of Credit Derivatives

Types of Credit Derivatives

5.1 Subject to paragraph 5.2 of this Annex, a Reporting Bank may recognise the effects of CRM of only the following types of credit derivatives that provide credit protection equivalent to guarantees:

(a) credit default swaps;

(b) total return swaps ;

(c) instruments that are composed of, or are similar in economic substance, to one or more of the credit derivatives in sub-paragraphs (a) and (b);

(d) where a Reporting Bank is using the A-IRBA to calculate the credit risk-weighted exposure, first-to-default credit derivatives.

5.2 Despite paragraph 5.1 of this Annex, a Reporting Bank must not recognise the effects of CRM for any of the following types of credit derivatives:

(a) a first-to-default credit derivative where a Reporting Bank is using the SA(CR), F-IRBA or the supervisory slotting criteria to calculate the credit risk-weighted exposure;

(b) a nth-to-default credit derivative;

(c) a total return swap, if the Reporting Bank records the net payments received on the total return swap as net income, but does not record offsetting deterioration in the value of the underlying asset that is protected (either through reductions in its marked-to-market value or by an addition to reserves).

Requirements for Recognition of Credit Derivatives

5.3 A Reporting Bank must ensure that all of the following requirements are complied with, before it recognises the effects of CRM of any credit derivative and on an ongoing basis for as long as it continues, to recognise the effects of CRM of any credit derivative:

(a) the terms and conditions of any credit protection obtained via a credit derivative are set out in writing by both the Reporting Bank and the provider of credit protection;

(b) the credit derivative represents a direct claim on the provider of credit protection;

(c) the credit derivative is explicitly referenced to a specific exposure or pool of exposures so that the extent of the credit protection cover is clearly defined and incontrovertible;

(d) other than in the event of non-payment by the Reporting Bank of money due in respect of the credit derivative, there is an irrevocable obligation on the part of the provider of the credit protection to pay out a pre-determined amount upon the occurrence of a credit event, as defined under the credit derivative contract;

(e) the credit derivative contract does not contain any clause that –

(i) would allow the provider of credit protection to unilaterally cancel the credit protection cover;

(ii) would increase the effective cost of the credit protection cover as a result of deteriorating credit quality of the underlying exposure;

(iii) depends on factors outside the direct control of the Reporting Bank for its fulfilment, which could prevent the provider of credit protection from being obliged to pay out in a timely manner in the event that the underlying obligor fails to make any payment due[425]; or

(iv) could allow the maturity of the credit protection agreed ex-ante to be reduced ex-post by the provider of credit protection;

(f) the credit events specified by the contracting parties at a minimum cover –

(i) failure to pay the amounts due under terms of the underlying exposure that are in effect at the time of such failure (with a grace period, if any, that is closely in line with the grace period in the underlying exposure);

[425] This does not preclude an obligation by the buyer of credit protection to satisfy requirements relating to providing a Notice of Publicly Available Information, as is the case for the triggering of credit protection under standard credit default swap contracts.

(ii) bankruptcy, insolvency or inability of the underlying obligor to pay its debts, or its failure or admission in writing of its inability generally to pay its debts as they become due, and analogous events; and

(iii) restructuring of the underlying exposure involving forgiveness or postponement of principal, interest or fees that results in a credit loss event (i.e. write-off, specific allowance or other similar debit to the profit and loss account), subject to paragraph 5.4 of this Annex;

(g) the credit derivative does not terminate prior to the expiration of any grace period required for a default on the underlying exposure to occur as a result of a failure to pay, or the maturity of the underlying exposure subject to Section 7 of this Annex;

(h) a robust valuation process is in place in order to estimate loss reliably for any credit derivative that allows for cash settlement, with a clearly specified period for obtaining post-credit event valuations of the underlying obligation[426];

(i) where the right or ability of the Reporting Bank to transfer the underlying exposure to the protection provider is required for settlement, the terms of the underlying exposure provide that any required consent to such transfer may not be unreasonably withheld;

(j) the identities of the parties responsible for determining whether a credit event has occurred are clearly defined and the determination is not the sole responsibility of the protection provider. The Reporting Bank has the right or ability to inform the protection provider of the occurrence of a credit event[427];

(k) the underlying obligation and the reference obligation specified in the credit derivative contract for the purposes of determining the cash settlement value or the deliverable obligation or for the purposes of determining whether a credit event has occurred may be different only if –

(i) the reference obligation ranks *pari passu* with or is junior to the underlying obligation; and

(ii) the underlying obligation and reference obligation share the same obligor (i.e. the same legal entity) and legally enforceable cross-default or cross-acceleration clauses are in place.

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[426] The Authority would generally consider the cash settlement methodology provided in the ISDA Credit Derivatives Definitions as satisfying this requirement.

[427] A Reporting Bank that has bought credit protection through a credit derivative covered by the 2009 ISDA Credit Derivatives Determinations Committees and Auction Settlement CDS Protocol (Big Bang Protocol) may recognise the effects of CRM of such a credit derivative, as the Reporting Bank has the right to request a ruling from the parties responsible for determining whether a credit event has occurred ("Determinations Committee") and the Determinations Committee is independent from the CRM provider. In this case, the requirements in paragraph 5.3(j) of this Annex are fulfilled as the roles and identities of the parties responsible for determining the occurrence of a credit event is clearly identified and the determination of a credit event is not the sole responsibility of the protection provider.

5.4 For the purposes of paragraph 5.3(f)(iii) of this Annex, a Reporting Bank hedging exposures to a corporate counterparty may recognise the effects of CRM of a credit derivative that does not include restructuring as a credit event provided that –

(a) a 100% vote of the creditors of the corporate counterparty is needed to amend the maturity, principal, coupon, currency or seniority status of the underlying exposure to the corporate counterparty;

(b) the legal domicile in which the exposure to the corporate counterparty is governed has a well-established bankruptcy code that allows for a company to reorganise or restructure and provides for an orderly settlement of creditor claims; and

(c) all the other requirements in paragraph 5.3 of this Annex are complied with.

Where the conditions set out in sub-paragraphs (a) to (b) are not met but the condition in sub-paragraph (c) is met, the Reporting Bank may recognise the effects of CRM of the credit derivative in accordance to paragraph 1.3 of Annex 7I, subject to the requirements set out in that paragraph.

Section 6: Currency Mismatches

6.1 For a Reporting Bank using the FC(CA) where there is a currency mismatch between the eligible financial collateral received and the underlying exposure secured by the eligible financial collateral, the Reporting Bank must adjust the value of the eligible financial collateral based on the standard supervisory haircuts applicable for currency mismatch set out in paragraphs 2.4 and 2.5 of Annex 7J. To avoid doubt, a Reporting Bank using the FC(SA) need not carry out any adjustments where there is a currency mismatch between the eligible financial collateral received and the underlying exposure secured by the eligible financial collateral.

6.2 In the case where there is a currency mismatch between the credit protection and the underlying exposure, a Reporting Bank must reduce the amount of the exposure deemed to be protected by applying a haircut, where –

$$\text{Protected portion } G_A = G \times (1-H_{FX})$$

where –

(a) G = notional amount of the credit protection; and

(b) H_{FX} = haircut appropriate for currency mismatch between the credit protection and underlying obligation exposure set at 8%, which is based on a 10-business day holding period, assuming daily mark-to-market.

6.3 For the purposes of calculating the protection portion G_A as set out in paragraph 6.1 of this Annex, if the credit protection is not marked-to-market daily, a Reporting Bank must scale H_{FX} in accordance with paragraph 3.4 of Annex 7J .

Section 7: Maturity Mismatches

7.1 Subject to paragraph 7.2 of this Annex, a Reporting Bank may recognise the effects of CRM for an exposure where there is a maturity mismatch only if the credit risk mitigant has an original maturity of at least one year and a residual maturity of at least 3 months. For the purposes of calculating credit RWA, a maturity mismatch occurs when the residual maturity of the credit risk mitigant is less than that of the underlying exposure.

7.2 If the credit risk mitigant is an eligible financial collateral, a Reporting Bank using the FC(SA) must not recognise the effects of CRM for an exposure where there is a maturity mismatch.

7.3 A Reporting Bank must determine the maturity of the underlying exposure and the maturity of the credit risk mitigant conservatively. The Reporting Bank must calculate the residual maturity of the underlying exposure as the longest possible remaining time before the counterparty is scheduled to fulfil its obligation, taking into account any applicable grace period. For the credit risk mitigant, a Reporting Bank must take into account options, including embedded options, which may reduce the term of the credit protection, so that the shortest possible residual maturity is used[428].

7.4 A Reporting Bank must calculate the value of the credit risk mitigant adjusted for any maturity mismatch, P_A, using the following formula:

$$P_A = [P \times (t-0.25)]/(T-0.25)$$

where –

(a) P = value of the credit risk mitigant[429] adjusted for any haircuts;

(b) t = min (T, residual maturity of the credit risk mitigant) expressed in years; and

(c) T = min (5, residual maturity of the exposure) expressed in years.

Section 8: Residual Risks

8.1 While a Reporting Bank may reduce or transfer credit risk by using CRM, the use of such techniques may simultaneously increase other risks (residual risks). Residual risks include legal, operational, liquidity and market risks. Therefore, a Reporting Bank must employ robust methods to control these risks, including –

(a) strategy;[430]

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[428] For example, in the case of a credit derivative, where the protection seller has a call option, the residual maturity is the remaining time to the first call date. Likewise, if the protection buyer owns the call option and has a strong incentive to exercise the call option at the first call date, for example because of a step-up in cost from this date on, the residual maturity is the remaining time to the first call date.

[429] For example, collateral amount, or guarantee amount.

[430] The Reporting Bank should ensure that a clearly articulated strategy for the use of CRM forms an intrinsic part of the general credit strategy of a Reporting Bank.

(b) consideration of the underlying credit;[431]

(c) valuation;[432]

(d) policies and procedures;[433]

(e) systems;[434]

(f) control of roll-off risks;[435] and

(g) management of concentration risk arising from the use of CRM and the interaction of such concentration risk with the overall credit risk profile of the Reporting Bank[436].

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431 Where an exposure is collateralised, the Reporting Bank should ensure that credit managers should continue to assess the exposure on the basis of the obligor's creditworthiness. The Reporting Bank should ensure that credit managers should obtain and analyse sufficient financial information to determine the obligor's risk profile and its management and operational capabilities.

432 The Reporting Bank should ensure that collateral should be revalued frequently, and the unsecured exposure should also be monitored frequently. Frequent revaluation is prudent, and the Reporting Bank should ensure that revaluation of marketable securities should occur on at least a daily basis. Furthermore, measures of the potential unsecured exposure under collateralised transactions should be calculated under stressed and normal conditions. One such measure would take account of the time and cost involved if the obligor or counterparty were to default and the collateral had to be liquidated. Furthermore, the Reporting Bank should ensure that the setting of limits for collateralised counterparties take account of the potential unsecured exposure. The Reporting Bank should ensure that the stress tests and scenario analysis are conducted to enable the Reporting Bank to understand the behaviour of its portfolio of collateral arrangements under unusual market conditions. The Reporting Bank should ensure that the unusual or disproportionate risk identified should be managed and controlled.

433 The Reporting Bank should ensure that clear policies and procedures should be established in respect of collateral management, including – (a) the terms of collateral agreements; (b) the types of collateral and enforcement of collateral terms (e.g. waivers of posting deadlines); (c) the management of legal risks; (d) the administration of agreement (e.g. detailed plans for determining default and liquidating collateral); and (e) the prompt resolution of disputes, such as valuation of collateral or positions, acceptability of collateral, fulfilment of legal obligations and the interpretation of contract terms.

434 The Reporting Bank should ensure that its policies and procedures referred to under paragraph 8.1(d) of this Annex are supported by collateral management systems capable of tracking the location and status of posted collateral (including re-hypothecated collateral), outstanding collateral calls and settlement problems.

435 Where a Reporting Bank obtains credit protection that differs in maturity from the underlying credit exposure, the Reporting Bank should monitor and control its roll-off risks, i.e. the fact that the Reporting Bank will be fully exposed when the protection expires, and the risk that it will be unable to purchase credit protection or ensure its capital adequacy when the credit protection expires.

436 Taking as collateral large quantities of instruments issued by one obligor creates concentration risk. A Reporting Bank should have a clearly defined policy with respect to the amount of concentration risk it is prepared to run. Such a policy might, for example, include a cap on the amount of collateral it would be prepared to take from a particular issuer or market. The Reporting Bank should also take collateral and purchased credit protection into account when assessing the potential concentrations in its overall credit profile.

Annex 7I

TREATMENT FOR SPECIFIC TYPES OF CREDIT PROTECTION BOUGHT

Proportional Cover

1.1 Where a Reporting Bank and the protection provider share losses on a pari passu and pro rata basis, a Reporting Bank must recognise the eligible credit protection on a proportional basis by applying to the protected portion of the exposure the treatment applicable to eligible credit protection, and by treating the remainder of the exposure as unprotected.

Principal-only Cover

1.2 Where the amount guaranteed, or against which an eligible credit protection is held, offers principal-only cover, a Reporting Bank must treat the principal amount as the protected portion and interest and other uncovered payments as the unprotected portion.

Partially Eligible Credit Derivatives

1.3 Where a Reporting Bank recognises credit protection through a credit derivative which meets all the requirements in Annex 7H other than paragraph 5.3(f)(iii) of Annex 7H, it must treat as the protected portion –

(a) 60% of the amount of the credit derivative; or

(b) 60% of the amount of the underlying exposure,

whichever is lower.

Tranched cover for Non-Securitisation Exposures

1.4 Where a Reporting Bank transfers a portion of the risk of an exposure or a pool of exposures in one or more tranches to a protection seller or sellers and the risk transferred and the risk retained are of different seniority, the Reporting Bank may recognise credit protection for the portion that has been transferred, regardless of whether this is a senior tranche[437] or a junior tranche[438], in accordance with paragraphs 7.6.5 and 7.6.6.

[437] For example, second loss portion of the securitisation.
[438] For example, first loss portion of the securitisation.

Tranched Cover for Securitisation Exposures

1.5 In the case of tranched cover for a securitisation exposure, a Reporting Bank must decompose the original securitisation tranche into protected and unprotected sub-tranches[439].

1.6 Subject to paragraphs 1.8 to 1.11 of this Annex, where a Reporting Bank provides tranched cover to a securitisation exposure, it must calculate its capital requirement as if it is directly exposed to the particular sub-tranche of the securitisation exposure on which it is providing protection, applying the approach as determined by paragraphs 7.6.13 to 7.6.19.

1.7 A Reporting Bank which has bought eligible credit protection must calculate its capital requirements for the unprotected and protected sub-tranches separately in the following manner:

(a) subject to paragraphs 1.8 to 1.11 of this Annex, by applying the risk weight that is applicable to the unprotected portion, and using the approach as determined by paragraphs 7.6.13 to 7.6.19 to calculate the credit risk-weighted exposure amount of the unprotected portion;

(b) by applying the risk weight that is applicable to the eligible protection provider to the protected portion to calculate the credit risk-weighted exposure amount of the protected portion, and calculating the maturity of the protected portion based on the tranche maturity of the securitisation exposure calculated in accordance with Section 6 of Annex 7V.

1.8 If, according to the hierarchy of approaches determined by paragraphs 7.6.13 to 7.6.19, a Reporting Bank must use the SEC-IRBA or SEC-SA for the original securitisation exposure, the Reporting Bank must calculate the parameters A and D separately for each of the sub-tranches as if the sub-tranches have been directly issued as separate tranches at the inception of the transaction. A Reporting Bank must compute the value for K_{IRB} or $K_{SA,}$ as the case may be, on the underlying portfolio of the original transaction.

1.9 If, according to the hierarchy of approaches determined by paragraphs 7.6.13 to 7.6.19, a Reporting Bank must use the SEC-ERBA or SEC-IAA for the original securitisation exposure, the Reporting Bank must calculate the relevant risk weights for the different sub-tranches as follows:

(a) for the sub-tranche of highest priority, the Reporting Bank must use the risk weight of the original securitisation exposure;

(b) for a sub-tranche of lower priority –

(i) the Reporting Bank must infer a rating from one of the tranches in the original transaction which is subordinated to the original securitisation tranche for which tranche protection is being provided.

[439] The envisioned decomposition is theoretical and it should not be viewed as a new securitisation transaction. The resulting sub-tranches should not be considered resecuritisations solely due to the presence of the credit protection.

The Reporting Bank must then apply the inferred rating to the SEC-ERBA to determine the risk weight of the sub-tranche of lower priority. The Reporting Bank must compute tranche thickness, T, as the thickness of the sub-tranche of lower priority only; or

(ii) if it is not possible to infer a rating, the Reporting Bank must compute the risk weight for the sub-tranche of lower priority using the SEC-SA, applying the adjustments to the determination of the parameters A and D described in paragraph 1.8 of this Annex. The Reporting Bank must ensure that the risk weight for this sub-tranche is the greater of –

(A) the risk weight determined through the application of the SEC-SA with the adjusted A and D points; and

(B) the SEC-ERBA risk weight of the original securitisation exposure before any effects of CRM are recognised.

1.10 For the purposes of paragraph 1.9(a) of this Annex, 'sub-tranche of highest priority' only describes the relative priority of the decomposed tranche. The calculation of the risk weight of each sub-tranche is independent of whether the sub-tranche is protected (i.e. risk is taken by the protection provider) or unprotected (i.e. risk is taken by the protection buyer).

1.11 Under all approaches, a Reporting Bank must treat a lower-priority sub-tranche as a non-senior securitisation exposure even if the original securitisation exposure prior to protection is a senior securitisation exposure.

Annex 7J

CALCULATION OF E* OR EAD* UNDER THE FC(CA) FOR COLLATERALISED TRANSACTIONS OTHER THAN OTC DERIVATIVE TRANSACTIONS AND LONG SETTLEMENT TRANSACTIONS

Section 1: Calculation of E* or EAD*

1.1 A Reporting Bank using the FC(CA) must calculate E* (or EAD*), the exposure amount adjusted for eligible financial collateral, for any collateralised transaction not covered by a qualifying bilateral netting agreement or a qualifying cross-product netting agreement other than OTC derivative transactions or long settlement transactions, using the following formula:

$$E^*(\text{or EAD}^*) = \max \{0, [E (\text{or EAD})(1 + H_E) - C(1 - H_C - H_{FX})]\}$$

where -

(a) E^* (or EAD*) = exposure value after credit risk mitigation;

(b) E (or EAD) = fair value of the exposure calculated in accordance with Division 2 of Part VII;

(c) H_E = haircut appropriate to the exposure;

(d) C = fair value of the eligible financial collateral received;

(e) H_C = haircut appropriate to the collateral, or if the collateral is a basket of assets, the weighted sum of the haircuts appropriate to the assets in the basket where each weight is the proportion of the asset in the basket in units of currency; and

(f) H_{FX} = haircut appropriate for currency mismatch between the collateral and exposure.

1.2 Where there is a maturity mismatch between the eligible financial collateral received by a Reporting Bank and the underlying exposure, the Reporting Bank must substitute P_A calculated in accordance with paragraph 7.4 of Annex 7H for $C(1 - H_C - H_{FX})$.

1.3 A Reporting Bank using the FC(CA) must calculate E* or EAD*, whichever is applicable, for any SFT covered by a qualifying bilateral netting agreement or qualifying cross-product netting agreement, using the following formula:

$$E^*(\text{or EAD}^*) = max\left\{0;\ \sum_i E_i\,(or\ EAD_i) - \sum_j C_j + 0.4 \times net\ exposure + 0.6 \times \frac{gross\ exposure}{\sqrt{N}} + \sum_{fx}\left(E_{fx} \times H_{fx}\right)\right\}$$

where –

(a) E^* (or EAD^*) = exposure value of the netting set after credit risk mitigation;

(b) E_i (or EAD_i) = fair value of all cash and collateral lent, sold with an agreement to repurchase or otherwise posted to the counterparty under the qualifying bilateral netting agreement or qualifying cross-product netting agreement;

(c) C_j = fair value of all cash and collateral borrowed, purchased with an agreement to resell or otherwise held by the Reporting Bank under the qualifying bilateral netting agreement or qualifying cross-product netting agreement;

(d) N = number of security issues or commodities in the netting set, excluding any issue of security or commodity for which the fair value of that security is less than one tenth of the largest security by fair value in the netting set;

(e) E_{fx} = absolute value of the net position in each currency fx different from the settlement currency; and

(f) H_{fx} = haircut appropriate for currency mismatch of each currency fx.

1.4 For the purposes of paragraph 1.3 of this Annex, a Reporting Bank must calculate net exposure and gross exposure, using the following formulas respectively:

Net exposure = $|\sum_S E_S \times H_S|$

Gross exposure = $\sum_S E_S \times |H_S|$

where –

(a) E_S = absolute value of the net position in a given security or commodity; and

(b) H_S = haircut appropriate to E_S, and has a positive sign if the collateral is lent, sold with an agreement to be repurchased, or transacted in a manner similar to either a securities lending, commodities lending or a repurchase agreement, and a negative sign if the collateral is borrowed, purchased with an agreement to be resold, or transacted in a manner similar to either a securities borrowing, commodities borrowing or a reverse repurchase agreement.

1.5 Subject to paragraphs 1.6 to 1.8 of this Annex, a Reporting Bank must determine H_E, H_C, H_S and H_{FX} referred to in paragraphs 1.1 to 1.4 of this Annex, in accordance with the standard supervisory haircuts in Section 2 of this Annex, applying the minimum holding period for the transaction set out in paragraphs 3.1 to 3.3 of this Annex.

1.6 Subject to paragraph 1.7 of this Annex, a Reporting Bank may apply a value of zero to H_E, H_C and H_S in the case of a qualifying repo-style transaction with a core market participant.

1.7 A Reporting Bank calculating E* or EAD*, whichever is applicable, in accordance with paragraph 1.3 of this Annex, may apply a value of zero to H_E, H_C and H_S, only where all transactions in the netting set are qualifying repo-style transactions with a core market participant.

1.8 A Reporting Bank may apply a value of zero to H_E, H_C and Hs in the case of a repo-style transaction where both the exposure and collateral are securities issued by the Singapore Government, or by other central governments where a value of zero has been prescribed by the bank regulatory agency of that country or jurisdiction and exposures to the central government of that country or jurisdiction have a credit quality grade of "1" as set out in Table 7M-1.

Section 2: Standard Supervisory Haircuts

2.1 The standard supervisory haircuts, H_E, H_C and H_S (assuming daily remargining and daily revaluation (i.e. mark-to-market) and a 10-business day holding period), are as follows:

Table 7J-1 - Standard Supervisory Haircuts

<table>
<tr><th colspan="2"></th><th colspan="3">Standard Supervisory Haircuts</th></tr>
<tr><th>Issue Rating for Debt Securities</th><th>Residual Maturity</th><th>Sovereign Issuers</th><th>Other Issuers</th><th>Securitisation Exposures</th></tr>
<tr><td rowspan="5">Any debt security with a credit quality grade of "1" or short-term credit quality grade of "I"</td><td>≤ 1 year</td><td>0.005</td><td>0.01</td><td>0.02</td></tr>
<tr><td>> 1 year, ≤ 3 years</td><td rowspan="2">0.02</td><td>0.03</td><td rowspan="2">0.08</td></tr>
<tr><td>> 3 years, ≤ 5 years</td><td>0.04</td></tr>
<tr><td>> 5 years, ≤ 10 years</td><td rowspan="2">0.04</td><td>0.06</td><td rowspan="2">0.16</td></tr>
<tr><td>> 10 years</td><td>0.12</td></tr>
<tr><td rowspan="5">Any debt security with a credit quality grade of "2" and "3" or short-term credit quality grade of "II" and "III"</td><td>≤ 1 year</td><td>0.01</td><td>0.02</td><td>0.04</td></tr>
<tr><td>> 1 year, ≤ 3 years</td><td rowspan="2">0.03</td><td>0.04</td><td rowspan="2">0.12</td></tr>
<tr><td>> 3 years, ≤ 5 years</td><td>0.06</td></tr>
<tr><td>> 5 years, ≤ 10 years</td><td rowspan="2">0.06</td><td>0.12</td><td rowspan="2">0.24</td></tr>
<tr><td>> 10 years</td><td>0.20</td></tr>
</table>

		Standard Supervisory Haircuts		
Issue Rating for Debt Securities	**Residual Maturity**	**Sovereign Issuers**	**Other Issuers**	**Securitisation Exposures**
Any debt security with a credit quality grade of "4"	All	0.15	Not eligible	Not eligible
Gold		0.20		
Any equity (including a convertible bond) in a main index		0.20		
Any other equity (including a convertible bond) listed on an approved exchange or an overseas exchange		0.30		
Any unit in a collective investment scheme		Highest haircut applicable to any security in which the fund can invest, unless a Reporting Bank applies the LTA for equity investment in a fund pursuant to Sub-division 2 of Division 5 of this Part, in which case a weighted-average of haircuts applicable to instruments held by the fund may be used		
Cash (i.e. items in paragraph 2.2(a) of Annex 7H) in the same currency as the underlying exposure		0		
Instruments in the trading book other than those listed above (for pre-settlement counterparty exposures arising from repo-style transactions included in the trading book)		0.30		

2.2 For the purposes of Table 7J-1 –

(a) in the case of a debt security issued by a central government or a central bank, a Reporting Bank must ensure that the credit quality grade is determined based on an issue-specific external credit assessment of the debt security and in accordance with paragraph 7.3.30. Where no issue-specific external credit assessment is available, the Reporting Bank may apply the treatment in paragraph 2.3 of Annex 7H; and

(b) "sovereign issuer" refers to –

(i) any central government;

(ii) any central bank;

(iii) any qualifying MDB; or

(iv) any PSE, the exposure to which would qualify for a 0% or 20% risk weight under the SA(CR) pursuant to paragraph 7.3.48 and Table 7-3.

2.3 Despite paragraph 2.1 of this Annex, the standard supervisory haircut, H_E, for SFTs in which a Reporting Bank lends, or posts as collateral, instruments that do not qualify as eligible financial collateral is 0.30. For collateralised transactions in which a Reporting Bank borrows, or receives as collateral, instruments that do not qualify as eligible financial collateral, the Reporting Bank must not recognise the effect of CRM of the collateral.

2.4 The standard supervisory haircut, H_{FX}, for currency mismatch where exposure and collateral are denominated in different currencies based on a 10-business day holding period and daily revaluation is 0.08.

2.5 Where the minimum holding period set out in paragraphs 3.1 to 3.3 of this Annex is shorter or longer than 10 business days, or where the frequency of remargining or revaluation is longer than that set out in Table 7J-2, the Reporting Bank must adjust H_E, H_C, H_{FX} and H_S using the formulae in paragraph 3.4 of this Annex.

Section 3: Minimum Holding Periods, Remargining or Revaluation Conditions

3.1 Subject to paragraphs 3.2 and 3.3 of this Annex, the following table sets out the minimum holding periods and remargining or revaluation conditions for the different types of transactions:

Table 7J-2 – Minimum Holding Periods and Remargining/Revaluation Conditions

Transaction type	Minimum holding period	Remargining/Revaluation Condition
Repo-style transactions	5 business days	daily remargining
Other capital market transactions, i.e. OTC derivative transactions, margin lending transactions, and commodities lending and commodities borrowing transactions	10 business days	daily remargining
Secured lending	20 business days	daily revaluation
Netting set comprising repo-style transactions and other capital market transactions	10 business days	daily remargining

3.2 A Reporting Bank must use higher minimum holding periods as specified in the cases set out in Table 7J-3 –

Table 7J-3 – Minimum Holding Periods applicable in specific cases

Type of netting set for repo-style and other capital market transactions	Minimum holding period
Netting set where the number of transactions exceeds 5,000 at any point during a quarter	20 business days (for the following quarter)
Netting set containing one or more transactions involving illiquid collateral, determined in the context of stressed	20 business days

market conditions[440]. This does not apply in the case of any transitional illiquidity of collateral and OTC derivative transactions that reference a new benchmark rate, for up to one year after the discontinuation of an old benchmark rate. Stressed market conditions are characterised by the absence of continuously active markets where a counterparty would, within 2 or fewer business days, obtain multiple price quotations that would not move the market or represent a price reflecting a market discount.	

3.3 In relation to any quarter ("relevant quarter"), where a Reporting Bank has experienced more than 2 margin call disputes on a netting set over the 2 quarters immediately preceding the relevant quarter that have lasted longer than the Reporting Bank's estimate of the margin period of risk, the Reporting Bank must use a minimum holding period that is twice the level that would apply under paragraph 3.1 or 3.2 of this Annex for the relevant quarter and next quarter after the relevant quarter.

3.4 Where the minimum holding period set out in paragraphs 3.1 to 3.3 of this Annex is shorter or longer than 10 business days, or when remargining or revaluation conditions set out in Table 7J-2 are not fulfilled, a Reporting Bank must calculate the applicable haircut using the following formula:

$$H = H_{10}\sqrt{\frac{N_R + (T_M - 1)}{10}}$$

where –

(a) "H" refers to the haircut;

(b) "H_{10}" refers to the haircut based on a 10-business day holding period;

(c) "T_M" refers to the minimum holding period for the type of transaction; and

(d) "N_R" refers to the actual number of business days between remargining or revaluation, as the case may be.

[440] Examples of situations where transactions are deemed illiquid for this purpose include, but are not limited to, transactions that are not marked daily, and transactions that are subject to specific accounting treatment for valuation purposes (e.g. transactions referencing securities whose fair value is determined by models with inputs that are not observed in the market).

ILLUSTRATION ON THE APPLICATION OF THE SFT HAIRCUT FLOORS ON A HYPOTHETICAL PORTFOLIO

1.1 The following example shows how a Reporting Bank must apply the SFT haircut floors to a hypothetical portfolio of trades.

Table 7K-1 – Hypothetical portfolio of trades in a netting set

Actual trades	Cash	Sovereign debt	Collateral A	Collateral B
Floor (f_s)	0	0	0.06	0.1
Portfolio of trades	50	100	-400	250
E_s	50	100	0	250
C_t	0	0	400	0

In this example –

(a) $H_{portfolio} = \frac{\sum C_t - \sum E_s}{\sum E_s}$ = 0; and

(b) $f_{portfolio} = \left[\frac{\sum_s \frac{E_s}{1+f_s}}{\sum_s E_s} / \frac{\sum_t \frac{C_t}{1+f_t}}{\sum_t C_t}\right] - 1$ = -0.00023

Since $H_{portfolio} > f_{portfolio}$, the portfolio does not breach the haircut floor.

Annex 7L

DEFINITION OF DEFAULT UNDER THE SA(CR) AND IRBA

Section 1: Definition of Default

1.1 A Reporting Bank must record a default on any exposure to a particular obligor if –

(a) it considers that the obligor is unlikely to pay its credit obligations to the banking group in full, without recourse by the Reporting Bank or any of its banking group entities to actions including realising collateral; or

(b) the obligor is past due more than 90 days on any credit obligation to the banking group.

1.2 For the purposes of paragraph 1.1 of this Annex, for an IRBA exposure, the Authority may permit an extension of days past due beyond 90 days for a foreign PSE obligor, of up to 180 days, if a Reporting Bank requests such permission and provides strong justification for the extension.

1.3 If the Reporting Bank considers that paragraph 1.1 of this Annex no longer applies to a previously defaulted exposure, the Reporting Bank must assign a new obligor and facility grade to the exposure using the applicable obligor and facility rating system, and where relevant, estimate LGD and EAD as it would for a non-defaulted exposure. Should the definition of default in this Annex subsequently be triggered, the Reporting Bank must deem a second default to have occurred.

Indications of Unlikeliness to Pay in Full

1.4 A Reporting Bank must consider a default to have occurred with regard to a particular obligor if any of the following indicators of default is present:

(a) the Reporting Bank puts any credit obligation of the obligor on non-accrued status[441];

(b) the Reporting Bank makes a write-off or specific allowance resulting from a significant perceived decline in credit quality of the obligor subsequent to the Reporting Bank taking on any exposure to the obligor[442];

(c) the Reporting Bank sells any credit obligation of the obligor at a material credit-related economic loss. For the purposes of this sub-paragraph, the Reporting Bank must implement internal policies to determine when a

[441] For example, the Reporting Bank no longer recognises accrued interest as income, or the Reporting Bank recognises accrued interest as income and makes an equivalent amount of allowance.

[442] Specific allowances on equity exposures may be set aside for price risk and do not signal default.

material credit-related economic loss has been incurred and track the performance of such policies over time[443];

(d) the Reporting Bank consents to a distressed restructuring of any credit obligation of the obligor (i.e. a restructuring where this is likely to result in a diminished financial obligation of the obligation due to the material forgiveness or postponement of principal, interest or where relevant, fees), including situations where the intention of the restructuring is to accommodate a deterioration in the obligor's financial position or the obligor's inability to meet the original repayment schedule or where the revised repayment terms of the credit obligation are of "non-commercial" nature, i.e. where the interest rate, fees or repayment period are not what would normally be granted by the Reporting Bank to a new obligor of similar creditworthiness;

(e) the Reporting Bank or any banking group entity has filed for the bankruptcy of the obligor or a similar order in respect of any credit obligation of the obligor to the banking group;

(f) the obligor has sought or has been placed in bankruptcy or similar protection which would enable the obligor to avoid or delay repayment of any credit obligation to the banking group;

(g) any facility to that particular obligor has been accelerated;

(h) where the obligor is a bank, merchant bank or finance company, the obligor's authorisation to operate has been revoked[444];

(i) where the obligor is a central government, there has been an announcement of a downgrade to a default rating by a recognised ECAI;

(j) a default by the obligor on credit obligations to other financial creditors[445] has occurred based on publicly available information;

(k) for an IRBA exposure, the Reporting Bank, in its judgement, deems that the default of a related obligor is an indication of default of that particular obligor (as described in paragraph 1.8 of this Annex).

1.5 For the purposes of paragraph 1.4(d) of this Annex, a Reporting Bank must implement internal policies on the criteria mentioned in paragraph 1.4(d) of this Annex (and any other factors it considers appropriate) and internal procedures to ensure that restructured exposures are classified appropriately.

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443 These internal policies are examined by the Authority in connection with a Reporting Bank's application to adopt the IRBA.

444 This indication of default does not include the voluntary surrender of licenses, for example, in the course of a business combination.

445 For example, financial institutions or bondholders.

1.6 For cases where a Reporting Bank liquidates collateral to satisfy any of the credit obligation and does not consider a default to have occurred with regard to the obligor, the Reporting Bank must put in place internal processes, independent of the credit risk control and origination functions, to review and validate, on a regular basis, that the classification of the exposure as a non-default exposure is in accordance with paragraphs 1.1 to 1.5 of this Annex. The Reporting Bank must ensure that such internal processes include validating that the liquidation of the collateral is not due to a deterioration of the creditworthiness of the obligor.[446]

1.7 To avoid doubt, for UST exposures, the Reporting Bank need not deem the failure of a counterparty to settle a trade, in itself, a default.

Related Obligor Default

1.8 When a default is recorded for any obligor for an IRBA exposure, a Reporting Bank must review all ratings of obligors related to that particular obligor to determine if that default is an indication that any other related obligor is unlikely to fulfil its obligations.[447] Where a Reporting Bank rates a group of obligors together as a single economic unit, the Reporting Bank must consider a default by any obligor in the group as a default by all the obligors in the group.

Calculation of Days Past Due for Any Facility

1.9 For the purposes of determining whether an obligor is past due more than 90 days on any credit obligation to the banking group, a Reporting Bank must include all components of amounts due, including principal, accrued interest and fees related to the credit obligation, in making that determination[448] inasmuch as they form part of the return that the Reporting Bank receives on the credit risk it underwrites.

1.10 A Reporting Bank must record a default when –

(a) for an overdraft, the approved limit (i.e. advised limit) remains breached for more than 90 days, including where the obligor has been advised of a limit smaller than current outstandings and the lower limit remains breached for more than 90 days;

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446 For example, for certain types of facilities such as securities financing, collateral is liquidated not due to a deterioration of the creditworthiness of an obligor but due to a fall in the value of the collateral. For such facilities, the collateral may be liquidated to restore an agreed collateral coverage ratio after a fall in the value of the collateral, in accordance with the standard practice for facilities of the same type and where such practice has been disclosed to the obligor in writing at the inception of the facility.

447 The Reporting Bank should ensure that such determination be based on the judgement of the Reporting Bank of the degree of economic interdependence and integration between the obligors concerned. There is no presumption that related entities would necessarily default together. This would depend on the credit judgement of the Reporting Bank expressed in its internal ratings systems. Where the ratings of individual obligors in a group are stand-alone ratings or "notched" ratings, a default by any obligor in the group need not be considered a default by all the obligors in the group. However, this principle should not override the result of any ratings review.

448 For example, in the case of corporate exposures, annual facility fees; or in the case of retail exposures, annual card fees. To avoid doubt, an obligor is not normally considered by the Authority to be in default only by virtue of annual fees payable to the Reporting Bank where the Reporting Bank has already commenced steps to reverse or waive such fees.

(b) for a corporate exposure which is a revolving loan, an amount is overdue for more than 90 days;

(c) for a retail exposure which is a revolving loan[449], the minimum monthly payment is not paid in full by the due date nor within the 90 days thereafter, and subsequent minimum monthly payments billed are also not paid in full; and

(d) for a loan with periodic principal instalments, interest payments, or both, an amount due and payable is not paid in full within 90 days of the instalment or payment due date.

1.11 For the purposes of paragraph 1.10(a) of this Annex, a Reporting Bank must also have adequate internal policies for assessing the creditworthiness of obligors who are offered overdraft accounts.

Re-ageing

1.12 For the purposes of paragraph 1.10 of this Annex, a Reporting Bank must have clearly articulated and documented policies in respect of the counting of days past due, in particular in respect of the re-ageing of the facilities and the granting of extensions, deferrals, renewals and rewrites to existing accounts. The Reporting Bank must ensure that the policies cover facilities where the Reporting Bank has entered into an agreement with the obligor to defer payments or reschedule the due dates that were originally agreed upon.

1.13 A Reporting Bank must ensure that the re-ageing policy includes clear prescriptions on –

(a) the approval authorities and reporting requirements on re-aging;

(b) the minimum age of a facility before it is eligible for re-ageing;

(c) the delinquency levels of facilities that are eligible for re-ageing;

(d) the maximum number of re-ageings per facility; and

(e) the associated reassessments of the capacity of the obligor to repay should re-aging take place.

1.14 A Reporting Bank must apply its internal policies on re-aging consistently over time, and must ensure that such policies support the 'use requirements' under paragraph 2.7 of Annex 7X. If a Reporting Bank treats a re-aged exposure in a similar fashion to exposures which are in default, the Reporting Bank must record this exposure as in default.

1.15 Except in the case where payments are deferred or the loan is otherwise restructured, a Reporting Bank may only re-age when –

[449] For example, credit card.

(a) in the case of an overdraft, the outstanding amount is reduced to or below the approved limit;

(b) in the case of a corporate exposure which is a revolving loan, the amount overdue is repaid in full;

(c) in the case of a retail exposure which is a revolving loan where an unpaid minimum monthly payment is rolled into the following month's minimum payment, the latest minimum monthly payment is paid in full; and

(d) in the case of a loan with periodic instalments, interest payments, or both, the longest overdue amount is repaid in full, inclusive of accrued interest and penalties, in which case the start date of the days past due count is then reset to the due date of the remaining instalment or payment that is longest overdue.

1.16 When granting extensions, deferrals, renewals and rewrites, a Reporting Bank must consider if these are in fact distressed restructurings under paragraph 1.4(d) of this Annex. If so, the Reporting Bank must record a default in respect of the exposure.

Treatment of overdrafts

1.17 A Reporting Bank must ensure that authorised overdrafts are subject to a credit limit set by the Reporting Bank and the credit limit is brought to the knowledge of the obligor. The Reporting Bank must monitor any break of the credit limit. The Reporting Bank must record a default on such overdrafts if the account is not brought under the credit limit for more than 90 days. The Reporting Bank must associate non-authorised overdrafts with a zero limit. A Reporting Bank must commence counting of days past due once any credit is granted to an obligor with a non-authorised overdraft. The Reporting Bank must record a default on non-authorised overdrafts if such credit is not repaid for more than 90 days. The Reporting Bank must have in place rigorous internal policies for assessing the creditworthiness of obligors who are offered overdraft accounts.

Section 2: Exclusion from Obligor-level Application of Definition of Default

2.1 Despite paragraph 1.1 of this Annex, a Reporting Bank may, for exposures categorised under the SA(CR) regulatory retail, SA(CR) other retail or IRBA retail asset classes, apply the definition of default in this Annex at the level of a particular facility, rather than at the level of the obligor. Therefore, a default by an obligor on one credit obligation does not require a Reporting Bank to treat all other credit obligations of the same obligor to the banking group as defaulted.

Annex 7M

CREDIT QUALITY GRADES

Table 7M-1 – Credit Quality Grades for SA(CR) Exposures

Credit Quality Grade	1	2	3	4	5	6
Fitch Ratings	AAA AA+ AA AA-	A+ A A-	BBB+ BBB BBB-	BB+ BB BB-	B+ B B-	CCC+ CCC CCC- CC C D
Moody's Investors Services	Aaa Aa1 Aa2 Aa3	A1 A2 A3	Baa1 Baa2 Baa3	Ba1 Ba2 Ba3	B1 B2 B3	Caa1 Caa2 Caa3 Ca C
Standard & Poor's Ratings Services	AAA AA+ AA AA-	A+ A A-	BBB+ BBB BBB-	BB+ BB BB-	B+ B B-	CCC+ CCC CCC- CC C D

Table 7M-2 – Credit Quality Grades for Short-term SA(CR) Exposures

Short-term Credit Quality Grade	I	II	III	IV
Fitch Ratings	F-1	F-2	F-3	Others
Moody's Investors Services	P-1	P-2	P-3	Others
Standard & Poor's Ratings Services	A-1	A-2	A-3	Others

1.1 For the purposes of Table 7M-2 –

(a) the A-1 rating of Standard & Poor's Ratings Services includes both A-1+ and A-1–; and

(b) "Others" includes all non-prime and B or C ratings.

Table 7M-3 – Credit Quality Grades for SEC-ERBA Exposures and SEC-IAA Exposures

Credit Quality Grade	Fitch Ratings	Moody's Investors Services	Standard & Poor's Ratings Services
1	AAA	Aaa	AAA
2	AA+	Aa1	AA+
3	AA	Aa2	AA
4	AA-	Aa3	AA-
5	A+	A1	A+
6	A	A2	A
7	A-	A3	A-
8	BBB+	Baa1	BBB+
9	BBB	Baa2	BBB
10	BBB-	Baa3	BBB-
11	BB+	Ba1	BB+
12	BB	Ba2	BB
13	BB-	Ba3	BB-
14	B+	B1	B+
15	B	B2	B
16	B-	B3	B-
17	CCC+/CCC/CCC-	Caa1/Caa2/Caa3	CCC+/CCC/CCC-
18	Below CCC-	Below Caa3	Below CCC-

Table 7M-4 – Credit Quality Grades for Short-term SEC-ERBA Exposures and Short-term SEC-IAA Exposures

Short-term Credit Quality Grade	I	II	III	IV
Fitch Ratings	F-1	F-2	F-3	Others
Moody's Investors Services	P-1	P-2	P-3	Others
Standard & Poor's Ratings Services	A-1	A-2	A-3	Others

Annex 7N

RECOGNISED ECAIs

1.1 The following entities are recognised as ECAIs by the Authority pursuant to paragraph 7.3.126:

(a) Fitch Ratings;

(b) Moody's Investor Services;

(c) Standard & Poor's Ratings Services.

Annex 7O

QUALIFYING MDBs

1.1 "Qualifying MDBs" means –

(a) the African Development Bank;

(b) the Asian Development Bank;

(c) the Asian Infrastructure Investment Bank;

(d) the Caribbean Development Bank;

(e) the Council of Europe Development Bank;

(f) the European Bank for Reconstruction and Development;

(g) the European Investment Bank;

(h) the European Investment Fund;

(i) the Inter-American Development Bank;

(j) the Islamic Development Bank;

(k) the Nordic Investment Bank;

(l) the International Finance Facility for Immunisation; or

(m) the World Bank Group, including the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation and the Multilateral Investment Guarantee Agency.

Annex 7P

QUALIFYING REPO-STYLE TRANSACTIONS

1.1 A qualifying repo-style transaction is a repo-style transaction that meets all of the following requirements:

(a) both the exposure and the collateral are cash, or a security issued by an entity which would fall within the central government and central bank asset class in paragraph 7.3.1(b) or the PSE asset class in paragraph 7.3.1(c), and qualify for a 0% risk weight under the SA(CR) pursuant to paragraphs 7.3.42 to 7.3.49;

(b) both the exposure and the collateral are denominated in the same currency;

(c) either the transaction is overnight or both the exposure and the collateral are marked-to-market daily and are subject to daily remargining;

(d) following a counterparty's failure to remargin, the time that is required between the last mark-to-market before the failure to remargin and the time that the collateral may be liquidated is no more than 4 business days. To avoid doubt, a Reporting Bank is not required to liquidate collateral to comply with this sub-paragraph, but must have the capability to do so within the given time frame;

(e) the transaction is settled across a recognised settlement system for that type of transaction;

(f) the documentation covering the agreement is standard market documentation for repo-style transactions in the securities concerned;

(g) the transaction is governed by documentation specifying that if the counterparty fails to satisfy an obligation to deliver cash or securities or to deliver margin, or otherwise defaults, then the transaction may be terminated immediately;

(h) upon any event of default, regardless of whether the counterparty is insolvent or bankrupt, the Reporting Bank has the unfettered, legally enforceable right to immediately seize and liquidate the collateral for the benefit of the Reporting Bank.

Annex 7Q

CORE MARKET PARTICIPANTS

1.1 "Core market participant" means any of the following:

(a) an entity which would fall within the central government and central bank asset class in paragraph 7.3.1(b);

(b) an entity which would fall within the PSE asset class in paragraph 7.3.1(c);

(c) an entity which would fall within the bank asset class in paragraph 7.3.1(e);

(d) a financial institution eligible for a 20% risk weight under the SA(CR);

(e) a qualifying CCP.

Annex 7R

DEFINITION OF SL ASSET SUB-CLASS AND HVCRE ASSET SUB-CLASS

1.1 An IRBA exposure belonging to the SL asset sub-class or HVCRE asset sub-class possesses all of the following characteristics, either in legal form or economic substance[450]:

(a) the obligor has little or no other material assets or activities, and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the asset(s) being financed;

(b) the terms of the obligation give the Reporting Bank a substantial degree of control over the assets and the income that such assets generate;

(c) as a result of the preceding factors, the primary source of repayment of the obligation is the income generated by the assets, rather than the independent capacity of the broader commercial enterprise of the obligor.

1.2 The 4 types of exposures within the SL asset sub-class are PF, OF, CF and IPRE lending.

Project Finance

1.3 PF is a method of funding in which the Reporting Bank looks primarily to the revenues generated by a single project, both as the source of repayment and as security for the exposure. This type of financing is usually for large, complex and expensive installations[451]. PF may take the form of financing of the construction of a new capital installation, or refinancing of an existing installation, with or without improvements.

1.4 In a PF transaction, the Reporting Bank is usually paid solely or almost exclusively out of the money generated by the contracts for the facility's output[452]. The obligor is usually an SPE that is not permitted to perform any function other than developing, owning, and operating the installation. The consequence is that repayment depends primarily on the project's cash flow and on the collateral value of the project's assets. In contrast, if repayment of the exposure depends primarily on a contractually obligated end-user with adequate capacity to meet its financial commitments in a timely manner based on the broader commercial enterprise of the end-user for repayment, it is treated as a secured exposure to that end-user.

Object Finance

1.5 OF refers to a method of funding the acquisition of physical assets[453] where the repayment of the exposure is dependent on the cash flows generated by the specific assets

[450] Such an exposure is typically to an entity (including an SPE) which was created specifically to finance or operate physical assets or both.

[451] For example, power plants, chemical processing plants, mines, transportation infrastructure, environment infrastructure, or media and telecommunications infrastructure.

[452] For example, the electricity sold by a power plant.

[453] For example, ships, aircraft, satellites, railcars, or fleets.

that have been financed and pledged or assigned to the Reporting Bank. A primary source of these cash flows may be rental or lease contracts with one or several third parties. In contrast, if the exposure is to an obligor whose financial condition and debt-servicing capacity enables it to repay the debt without undue reliance on the specifically pledged assets, the exposure is treated as a collateralised exposure categorised in an asset class or asset sub-class other than the specialised lending asset sub-class.

Commodities Finance

1.6 CF refers to structured short-term lending to finance reserves, inventories, or receivables of exchange-traded commodities[454], where the exposure will be repaid from the proceeds of the sale of the commodity and the obligor has no independent capacity to repay the exposure. This is the case when the obligor has no other activities and no other material assets on its balance sheet. The structured nature of the financing is designed to compensate for the weak credit quality of the obligor. The rating of the exposure reflects its self-liquidating nature and the skill of the Reporting Bank in structuring the transaction rather than the credit quality of the obligor.

1.7 Such lending can be distinguished from exposures financing the reserves, inventories, or receivables of other more diversified corporate obligors, where a Reporting Bank is able to rate the credit quality of the latter type of obligors based on the obligors' broader ongoing operations. In such cases, the value of the commodity serves as a credit risk mitigant rather than as the primary source of repayment.

IPRE Lending

1.8 IPRE lending refers to a method of providing funding to real estate[455] where the prospects for repayment and recovery on the exposure depend primarily on the cash flows generated by the asset. The primary source of these cash flows would generally be lease or rental payments or the sale of the asset. The obligor may be, but is not required to be, an SPE, an operating company focused on real estate construction or holdings, or an operating company with sources of revenue other than real estate. The distinguishing characteristic of IPRE lending versus other corporate exposures that are collateralised by real estate is the strong positive correlation between the prospects for repayment of the exposure and the prospects for recovery in the event of default, with both depending primarily on the cash flows generated by a property.

HVCRE Lending

1.9 HVCRE lending refers to the financing of CRE that exhibits higher loss rate volatility (i.e. higher asset correlation) compared to an IRBA exposure belonging to the SL asset sub-class. HVCRE includes –

[454] For example, crude oil, metals, or crops.

[455] For example, office building to let, retail space, multifamily residential buildings, industrial or warehouse space, or hotels.

(a) CRE exposures secured by properties of types that are categorised by the Authority as sharing higher volatilities in portfolio default rates;[456]

(b) loans financing any of the ADC phases for properties of those types in sub-paragraph (a); and

(c) loans financing ADC of any other properties where the source of repayment at origination of the exposure is either the future uncertain sale of the property or cash flows whose source of repayment is substantially uncertain[457], unless the obligor has substantial equity at risk. The Reporting Bank must not risk-weight commercial ADC loans exempted from treatment as HVCRE loans on the basis of certainty of repayment or obligor equity using the risk weights specified in paragraph 7.4.128.

1.10 Where a bank regulatory agency in a foreign country or jurisdiction has categorised certain types of CRE exposures as HVCRE in its country or jurisdiction, a Reporting Bank must apply the capital treatment in accordance with Sub-division 7 of Division 4 of Part VII to such HVCRE exposures in that country or jurisdiction.

Case Studies

1.11 Some case studies on the categorisation of IRBA exposures based on the definitions above are as follows[458]:

Project Finance

(a) A Reporting Bank finances an SPE that will build and operate a project. The SPE has an off-take contract with an end-user. The length of the off-take contract covers the full maturity of the loan, and the loan amortises fully during the length of the contract. The payments by the end-user to the SPE are based mainly on the ability of the SPE to provide the specified output or services and not on the actual demand for the output or services. If the contract is terminated, the end-user is normally required to purchase the underlying assets at a price related to the market value of the unexpired term of the contract. This should be considered as an exposure belonging to the general corporate asset sub-class rather than the SL asset sub-class.

(b) A Reporting Bank finances an SPE that will build and operate a project. If the Reporting Bank is exposed to the key risks in the project – construction risk (the risk that the project will not be completed in a timely or cost-effective manner), operational or technology risk (the risk that the project will not operate up to specifications), or market/price risk (the risk that

[456] The Authority has not categorised any type of CRE exposures as HVCRE. Where the Authority categorises any type of CRE exposures as HVCRE, the Authority will make public any such determinations.

[457] For example, the property has not yet been leased to the occupancy rate prevailing in that geographic market for that type of CRE.

[458] The examples are for illustrative purposes only and not intended to be definitive or exhaustive. The actual operation of the principles embodied in paragraphs 1.1 to 1.10 of this Annex may vary depending on the circumstances in each case.

the demand and the price of the output will fall or that the margin between output prices and input prices and production costs will deteriorate), the project should be categorised within the SL asset sub-class. If a circular relationship exists between the financial strength of the end-user and the project, the project should be categorised under the SL asset sub-class. This would be the case when an end-user has limited resources or capacity to generate revenues apart from those generated by the project being financed, so that the ability of the end-user to honour its off-take contract depends primarily on the performance of the project.

(c) If a Reporting Bank provides a loan to finance a transatlantic fibre optic cable to an established telecommunications firm, which has an established business plan, track record and diversified revenue stream, the exposure would be considered as belonging to the general corporate asset sub-class.

Object Finance

(d) A recently established charter airline finances the purchase of 2 aircraft. The airline does not have an established record of financial or operational performance, and a Reporting Bank would not normally extend long-term credit to the airline. An SPE owns the aircraft and leases it to the airline. The legal structure of the transaction is such that the Reporting Bank, in the event of default, can seize and re-market the aircraft without delay. Such a loan would be assigned to the SL asset sub-class given that the ability of the obligor to service the loan is unproven and the credit decision of the Reporting Bank is largely based on its ability to re-market the collateral in the event of default by the obligor. In this case, the asset-based focus is supported by a loan structure that supports this premise[459].

(e) A charter airline with an established business plan, many aircraft, and diversified service routes, finances the purchase of additional aircraft to be used in its own operations. The airline establishes an SPE to own the subject aircraft. The Reporting Bank lends to the SPE and takes a security interest in the aircraft. The SPE enters into a long-term lease with the airline. The term of the lease exceeds that of the underlying loan. The lease cannot be terminated under any condition. This exposure would be placed in the general corporate asset sub-class because the repayment of the loan depends on the overall operations of the airline and is not unduly dependent upon the specific aircraft as the primary source of repayment.

(f) Same as in sub-paragraph (e), except that (i) the lease term can be cancelled by the airline without penalty at some time before the end of the loan term, or (ii) even if the lease is non-cancellable, the lease payments do not fully cover the aggregate loan payments over the life of the loan. This loan should be categorised within the SL asset sub-class, given that the airline/lessee is not fully committed to a lease sufficient to repay the loan, so pass-through treatment is inappropriate.

[459] For example, where the amortisation schedule mirrors the anticipated depreciation of the aircraft's fair value, where the Reporting Bank has the right to quickly gain control of the aircraft in the event of default or bankruptcy, or where the Reporting Bank has control over the airline's lease payments.

(g) A large, well-established shipping company sets up an SPE as a subsidiary. There is no contractual recourse between the shipping company and the SPE. The SPE wishes to finance a container ship, and the income from container shipping (either by the SPE leasing the ship to third parties or doing the shipping itself) serves as the sole repayment source for the loan. Such a loan would be categorised within the SL asset sub-class because the primary source of repayment is the container ship and its income generating ability. A Reporting Bank's ability to base the transaction's rating on the shipping company's financial capacity is hampered, given that the shipping company is not contractually obligated to repay the debt or make payments to the SPE sufficient to repay the debt. Instead, the loan is structured so that the cash flow from the specified asset, and not the general financial capacity of the shipping company, serves as the primary source of repayment.

Commodities Finance

(h) A Reporting Bank extends short-term documentary trade credit to a small independent trading company ("trader") that acts as an intermediary between producers and their customers. The trader specialises in a single commodity and a single region. Each commodity shipment handled by the trader is financed and secured separately. Credit is extended upon delivery of the commodity to the trader, who has already contracted for the resale of the commodity shipment. A trustworthy third party controls the shipment of the commodity, and the Reporting Bank controls payment by the customer. This loan would be categorised as an exposure in the SL asset sub-class, since repayment depends primarily on the proceeds of the sale of the commodity.

(i) A Reporting Bank extends short-term documentary trade credit to a trader. The circumstances are the same as in the preceding case, except that the trader has not yet contracted for the resale of the commodity. In deciding whether to classify a particular commodities finance transaction as an exposure in the SL asset sub-class, the Reporting Bank should, among other things, consider the degree of control that it has over the commodities and whether the trader has any independent capacity to repay the loan other than through the proceeds from the resale of the commodities. Where the trader has not contracted for resale of the commodities because it has other possible means of repaying its obligations, despite the degree of control the Reporting Bank has over the commodities, the transaction would not qualify as an exposure in the SL asset sub-class. This loan would instead be categorised as an exposure in the general corporate asset sub-class since the Reporting Bank's credit exposure is primarily to the trader that is long the commodity.

(j) A Reporting Bank provides an unsecured non-transactional working capital loan to a small trader, either separately or as part of a transactional credit facility. Such an unsecured loan would be categorised within the general corporate asset sub-class, since its repayment depends on the trader

rather than on the revenues generated by the sale of any specific commodity shipment being financed.

IPRE Lending

(k) A Reporting Bank makes a loan to an SPE to finance the construction of an office building that will be let out to prospective tenants. The SPE has essentially no other assets and has been created just to manage this office building. The office building is pledged as collateral on the loan. This loan should be categorised with the SL asset sub-class, given that the prospects for repayment and recovery depend primarily on the cash flow generated by the asset.

(l) A Reporting Bank makes a loan to a large, well-diversified operating company to finance the construction of an office building that will be primarily occupied by the company. The office building is pledged as collateral on the loan, and the loan is a general obligation of the company. The loan is small relative to the overall assets and debt service capacity of the company. This loan should be categorised as an exposure within the general corporate asset sub-class since repayment depends primarily on the overall condition of the operating company, which does not in turn depend significantly on the cash flow generated by the asset.

(m) A Reporting Bank makes a loan to a company to finance the construction or acquisition of an office building that will be let out to prospective tenants. The office building is pledged as collateral on the loan, and the loan is a general obligation of the company. The company has essentially no other assets. The Reporting Bank underwrites the loan using its corporate procedures. Despite the fact that the obligor is an operating company and the Reporting Bank uses its corporate underwriting procedures, this loan should be categorised within the SL asset sub-class. The motivation is that the prospects for repayment and recovery both depend primarily on the cash flow generated by the asset. Although there is legal recourse to the project sponsor, which is an operating company, the overall condition of the project sponsor depends primarily on the cash flow generated by the asset. Therefore, in the event of project failure, the sponsor will have essentially no ability to meet its general obligations.

(n) A Reporting Bank makes a loan to an SPE to finance the acquisition of an office building that will be primarily leased to a large, well-diversified operating company under a long-term lease. The SPE has essentially no other assets and has been created just to manage this office building. The lease is at least as long as the loan term and is non-cancellable, and the lease payments completely cover the cash flow needs of the obligor[460]. The loan is amortised fully over the term of the lease with no bullet or balloon payment at maturity. In categorising this loan, the Reporting Bank may look through the SPE to the long-term tenant, treating it as an exposure within the general corporate asset sub-class. This is because the prospects for repayment and recovery depend primarily on the overall

[460] For example, debt service, capital expenditures, or operating expenses.

condition of the long-term tenant, which will determine the cash flow generated by the asset.

(o) Same as in sub-paragraph (n), except that (i) the lease term can be cancelled at some time before the end of the loan term, or (ii) even if the lease is non-cancellable, the lease payments do not fully cover the aggregate loan payments over the life of the loan. This loan should be categorised in the SL asset sub-class. This is because the tenant is not fully committed to the lease sufficient to repay the loan, so pass-through treatment is inappropriate.

Annex 7S

GUIDELINES ON SUPERVISORY RATING CATEGORIES FOR SL ASSET SUB-CLASS AND HVCRE ASSET SUB-CLASS

1.1 The following tables set out guidelines on the supervisory rating categories to be used for determining RW_{slot} for any IRBA exposure belonging to the SL asset sub-class or HVCRE asset sub-class for which the Reporting Bank is using the supervisory slotting criteria to calculate the credit risk-weighted exposure amount of the exposure.

Table 7S-1 – Guidelines on Supervisory Rating Categories for Project Finance

	Strong	Good	Satisfactory	Weak
Financial Strength				
Market conditions	Few competing suppliers or substantial and durable advantage in location, cost, or technology. Demand is strong and growing	Few competing suppliers or better than average location, cost, or technology but this situation may not last. Demand is strong and stable	Project has no advantage in location, cost, or technology. Demand is adequate and stable	Project has worse than average location, cost, or technology. Demand is weak and declining
Financial ratios (e.g. debt service coverage ratio (DSCR), loan life coverage ratio (LLCR), project life coverage ratio (PLCR), and debt-to-equity ratio)	Strong financial ratios considering the level of project risk; very robust economic assumptions	Strong to acceptable financial ratios considering the level of project risk; robust project economic assumptions	Standard financial ratios considering the level of project risk	Aggressive financial ratios considering the level of project risk
Stress analysis	The project can meet its financial obligations under sustained, severely stressed economic or sectoral conditions	The project can meet its financial obligations under normal stressed economic or sectoral conditions. The project is only likely to default under severe economic conditions	The project is vulnerable to stresses that are not uncommon through an economic cycle, and may default in a normal downturn	The project is likely to default unless conditions improve soon

	Strong	Good	Satisfactory	Weak
Financial structure				
Duration of the credit compared to the duration of the project	Useful life of the project significantly exceeds tenor of the loan	Useful life of the project exceeds tenor of the loan	Useful life of the project exceeds tenor of the loan	Useful life of the project may not exceed tenor of the loan
Amortisation schedule	Amortising debt	Amortising debt	Amortising debt repayments with limited bullet payment	Bullet repayment or amortising debt repayments with high bullet repayment
Political and legal environment				
Political risk, including transfer risk, considering project type and mitigants	Very low exposure; strong mitigation instruments, if needed	Low exposure; satisfactory mitigation instruments, if needed	Moderate exposure; fair mitigation instruments	High exposure; no or weak mitigation instruments
Force majeure risk (war, civil unrest, etc.)	Low exposure	Acceptable exposure	Standard protection	Significant risks, not fully mitigated
Government support and project's importance for the country or jurisdiction over the long term	Project of strategic importance for the country or jurisdiction (preferably export-oriented). Strong support from government	Project considered important for the country or jurisdiction. Good level of support from government	Project may not be strategic but brings unquestionable benefits for the country or jurisdiction. Support from government may not be explicit	Project not key to the country or jurisdiction. No or weak support from government

	Strong	Good	Satisfactory	Weak
Stability of legal and regulatory environment (risk of change in law)	Favourable and stable regulatory environment over the long term	Favourable and stable regulatory environment over the medium term	Regulatory changes can be predicted with a fair level of certainty	Current or future regulatory issues may affect the project
Acquisition of all necessary supports and approvals for such relief from local content laws	Strong	Satisfactory	Fair	Weak
Enforceability of contracts, collateral and security	Contracts, collateral and security are enforceable	Contracts, collateral and security are enforceable	Contracts, collateral and security are considered enforceable even if certain non-key issues may exist	There are unresolved key issues in respect of actual enforcement of contracts, collateral and security
Transaction characteristics				
Design and technology risk	Fully proven technology and design	Fully proven technology and design	Proven technology and design – start-up issues are mitigated by a strong completion package	Unproven technology and design; technology issues exist and/or complex design
Construction risk				
Permitting and siting	All permits have been obtained	Some permits are still outstanding but their receipt is considered very likely	Some permits are still outstanding but the permitting process is well defined and they are considered routine	Key permits still need to be obtained and are not considered routine. Significant conditions may be attached
Type of construction contract	Fixed-price date-certain	Fixed-price date-certain	Fixed-price date-certain	No or partial fixed-price

	Strong	Good	Satisfactory	Weak
	turnkey construction engineering and procurement contract (EPC)	turnkey construction EPC	turnkey construction contract with one or several contractors	turnkey contract and/or interfacing issues with multiple contractors
Completion guarantees	Substantial liquidated damages supported by financial substance and/or strong completion guarantee from sponsors with excellent financial standing	Significant liquidated damages supported by financial substance and/or completion guarantee from sponsors with good financial standing	Adequate liquidated damages supported by financial substance and/or completion guarantee from sponsors with good financial standing	Inadequate liquidated damages or not supported by financial substance or weak completion guarantees
Track record and financial strength of contractor in constructing similar projects	Strong	Good	Satisfactory	Weak
Operating risk				
Scope and nature of operations and maintenance (O & M) contracts	Strong long-term O&M contract, preferably with contractual performance incentives, and/or O&M reserve accounts	Long-term O&M contract, and/or O&M reserve accounts	Limited O&M contract or O&M reserve account	No O&M contract: risk of high operational cost overruns beyond mitigants
Operator's expertise, track record, and financial strength	Very strong, or committed technical assistance of the sponsors	Strong	Acceptable	Limited/weak, or local operator dependent on local authorities

	Strong	Good	Satisfactory	Weak
Off-take risk				
(a) If there is a take-or-pay or fixed-price off-take contract:	Excellent creditworthiness of off-taker; strong termination clauses; tenor of contract comfortably exceeds the maturity of the debt	Good creditworthiness of off-taker; strong termination clauses; tenor of contract exceeds the maturity of the debt	Acceptable financial standing of off-taker; normal termination clauses; tenor of contract generally matches the maturity of the debt	Weak off-taker; weak termination clauses; tenor of contract does not exceed the maturity of the debt
(b) If there is no take-or-pay or fixed-price off-take contract:	Project produces essential services or a commodity sold widely on a world market; output can readily be absorbed at projected prices even at lower than historic market growth rates	Project produces essential services or a commodity sold widely on a regional market that will absorb it at projected prices at historical growth rates	Commodity is sold on a limited market that may absorb it only at lower than projected prices	Project output is demanded by only one or a few buyers or is not generally sold on an organised market
Supply risk				
Price, volume and transportation risk of feed-stocks; supplier's track record and financial strength	Long-term supply contract with supplier of excellent financial standing	Long-term supply contract with supplier of good financial standing	Long-term supply contract with supplier of good financial standing – a degree of price risk may remain	Short-term supply contract or long-term supply contract with financially weak supplier – a degree of price risk definitely remains

	Strong	Good	Satisfactory	Weak
Reserve risks (e.g. natural resource development)	Independently audited, proven and developed reserves well in excess of requirements over lifetime of the project	Independently audited, proven and developed reserves in excess of requirements over lifetime of the project	Proven reserves can supply the project adequately through the maturity of the debt	Project relies to some extent on potential and undeveloped reserves
Strength of Sponsor				
Sponsor's track record, financial strength, and experience in relation to the relevant sector, country or jurisdiction	Strong sponsor with excellent track record and high financial standing	Good sponsor with satisfactory track record and good financial standing	Adequate sponsor with adequate track record and good financial standing	Weak sponsor with no or questionable track record and/or financial weaknesses
Sponsor support, as evidenced by equity, ownership clause and incentive to inject additional cash if necessary	Strong. Project is highly strategic for the sponsor (core business – long-term strategy)	Good. Project is strategic for the sponsor (core business – long-term strategy)	Acceptable. Project is considered important for the sponsor (core business)	Limited. Project is not key to sponsor's long-term strategy or core business
Security Package				
Assignment of contracts and accounts	Fully comprehensive	Comprehensive	Acceptable	Weak
Pledge of assets, taking into account quality, value and liquidity of assets	First perfected security interest in all project assets, contracts, permits and accounts necessary to run the project	Perfected security interest in all project assets, contracts, permits and accounts necessary to run the project	Acceptable security interest in all project assets, contracts, permits and accounts necessary to run the project	Little security or collateral for lenders; weak negative pledge clause

	Strong	Good	Satisfactory	Weak
Lender's control over cash flow (e.g. cash sweeps, independent escrow accounts)	Strong	Satisfactory	Fair	Weak
Strength of the covenant package (mandatory prepayments, payment deferrals, payment cascade, dividend restrictions, etc.)	Covenant package is strong for this type of project Project may issue no additional debt	Covenant package is satisfactory for this type of project Project may issue extremely limited additional debt	Covenant package is fair for this type of project Project may issue limited additional debt	Covenant package is insufficient for this type of project Project may issue unlimited additional debt
Reserve funds (debt service, O&M, renewal and replacement, unforeseen events, etc.)	Longer than average coverage period, all reserve funds fully funded in cash or letters of credit from highly rated bank	Average coverage period, all reserve funds fully funded	Average coverage period, all reserve funds fully funded	Shorter than average coverage period, reserve funds funded from operating cash flows

Table 7S-2 – Guidelines on Supervisory Rating Categories for Object Finance

	Strong	Good	Satisfactory	Weak
Financial Strength				
Market conditions	Demand is strong and growing, strong entry barriers, low sensitivity to changes in technology and economic outlook	Demand is strong and stable. Some entry barriers, some sensitivity to changes in technology and economic outlook	Demand is adequate and stable, limited entry barriers, significant sensitivity to changes in technology and economic outlook	Demand is weak and declining, vulnerable to changes in technology and economic outlook, highly uncertain environment
Financial ratios (debt service coverage ratio and loan-to-value ratio)	Strong financial ratios considering the type of asset. Very robust economic assumptions	Strong / acceptable financial ratios considering the type of asset. Robust project economic assumptions	Standard financial ratios for the asset type	Aggressive financial ratios considering the type of asset
Stress analysis	Stable long-term revenues, capable of withstanding severely stressed conditions through an economic cycle	Satisfactory short-term revenues. Loan can withstand some financial adversity. Default is only likely under severe economic conditions	Uncertain short-term revenues. Cash flows are vulnerable to stresses that are not uncommon through an economic cycle. The loan may default in a normal downturn	Revenues subject to strong uncertainties; even in normal economic conditions the asset may default, unless conditions improve
Market liquidity	Market is structured on a worldwide basis; assets are highly liquid	Market is worldwide or regional; assets are relatively liquid	Market is regional with limited prospects in the short term, implying lower liquidity	Local market and/or poor visibility. Low or no liquidity, particularly on niche markets

	Strong	Good	Satisfactory	Weak
Political and legal environment				
Political risk, including transfer risk	Very low; strong mitigation instruments, if needed	Low; satisfactory mitigation instruments, if needed	Moderate; fair mitigation instruments	High; no or weak mitigation instruments
Legal and regulatory risks	Country or jurisdiction is favourable to repossession and enforcement of contracts	Country or jurisdiction is favourable to repossession and enforcement of contracts	Country or jurisdiction is generally favourable to repossession and enforcement of contracts, even if repossession might be long and/or difficult	Poor or unstable legal and regulatory environment. Country or jurisdiction may make repossession and enforcement of contracts lengthy or impossible
Transaction characteristics				
Financing term compared to the economic life of the asset	Full payout profile/ minimum balloon. No grace period	Balloon more significant, but still at satisfactory levels	Important balloon with potentially grace periods	Repayment in fine or high balloon
Operating risk				
Permits / licensing	All permits have been obtained; asset meets current and foreseeable safety regulations	All permits obtained or in the process of being obtained; asset meets current and foreseeable safety regulations	Most permits obtained or in process of being obtained, outstanding ones considered routine, asset meets current safety regulations	Problems in obtaining all required permits, part of the planned configuration and/or planned operations might need to be revised

	Strong	Good	Satisfactory	Weak
Scope and nature of O & M contracts	Strong long-term O&M contract, preferably with contractual performance incentives, and/or O&M reserve accounts (if needed)	Long-term O&M contract, and/or O&M reserve accounts (if needed)	Limited O&M contract or O&M reserve account (if needed)	No O&M contract: risk of high operational cost overruns beyond mitigants
Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease	Excellent track record and strong re-marketing capability	Satisfactory track record and re-marketing capability	Weak or short track record and uncertain re-marketing capability	No or unknown track record and inability to re-market the asset
Asset characteristics				
Configuration, size, design and maintenance (i.e. age, size for a plane) compared to other assets on the same market	Strong advantage in design and maintenance. Configuration is standard such that the object meets a liquid market	Above average design and maintenance. Standard configuration, maybe with very limited exceptions – such that the object meets a liquid market	Average design and maintenance. Configuration is somewhat specific, and thus might cause a narrower market for the object	Below average design and maintenance. Asset is near the end of its economic life. Configuration is very specific; the market for the object is very narrow
Resale value	Current resale value is well above debt value	Resale value is moderately above debt value	Resale value is slightly above debt value	Resale value is below debt value
Sensitivity of the asset value and liquidity to economic cycles	Asset value and liquidity are relatively insensitive to economic cycles	Asset value and liquidity are sensitive to economic cycles	Asset value and liquidity are quite sensitive to economic cycles	Asset value and liquidity are highly sensitive to economic cycles

	Strong	Good	Satisfactory	Weak
Strength of sponsor				
Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease	Excellent track record and strong re-marketing capability	Satisfactory track record and re-marketing capability	Weak or short track record and uncertain re-marketing capability	No or unknown track record and inability to re-market the asset
Sponsors' track record and financial strength	Sponsors with excellent track record and high financial standing	Sponsors with good track record and good financial standing	Sponsors with adequate track record and good financial standing	Sponsors with no or questionable track record and/or financial weaknesses
Security Package				
Asset control	Legal documentation provides the lender effective control (e.g. a first perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it	Legal documentation provides the lender effective control (e.g. a perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it	Legal documentation provides the lender effective control (e.g. a perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it	The contract provides little security to the lender and leaves room to some risk of losing control on the asset
Rights and means at the lender's disposal to monitor the location and condition of the asset	The lender is able to monitor the location and condition of the asset, at any time and place (regular reports, possibility to lead inspections)	The lender is able to monitor the location and condition of the asset, almost at any time and place	The lender is able to monitor the location and condition of the asset, almost at any time and place	The lender's ability to monitor the location and condition of the asset is limited

	Strong	Good	Satisfactory	Weak
Insurance against damages	Strong insurance coverage including collateral damages with top quality insurance companies	Satisfactory insurance coverage (not including collateral damages) with good quality insurance companies	Fair insurance coverage (not including collateral damages) with acceptable quality insurance companies	Weak insurance coverage (not including collateral damages) or with weak quality insurance companies

Table 7S-3 – Guidelines on Supervisory Rating Categories for Commodities Finance

	Strong	Good	Satisfactory	Weak
Financial Strength				
Degree of over-collateralisation of trade	Strong	Good	Satisfactory	Weak
Political and legal environment				
Country or jurisdiction risk	No country or jurisdiction risk	Limited exposure to country or jurisdiction risk (in particular, offshore location of reserves in an emerging country or jurisdiction)	Exposure to country or jurisdiction risk (in particular, offshore location of reserves in an emerging country or jurisdiction)	Strong exposure to country or jurisdiction risk (in particular, inland reserves in an emerging country or jurisdiction)
Mitigation of country or jurisdiction risks	Very strong mitigation: Strong offshore Mechanisms Strategic commodity 1st class buyer	Strong mitigation: Offshore mechanisms Strategic commodity Strong buyer	Acceptable mitigation: Offshore mechanisms Less strategic commodity Acceptable buyer	Only partial mitigation: No offshore mechanisms Non-strategic commodity Weak buyer
Asset characteristics				
Liquidity and susceptibility to damage	Commodity is quoted and can be hedged through futures or OTC instruments. Commodity is not susceptible to damage	Commodity is quoted and can be hedged through OTC instruments. Commodity is not susceptible to damage	Commodity is not quoted but is liquid. There is uncertainty about the possibility of hedging.	Commodity is not quoted. Liquidity is limited given the size and depth of the market. No appropriate hedging instruments.

	Strong	Good	Satisfactory	Weak
			Commodity is not susceptible to damage	Commodity is susceptible to damage
Strength of Sponsor				
Financial strength of trader	Very strong, relative to trading philosophy and risks	Strong	Adequate	Weak
Track record, including ability to manage the logistic process	Extensive experience with the type of transaction in question. Strong record of operating success and cost efficiency	Sufficient experience with the type of transaction in question. Above average record of operating success and cost efficiency	Limited experience with the type of transaction in question. Average record of operating success and cost efficiency	Limited or uncertain track record in general. Volatile costs and profits
Trading controls and hedging policies	Strong standards for counterparty selection, hedging, and monitoring	Adequate standards for counterparty selection, hedging, and monitoring	Past deals have experienced no or minor problems	Trader has experienced significant losses on past deals
Quality of financial disclosure	Excellent	Good	Satisfactory	Financial disclosure contains some uncertainties or is insufficient
Security Package				
Asset control	First perfected security interest provides the lender legal control of the assets at any time if needed	First perfected security interest provides the lender legal control of the assets at any time if needed	At some point in the process, there is a rupture in the control of the assets by the lender. The rupture is mitigated	Contract leaves room for some risk of losing control over the assets. Recovery could be jeopardised

	Strong	Good	Satisfactory	Weak
			by knowledge of the trade process or a third party undertaking as the case may be	
Insurance against damages	Strong insurance coverage including collateral damages with top quality insurance companies	Satisfactory insurance coverage (not including collateral damages) with good quality insurance companies	Fair insurance coverage (not including collateral damages) with acceptable quality insurance companies	Weak insurance coverage (not including collateral damages) or with weak quality insurance companies

Table 7S-4 – Guidelines on Supervisory Rating Categories for IPRE and HVCRE Lending

	Strong	Good	Satisfactory	Weak
Financial Strength				
Market conditions	The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is equal or lower than forecasted demand	The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is roughly equal to forecasted demand	Market conditions are roughly in equilibrium. Competitive properties are coming on the market and others are in the planning stages. The project's design and capabilities may not be state-of-the-art compared to new projects	Market conditions are weak. It is uncertain when conditions will improve and return to equilibrium. The project is losing tenants at lease expiration. New lease terms are less favourable compared to those expiring
Financial ratios and advance rate	The property's debt service coverage ratio (DSCR) is considered strong (DSCR is not relevant for the construction phase) and its loan to value ratio (LTV) is considered low given its property type. Where a secondary market exists, the transaction is underwritten to market standards	The DSCR (not relevant for development real estate) and LTV are satisfactory. Where a secondary market exists, the transaction is underwritten to market standards	The property's DSCR has deteriorated and its value has fallen, increasing its LTV	The property's DSCR has deteriorated significantly and its LTV is well above underwriting standards for new loans
Stress analysis	The property's resources, contingencies and liability	The property can meet its	During an economic	The property's financial

	Strong	Good	Satisfactory	Weak
	structure allow it to meet its financial obligations during a period of severe financial stress (e.g. interest rates, economic growth)	financial obligations under a sustained period of financial stress (e.g. interest rates, economic growth). The property is likely to default only under severe economic conditions	downturn, the property would suffer a decline in revenue that would limit its ability to fund capital expenditures and significantly increase the risk of default	condition is strained and is likely to default unless conditions improve in the near term
Cash-flow predictability				
(a) For complete and stablilised property	The property's leases are long-term with creditworthy tenants and their maturity dates are scattered. The property has a track record of tenant retention upon lease expiration. Its vacancy rate is low. Expenses (maintenance, insurance, security, and property taxes) are predictable	Most of the property's leases are long-term, with tenants that range in creditworthiness. The property experiences a normal level of tenant turnover upon lease expiration. Its vacancy rate is low. Expenses are predictable	Most of the property's leases are medium rather than long-term with tenants that range in creditworthiness. The property experiences a moderate level of tenant turnover upon lease expiration. Its vacancy rate is moderate. Expenses are relatively predictable but vary in relation to revenue	The property's leases are of various terms with tenants that range in creditworthiness. The property experiences a very high level of tenant turnover upon lease expiration. Its vacancy rate is high. Significant expenses are incurred preparing space for new tenants
(b) For complete but not stabilised property	Leasing activity meets or exceeds projections. The project should achieve	Leasing activity meets or exceeds projections. The	Most leasing activity is within projections; however, stabilisation	Market rents do not meet expectations. Despite achieving target occupancy rate, cash flow coverage is

	Strong	Good	Satisfactory	Weak
	stabilisation in the near future	project should achieve stabilisation in the near future	will not occur for some time	tight due to disappointing revenue
(c) For construction phase	The property is entirely pre-leased through the tenor of the loan or pre-sold to an investment grade tenant or buyer, or the Reporting Bank has a binding commitment for take-out financing from an investment grade lender	The property is entirely pre-leased or pre-sold to a creditworthy tenant or buyer, or the Reporting Bank has a binding commitment for permanent financing from a creditworthy lender	Leasing activity is within projections but the building may not be pre-leased and there may not exist a take-out financing. The Reporting Bank may be the permanent lender	The property is deteriorating due to cost overruns, market deterioration, tenant cancellations or other factors. There may be a dispute with the party providing the permanent financing
Asset characteristics				
Location	Property is located in highly desirable location that is convenient to services that tenants desire	Property is located in desirable location that is convenient to services that tenants desire	The property location lacks a competitive advantage	The property's location, configuration, design and maintenance have contributed to the property's difficulties
Design and condition	Property is favoured due to its design, configuration, and maintenance, and is highly competitive with new properties	Property is appropriate in terms of its design, configuration and maintenance. The property's design and capabilities are competitive with new properties	Property is adequate in terms of its configuration, design and maintenance	Weaknesses exist in the property's configuration, design or maintenance

	Strong	Good	Satisfactory	Weak
Property is under construction	Construction budget is conservative and technical hazards are limited. Contractors are highly qualified	Construction budget is conservative and technical hazards are limited. Contractors are highly qualified	Construction budget is adequate and contractors are ordinarily qualified	Project is over budget or unrealistic given its technical hazards. Contractors may be under qualified
Strength of Sponsor/Developer				
Financial capacity and willingness to support the property	The sponsor or developer made a substantial cash contribution to the construction or purchase of the property. The sponsor or developer has substantial resources and limited direct and contingent liabilities. The sponsor or developer's properties are diversified geographically and by property type	The sponsor or developer made a material cash contribution to the construction or purchase of the property. The sponsor or developer's financial condition allows it to support the property in the event of a cash flow shortfall. The sponsor or developer's properties are located in several geographic regions	The sponsor or developer's contribution may be immaterial or non-cash. The sponsor or developer is average to below average in financial resources	The sponsor or developer lacks capacity or willingness to support the property
Reputation and track record with similar properties	Experienced management and high sponsors' quality. Strong reputation and lengthy and successful record with similar properties	Appropriate management and sponsors' quality. The sponsor or management has a successful record with similar properties	Moderate management and sponsors' quality. Management or sponsor track record does not raise serious concerns	Ineffective management and substandard sponsors' quality. Management and sponsor difficulties have contributed to difficulties in managing properties in the past

	Strong	Good	Satisfactory	Weak
Relationships with relevant real estate actors	Strong relationships with leading actors such as leasing agents	Proven relationships with leading actors such as leasing agents	Adequate relationships with leasing agents and other parties providing important real estate services	Poor relationships with leasing agents and/or other parties providing important real estate services
Security Package				
Nature of charge	Perfected first charge	Perfected first charge. Lenders in some markets extensively use loan structures that include junior charges. Junior charges may be indicative of this level of risk if the total LTV inclusive of all senior positions does not exceed a typical first loan LTV	Perfected first charge. Lenders in some markets extensively use loan structures that include junior charges. Junior charges may be indicative of this level of risk if the total LTV inclusive of all senior positions does not exceed a typical first loan LTV	Ability of lender to foreclose is constrained
Assignment of rents (for projects leased to long-term tenants)	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to remit rents directly to the lender, such as a current rent roll and copies of the project's leases	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as current rent roll and copies of the project's leases	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as current rent roll and copies of the project's leases	The lender has not obtained an assignment of the leases or has not maintained the information necessary to readily provide notice to the building's tenants

	Strong	Good	Satisfactory	Weak
Quality of the insurance coverage	Appropriate	Appropriate	Appropriate	Substandard

Annex 7T

USE OF TOP-DOWN APPROACH FOR PURCHASED RECEIVABLES

Section 1: Overview

1.1 The requirements in this Annex apply to a Reporting Bank which intends to use the top-down approach to calculate any of the following:

(a) $K_{df,cp}$ and $K_{df,sp}$ for purchased corporate receivables and purchased corporate small business receivables respectively;

(b) $K_{dil,cp}$,$K_{dil,sp}$ and $K_{dil,rp,}$ for purchased corporate receivables, purchased corporate small business receivables and purchased retail receivables respectively.

1.2 A Reporting Bank must assign the purchased receivables which meet the conditions in paragraph 7.4.98(a) to (e) into sufficiently homogeneous pools so that accurate and consistent estimates of PD and LGD (or EL) for default losses and estimates of EL for dilution losses can be determined.

1.3 For the purposes of paragraph 1.2 of this Annex, the Reporting Bank must reflect the seller's underwriting practices and the heterogeneity of the customers of the seller in the assignment of purchased receivables which meet the conditions in paragraph 7.4.98(a) to (e).

1.4 Despite paragraph 2.13 of this Annex, a Reporting Bank must ensure that the methods and data used to derive estimates of PD, LGD and EL under the top-down approach complies with the requirements in Section 5 of Annex 7X[461]. In particular, the Reporting Bank must ensure that the parameterisation process incorporates all relevant information available to the Reporting Bank regarding the quality of the underlying purchased receivables and data for similar pools provided by the seller, the Reporting Bank or by external sources. A Reporting Bank must determine if the data[462] provided by the seller is consistent with expectations agreed upon by both the Reporting Bank and the seller[463].

Section 2: Operational Requirements and Guidelines

2.1 A Reporting Bank which has purchased receivables must demonstrate that current and future advances can be repaid from the liquidation of or collections against the receivables pool. A Reporting Bank must not qualify for the top-down approach unless it monitors closely and controls the receivable pool and the overall lending relationship. The Reporting Bank must demonstrate to the satisfaction of the Authority its compliance with the requirements stated in paragraphs 2.2 to 2.9 of this Annex.

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461 A Reporting Bank should also ensure that the method used to derive estimates of PD, LGD, and EL under the top-down approach meets the guidelines in Section 5 of Annex 7X and Annex 7Z.

462 For example, data concerning the type, volume and on-going quality of receivables purchased.

463 If this is not the case, the Reporting Bank should obtain and rely upon more relevant data.

Legal Certainty

2.2 The Reporting Bank must satisfy itself that the structure of the facility is such that it has effective ownership and control of all cash remittances from the receivables under all foreseeable circumstances, including incidences of seller or servicer distress and bankruptcy.

2.3 In instances where the obligor of the purchased receivables makes payments directly to a seller or a servicer, a Reporting Bank must verify regularly that payments are forwarded completely and in accordance to the contractually agreed terms.

2.4 A Reporting Bank must have procedures in place to ensure that ownership over the purchased receivables and cash receipts are protected against bankruptcy stays or legal challenges that could materially delay the ability of the seller to liquidate or assign the receivables or retain control over cash receipts.

Monitoring Systems

2.5 A Reporting Bank must monitor both the quality of the purchased receivables and the financial condition of the seller and servicer. In particular, a Reporting Bank must –

(a) assess the correlation among the quality of the purchased receivables and the financial condition of both the seller and servicer;

(b) put in place policies and procedures that provide adequate safeguards to protect against such contingencies, including the assignment of an internal risk rating for each seller and servicer;

(c) have clear and effective policies and procedures for determining seller and servicer eligibility, which must include the conduct of periodic reviews of sellers and servicers, which findings must be documented, in order to verify the accuracy of reports from the seller or servicer, to detect fraud or any operational weaknesses and to verify the quality of the credit policies of the seller and the collection policies and procedures of the servicer;

(d) assess the characteristics of the receivables pool including –

(i) over-advances;

(ii) history of the seller's arrears, bad debts and bad debt allowances;

(iii) payment terms; and

(iv) potential contra accounts;

(e) have effective policies and procedures for monitoring on an aggregate basis concentrations both within and across receivable pools of single obligors of purchased receivables; and

(f) receive timely and sufficiently detailed reports of receivables ageings and dilutions to –

(i) ensure compliance with the Reporting Bank's eligibility criteria and advancing policies governing purchased receivables; and

(ii) provide an effective means with which to monitor and confirm the seller's terms of sale[464] and dilution.

Work-Out Systems

2.6 A Reporting Bank must have systems and procedures for detecting deterioration in the financial condition of the seller and deterioration in the quality of the receivables at an early stage, and for addressing emerging problems proactively.

2.7 In addition, a Reporting Bank must have clear and effective policies, procedures and where applicable, information systems to –

(a) monitor compliance with –

(i) all contractual terms of the facility (including covenants, advancing formulas, concentration limits, early amortisation triggers etc.); and

(ii) internal policies governing advance rates and receivables eligibility;

in order to track covenant violations and waivers, and exceptions to established policies and procedures;

(b) detect, approve, monitor and correct over-advances so as to limit inappropriate draws; and

(c) address situations regarding financially weakened sellers or servicers and deterioration in the quality of receivable pools.[465]

Systems for Controlling Collateral, Credit Availability and Cash

2.8 A Reporting Bank must have clear and effective policies and procedures governing the control of purchased receivables, credit availability and cash. In particular, a Reporting Bank must have –

(a) written internal policies that specify all material elements[466] of the receivables purchase programme, (including advancing rates, eligible

[464] For example, invoice date ageing.

[465] These may include –
(a) early termination triggers in revolving loans and other covenant protections;
(b) a structured and disciplined approach to dealing with covenant violations; and
(c) clear and effective policies and procedures for initiating legal actions and dealing with problem purchased receivables.

[466] These elements should take into account all relevant and material factors, including the financial condition of the seller and servicer, risk concentrations, and trends in the quality of the purchased receivables and the customer base of the seller.

collateral, necessary documentation, concentration limits, and how cash receipts are to be handled); and

(b) internal systems to ensure that funds are advanced only against specified supporting collateral and documentation[467].

Compliance with Internal Policies and Procedures

2.9 A Reporting Bank must have an internal process for assessing compliance with all internal policies and procedures, which must include –

(a) regular internal and external audits of all critical phases of the receivables purchase programme of the Reporting Bank;

(b) verification of the separation of duties between –

(i) the assessment of the seller and servicer and the assessment of the obligor;

(ii) the assessment of the seller and servicer and the field audit of the seller and servicer; and

(c) evaluations of back office operations, with particular focus on qualifications, experience, staffing levels and supporting systems.

Calculation of Capital Requirements for Default Risk, $K_{df,cp}$ and $K_{df,sp}$ using the top-down approach

2.10 For each pool of qualifying corporate purchased receivables and corporate small business purchased receivables, the Reporting Bank must estimate the one-year EL arising from default risk expressed as a percentage of the total EAD arising from the receivables in the relevant pool. The Reporting Bank must calculate the estimate without regard to any assumption of recourse or guarantees from the seller or other parties.

2.11 With the estimated EL for each pool, a Reporting Bank must calculate $K_{df,cp}$ using the formula in paragraph 7.4.62 or 7.4.63 as appropriate, and $K_{df,sp}$ using the formula in paragraph 7.4.65 or 7.4.66 as appropriate, subject to all of the following:

(a) where the Reporting Bank uses the formula in paragraph 7.4.65, the Reporting Bank must calculate S as the weighted average by individual exposures of the pool of purchased receivables;

(b) where a Reporting Bank does not have the information to calculate the average size of the pool, the Reporting Bank must calculate $K_{df,sp}$ using the formula in paragraph 7.4.62.

2.12 For the purposes of paragraph 2.11 of this Annex, a Reporting Bank adopting the F-IRBA for its general corporate asset sub-class or corporate small business asset sub-

[467] For example, servicer attestations, invoices, or shipping documents.

class must calculate $K_{df,cp}$ and $K_{df,sp}$, respectively, with the following as inputs into the formulae:

(a) if the Reporting Bank is unable to decompose its EL estimate into its PD and LGD components in a reliable manner, but it is able to demonstrate that the exposures are exclusively senior claims to corporate obligors, it must determine PD, LGD and EAD as follows:

(i) LGD = 0.40;

(ii) PD = EL/LGD;

(iii) EAD = EAD calculated in accordance with Division 2 of Part VII – K_{dil};

(b) if the Reporting Bank is unable to decompose its EL estimate into its PD and LGD components in a reliable manner, and it is unable to demonstrate that the exposures are exclusively senior claims to corporate obligors, it must determine PD, LGD and EAD as follows:

(i) LGD = 1.00;

(ii) PD = EL;

(iii) EAD = EAD calculated in accordance with Division 2 of Part VII – K_{dil};

(c) if the Reporting Bank is able to estimate PD in accordance with Annex 7X in a reliable manner, it must calculate K_{df} using the F-IRBA pursuant to paragraphs 7.4.62 to 7.4.79, 7.4.81, 7.4.109, and 7.4.111 to 7.4.114, where applicable.

2.13 For the purposes of paragraph 2.11 of this Annex, a Reporting Bank adopting the A-IRBA for its general corporate asset sub-class or corporate small business asset sub-class must calculate $K_{df,cp}$ and $K_{df,sp}$, respectively, with the following as inputs into the formulae:

(a) if the Reporting Bank is able to estimate PD in a reliable manner, it must determine PD, LGD and EAD as follows:

(i) PD = PD estimated in accordance with Annex 7X;

(ii) LGD = EL/PD, subject to a floor equal to the long-run default-weighted average loss rate given default;

(iii) EAD = EAD calculated in accordance with Division 2 of Part VII – K_{dil};

(b) if the Reporting Bank is able to estimate LGD in a reliable manner, it must determine PD, LGD and EAD as follows:

(i) LGD = LGD estimated in accordance with Annex 7X, subject to a floor equal to the long-run default-weighted average loss rate given default;

(ii) PD = EL/LGD;

(iii) EAD = EAD calculated in accordance with Division 2 of Part VII − K_{dil}.

2.14 For the purposes of paragraphs 2.12 and 2.13 of this Annex, a Reporting Bank must calculate EAD for a purchase facility which is a revolving loan as follows:

EAD = current amount of receivables purchased + (0.4 x undrawn purchase commitment) − K_{dil}.

2.15 For the purposes of paragraph 2.13 of this Annex, a Reporting Bank must calculate M as follows:

(a) for drawn amounts, M = the pool's exposure-weighted average effective M as determined in Annex 7V;

(b) for undrawn amounts where the facility contains covenants, early amortisation triggers, or other features that protect the Reporting Bank against a significant deterioration in the quality of the future receivables it is required to purchase over the facility's term , M = the pool's exposure-weighted average effective M as determined in Annex 7V;

(c) for undrawn amounts where the facility does not contain such effective protections, M = longest-dated potential receivable under the purchase agreement + remaining maturity of the purchase facility.

Annex 7U

DEFINITION OF IRBA PARAMETERS

Section 1: Introduction

1.1 A Reporting Bank must derive estimates of PD, and where relevant LGD and EAD, that are consistent with the definitions under Sections 2, 3 and 4 of this Annex as inputs to the IRBA risk weight functions in Division 4 of Part VII.

1.2 A Reporting Bank must calculate M in accordance with Annex 7V as an input to the IRBA risk weight functions for the IRBA wholesale asset class under Division 4 of Part VII.

Section 2: Definition of PD

2.1 For the IRBA wholesale asset class, the PD attached to any particular obligor grade is a statistic that measures the long-run average of one-year default rates for obligors in that grade. A Reporting Bank must calculate PD in accordance with the following formula[468]:

$$PD_t = D_t/N_t$$

where –

(a) "PD_t" refers to the probability of default over one year for a particular obligor grade;

(b) "N_t" refers to the total number of obligors assigned to that obligor grade at the beginning of year t, i.e. the obligor grade cohort; and

(c) "D_t" is the number of defaults observed for the obligor grade cohort over year t.

2.2 For the IRBA retail asset class, the PD attached to any particular pool of exposures is a statistic that measures the long-run average of one-year default rates for obligors in that pool. A Reporting Bank must calculate PD in accordance with the formula in paragraph 2.1 of this Annex, with "obligor grade" in paragraph 2.1 of this Annex read as "pool of exposures".

[468] A Reporting Bank should assess the effects of all of the following events when calculating historical outcomes and deriving forward-looking estimates of PD_t for any obligor grade:
(a) withdrawals of obligors from the obligor grade cohort over a one-year horizon;
(b) addition of obligors to that particular obligor grade cohort during the one-year horizon and defaults of such obligors within the same one-year horizon.
If the effects are material, the Reporting Bank should take them into account when estimating PD_t. This may entail modifying the formula for calculating PD_t under paragraph 2.1 of this Annex, or using other methods to account for the bias in the Reporting Bank's PD estimate arising from an unequal distribution of such events.

Section 3: Definition of LGD

3.1 The LGD attached to any particular facility grade or retail pool of exposures is a statistic that measures the long-run rate of economic loss, as specified in paragraph 5.6 of Annex 7X, associated with any facility grade or retail pool of exposures should a default occur, and is measured as a percentage of the EAD.

Section 4: Definition of EAD

4.1 The EAD for an on-balance sheet asset or off-balance sheet item is defined as the expected gross exposure of the facility upon default of the obligor. A Reporting Bank must estimate EAD in accordance with the requirements under Division 2 of Part VII.

Annex 7V

CALCULATION OF M

Section 1: Calculation of M for IRBA Wholesale Asset Class

1.1 Subject to paragraphs 1.2 and 1.3 of this Annex, and Sections 2 to 5 of this Annex, a Reporting Bank adopting the F-IRBA or A-IRBA for an exposure that falls within the IRBA wholesale asset class, must calculate the M in years for that exposure based on the contractual cash flow schedule for that exposure in accordance with the following formula:

$$M = \sum_t t \times CF_t \Big/ \sum_t CF_t$$

where "CF_t" denotes the cash flows (including principal, interest payments and fees) contractually payable by the obligor in period t, subject to the following:

(a) M must be no greater than 5 years;

(b) M must be no lower than one year.

1.2 For an exposure to a revolving loan, a Reporting Bank must determine M using the maximum contractual termination date of the facility. The Reporting Bank must not use the repayment date of the current drawn amounts to calculate M.

1.3 A Reporting Bank may cap M at one year for each netting set for which the Reporting Bank calculates CVA RWA under either the BA-CVA or the SA-CVA.

Section 2: Calculation of M for CCR Exposures Covered by Qualifying Bilateral Netting Agreements

2.1 Subject to paragraph 2.2 of this Annex, and Sections 3 to 5 of this Annex, a Reporting Bank adopting the F-IRBA or A-IRBA for any CCR exposures that fall within the IRBA wholesale asset class and that are subject to a qualifying bilateral netting agreement, must calculate the M in years for all the transactions to a single counterparty as follows:

(a) calculate M_i in years, which is the M for each transaction with the counterparty in accordance with paragraph 1.1 of this Annex;

(b) calculate M in accordance with the following formula:

$$M = \sum_i M_i \times \frac{N_i}{N}$$

where "N_i" denotes the notional amount of each transaction and N denotes the notional amount of all the transactions covered by the qualifying bilateral netting agreement.

2.2 A Reporting Bank may cap M at one year for each netting set for which the Reporting Bank calculates CVA RWA under either the BA-CVA or the SA-CVA.

Section 3: Calculation of M for CCR Internal Models Method where the Original Maturity of the Longest-Dated Contract Exceeds One Year

3.1 Subject to paragraphs 3.2 and 3.3 of this Annex and Section 5 of this Annex, a Reporting Bank using the CCR internal models method must calculate the M for netting sets in which the original maturity of the longest-dated contract within the set is greater than one year as follows:

$$M^{469} = \frac{\sum_{k=1}^{t_k \le 1year} \text{Effective } EE_k \times \Delta t_k \times df_k + \sum_{t_k > 1year}^{maturity} EE_k \times \Delta t_k \times df_k}{\sum_{k=1}^{t_k \le 1year} \text{Effective } EE_k \times \Delta t_k \times df_k}$$

where "df_k" is the risk-free discount factor for future time period t_k.

3.2 A Reporting Bank must ensure that M calculated in accordance with paragraph 3.1 of this Annex is no greater than 5 years and no lower than one year.

3.3 A Reporting Bank may cap M at one year for each netting set for which the Reporting Bank calculates CVA RWA under either the BA-CVA or the SA-CVA.

Section 4: Calculation of M for Short-term Exposures

4.1 Despite paragraphs 1.1 and 2.1 of this Annex and subject to paragraphs 4.4, 4.5 and 5.1 of this Annex, a Reporting Bank adopting the CCR internal models method, or the F-IRBA or A-IRBA for a short-term exposure that falls within the IRBA wholesale asset class, must calculate M in years for that exposure in accordance with the formula in paragraph 1.1 of this Annex, except that M must be at least one day and the requirement that M must be no lower than one year does not apply.

4.2 For the purposes of paragraph 4.1 of this Annex, a short-term exposure means –

(a) any self-liquidating trade transaction, including any issued or confirmed letter of credit, that has an original maturity of less than one year; or

(b) any one of the following exposures that is transaction-oriented, has an original maturity of less than one year and does not form part of the ongoing financing of an obligor by a Reporting Bank:

469 The formula adjusts M to reflect rollover risk by replacing EE with effective EE for forecasting horizons under one year. Rollover risk is the amount by which EPE is understated when future transactions with a counterparty are expected to be conducted on an ongoing basis, but the additional exposure generated by the future transactions is not included in calculation of EPE.

(i) any OTC derivative transaction and margin lending transaction;

(ii) any repo-style transaction;

(iii) any short-term loan and deposit, including any negotiable certificates of deposit;

(iv) any exposure arising from settling the purchase and sale of securities, including any overdraft arising from failed securities settlements provided that such an overdraft does not continue for more than 5 business days;

(v) any exposure arising from cash settlements by wire transfer, including any overdraft arising from failed transfers provided that such an overdraft does not continue for more than 5 business days;

(vi) any exposure to banks, merchant banks and finance companies arising from foreign exchange or money market transactions;

(vii) any exposure to central governments and central banks that are denominated and funded in the local currency of that country or jurisdiction.

4.3 For transactions referred to in paragraph 4.2(b)(i) and (ii) of this Annex, the Reporting Bank must ensure that the documentation applicable to the exposure requires daily remargining and daily revaluation and provides for the prompt liquidation or setoff of collateral in the event of default or failure to remargin.

4.4 For the purposes of paragraph 4.1 of this Annex, for a short-term exposure falling within paragraph 4.2(a) of this Annex which is an import or export letter of credit or a similar transaction, a Reporting Bank must calculate M in years for that exposure based on the remaining maturity of the transaction, subject to M being at least one day.

4.5 Despite paragraphs 2.1 and 4.1 of this Annex and subject to Section 5 of this Annex, a Reporting Bank adopting the F-IRBA or A-IRBA for an OTC derivative transaction, margin lending transaction or repo-style transaction that qualifies as a short-term exposure as defined in paragraph 4.2 of this Annex, falls within the IRBA wholesale asset class and is subject to a qualifying bilateral netting agreement or a qualifying cross-product netting agreement must calculate the M in years for all the transactions to a single counterparty as follows:

(a) calculate M_i in years, which is the M for each transaction subject to a qualifying bilateral netting agreement or a qualifying cross-product netting agreement with the counterparty in accordance with paragraph 4.1 of this Annex; and

(b) calculate M in accordance with the following formula:

$$M = \sum_i M_i \times \frac{N_i}{N}$$

where –

(i) "N_i" refers to the notional amount of each transaction;

(ii) "N" refers to the notional amount of all the transactions covered by the qualifying bilateral netting agreement or qualifying cross-product netting agreement; and

(iii) "M" is subject to a floor equal to the minimum holding period for the transaction type set out in Table 7J-2, or where there is more than one transaction type, a floor equal to the highest holding period.

Section 5: Calculation of M using Residual Contractual Maturity

5.1 Subject to paragraph 5.2 of this Annex, a Reporting Bank which is not able to calculate M in accordance with Sections 1 to 4 of this Annex must use a more conservative measure of M, calculated as the maximum remaining time (in years) that the obligor is permitted to take to fully discharge its contractual obligation (including principal, interest, and fees) under the terms of the agreement giving rise to the obligation[470], subject to a minimum M of one year and a cap on M of 5 years. The Reporting Bank must not apply the one-year maturity floor to short-term exposures as defined in paragraph 4.2 of this Annex.

5.2 A Reporting Bank may cap M at one year for each netting set for which the Reporting Bank calculates CVA RWA under either the BA-CVA or the SA-CVA.

Section 6: Calculation of Tranche Maturity for Securitisation Exposures

6.1 Subject to paragraphs 6.2 and 6.3 of this Annex, a Reporting Bank must calculate the tranche maturity M_T of a securitisation exposure in years –

(a) as the weighted-average maturity of the contractual cash flows of the tranche, in accordance with the following formula:

$$M_T = \sum_t t \cdot CF_t \Big/ \sum_t CF_t$$

where "CF_t" denotes the cash flows (including principal, interest payments and fees) contractually payable by the obligor in period t. The contractual cash flows must be unconditional and must not be dependent on the actual performance of the underlying exposures; or

(b) on the basis of the final legal maturity of the tranche, in accordance with the following formula:

$$M_T = 1 + (M_L - 1) \cdot 80\%$$

[470] In some instances, this will correspond to the notional maturity of the instrument.

where "M_L" is the final legal maturity of the tranche.

6.2 The Reporting Bank must calculate tranche maturity on the basis of the final legal maturity in accordance with paragraph 6.1(b) of this Annex, if unconditional contractual payment dates are not available.

6.3 The Reporting Bank must subject the tranche maturity calculated in accordance with paragraph 6.1 of this Annex to a cap of 5 years and a floor of one year.

6.4 In calculating M_T, a Reporting Bank must take into account the maximum period of time it is exposed to potential losses from the underlying exposures as follows:

(a) where the Reporting Bank provides a commitment to a securitisation transaction, the Reporting Bank must calculate M_T of the securitisation exposure resulting from this commitment as the sum of the contractual maturity of the commitment and the longest maturity of the underlying exposures to which the Reporting Bank would be exposed after a draw on the commitment has occurred. If the underlying exposures are revolving loans, the Reporting Bank must apply the longest contractually possible remaining maturity of the asset that might be added to the underlying pool during the revolving period, rather than the longest maturity of the assets currently in the underlying pool;

(b) where the Reporting Bank provides any other instrument to a securitisation transaction resulting in a securitisation exposure of the Reporting Bank that is not limited to losses realised until the maturity of that instrument [471], the Reporting Bank must calculate M_T of the securitisation exposure resulting from this instrument in accordance with sub-paragraph (a);

(c) where the Reporting Bank provides a credit protection instrument to a securitisation transaction resulting in a securitisation exposure of the Reporting Bank that is limited to losses that occur up to the maturity of the instrument provided, the Reporting Bank must calculate M_T of the securitisation exposure resulting from this instrument as the contractual maturity of the instrument. The Reporting Bank must not look through to the protected position in the calculation of M_T.

[471] For example, total return swaps.

Annex 7W

MINIMUM REQUIREMENTS ON INFORMATION AND DATA USED FOR DERIVING ESTIMATES OF IRBA PARAMETERS

1.1 The appropriate length of the information and data series for each IRBA asset sub-class would depend on, inter-alia, the information and data sources, the IRBA asset sub-class in question, the risk characteristics of the exposures, the type of rating system in use by the Reporting Bank, and the representativeness of the information and data series to the exposures of the Reporting Bank at the relevant time. A Reporting Bank may be expected to apply additional margins of conservatism if the Authority deems that the information and data series used by the Reporting Bank is inadequate or not sufficiently representative.

1.2 A Reporting Bank must ensure that the historical observations of IRBA parameters, henceforth referred to as data series in this Annex, are not shorter than as set out in paragraphs 1.3 to 1.5 of this Annex.[472] The Reporting Bank must also consider if its data series is of sufficient breadth to cover a wide range of possible economic events and is representative of the Reporting Bank's exposures at the relevant time.

Minimum Requirements for IRBA Wholesale Asset Class

1.3 Without prejudice to paragraph 1.1 of this Annex, a Reporting Bank must ensure that the data series used in the process for deriving estimates of IRBA parameters for any exposure that falls within the IRBA wholesale asset class –

(a) for deriving any PD estimate, covers at least 5 years for at least one data source.[473] This is irrespective of whether the Reporting Bank is using external, internal, or pooled data sources, or a combination of the above. If the available observation period spans a longer period for any source and the data is relevant and material, the Reporting Bank must use the longer period;

(b) for deriving any LGD estimate, is no shorter than a period of 7 years and ideally covers a complete economic cycle for at least one data source. If the available observation period spans a longer period for any source and the data is relevant and material, the Reporting Bank must use the longer period; and

(c) for deriving any EAD estimate, is no shorter than a period of 7 years and ideally covers a complete economic cycle for at least one data source. If the available observation period spans a longer period for any source and the data is relevant and material, the Reporting Bank must use the longer period.

[472] To avoid doubt, a Reporting Bank should not expect that merely meeting the minimum expectations on the length of the data series as set out in paragraphs 1.3 to 1.5 of this Annex will automatically qualify the Reporting Bank for IRBA adoption.

[473] The data should include a representative mix of good and bad years.

Minimum Requirements for IRBA Retail Asset Class

1.4 Without prejudice to paragraph 1.1 of this Annex, a Reporting Bank must ensure that the data series used in the process for deriving estimates of IRBA parameters for any exposure that falls within the IRBA retail asset class –

(a) for deriving any PD estimate, covers at least 5 years[474], irrespective of whether the Reporting Bank is using external, internal, or pooled data sources, or a combination of the above. If the available observation period spans a longer period for any source and the data is relevant and material, the Reporting Bank must use the longer period;

(b) for deriving any LGD estimate, is no shorter than a period of 5 years and ideally covers a complete economic cycle relevant for the portfolio for at least one data source; and

(c) for deriving any EAD estimate, is no shorter than a period of 5 years and ideally covers a complete economic cycle relevant for the portfolio for at least one data source.

Minimum Requirements for IRBA Purchased Receivables Asset Class

1.5 Without prejudice to paragraph 1.1 of this Annex, a Reporting Bank must ensure that the data series used in the process for deriving estimates of IRBA parameters for any exposure that falls within the IRBA purchased receivables asset class follows the treatment for the IRBA asset class to which the underlying purchased asset is categorised.

[474] The data should include a representative mix of good and bad years of the economic cycle relevant for the portfolio.

Annex 7X

MINIMUM REQUIREMENTS FOR IRBA

Section 1: Overview

1.1 Introduction

(a) A Reporting Bank that adopts the IRBA must observe the standards set out in this Annex.

(b) A Reporting Bank must comply with the requirements set out in this Annex at the outset and on an ongoing basis[475]. The Reporting Bank must ensure that its overall credit risk management practices are consistent with the evolving sound practice guidelines issued by the BCBS and the Authority, where applicable.

(c) The overarching principles behind these standards are as follows:

(i) A Reporting Bank must ensure that the internal ratings of a Reporting Bank (including segmentations of exposures to pools of homogenous exposures) and the parameterisation process provide for a meaningful assessment of obligor and facility characteristics of the credit exposures of the Reporting Bank and a meaningful differentiation of risk, as well as generate consistent and predictive estimates of IRBA parameters suitable for use under IRBA to calculate regulatory capital requirements;

(ii) A Reporting Bank must ensure that the internal ratings and estimates of IRBA parameters are used pervasively in internal credit risk management and other significant business decisions relating to credit risk of the Reporting Bank. The Reporting Bank must ensure that the rating and risk estimation systems and parameterisation processes are consistent with internal use of the estimates of IRBA parameters; and

(iii) A Reporting Bank must set up and maintain a governance framework, including the appropriate organisational structures and control mechanisms, to ensure that it is able to continue to derive consistent and predictive estimates of IRBA parameters.

(d) A Reporting Bank must apply the standards in this Annex to all asset classes and to the F-IRBA, the A-IRBA and the IRBA for the IRBA retail asset class, unless this Annex otherwise provides. The Reporting Bank must apply the standards related to the

[475] A Reporting Bank should meet the guidelines set out in this Annex at the outset and on an ongoing basis. The Reporting Bank should also note that meeting these standards does not automatically qualify the Reporting Bank for IRBA adoption. The Authority will want to be assured that the intention of the Reporting Bank in adopting IRBA is to seek continual improvements in its risk management practices. A Reporting Bank should not regard these standards as an exhaustive checklist to be satisfied in order to adopt IRBA. The Authority will consider the willingness and ability of a Reporting Bank to maintain and improve its rating systems to ensure the continuing appropriateness of the capital requirements calculated using estimates of IRBA parameters derived from the rating systems. The Authority will also consider a Reporting Bank's abilities to rank order and quantify risk in a consistent, reliable and valid manner.

process of assigning exposures to obligor or facility grades (and the related standards on oversight, validation, etc.) equally to the process of assigning retail exposures to pools of homogenous exposures, unless this Annex otherwise provides.

Section 2: Oversight and Control

2.1 Board Oversight

(a) A Reporting Bank must ensure that the Board has ultimate responsibility for the continuing appropriateness of the rating systems, the parameterisation process, the use of the rating systems and estimates of IRBA parameters, and stress tests[476]. This includes responsibility for the adequacy of control processes in respect of these areas. Accordingly, a Reporting Bank must undertake efforts to equip the Board with a general understanding of the objectives and basis of the rating systems and parameterisation process of the Reporting Bank. The Reporting Bank must ensure that the information provided to the Board is adequate for the Board to be able to perform its roles effectively.

(b) A Reporting Bank must ensure that the Board reviews and approves all important aspects of the rating systems, parameterisation process, use of rating systems and estimates of IRBA parameters, and stress tests of the Reporting Bank.

(c) A Reporting Bank must inform the Board of material changes to the rating systems, the parameterisation process, and the controls in respect of the rating systems and parameterisation process. The Reporting Bank must inform the Board of any significant exceptions from established policies and procedures, or weaknesses in respect of the design and operation of rating systems, parameterisation process, the use of rating systems and estimates of IRBA parameters, or stress tests of the Reporting Bank.[477]

(d) A Reporting Bank must ensure that the Board establishes comprehensive and adequate written policies and procedures relating to the oversight and control of the design and operation of its rating systems, the parameterisation process, the use of rating systems and estimates of IRBA parameters, and stress tests of the Reporting Bank[478]. At a minimum, the Reporting Bank must ensure that these policies include –

(i) the roles and responsibilities of the Board, senior management and other personnel involved in the design and approval of the rating systems and parameterisation process of the Reporting Bank;

(ii) the internal control processes and independent oversight of the design and operation of its rating systems, the parameterisation process of the Reporting Bank, the use of rating systems and estimates of IRBA parameters, and stress tests;

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476 The roles of the Board should include, but not be confined to, the areas under paragraph 2.1(b) to (d) of this Annex.

477 For example, a Reporting Bank should report persistent concentrations of obligors in particular obligor grades (for wholesale exposures), and persistent occurrences of significant differences between realised and predicted outcomes of estimates of IRBA parameters for any IRBA asset sub-class, to the Board.

478 A Reporting Bank should ensure that the Board integrates the IRBA systems and practices of the Reporting Bank into its risk management processes and operations.

(iii) the matters which the Reporting Bank considers material and the authority and approval levels for these matters;

(iv) the frequency and level of detail of reporting to the Board and senior management on the rating systems of the Reporting Bank; and

(v) the frequency and level of detail of reporting to the Board and senior management on the estimates of IRBA parameters used by the Reporting Bank to calculate regulatory capital requirements under IRBA.

2.2 Senior Management Oversight

(a) A Reporting Bank must ensure that senior management exercises active oversight exceeding the level of involvement by the Board to ensure the continuing appropriateness of the rating systems, the parameterisation process, the use of rating systems and estimates of IRBA parameters, and stress tests.[479]

(b) A Reporting Bank must ensure that senior management has a good understanding of the design and operation of the rating systems, parameterisation process, the use of rating systems and estimates of IRBA parameters, and stress tests of the Reporting Bank. The Reporting Bank must also ensure that senior management has a good understanding of its credit policies, underwriting standards, lending practices, as well as collection and recovery practices. The Reporting Bank must ensure that senior management approves material aspects of these areas and material differences between established procedure and actual practice and reports significant issues to the Board on a regular and timely basis.

(c) A Reporting Bank must also ensure that senior management ensures, on an ongoing basis, that the rating systems and the parameterisation process –

(i) provide for a meaningful assessment of obligor and facility characteristics of the credit exposures of the Reporting Bank, a meaningful differentiation of risk, and generate consistent and predictive estimates of IRBA parameters suitable for use under IRBA to calculate regulatory capital requirements; and

(ii) are consistent with all applicable rules and regulations as well as established internal policies.

(d) A Reporting Bank must ensure that senior management and staff in the credit control functions meet regularly to discuss the consistency of ratings assignments, the

[479] The Reporting Bank should ensure that senior management articulates its expectations and provides guidance for the technical and operational aspects in respect of these areas. The roles of senior management should include, but not be confined to the areas under paragraph 2.2(b) to (d) of this Annex. A Reporting Bank should also ensure that –
(a) senior management exercises active oversight to ensure steps are taken by staff at all levels to integrate the IRBA systems and practices of the Reporting Bank into its day-to-day risk management processes and operations; and
(b) senior management ensures that the staff responsible for any aspect of its rating systems, including ratings assignments, credit risk control and internal validation, are adequately qualified and trained to undertake their respective roles.

parameterisation process, areas needing improvement, and the status of efforts to improve previously identified deficiencies.

2.3 Regular Reporting to the Board and Senior Management

(a) A Reporting Bank must integrate internal ratings, estimates of IRBA parameters and results of stress tests into regular reports to the Board and senior management on the changes in the risk profile of the Reporting Bank, trends in risk-adjusted profitability, and the material risks which the Reporting Bank is exposed to.[480]

(b) At a minimum, a Reporting Bank must ensure that the Board and senior management get regular reports on all of the following for material credit portfolios:

(i) risk profile by internal grade (or in the case of retail exposures, risk profile by exposure pool);

(ii) risk rating migration across grades with emphasis on unexpected results;

(iii) changes in estimates of IRBA parameters by obligor and facility grade (and in the case of retail exposures, changes in estimates of IRBA parameters of exposure pools);

(iv) comparison of realised PD, LGD, and EAD against the estimates of IRBA parameters of the Reporting Bank;

(v) changes in regulatory capital requirements under IRBA and economic capital over time;

(vi) results of credit stress testing;

(vii) results of internal validation, including results of replication tests performed to check for systematic biases in rating assignments;

(viii) reports from internal audit and credit risk control units on material issues in respect of the Reporting Bank's IRBA systems.

2.4 Credit Risk Control Function

(a) A Reporting Bank must have a credit risk control unit[481] that is responsible for the design or selection, implementation and performance of the rating systems of the Reporting Bank, and for putting in place an appropriate parameterisation process. The Reporting Bank must ensure that the unit is structurally and functionally independent from the personnel and management functions responsible for originating exposures.

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480 A Reporting Bank should ensure that the depth and frequency of information provided to these parties is commensurate with the operations, size, and risk profile of the Reporting Bank.

481 A Reporting Bank should ensure that the evaluation of the performance and remuneration of the credit risk control unit takes into consideration how well credit risks are managed (e.g. the reliability and consistency of rating assignments and predictiveness of estimates of IRBA parameters or other risk estimates).

(b) A Reporting Bank must ensure that the areas of responsibility of the credit risk control unit(s) include at least all of the following:

(i) testing and monitoring internal grades;

(ii) conducting comprehensive stress tests in accordance with Section 6 of this Annex;

(iii) producing and analysing summary reports from the rating systems of the Reporting Bank, including historical default data sorted by rating at the time of default and one year prior to default, grade migration analyses, as well as monitoring trends in key rating criteria;

(iv) ensuring the reliability and consistency of the estimates of IRBA parameters, including implementing procedures to verify that rating definitions are consistently applied across departments and geographic areas. In this regard, the Reporting Bank must implement internal standards for the estimate of IRBA parameters and associated remedial actions to be taken when such standards are not met;

(v) reviewing and documenting any changes to the rating process, including the reasons for the changes;

(vi) reviewing the rating criteria to evaluate if they remain predictive of risk. The Reporting Bank must document and retain changes to the rating process, criteria or individual rating parameters;

(vii) participating actively in the design or selection, implementation and validation of rating systems;

(viii) oversight and supervision responsibilities for any systems used in the rating process, and ultimate responsibility for the ongoing assessments of the performance of and alterations to the rating systems. In this regard, the Reporting Bank must use one or more of the appropriate methodologies or techniques in assessing the discriminatory power of the rating systems and the stability of such power. The Reporting Bank must also implement internal standards for assessing the discriminatory power of its rating systems and associated remedial actions to be taken when such standards are not met;

(ix) establishing and documenting the accountability and reporting structure of the credit risk control unit.

2.5 Internal Validation

(a) Internal validation encompasses a range of processes and activities that contribute to the internal assessment of a Reporting Bank of whether it is capable of deriving consistent and predictive estimates of IRBA parameters. A Reporting Bank has primary responsibility for internal validation. A Reporting Bank must have a robust system in place to validate the accuracy and consistency of its rating systems, processes, and the estimation of all relevant risk components. A Reporting Bank must demonstrate to the

satisfaction of the Authority that its internal validation process enables it to assess the performance of its internal rating and risk estimation systems consistently and meaningfully, and its internal validation is robust and likely to remain so.

(b) Internal validation is an iterative process and encompasses both quantitative and qualitative elements. A Reporting Bank must perform regular internal validation of its rating systems (at least annually). The Reporting Bank must ensure that such internal validation comprises at least all of the following:

(i) assessment of whether the standards in this Annex relating to the design of rating systems, rating systems operations, deriving estimates of IRBA parameters (only PD, in the case of a Reporting Bank adopting the F-IRBA; PD, LGD and EAD, in the case of a Reporting Bank adopting the A-IRBA or the IRBA for the IRBA retail asset class) oversight and control and stress tests are met;

(ii) assessment of whether in totality, the systems and processes of the Reporting Bank in respect of the areas outlined in paragraph 2.5(b)(i) of this Annex have adhered to the overarching principles under paragraph 1.1(c) of this Annex;

(iii) regular comparison of realised outcomes with estimates of IRBA parameters, using historical data over as long a period as possible, covering a range of economic conditions, and ideally one or more complete business cycles. A Reporting Bank must regularly compare realised default rates with estimated PDs for each rating grade and demonstrate to the satisfaction of the Authority that the realised default rates are within the expected range for that grade. A Reporting Bank which is using the A-IRBA or the IRBA for the IRBA retail asset class must complete such analysis for its estimates of LGDs and EADs. A Reporting Bank must clearly document the methods and data used in such comparisons, and update this analysis and documentation at least annually;[482]

(iv) use of appropriate validation methodology and quantitative tools, and comparison with relevant (i.e. in terms of appropriateness, timeliness and time period) external data sources where applicable. A Reporting Bank must ensure that the analysis must be based on data that is appropriate to the portfolio, are updated regularly and cover a relevant observation period. A Reporting Bank must ensure that internal assessments of the performance of its rating systems are based on long data histories, covering a range of economic conditions, and ideally one or more business cycles. A Reporting Bank must demonstrate that the validation methodologies and tools do not vary systematically with the economic cycle;

[482] A Reporting Bank adopting the F-IRBA should compare realised (i.e. historical) LGDs and EADs to those that the Authority has set and take such comparisons into account in its ICAAP. Where the realised outcomes are materially higher than what the Authority has set, the Reporting Bank should consider if additional capital buffers would be appropriate in its ICAAP.

(v) well-articulated internal validation standards, taking into account business cycles and similar systematic variability in default experiences, for distinguishing situations where deviations in realised outcomes of IRBA parameters from expectations (i.e. estimates of IRBA parameters) become significant enough to call into question the validity and predictive power of the estimates of IRBA parameters. Where such deviations continue to be significant, a Reporting Bank must revise relevant estimates of IRBA parameters upwards to reflect its default and loss experience;

(vi) in the case where a Reporting Bank uses a statistical rating model, it must also monitor the performance and stability of the statistical rating model and review the inherent statistical relationships and assumptions of the model.

(c) A Reporting Bank must ensure that no person responsible for the design or implementation of the rating system for a class of exposures or the parameterisation process for that class of exposures participates in the validation work relating to that rating system. Where any person or group of persons is involved in the validation work relating to a rating system designed or implemented by another person or group of persons of the same unit, the Reporting Bank must ensure that senior management ensures that there is no conflict of interest, and that the person or group of persons involved in the validation work relating to that rating system can provide objective and effective challenge to the person or group of persons responsible for the design or implementation of that rating system and the parameterisation process.

2.6 Independent Review of Internal Validation

(a) A Reporting Bank must ensure that the IA reporting to the Audit Committee reviews the internal validation processes of the rating systems and ensure that validation processes are implemented as designed and are effective. In performing this role, the IA may seek the assistance of other internal or third party specialists, so long as overall responsibility remains with the IA.

(b) In the event where the IA has sought assistance from internal or external specialists in the review process for any class of exposures, a Reporting Bank must ensure that such specialists are not involved in or responsible for –

(i) the design, selection or implementation of rating systems used for that class of exposures;

(ii) the parameterisation process for that class of exposures; and

(iii) the origination of exposures for that class of exposures.

(c) A Reporting Bank must ensure that the IA conducts regular reviews (at least annually) of the ongoing validation of the IRBA systems of the Reporting Bank. The Reporting Bank must ensure that the review at least covers aspects of the internal validation related to the operations and processes of the credit risk control function. The Reporting Bank must ensure that the IA conducts checks to attest to the depth, scope, and quality of the internal validation to ensure that its findings are well founded. In

particular, the Reporting Bank must ensure that the checks cover the process of the Reporting Bank for estimating, documenting and justifying the estimates of IRBA parameters used to calculate regulatory capital requirements under IRBA, given that it is an important area which affects regulatory capital requirements.[483] The Reporting Bank must also ensure that the IA ensures that the person or group of persons involved in the internal validation of a rating system is independent from those involved in designing or implementing that rating system or in the related parameterisation process and is able to provide objective and effective challenge, as specified in paragraph 2.5(c) of this Annex.

(d) A Reporting Bank must ensure that the IA –

(i) documents the scope of its review and the findings and recommendations in respect of its independent review of the internal validation;

(ii) proactively discusses its findings and recommendations in respect of its independent review of the internal validation with senior management of the Reporting Bank;

(iii) reports important findings to the Audit Committee on a timely basis; and

(iv) monitors the implementation of the recommendations accepted by the Audit Committee and report incidences of non-implementation to the Audit Committee.

(e) A Reporting Bank must ensure that the Audit Committee ensures that IA is adequately qualified and trained to assume its responsibilities of independent review of the internal validation of the Reporting Bank.

2.7 Use of Internal Ratings and Estimates of IRBA Parameters

(a) A Reporting Bank must not design its rating systems and parameterisation process exclusively for the purposes of qualifying for IRBA. The Reporting Bank must ensure that the internal ratings and estimates of IRBA parameters are used pervasively by the Reporting Bank and play an essential role in –

(i) credit approval;

(ii) risk management and setting of risks tolerances for credit portfolios;

(iii) internal capital allocations and pricing;

(iv) provisioning; and

(v) corporate governance functions, including reporting to the Board and senior management on credit risk profile and trends.

[483] The Authority may also require an external audit of the Reporting Bank's rating assignment process and its estimates of IRBA parameters.

While internal ratings and estimates of IRBA parameters must play an essential role in these areas mentioned above, a Reporting Bank need not ensure that the internal ratings and estimates of IRBA parameters play an exclusive or primary role in the areas above[484].

(b) While a Reporting Bank may not necessarily be using the same estimates of IRBA parameters for all internal purposes specified in paragraph 2.7(a) of this Annex[485], it must nevertheless document the differences and the justifications for such differences. The Reporting Bank must ensure that the justifications provide the reasonableness of use of certain estimates in each particular instance, and a demonstration of consistency in the use of the different set of the estimates or in the risk factors or criteria driving these estimates. The Reporting Bank must ensure that senior management approves the use of different estimates of IRBA parameters for different purposes.

(c) A Reporting Bank must have a credible track record in the use of internal ratings and estimates of IRBA parameters. A Reporting Bank adopting IRBA for a class of exposures must demonstrate that it has been using a rating system for the class of exposures as at the IRBA adoption date for the class of exposures, broadly in line with the minimum standards for use, for at least the 3 years prior to the IRBA adoption date for the class of exposures.

(d) A Reporting Bank using the A-IRBA or the IRBA for the IRBA retail asset class for a class of exposures must demonstrate that it has been estimating and employing LGDs and EADs in a manner that is broadly consistent with the applicable standards for use of own estimates of LGDs and EADs in this Annex for at least the 3 years prior to the adoption date for the A-IRBA or the IRBA for the IRBA retail asset class for the class of exposures.

(e) For the purposes of meeting the standards on duration of use under paragraph 2.7(c) and (d) of this Annex, improvements to a Reporting Bank's rating systems will not render a Reporting Bank non-compliant provided that the changes do not render prior use experience irrelevant in assessing the reliability of the rating systems.

2.8 Documentation

(a) A Reporting Bank must ensure that the internal validation of a Reporting Bank is comprehensively documented. A Reporting Bank must ensure that the internal validation itself is based on comprehensively documented processes and systems. A Reporting Bank must document clearly changes in validation methodology and tools, and data used, including data sources and periods covered. The objective of these requirements is to promote the stability of the IRBA systems and to enable independent verification.

(b) A Reporting Bank must document in writing the design and operational details of its rating systems. The Reporting Bank must ensure that the documentation evidences the observance of the standards in this Annex by the Reporting Bank, and addresses topics including portfolio differentiation, rating criteria, rating process, overrides and management oversight of the rating systems. In addition, the Reporting Bank must also

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[484] A Reporting Bank should also consider the internal ratings and estimates of IRBA parameters in other significant decisions relating to credit risk, such as –
(a) business strategies, and potential mergers and acquisitions;
(b) performance measurement and performance-related remuneration; and
(c) credit targeting or credit portfolio rebalancing.

[485] For example, pricing models are likely to use PDs and LGDs relevant to the life of the asset.

articulate its rating philosophy[486], including implications for capital adequacy as economic conditions change.

(c) A Reporting Bank must ensure that the documentation of the rating criteria by a Reporting Bank includes at least all of the following:

(i) the rationale for the choice of rating criteria, including analyses demonstrating that the rating criteria and procedures are likely to result in ratings that meaningfully differentiate risk, and that the rating criteria have taken all relevant and material obligor and transaction characteristics into account;

(ii) the rationale for assigning an obligor or a group of obligors to a particular rating system if the Reporting Bank uses multiple rating systems within each asset class;

(iii) the relationship between obligor grades in terms of the level of risk each grade implies, and the risk of each grade in terms of both a description of the probability of default typical for obligors assigned to that grade and the criteria used to distinguish that level of credit risk;

(iv) the relationship between facility grades in terms of the level of risk each grade implies, and the risk of each grade in terms of both a description of the expected severity of loss upon default and the criteria used to distinguish that level of credit risk;[487]

(v) the periodic review of rating criteria and procedures to determine whether the rating criteria remain fully applicable to the current portfolio taking into account external conditions.

(d) A Reporting Bank must ensure that the documentation of the rating process by a Reporting Bank includes at least all of the following:

(i) the responsibilities of the parties that rate and approve rating grades for obligors and facilities;

(ii) the definition of what constitutes a rating exception and override, and the situations where exceptions and overrides can be used and the approval authorities for such exceptions and overrides;

(iii) the frequency of rating reviews, including the policy on refreshing relevant and material obligor and facility characteristics;

(iv) the history of significant changes in the rating process to enable easy identification of any changes made to the rating process subsequent to

[486] A rating philosophy is a broad term referring to the approach of the Reporting Bank in assigning obligors to groups that are expected to share common default frequencies, including whether the Reporting Bank groups obligors by expected common default frequency over the next year or over a wider range of possible economic and stress outcomes.

[487] A Reporting Bank adopting the F-IRBA may fulfil this requirement by describing the risk of each facility grade in terms of both obligor and transaction-specific factors if the facility dimension reflects both these factors.

the last supervisory review by the Authority or by the home supervisor of a foreign bank subsidiary;

(v) the organisation of rating assignment, including the internal control structure.

(e) A Reporting Bank must document the specific definitions of default and loss used and demonstrate consistency with the definitions set out in Annexes 7L and 7U.

(f) If a Reporting Bank employs statistical models in the rating process, the Reporting Bank must document the methodologies. The Reporting Bank must ensure that the documentation includes at least all of the following:

(i) a detailed outline of the theory, assumptions and mathematical and empirical basis for deriving estimates of IRBA parameters for grades, individual obligors, exposures or pools of exposures, and the data sources used to estimate the model;

(ii) a rigorous statistical process (including out-of-time and out-of-sample performance tests) for validating the model;

(iii) any circumstances under which the model does not work effectively.

(g) A Reporting Bank must ensure that the standards in this Annex are met where it uses a model obtained from a third-party vendor. To avoid doubt, a Reporting Bank must still comply with the standards in this Annex, including the requirements on documentation in paragraph 2.8 of this Annex, where it uses a model from a third-party vendor that claims proprietary technology.

Section 3: Design of Rating Systems

3.1 Multiple Rating Systems: Standards for Wholesale and Retail Exposures

(a) If a Reporting Bank uses multiple rating systems[488], the Reporting Bank must document the rationale for assigning an obligor or credit facility to a rating system. A Reporting Bank must assign an obligor or credit facility to the rating system that is most appropriate to measure the risk of the obligor or the credit facility. A Reporting Bank must not allocate obligors or credit facilities across rating systems inappropriately to minimise regulatory capital requirements (i.e. cherry-picking by choice of rating system). A Reporting Bank must demonstrate that each rating system used for IRBA purposes meets the minimum standards as set out in this Annex at the outset and on an ongoing basis.

[488] A Reporting Bank may use multiple rating systems (including the case of multiple rating methodologies under a common rating system framework) within each IRBA asset sub-class. For example, a Reporting Bank may have customised rating systems for specific industries or market segments (e.g. middle market, or large corporate) within an IRBA asset sub-class.

3.2 Rating Dimensions: Standards for Wholesale Exposures

(a) A Reporting Bank must ensure that the rating systems for its wholesale exposures have 2 separate and distinct dimensions: (i) one that is oriented to the risk of obligor default ("obligor dimension"), and (ii) one that takes into account transaction-specific factors ("facility dimension").

(b) For the obligor dimension, a Reporting Bank must assign the same obligor grade to separate credit exposures to the same obligor, irrespective of any differences in the nature of each specific transaction, except under the following circumstances where separate credit exposures may result in multiple obligor grades for the same obligor:

(i) the rating systems are also used to measure country or jurisdiction transfer risks. Under such a circumstance, the Reporting Bank may assign a different obligor grade to a credit exposure denominated in foreign currency from a credit exposure denominated in local currency if the Reporting Bank has a documented framework for taking into account country or jurisdiction transfer risks. The framework must at least cover the methodology for assigning different obligor grades to foreign currency and local currency exposures;

(ii) a Reporting Bank adjusts the obligor grade of a credit exposure on account of associated guarantees in respect of that credit exposure.

(c) A Reporting Bank must articulate in its credit policy the relationship between obligor grades in terms of the level of risk each grade implies. The Reporting Bank must ensure that perceived and measured risk increases as credit quality declines from one obligor grade to the next. The Reporting Bank must ensure that the credit policy articulates the risk of each obligor grade in terms of both a description of the probability of default typical for obligors assigned to that grade and the criteria used to distinguish that level of credit risk.

(d) A Reporting Bank must ensure that the facility dimension reflects transaction-specific factors, including collateral, seniority, product type, industry and purpose in respect of any credit facility. For a Reporting Bank adopting –

(i) F-IRBA for the credit exposure, this standard may be fulfilled by a facility dimension which reflects both obligor and transaction-specific factors, including a rating dimension that reflects EL by incorporating both obligor strength (PD) and loss severity (LGD) considerations, or by a rating dimension that exclusively reflects LGD. Where a rating dimension reflects EL and does not separately quantify LGD, the Reporting Bank must use the supervisory estimates of LGD; or

(ii) A-IRBA for the credit exposure, a Reporting Bank must ensure that facility ratings reflect only factors that can influence LGD. A Reporting bank may only include obligor characteristics as rating criteria to the extent they are predictive of LGD. A Reporting Bank may alter the factors that influence facility grades across segments of the portfolio if it is able to demonstrate to the satisfaction of the Authority that the alteration improves the relevance and reliability of its LGD estimates.

(e) Despite paragraph 3.2(a) to (d) of this Annex, a Reporting Bank using the supervisory slotting criteria for the SL asset sub-class and the HVCRE asset sub-class may use rating systems with a single rating dimension that reflects EL by incorporating both the risk of obligor default and transaction-specific factors, given the interdependence of obligor and transaction-specific factors for exposures categorised under the SL asset sub-class and HVCRE asset sub-class.

3.3 Rating Dimensions: Standards for Retail Exposures

(a) A Reporting Bank must ensure that rating systems for credit exposures categorised under the IRBA retail asset class are oriented to both obligor and transaction risk, and capture all relevant obligor and transaction characteristics.

(b) A Reporting Bank must have a process of assigning exposures categorised under the IRBA retail asset class into pools of homogenous exposures, with corresponding quantitative measures of default and loss characteristics (i.e. PD, LGD and EAD estimates) for each pool. The Reporting Bank may use identical estimates for some, but must not use identical estimates for all IRBA parameters for different pools of exposures. The Reporting Bank must demonstrate that the process of assigning exposures to pools provides for a meaningful differentiation of risk and for a grouping of sufficiently homogenous exposures, and allows for consistent and predictive estimation of default and loss characteristics for each pool of exposures. The Reporting Bank must consider at least the following risk drivers when assigning any exposure to a pool of exposures:

(i) obligor characteristics including obligor type and demographics[489];

(ii) facility characteristics, including product, collateral types, loan to collateral value measures in the case of secured facilities, seasoning[490], guarantees, seniority of the facility, and cross-collateral provisions;

(iii) delinquency of exposure. A Reporting Bank must identify exposures that are delinquent from those that are not.

3.4 Rating Structure: Standards for Wholesale Exposures

(a) A Reporting Bank must have a meaningful distribution of exposures across grades with no excessive concentrations, on both its obligor-rating and its facility-rating scales.

[489] For example, age or occupation.

[490] For each pool of exposures, a Reporting Bank should analyse the representativeness of the age of the facilities (in terms of time since origination for PD and time since the date of default for LGD) in the data used to derive the estimates of the Reporting Bank's actual facilities. Where default rates peak several years after origination or where recovery rates show a low point several years after default, a Reporting Bank should adjust the estimates with an adequate margin of conservatism to account for the lack of representativeness and anticipated implications of rapid exposure growth.

(b) A Reporting Bank must ensure that its rating systems for the obligor dimension have at least 7 obligor grades for non-defaulted obligors and one grade for defaulted obligors.[491] In this regard, –

(i) a Reporting Bank must have a grade definition for each obligor grade. The Reporting Bank must ensure that the grade definition includes both a description of the degree of default risk typical for obligors assigned to that grade and the criteria used to distinguish that level of credit risk. "+" or "-" modifiers to alpha or numeric grades may qualify as distinct grades only if the Reporting Bank has developed complete rating descriptions and criteria for their assignment, and separately derives PD estimates for alpha or numeric grades with "+" or "-" modifiers; and

(ii) a Reporting Bank with a loan portfolio concentrated in a particular market segment and range of default risk must have enough grades within that range to avoid undue concentrations of obligors in particular grades. The Reporting Bank must ensure that significant concentrations within a single grade or grades are supported by convincing empirical evidence that the grade or grades cover reasonably narrow PD bands and that the default risk posed by all obligors in a grade fall within that band.

(c) For the facility dimension, a Reporting Bank adopting the A-IRBA must have a sufficient number of facility grades to avoid grouping facilities with widely varying LGDs into a single grade. The Reporting Bank must ensure that the criteria used to define facility grades is grounded in empirical evidence.

(d) A Reporting Bank using the supervisory slotting criteria for the SL asset sub-class and HVCRE asset sub-class must have at least 4 grades for non-defaulted obligors and one grade for defaulted obligors.

3.5 Rating Structure: Standards for Retail Exposures

(a) A Reporting Bank must ensure that the number of exposures in a given pool is sufficiently large to allow for meaningful quantification and validation of the default and loss characteristics at the pool level. However, the Reporting Bank must ensure that there is also a meaningful distribution of obligors and exposures across pools within any IRBA retail asset sub-class, i.e. a single pool does not include an undue concentration of the exposures of the Reporting Bank in any IRBA retail asset sub-class.

3.6 Rating Definitions and Criteria: Standards for Wholesale Exposures

(a) A Reporting Bank must have specific rating definitions, processes and criteria for assigning exposures to grades within a rating system. The Reporting Bank must ensure that the rating definitions and criteria are both plausible and intuitive and result in a meaningful differentiation of risk. In this regard, the Reporting Bank must ensure that –

[491] Where a Reporting Bank lends to obligors of diverse credit quality, its rating systems for the obligor dimension should have a greater number of obligor grades.

(i) the rating definitions and criteria are sufficiently detailed to allow those responsible for assigning ratings to consistently assign the same grade to obligors or facilities posing similar risk.[492] If rating criteria and procedures differ for different types of obligors or facilities that are rated using the same rating system, a Reporting Bank must monitor for possible inconsistency with the prescribed rating criteria and procedures, and continually seek to improve the degree of consistency;

(ii) written rating definitions, processes and criteria are clear and detailed enough to allow parties independent of the assignment of ratings, including IA and the Authority, to understand the assignment of obligor and facility ratings, replicate the assignments, and evaluate the appropriateness of the assignments; and

(iii) the rating criteria is also consistent with the internal lending standards of a Reporting Bank and its policies for handling obligors and facilities.

(b) A Reporting Bank must use all relevant, reliable and material information in assigning ratings to obligor and facilities. While an external rating can be an important factor determining an internal rating assignment, the Reporting Bank must ensure that it considers other relevant information. A Reporting Bank must –

(i) endeavour to use current information;

(ii) specify the frequency of updating the information; and

(iii) apply greater conservatism in its assignments of exposures to obligor or facility grades if the Reporting Bank is not able to take into account all the information it would normally consider.

3.7 Segmentation Criteria: Standards for Retail Exposures

(a) A Reporting Bank must have specific segmentation processes and criteria for assigning exposures to pools. The Reporting Bank must ensure that the segmentation criteria is both plausible and intuitive and results in a meaningful differentiation of risk. The Reporting Bank must ensure that –

(i) the segmentation criteria is sufficiently detailed to allow those responsible for assigning exposures into pools to consistently assign retail exposures posing similar risk into the same pool;

(ii) written segmentation processes and criteria are clear and detailed enough to allow parties independent of the assignment of ratings, including IA and the Authority, to understand the assignment of exposures into pools, replicate the assignments, and evaluate the appropriateness of the assignments; and

[492] This consistency should exist across lines of business, departments and geographic locations using the same rating system.

(iii) the segmentation criteria is also consistent with the internal lending standards of a Reporting Bank and its policies for handling exposures.

(b) A Reporting Bank must use all relevant, reliable and material information in assigning exposures to pools. The Reporting Bank must –

(i) endeavour to use current information;

(ii) specify the frequency of updating the information; and

(iii) apply greater conservatism in its assignments of exposures to pools of exposures if the Reporting Bank is not able to take into account all the information it would normally consider.

3.8 Rating Definitions and Criteria: Standards Specific to the Use of the Supervisory Slotting Criteria for Exposures in the SL Asset Sub-class and HVCRE Asset Sub-class

(a) A Reporting Bank using the supervisory slotting criteria for exposures in the SL asset sub-class and HVCRE asset sub-class must assign such exposures to internal rating grades based on its own criteria, systems and processes. The Reporting Bank must then map these internal rating grades into the supervisory rating categories in Annex 7S according to the general assessment factors and characteristics exhibited by the exposures which fall under each of the 4 types of exposures within the SL asset sub-class as defined in Annex 7R and the HVCRE asset sub-class.

(b) For the purposes of paragraph 3.8(a) of this Annex –

(i) a Reporting Bank must demonstrate that the characteristics associated with its internal rating grades are consistent with a preponderance of the characteristics of the respective supervisory rating categories to which they are mapped; and

(ii) where a Reporting Bank allows overrides of its internal rating grades based on its internal criteria, it must also demonstrate that the overrides do not render the mapping process ineffective.

3.9 Rating Assignment Horizon: Standards for Wholesale and Retail Exposures

(a) The time horizon used in PD estimation is one year. However, a Reporting Bank must use a time horizon of longer than one year in assigning ratings[493].

(b) A Reporting Bank must ensure that an obligor rating represents the conservative assessment of the obligor's ability and willingness to contractually perform despite adverse economic conditions or the occurrence of unexpected events. The Reporting Bank must ensure that the range of economic conditions that are considered by the Reporting Bank when making such assessments are consistent with current conditions and those that are likely to occur over a business cycle within the respective industry, geographic region, or both.[494]

(c) A Reporting Bank must ensure that PD estimates for obligors that are highly leveraged financial institutions (i.e. including hedge funds and other equivalently highly leveraged counterparties) and for obligors whose assets are predominantly traded assets, reflect the performance of the underlying assets based on periods of stressed volatilities. In the case of obligors that are highly leveraged financial institutions where there is likely a significant vulnerability to market risk, the Reporting Bank must assess the potential impact on the obligor's ability to perform in periods of stressed volatilities when assigning a rating and corresponding PD to that obligor.

(d) For the purposes of paragraph 3.9(b) and (c) of this Annex, a Reporting Bank must –

(i) take a conservative view of projected information, given the difficulties in forecasting future events and the influence they will have on the financial condition of a particular obligor; and

(ii) adopt a conservative bias to its analysis, particularly if limited data is available.

3.10 Additional Requirements Specific to the Application of Statistical Models to Assign Obligor or Facility Ratings or in the Estimation of PD, LGD, and EAD

(a) A Reporting Bank may only employ statistical models (including credit scoring models or other mechanical methods) as the primary or partial basis of rating assignments, if there is sufficient human judgement and oversight to ensure that all relevant, reliable and material information that has not been fully taken into account in the statistical model

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493 A Reporting Bank should clearly articulate its rating philosophy and the intended time horizon underlying the assignment of ratings. In particular, for obligor rating systems, –
(a) a Reporting Bank should state whether obligors are grouped by expected common default frequency over the next year or over a wider range of possible economic and stress outcomes; and
(b) a Reporting Bank should articulate how its ratings are expected to migrate in response to economic cycles for all obligor grades. Obligors grouped by an expected common default frequency over the next year should experience cyclical variations in the grades to which individual obligors are assigned while obligors grouped by an expected common default frequency over a wider range of possible stress outcomes should experience relative stability in their obligor grades.

494 A Reporting Bank should ensure that rating systems are designed in such a way that idiosyncratic or industry-specific changes and business cycle effects are a driver of migrations from one category to another.

is considered[495] and that the statistical model is used appropriately, and all of the following standards are met:

(i) a Reporting Bank must demonstrate that a statistical model has good predictive power and that regulatory capital requirements will not be distorted as a result of its use. In particular, the Reporting Bank must ensure that the variables that are inputs to the model form a set of reasonable and plausible predictors, the model is accurate on average across the range of obligors or facilities to which the Reporting Bank is exposed and there are no known material biases;

(ii) the Reporting Bank must have in place a process for vetting data inputs into a statistical model which includes an assessment of the accuracy, completeness and appropriateness of the data specific to the assignment of an approved rating;

(iii) the Reporting Bank must have procedures in place to continually ensure that the data used to build the model are representative of the population of the Reporting Bank's obligors or facilities;

(iv) the Reporting Bank must, when combining model results with human judgement, take into account all relevant, reliable and material information not considered by the model in the judgement used, and have written procedures describing how human judgement and model results are to be combined;

(v) the Reporting Bank must have procedures for human review of statistical model-based rating assignments, that include ongoing efforts to improve the model's performance[496];

(vi) the Reporting Bank must have a regular cycle of model validation that includes monitoring the performance and stability of the statistical model, reviewing the statistical relationships, and testing the outputs against the outcomes of the model. The Reporting Bank must ensure that subsequent changes made to the statistical model meet the standards set out in this Annex.[497]

Section 4: Rating Systems Operations

4.1 Coverage for Wholesale Exposures

(a) A Reporting Bank must ensure that every new and existing obligor of an exposure categorised under the IRBA wholesale asset class, and every protection provider

[495] While statistical models may sometimes avoid some of the idiosyncratic errors made by rating systems in which human judgement plays a large role, there could potentially be rating errors introduced by the use of limited information.

[496] Such procedures should also focus on finding and limiting errors associated with known model weaknesses.

[497] The Reporting Bank should ensure that the details and rationale for changes made to the statistical model are documented before the changes take effect.

recognised for the purposes of calculating credit RWA for the wholesale component is assigned an obligor rating as part of the credit approval process.

(b) A Reporting Bank must ensure that every exposure categorised under the IRBA wholesale asset class is associated with a facility rating as part of the credit approval process.

(c) A Reporting Bank must ensure that each separate legal entity to which it has a credit exposure is assigned a separate obligor grade. The Reporting Bank must have clear and appropriate policies regarding the assignment of ratings to separate legal entities in a connected group, including –

(i) the circumstances under which the Reporting Bank may or may not assign the same rating to separate legal entities within a connected group; and

(ii) the definition of a connected group of legal entities for the purposes of rating assignment.

(d) A Reporting Bank must ensure that the policies regarding the assignment of ratings include a process for the identification of specific wrong-way risk for each legal entity to which the Reporting Bank is exposed.

4.2 Coverage for Retail Exposures

(a) A Reporting Bank must ensure that every new and existing exposure categorised under the IRBA retail asset class is assigned to a pool consisting of exposures with similar default and loss characteristics as part, or immediately upon completion, of the credit approval process.

4.3 Integrity of Rating Process: Standards Applicable to Wholesale Exposures

(a) A Reporting Bank must ensure that the rating assignments and periodic rating reviews are approved by an independent person or unit.[498]

(b) For the purposes of paragraph 4.3(a) of this Annex, an independent person or unit is one that does not directly stand to benefit from the extension of credit.

(c) A Reporting Bank must have in place rigorous internal policies for assessing the creditworthiness of every obligor and protection provider recognised for the purposes of calculating credit RWA, and the riskiness of each facility. The Reporting Bank must ensure that its credit policies and underwriting procedures foster and reinforce the consistency and independence of the rating process. The Reporting Bank must document the operational processes in its policies and procedures.

[498] A Reporting Bank should ensure that such rating approvals and reviews are independently checked by IA at least annually.

(d) A Reporting Bank must ensure that every obligor, protection provider recognised for the purposes of calculating credit RWA, and facility, has its ratings refreshed at least on an annual basis.

(e) A Reporting Bank must define clearly in its policies and procedures the required review frequency for each type of obligor, protection provider recognised for the purposes of calculating credit RWA, and facility. A Reporting Bank must ensure that the policies and procedures clearly articulate the types of obligors, protection providers, and facilities, that require more frequent reviews than on an annual basis. In particular, the Reporting Bank must subject higher risk obligors and problem exposures to more frequent reviews.

(f) A Reporting Bank must initiate a rating review in a timely fashion if relevant and material information on any obligor, protection provider recognised for the purposes of calculating credit RWA, or facility, emerges.

4.4 Integrity of Process for Assigning Retail Exposures to Pools

(a) A Reporting Bank must assign a retail exposure to a pool of exposures based on available information on that exposure at the time of assignment.

(b) A Reporting Bank must review the loss characteristics and delinquency status of each risk pool at least on an annual basis. In order to ensure that retail exposures continue to be assigned to the correct pools and generate consistent and predictive estimates of IRBA parameters, a Reporting Bank must review the status of individual obligors within each pool and continually monitor the risk characteristics of exposures of every pool and migrate exposures from one pool to another, based on updated information on risk drivers gathered by the Reporting Bank as part of its monitoring process.

(c) For the purposes of paragraph 4.4(a) and (b) of this Annex, a Reporting Bank must –

(i) in the process of segmenting exposures, use risk drivers that best reflect the risk of an exposure and are consistent with risk measures used for credit risk management; and

(ii) ensure that risk driver information[499] is sufficiently accurate and timely to track changes in underlying credit quality and to migrate exposures between risk pools. The Reporting Bank must –

(A) clearly articulate its operational processes for monitoring and updating of information on risk drivers and for migrating exposures between risk pools; and

[499] The Authority recognises that the benefit of more frequent information updates needs to be balanced against the incremental costs of such updates. However, a Reporting Bank should ensure that relevant information is updated if more frequent updates of risk drivers enable a Reporting Bank to derive more predictive estimates of IRBA parameters, especially if the potential impact on the calculation of regulatory capital adequacy requirements arising from low frequency of information updates is large.

(B) clearly articulate the risk drivers to be updated, as well as the frequency of such updates, for each product type or asset sub-class.[500]

4.5 Overrides for all Exposure Types

(a) For rating assignments based exclusively or partly on expert judgement, a Reporting Bank must clearly articulate in its credit policies whether it allows for the outputs of the rating process to be overridden. The Reporting Bank must ensure that its credit policies at least articulate –

(i) the circumstances under which such overrides may be used and the implications such overrides would have on the mapping process of the Reporting Bank should the Reporting Bank use any of the technique under paragraph 5.4(d)(iii) of this Annex to derive estimates of PD;

(ii) the extent of overrides allowed;

(iii) the persons responsible for approving these overrides and the documentation that is required for supporting the overrides;

(iv) the process for identifying overrides and separately tracking their performance[501]; and

(v) the procedures to ensure that the credit approver(s) of the Reporting Bank is informed of any overrides made and the reasons for the overrides, at the point of credit approval and periodic rating reviews.

(b) For rating assignments where statistical models play a role (or in combination with expert judgement), a Reporting Bank must, in addition to meeting the standards in paragraph 4.5(a)(i) to (v) of this Annex, also have a process to monitor instances where certain variables used in the statistical models were excluded or altered.

4.6 Maintenance of Key Obligor and Facility Characteristics for All Exposure Types

(a) A Reporting Bank must collect and retain reliable information on key obligor and facility characteristics at the individual exposure level. A Reporting Bank must also collect and retain data on aspects of their internal ratings as required under Part XI. A Reporting

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[500] To ensure that the segmentation system continues to maintain meaningful differentiation of risk, a Reporting Bank should –
(i) institute clear policies to define the criteria for reviewing and modifying its process of segmenting exposures;
(ii) review its criteria and process of segmenting exposures at least on an annual basis;
(iii) document changes, as well as justifications for the changes, to its criteria and process for segmenting exposures to ensure consistency in the Reporting Bank's criteria and process over time and obtain historically comparable measurements of estimates of IRBA parameters; and
(iv) assess its approach to updating information on risk drivers and migrating exposures as part of the validation of the segmentation process.

[501] This should include, but is not limited to, validation of the performance of both the overridden ratings and the ratings after overrides.

Bank must have an effective process to obtain and update relevant and material information on –

(i) the financial condition of all obligors and all protection providers recognised for the purposes of calculating credit RWA; and

(ii) facility characteristics (including the condition of collateral secured against a facility) that affect LGD and EAD estimates.

(b) A Reporting Bank must ensure that key obligor and facility characteristics collected and retained for the purposes of paragraph 4.6(a) of this Annex include those that support assignment of obligor and facility grades or could significantly affect underwriting decisions.[502] A Reporting Bank must submit to the Authority the key obligor and facility characteristics, rating histories and estimates of IRBA parameters, upon request by the Authority.

4.7 Maintenance of Rating Histories and Estimates of IRBA Parameters for Wholesale Exposures

(a) A Reporting Bank must maintain obligor rating histories on every obligor and protection provider recognised for the purposes of calculating credit RWA, including –

(i) the ratings that have been assigned since the obligor or protection provider was first assigned to an internal grade (history of rating migrations), and person or model responsible;

(ii) the dates that such ratings were assigned;

(iii) the methodology used to assign the ratings, including information on whether a statistical model has played a role in the rating assignment;

(iv) key characteristics used to assign the ratings; and

(v) in the case where an expert judgement rating system was used or when an override was approved, the persons responsible for applying the judgement or approving the override.

(b) A Reporting Bank must maintain information on the obligors and facilities that have defaulted, including the timing and circumstances of default.

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[502] A Reporting Bank should ensure that data collected are sufficiently detailed and retained for an adequate period of time to allow reallocation of obligors and facilities to grades, including refinements of rating systems to achieve finer segregations of obligors and facilities. Examples of key obligor and facility characteristics that should be collected and retained include –
(i) credit scores from statistical rating models;
(ii) qualitative factors that affect rating assignment.
(iii) type of collateral secured against an exposure;
(iv) facility amount;
(v) key financial ratios; and
(vi) ongoing characteristics that could significantly affect account management decisions, for example, refreshed credit scores, payment history, prepayment, and past instances of default.

(c) A Reporting Bank must maintain PD estimates and realised default rates associated with each rating grade and ratings migration in order to track the predictive power of the obligor rating system.

(d) A Reporting Bank adopting the A-IRBA must also maintain –

(i) a complete history of LGD and EAD estimates associated with each facility, and person or model responsible;

(ii) key data used to derive the LGD and EAD estimates;

(iii) the methodologies used to derive the LGD and EAD estimates;

(iv) in the case where expert judgement was applied or when an override was approved in estimates of IRBA parameters, the person responsible for applying the judgement or approving the override;

(v) the components of economic losses for each defaulted exposure, including –

(A) the amounts recovered;

(B) the source of recovery[503];

(C) the time period required for recovery;

(D) the opportunity costs; and

(E) the administrative costs associated with recovery; and

(vi) the LGD and EAD estimates, and the realised LGD and EAD, associated with each defaulted exposure.

(e) A Reporting Bank adopting the A-IRBA and that reflects the credit risk mitigating effects of credit protection by adjusting LGD pursuant to Division 4 of Part VII must maintain data on the LGD of the facility before and after evaluation of the effects of the credit protection.

(f) A Reporting Bank adopting the F-IRBA or the supervisory slotting criteria for the SL and HVCRE asset sub-classes must retain data on loss and recovery experience for the exposures.

4.8 Maintenance of Rating Histories and Estimates of IRBA Parameters for Retail Exposures

(a) A Reporting Bank must maintain –

(i) information on risk drivers;

[503] For example, collateral, liquidation proceeds or enforcement of guarantees.

(ii) the methodology and data (including data on obligor and transaction risk characteristics used either directly or through use of a model, and data on delinquency) used in the process of allocating exposures to pools; and

(iii) a complete history of the PD, LGD and EAD estimates associated with each pool of exposures.

(b) For every defaulted exposure, a Reporting Bank must maintain –

(i) the history of assignments of that exposure to pools over the one-year period prior to the point of default;

(ii) the PD, LGD and EAD estimates for the pools to which the exposure was assigned over the one-year period prior to the point of default; and

(iii) the realised LGD and EAD for that exposure.

Section 5: Parameterisation Process

5.1 Definitions of IRBA Parameters

(a) A Reporting Bank adopting IRBA must adopt the definitions of default, PD, LGD and EAD in Annexes 7L and 7U.

(b) A Reporting Bank which fails to adopt the definitions of LGD or EAD specified in Annex 7U, or fails to meet the requirements specified in Annex 7W or paragraphs 5.6 to 5.7 of this Annex, for wholesale exposures must use the supervisory estimates of these parameters in accordance with Divisions 2 and 4 of Part VII.

5.2 Reference Data Used in Parameterisation Process

(a) A Reporting Bank must comply with the requirements in Annex 7W. Whether a Reporting Bank uses internal data or data from external sources (including pooled data) for the parameterisation process, it must ensure that the historical default and loss experiences embodied in the reference data set is of sufficient breadth, i.e. the reference data set must include relevant default and loss experiences derived from periods of economic downturns. The Reporting Bank must demonstrate that its internal estimates of PD, LGD and EAD are representative of long run experience.[504]

(b) For the purposes of meeting paragraph 5.2(a) of this Annex, a Reporting Bank must not omit data from any periods with relatively higher rates of default and loss rates from the reference data set. A Reporting Bank which does not utilise a reference data set that covers a complete economic cycle must apply a greater degree of conservatism in its parameterisation process. In this respect, the Reporting Bank must also take into consideration the need for an additional degree of conservatism in view of the standards on deriving estimates of PD, LGD and EAD in paragraphs 5.3 to 5.7 of this Annex.

[504] A Reporting Bank should ensure that the reference data set covers at least one complete economic cycle with a representative mix of good and bad years.

(c) A Reporting Bank must ensure that the reference data set for EAD estimates is not capped to the principal amount outstanding or facility limits. A Reporting Bank must ensure that accrued interest, other due payments and limit excesses are included in the reference data set.

Data Representativeness and Relevance

(d) A Reporting Bank must ensure the ongoing applicability of the statistical inferences which are grounded on the reference data set. To this end, a Reporting Bank must continually ensure the representativeness of the reference data set by ensuring broad comparability between –

(i) the population of exposures represented in the reference data set with the Reporting Bank's current credit exposures;

(ii) the definitions of default and IRBA parameters in use when the reference data set was generated with the definitions of the Reporting Bank;

(iii) lending standards in use when the reference data set was generated with the Reporting Bank's lending standards; and

(iv) other applicable characteristics that could affect estimates of IRBA parameters when the reference data set was generated with the characteristics that are in occurrence. The Reporting Bank must demonstrate that economic or market conditions that underlie the reference data set are relevant to current and foreseeable economic or market conditions.

(e) Where the reference data set includes external data (including legacy data from different institutions after a business combination), the Reporting Bank must exercise greater care in ensuring the representativeness of the reference data set. In particular, the Reporting Bank must demonstrate that –

(i) the external data is representative of the portfolio for which the external data is used;

(ii) it has sufficient understanding of the data collection process;

(iii) the external data includes periods of economic downturns; and

(iv) the external data broadly adheres to the definitions of default and IRBA parameters for the portfolio.

(f) In deriving estimates of PD, and where relevant, LGD and EAD, where a Reporting Bank uses external data available to it that is not itself consistent with the definition of default in Annex 7L, or the definition of PD, LGD and EAD in Annex 7U, the Reporting Bank must demonstrate to the satisfaction of the Authority that appropriate adjustments to the data are made to achieve broad equivalence with the definition of default in Annex 7L, and the definition of PD, LGD, and EAD in Annex 7U, subject to the Reporting Bank meeting the requirements in paragraph 5.2(e) of this Annex.

(g) In deriving estimates of PD, and where relevant, LGD and EAD, where a Reporting Bank uses any internal data based on periods prior to 1 January 2008 that is not itself consistent with the definition of default in Annex 7L, or the definition of PD, LGD and EAD in Annex 7U, the Reporting Bank must demonstrate to the satisfaction of the Authority that appropriate adjustments to the data are made to achieve broad equivalence with the definition of default in Annex 7L, and the definition of PD, LGD, and EAD in Annex 7U, subject to the Reporting Bank meeting the requirements in paragraph 5.2(e) of this Annex.

(h) For internal data based on periods from 1 January 2008 onwards that is used by a Reporting Bank, the Reporting Bank must ensure that internal data and any pooled data used by the Reporting Bank to derive estimates of IRBA parameters is consistent with the definition of default in Annex 7L, and the definition of PD, LGD and EAD in Annex 7U.

Size of Reference Data Set

(i) A Reporting Bank must ensure that the number of exposures and default observations, and the data period in the reference data set is sufficient to provide the Reporting Bank with confidence in the accuracy and robustness of its estimates of IRBA parameters.

5.3 Standards on Parameterisation Process

(a) A Reporting Bank must ensure that the estimates of IRBA parameters are grounded in historical and empirical evidence, and not based purely on subjective or judgemental considerations[505]. A Reporting Bank must promptly take into account the changes in lending practice or the process for pursuing recoveries over the observation period in its parameterisation process.

(b) A Reporting Bank must not mechanically calculate its estimates of IRBA parameters from historical losses[506]. The Reporting Bank must take into account the implications of technical advances deployed in banking, new data and other information, as such information becomes available.

(c) A Reporting Bank must ensure that the parameterisation process of a Reporting Bank incorporates all relevant, material and available data, information and methods which could influence its view and outlook on credit risks.

(d) A Reporting Bank must use the definition of default under Annex 7L for deriving estimates of PD, and where relevant LGD and EAD.

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505 A Reporting Bank should ensure that its parameterisation process is oriented to the derivation of forward-looking, consistent and predictive estimates of IRBA parameters. A Reporting Bank should demonstrate an intention to characterise the future risk of losses arising from its portfolios.

506 The Reporting Bank should assess the relevance of the historical loss experiences for the purposes of deriving estimates of IRBA parameters, and be cognisant that historical losses are the outcome of a combination of contextual circumstances which may not be repeated in the future.

(e) A Reporting Bank must consider judiciously the relevance of representative external data and other information sources for enhancing the breadth of experience of its reference data set.[507]

(f) Judgemental inputs may form part of the parameterisation process of a Reporting Bank. Judgemental input includes any adjustment of the results derived from the parameterisation process or observed from the reference data set.[508]

(g) A Reporting Bank must not use judgemental input to reduce its estimates of IRBA parameters, unless the judgemental input has been subjected to a high degree of scrutiny within the Reporting Bank.[509]

(h) A Reporting Bank must review its estimates of IRBA parameters when new information that may affect the IRBA parameters comes to light but in any case at least annually[510]. Upon completion of the review of the estimates of IRBA parameters, a Reporting Bank must document –

(i) the data, information and considerations which were taken into account in deriving the PD, LGD and EAD estimates. If a Reporting Bank has used multiple parameterisation processes to derive estimates of IRBA parameters for any obligor or facility (or pool of exposures), it must document the data, information and considerations which were taken into account in deriving each set of estimates;

(ii) its justification for its estimates of PD, LGD and EAD used for calculating regulatory capital requirements under IRBA; and

(iii) a description of the statistical precision of the PD, LGD and EAD estimates used for calculating regulatory capital requirements under IRBA. This standard could be fulfilled by a description of the potential errors associated with the estimates of IRBA parameters by the unit responsible for deriving the estimates.

(i) A Reporting Bank must add to its estimates of IRBA parameters a margin of conservatism that is related to the likely range of errors. This is to account for potential uncertainties and weaknesses in the parameterisation process, as such potential uncertainties and weaknesses could lead to unpredictable errors in its estimates of IRBA parameters. A Reporting Bank must apply a greater margin of conservatism if the data, information and methods used in the parameterisation process do not fully take into

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507 A Reporting Bank should take into account external data on defaults and losses, to the extent that they are reliable and relevant, in deriving forward-looking estimates of IRBA parameters, particularly if internal default or loss experience is limited.

508 For example, a Reporting Bank would be considered to have used judgemental inputs if it has "smoothed" its observed PDs, by judgementally raising the PD of a rating grade to ensure that there is a monotonic relationship between rating grades and PDs.

509 A Reporting Bank should conduct ex-post evaluations of the contribution of such judgemental input to the derivation of consistent and predictive estimates of IRBA parameters. A Reporting Bank should investigate the causes of persistent failures of judgemental input to improve the consistency and predictiveness of estimates of IRBA parameters.

510 A Reporting Bank should, at a regular interval, examine the justifications of its estimates of IRBA parameters, particularly the judgemental input used, with the view to improving its parameterisation processes. Particular attention should be given to new business lines or portfolios in which the mix of obligors is believed to have changed substantially.

account all relevant considerations and may potentially result in a larger range of unpredictable errors.

(j) A Reporting Bank must continually review its parameterisation process to incorporate new data, analytical techniques, and evolving industry practice.

(k) A Reporting Bank must ensure that the estimation technique used by it to derive estimates of IRBA parameters for any obligor and facility (or pool of exposures) performs well in out-of-sample tests.

5.4 Standards on Estimation of PD for Wholesale Exposures

(a) A Reporting Bank must estimate a PD for each internal obligor grade for each rating system used for wholesale exposures. To avoid doubt, a Reporting Bank is not required to produce its own estimates of PD for exposures within the SL asset sub-class and the HVCRE asset sub-class, where the Reporting Bank is using the supervisory slotting criteria set out in Sub-division 13 of Division 4 of Part VII.

(b) A Reporting Bank must ensure that the PD estimate for any obligor grade reflects the expectation of the Reporting Bank of the "long-run average" of one-year default rates for obligors categorised in that grade.[511]

(c) A Reporting Bank must not estimate its long-run average PD purely by a mechanical calculation of its historical default rates without supporting analysis, even if the Reporting Bank has representative and consistent historical default experience covering one or more economic cycles. A Reporting Bank must recognise the importance of judgemental considerations in combining results of techniques and in making adjustments for limitations of techniques and information.

(d) A Reporting Bank must use information and techniques[512] that allow it to most appropriately take account of the long-run experience of the Reporting Bank to derive a long-run average estimate of PD for each rating grade. The Reporting Bank must estimate a PD for each rating grade based on the observed historical average one-year default rate that is a simple average based on number of obligors (i.e. count-weighted). The Reporting Bank must not use other weighting approaches, including weighting by exposure amount. The following are 4 specific techniques that a Reporting Bank may use and some of the attendant issues arising from their use[513]:

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511 A Reporting Bank should ensure that the "long-run average" reflect the expected average default experience for that grade (based on reference data set which covers at least one complete economic cycle with a representative mix of good and bad years). A Reporting Bank which has not fully incorporated an assessment of the vulnerability of the obligor to adverse economic conditions or unexpected events in its rating assignments should incorporate such an assessment in its process of deriving PD estimates.

512 A Reporting Bank may have a primary technique and may use other techniques as a point of comparison and potential adjustment.

513 A Reporting Bank should consider alternative techniques for deriving a PD estimate for portfolios where there are insignificant incidences of past representative defaults to make meaningful statistical inferences. For example, a Reporting Bank may use one or more of the following:
(a) use pooled data, external data or market measures of risk to complement internal loss data;
(b) combine internal portfolio segments with similar characteristics, subject to the fulfilment of other standards in this Annex;

(i) A Reporting Bank uses data based on internal default experiences for deriving PD estimates. When using this technique, the Reporting Bank must demonstrate that the PD estimates have taken into account underwriting standards and potential differences due to changes in the definition of default, calculation of PD, underwriting standards, rating systems, and the profile of the population of exposures of the Reporting Bank over time. Where only limited internal default data are available, or if changes have rendered historical internal default rates less representative, a Reporting Bank must add a greater margin of conservatism in its estimate of PD;

(ii) A Reporting Bank uses data based on internal default experiences and data pooled across banks for deriving PD estimates. When using this technique, the Reporting Bank must demonstrate to the satisfaction of the Authority that the internal rating systems and criteria of other banks contributing to the pool are comparable with that of the Reporting Bank. The Reporting Bank must, in addition to observing paragraph 5.4(d)(i) of this Annex, properly account for differences in definition of default, calculation of PD, underwriting standards, rating systems, and the profile of the population of exposures across the banks contributing to the data pool. Where differences across banks contributing to the data pool are significant, a Reporting Bank must add a greater margin of conservatism in its estimate of PD;

(iii) A Reporting Bank associates or maps its internal grades to the rating scale used by an ECAI or similar institution and then attributes the default rates observed for the ECAI's grades to the grades of the Reporting Bank. A Reporting Bank must ensure that, where such a technique is used, the mappings of the Reporting Bank are based on a comparison of internal rating criteria with the criteria used by the ECAI and on a comparison of the internal and external ratings of any common obligors. The ECAI's criteria must be oriented to the risk of the obligor and not reflect transaction characteristics. The Reporting Bank must properly account for differences in definition of default, calculation of PD, underwriting standards (where applicable), rating systems, and the profile of the population of exposures between itself and the ECAI to prevent biases or inconsistencies in the mapping process and underlying data. The Reporting Bank must document the basis for the mapping;

(c) combine different rating categories and analyse PDs for the combined category. For example, a Reporting Bank using a rating system that maps to the rating categories of an ECAI might find it useful to combine AAA, AA and A-rated credits;

(d) use the upper bound of the PD estimate as an input to the formula for risk-weighted assets for those portfolios where the PD estimate itself is deemed to be too unreliable to warrant direct inclusion in capital adequacy calculations;

(e) derive PD estimates from data with a horizon that is different from one year. Where defaults are spread out over several years, a Reporting Bank may calculate a multi-year cumulative PD and then annualise the resulting figure. This cumulative PD should be calculated by taking into account rating migrations over the horizon. Where intra-year rating migrations contain additional information, these migrations could be analysed as separate rating movements in order to infer PDs, which may be especially useful for the higher-quality rating grades.

(iv) A Reporting Bank uses a simple average of default-probability estimates for individual obligors in a given grade where such estimates are drawn from statistical default prediction models. When using this technique, the Reporting Bank must meet the standards specified in paragraph 3.10 of this Annex, and ensure that the definitions and exposures used to construct such models are representative of the credit exposures of a Reporting Bank and that the data covers at least one economic cycle.

5.5 Standards on Estimation of PD for Retail Exposures

(a) A Reporting Bank must estimate a PD for each pool of retail exposures.[514]

(b) A Reporting Bank must rely on internal default data as the primary source of information for estimating PD given that the Reporting Bank is unlikely to find representative external default data for all of its pools of exposures.

(c) Despite paragraph 5.5(b) of this Annex, a Reporting Bank may use external data or statistical models provided –

(i) it does not omit any available and relevant internal data source selectively;

(ii) it has verified that there is a strong link between its process of assigning exposures to a pool and the process used by the external data source; and

(iii) it has verified that the exposures composing the external data are representative of the internal risk profile of its exposures.

5.6 Standards on Estimation of LGD[515]

(a) A Reporting Bank adopting the A-IRBA or the IRBA for the IRBA retail asset class must estimate an LGD for each facility or retail pool that aims to reflect economic downturn conditions. Appropriate downturn conditions for any IRBA asset sub-class are those in which the relevant drivers of default rates are consistent with conditions where credit losses for that IRBA asset sub-class are expected to be substantially higher than average. In addition, a Reporting Bank must take into account the potential for the LGD estimate of a facility to be higher than the long-run default-weighted average loss rate given default, during a period when credit losses are substantially higher than average. A Reporting Bank must incorporate the cyclical variability in loss severities in LGD estimates for facilities where this is relevant.[516]

(b) A Reporting Bank must take into account material discount effects and material direct and indirect costs associated with collecting on an exposure to estimate economic

[514] A Reporting Bank should not derive PD and LGD estimates for any retail pool based on an estimate of the expected long-run loss rate for that retail pool.

[515] A Reporting Bank should also meet the guidelines in Annex 7Z on LGD estimates.

[516] For this purpose, a Reporting Bank may make reference to averages of loss severities observed during periods of high credit losses or forecasts based on appropriately conservative assumptions, or other similar methods. Appropriate estimates of LGD during periods of high credit losses may be formed using either internal or external data.

loss, for the purposes of calculating historical LGDs and deriving forward-looking estimates of LGDs. A Reporting Bank must not simply measure the loss recorded in accounting records, but must be able to compare accounting and economic losses.

(c) A Reporting Bank adopting the IRBA for the IRBA retail asset class must rely on internal default data as the primary source of information for estimating LGD.[517]

(d) The Reporting Bank must consider the potential impact of adverse dependencies between default and recovery rates.

(e) A Reporting Bank must establish internal policies on the determinants of high dependency between the risk of the obligor and the collateral or collateral provider, including the existence of a legal connection or economic considerations. The Reporting Bank must ensure that these policies also determine the actions to take when there is a significant dependency, with respect to terms of business, exposure and limit measurement, capital requirements and other forms of risk mitigation[518]. In such cases, the Reporting Bank must ensure that the dependence is addressed in a conservative manner. A Reporting Bank must consider any currency mismatch between the underlying obligation and the collateral and ensure that they are treated conservatively in the Reporting Bank's assessment and process of deriving LGD estimates.

(f) A Reporting Bank must derive LGD estimates on the basis of historical recovery rates and not solely based on the collateral's estimated market value in order to account for the potential inability of the Reporting Bank to gain control of collateral and liquidate it expeditiously. If internal historical recovery rates are insufficient for a Reporting Bank to make meaningful statistical inferences, the Reporting Bank may consider whether external data would be appropriate. To the extent that LGD estimates take into account the existence of collateral, a Reporting Bank must establish internal requirements for collateral management, operational procedures, legal certainty and risk management processes that are at least consistent with the requirements set out in Annex 7H.

(g) A Reporting Bank must ensure that any adjustment to its LGD estimates, to take into account its own workout and collection expertise, is made in consultation with the Authority. A Reporting Bank must ensure that such adjustments are conservative until it has sufficient internal empirical evidence of the impact of its expertise on recovery rates.

(h) A Reporting Bank must ensure that the estimate of the LGD associated with any facility grade or retail pool of a Reporting Bank is not be less than the long-run default weighted average loss rate given default calculated based on the average economic loss of all observed defaults within the data source for that type of facility or retail pool.

(i) Given the possibility of recognising additional, unexpected losses during the recovery period as realised losses can at times systematically exceed expected levels[519], a Reporting Bank must construct its best estimates of the expected loss for each defaulted exposure based on current economic circumstances and facility status. The amount, if any, by which the LGD on a defaulted exposure is greater than the best estimate of expected loss on that exposure, represents the capital requirement for that exposure as set out in

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517 This is because the Reporting Bank is unlikely to find representative external default data for all of its pools of exposures.

518 For example, through the use of guarantees or credit derivatives.

519 The LGD assigned to a defaulted asset should reflect the possibility that the Reporting Bank has to recognise additional, unexpected losses during the recovery period.

paragraph 7.4.122. If the sum of specific allowances and partial write-offs on a defaulted exposure is greater than the best estimate of expected loss on that exposure, the Reporting Bank has to provide to the Authority the justification for such difference.

5.7 Standards on Estimation of EAD[520]

(a) A Reporting Bank adopting the A-IRBA or the IRBA for the IRBA retail asset class must estimate EAD at no less than the current drawn amount, subject to recognising the effects of on-balance sheet netting, and have procedures in place for the estimation of EAD for off-balance sheet items (excluding derivatives). The Reporting Bank must ensure that such procedures specify the estimates of EAD to be used for each facility type.

(b) A Reporting Bank must ensure that the estimates of EAD of a Reporting Bank reflect the possibility of additional drawings by the obligor up to and after the time a default event is triggered. Where estimates of EAD differ by facility type, a Reporting Bank must ensure that the delineation of these facilities is clear and unambiguous. For exposures in the IRBA retail asset class with uncertain future drawdown[521], a Reporting Bank must take into account its history and expectation of additional drawings prior to default in its overall calibration of loss estimates.

(c) A Reporting Bank adopting the A-IRBA or the IRBA for the IRBA retail asset class must estimate an EAD for each facility or pool of exposures. The Reporting Bank must ensure that the EAD estimate for each facility or pool of exposures is an estimate of the long-run default-weighted average EAD (and not a time-weighted average) for similar facilities or pool of exposures over a sufficiently long period of time (including periods of stress), but with a margin of conservatism appropriate to the likely range of errors in the estimate. If a positive correlation can reasonably be expected between the default frequency and the magnitude of EAD, the Reporting Bank must ensure that the EAD estimate incorporates a larger margin of conservatism.

(d) For the purposes of meeting the standards in paragraph 5.7(c) of this Annex, a Reporting Bank must use EAD estimates that are appropriate for an economic downturn for exposures for which EAD estimates are volatile over the economic cycle, if EAD estimates appropriate in an economic downturn are more conservative than the long-run average EAD estimates.[522,523]

(e) A Reporting Bank must ensure that the process for deriving EAD estimates –

(i) is plausible and intuitive;

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520 A Reporting Bank should also meet the guidelines in Annex 7Z on EAD estimates.

521 For example, credit cards.

522 For example, a Reporting Bank may achieve this by –
(i) considering the cyclical nature, if any, of the drivers of EAD models for a Reporting Bank which is using such models to estimate EAD;
(ii) examining the impact of previous recession(s) on EAD estimates based on historical internal data;
(iii) applying conservatism in EAD estimates if historical internal data does not cover recessionary period(s); or
(iv) making conservative use of external data if historical internal data is insufficient.

523 Moreover, where a Reporting Bank bases its EAD estimates on alternative measures of central tendency (such as the median or a higher percentile estimate) or only on downturn data, it should explicitly confirm that the basic downturn requirement of the framework is met, i.e. the Reporting Bank's estimates do not fall below a (conservative) estimate of the long-run default-weighted average EAD for similar facilities.

(ii) takes into account the effects of material drivers of EAD;

(iii) takes into account all relevant and material information; and

(iv) is supported by credible internal analysis by the Reporting Bank.

(f) A Reporting Bank adopting the IRBA for the IRBA retail asset class must rely on internal default data as the primary source of information for estimating EAD[524].

(g) A Reporting Bank must be able to provide a breakdown of its EAD experience by the factors which the internal analysis in paragraph 5.7(e) of this Annex has uncovered as drivers of EAD.

(h) A Reporting Bank must review its estimates of EAD for each facility type or pool of exposures when material new information comes to light and at least on an annual basis.

(i) For the purposes of meeting the standard in paragraph 5.7(e)(ii) of this Annex, a Reporting Bank must consider its specific policies and strategies adopted in respect of account monitoring and payment processing. The Reporting Bank must also consider its ability and willingness to prevent further drawings in circumstances short of payment default, including covenant violations or other technical default events.

(j) A Reporting Bank must –

(i) have adequate systems and procedures in place to monitor facility amounts, current outstanding balances against committed lines and changes in outstanding balances per obligor and per grade; and

(ii) be able to monitor outstanding balances on a daily basis.

(k) A Reporting Bank must ensure that its EAD estimates are developed using a 12-month fixed-horizon approach (i.e. for each observation in the reference data set, default outcomes must be linked to relevant obligor and facility characteristics 12 months prior to default).

5.8 Standards on Reporting Banks Adopting the A-IRBA or the IRBA for the IRBA Retail Asset Class for Assessing Effect of Credit Protection

Protection Providers Recognised for the Purposes of Calculating Credit RWA

(a) Subject to sub-paragraphs (c) and (d), a Reporting Bank adopting the A-IRBA or the IRBA for the IRBA retail asset class is not subject to any restrictions on the types of protection providers for the purposes of recognising the effect of credit protection, provided that the requirements in Annex 7H, and in addition, if the credit protection is through a guarantee, all of the following conditions, are met:

(i) the guarantee is in writing and unconditional;

[524] This is because the Reporting Bank is unlikely to find representative external default data for all of its pools of exposures.

(ii) the guarantee is non-cancellable on the part of the guarantor;

(iii) the guarantee will be in force until the obligation is satisfied in full (to the extent of the amount and tenor of the guarantee);

(iv) the guarantee is legally enforceable against the guarantor in a country or jurisdiction where the guarantor has assets to attach and enforce a judgement.

(b) A Reporting Bank must have clearly specified criteria for the types of protection providers it will recognise for regulatory capital purposes.

(c) In the case of eligible credit protection where a Reporting Bank applies the SA(CR) to the covered portion of exposure in accordance with paragraph 7.4.110(a), the Reporting Bank must apply the scope of eligible protection providers under the SA(CR).

(d) In the case of eligible credit protection where a Reporting Bank applies the F-IRBA to the covered portion of exposure in accordance with paragraph 7.4.110(b), the Reporting Bank must apply the scope of eligible protection providers under the F-IRBA.

Recognition of Guarantees through an Adjustment to Obligor or Facility Grade

(e) A Reporting Bank using its own estimates of LGD may reflect the risk-mitigating effect of guarantees through an adjustment to PD or LGD estimates, provided this is done consistently both across types of guarantees and over time. For retail exposures, where guarantees exist, either in support of an individual exposure or a pool of exposures, a Reporting Bank may reflect the risk-reducing effect either through its estimates of PD or LGD.

(f) A Reporting Bank must assign a obligor rating to both the obligor and all recognised guarantors at the outset and on an ongoing basis, and abide by all standards for assigning obligor ratings set out in this Annex, including the standards on the regular monitoring of the financial condition of the guarantor as well as its ability and willingness to honour its obligations. A Reporting Bank must retain all relevant information on the obligor absent of the guarantee and the guarantor, consistent with paragraph 4.7 of this Annex. In the case of retail exposures where guarantees exists, the Reporting Bank must also apply these requirements to the assignment of an exposure to a pool, and the estimation of PD.

(g) A Reporting Bank must not derive an adjusted PD or LGD estimate for a guaranteed exposure such that the adjusted risk weight would be lower than that of a comparable, direct exposure to the guarantor. The Reporting Bank must not consider possible favourable effects of imperfect expected correlation between default events for the obligor and guarantor for the purposes of calculating regulatory capital requirements in the rating criteria and rating processes. As such, a Reporting Bank must ensure that the adjusted risk weight does not reflect the risk mitigation of "double default".

(h) A Reporting Bank must have clearly specified internal criteria for adjusting obligor grades or LGD estimates (or in the case of retail and eligible purchased receivables, the process of assigning exposures to pools) to reflect the impact of guarantees for regulatory capital purposes. A Reporting Bank must ensure that such criteria is as detailed as the criteria for assigning obligor or facility ratings and is consistent with the standards in Section 4 of this Annex.

(i) The Reporting Bank must ensure that the internal criteria at paragraph 5.8(h) of this Annex is plausible and intuitive, and addresses the guarantor's ability and willingness to perform under the guarantee. The Reporting Bank must ensure the criteria addresses the likely timing of any payments and the degree to which the guarantor's ability to perform under the guarantee is correlated with the obligor's ability to repay. The Reporting Bank's criteria must also consider the extent to which residual risk to the obligor remains[525].

(j) In adjusting obligor grades or LGD estimates (or in the case of exposures under the IRBA retail asset class, the process of assigning exposures to pools), a Reporting Bank must take all relevant available information into account.

Recognition of Single-Name Credit Derivatives through an Adjustment to Obligor or Facility Grade

(k) A Reporting Bank using its own estimates of LGD may reflect the risk-mitigating effect of single-name credit derivatives through an adjustment to PD or LGD estimates, subject to the following:

(i) the standards for recognition under paragraph 5.8(a) to (j) of this Annex are met;

(ii) a Reporting Bank must ensure that the internal criteria used for assigning adjusted obligor grades or deriving LGD estimates (or in the case of exposures under the IRBA retail asset class, the process of assigning exposures to pools) for exposures hedged with credit derivatives –

(A) requires that the asset on which the protection is based (the reference asset) is not different from the underlying asset, unless the requirements outlined in paragraph 5.3(k) of Annex 7H are complied with; and

(B) addresses the payout structure of the credit derivative and conservatively assesses the impact this has on the level and timing of recoveries. The Reporting Bank's internal criteria must also consider the extent to which other forms of residual risk remain for an exposure hedged with a single-name credit derivative.

[525] For example, a currency mismatch between the guarantee and the underlying exposure.

5.9 Standards on Reporting Banks Adopting F-IRBA for the IRBA Wholesale Asset Class for Assessing Effect of Credit Protection

(a) For the purposes of recognising the effect of credit protection for a Reporting Bank adopting the F-IRBA for the wholesale asset class, a Reporting Bank must comply with the requirements in paragraph 5.8 of this Annex, with the following exceptions:

(i) a Reporting Bank must calculate the credit risk-weighted exposure amount in accordance with paragraph 7.4.109;

(ii) a Reporting Bank must limit the range of eligible protection providers and eligible credit protection in accordance with Annex 7H, and paragraph 5.8(c) and (d) of this Annex.

Section 6: Stress Tests

6.1 General Stress Tests

(a) A Reporting Bank adopting the IRBA must have in place sound and comprehensive stress testing processes for use in the assessment of its capital adequacy. The Reporting Bank must ensure that stress testing involves identifying possible events or future changes in economic conditions that could have unfavourable effects on the Reporting Bank's credit exposures and assessment of the Reporting Bank's ability to withstand such changes.[526]

6.2 Credit Stress Test

(a) In addition to the general stress tests described above, a Reporting Bank must specifically conduct regular (at least semi-annually, or more frequently if so directed by the Authority) credit risk stress tests to assess the effect of certain specific conditions on its IRBA regulatory capital requirements. The Reporting Bank must perform additional stress tests where it determines that the prevailing economic circumstances are such that the results of the last semi-annual stress test have become irrelevant. Despite the foregoing, the Authority may, from time to time, direct a Reporting Bank to conduct additional credit risk stress tests as the Authority considers necessary. The credit stress tests to be employed would be chosen by the Reporting Bank, subject to review by the

[526] Examples of scenarios that could be used are –
(i) economic or industry downturns;
(ii) market risk events; and
(iii) liquidity conditions.
The 1998 Asian crisis and 2001 slowdown in the U.S. economy, in particular the electronics sector, are examples of historical events that may be used in developing stress scenarios.

Authority.[527] The Reporting Bank must ensure that the credit stress tests to be conducted are meaningful and reasonably conservative. [528,529]

(b) A Reporting Bank is not required to consider worst-case scenarios in the credit stress tests[530,531].

(c) Regardless of the approach used for stress testing, the Reporting Bank must incorporate all of the following sources of information:

(i) the data of the Reporting Bank which includes the estimation of the ratings migration of at least some of its exposures;

(ii) the impact of smaller deteriorations in the credit environment on the Reporting Bank's ratings which may give some information on the likely effect of bigger, stress circumstances;

(iii) the evidence of ratings migration in external ratings. This would include the Reporting Bank broadly matching its internal grades to rating categories of an ECAI.

6.3 Oversight of Stress Tests

(a) A Reporting Bank must ensure that the Board and senior management approve and exercise effective oversight over its stress test process. The Reporting Bank must ensure that the Board or senior management, or both, regularly review the techniques, assumptions, results and effectiveness of the stress tests, as well as approve material changes to the stress test techniques and assumptions.

(b) A Reporting Bank must ensure that senior management is actively involved in the process of designing stress tests, monitoring of results and drawing up plans for remedial actions.

(c) A Reporting Bank must ensure that senior management also establishes comprehensive and adequate written policies and procedures, to be approved by the Board, on its stress test processes. The Reporting Bank must ensure that the documentation includes the objectives, techniques, assumptions, reporting requirements, remedial

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527 The Authority may prescribe specific scenarios for stress testing, on top of the Reporting Bank's own scenarios.

528 The stress tests should be consistent with the historical economic downturns experienced in Singapore and the regions, countries or jurisdictions in which the Reporting Bank has material exposures.

529 A Reporting Bank may develop different approaches to undertaking stress tests depending on its circumstances. A Reporting Bank should use a range of stress scenarios, which may include historical and hypothetical scenarios. The techniques, scenarios and risk factors used by a Reporting Bank in its stress tests should commensurate with the nature, size and complexity of its business.

530 A Reporting Bank should consider at least the effect of mild recession scenarios. At a minimum, the Reporting Bank should assess the impact of 2 consecutive quarters of zero growth on its PDs, LGDs and EADs. It is up to the Reporting Bank to determine how this mild recession scenario translates into movements in specific risk factors and how these risk factors affect its regulatory capital requirement. Any consideration by a Reporting Bank of its international diversification should be on a conservative basis.

531 The time horizon of the stress test should be consistent with the specifics of the scenario and should take into account the lag effect of an economic downturn on the Reporting Bank's credit exposures. A Reporting Bank should also stress all material portfolios, including portfolios that contain the vast majority of its total exposures, under the IRBA.

actions, responsibilities and lines of authority for the stress tests of the Reporting Bank. In addition, the Reporting Bank must ensure that senior management regularly updates the Board on the stress test results as well as the remedial actions taken, in accordance with the stress test policy.

(d) A Reporting Bank must ensure that senior management includes all of the following key elements when implementing stress testing processes:

(i) stress tests must include both quantitative and qualitative criteria. Quantitative criteria must identify plausible stress scenarios, preferably with different levels of severity, to which the Reporting Bank could be exposed. Qualitative criteria must emphasise that the 2 major goals of stress testing are to evaluate the capacity of the capital and earnings of the Reporting Bank to absorb potentially significant losses and to identify the steps that the Reporting Bank can take to manage its risk (including hedging and asset sales) and conserve capital;

(ii) stress scenarios must reflect specific risk characteristics of the portfolios of the Reporting Bank and take into consideration prevailing market conditions. All related risk factors must be identified and stressed;

(iii) stress tests must be integrated into the Reporting Bank's risk management system;

(iv) the Reporting Bank must put in place adequate information systems to support the stress test process;

(v) the review of the stress tests must take into account changes in portfolio characteristics and external conditions. The validity of the underlying assumptions must also be reviewed. Such reviews must be done at least once a year or more frequently if the portfolio or the environment changes significantly.

Annex 7Y

GUIDELINES ON IRBA ROLLOUT PARAMETERS

Section 1: IRBA Coverage

1.1 A Reporting Bank should observe the parameters set out in this Annex in its IRBA rollout.

1.2 Where a Reporting Bank adopts the IRBA for part of its exposures within the scope of paragraph 7.1.1(a) or (b) under the following IRBA asset sub-classes in sub-paragraph (a), (b), (d), (e), (f), (g) or (i), or combination of IRBA asset sub-classes in sub-paragraph (c) or (h), the Reporting Bank should extend its adoption of the IRBA across all exposures of the banking group which would fall within the respective IRBA asset sub-class or combination of IRBA asset sub-classes described in the same sub-paragraph:

[MAS Notice 637 (Amendment) 2024]

(a) sovereign asset sub-class;

(b) bank asset sub-class;

(c) general corporate asset sub-class and corporate small business asset sub-class;

(d) SL asset sub-class and HVCRE asset sub-class;

(e) residential mortgage asset sub-class;

(f) QRRE asset sub-class;

(g) other retail exposures asset sub-class;

(h) purchased corporate receivables asset sub-class and purchased corporate small business receivables asset sub-class;

(i) purchased retail receivables asset sub-class.

1.3 The Authority recognises that a simultaneous rollout for an entire IRBA asset sub-class or combination of IRBA asset sub-classes across all business units of the banking group may not be practicable in all circumstances. As such, the Authority may permit phased rollouts in certain cases[532]. Despite this, the Authority will generally not permit a Reporting Bank to adopt the IRBA unless it is able to do so meaningfully from its IRBA adoption date.

[532] For example, the Authority may permit a phased rollout of the IRBA (including a phased rollout of the A-IRBA from the F-IRBA) for an IRBA asset sub-class or combination of IRBA asset sub-classes as set out in paragraph 1.2 of this Annex across business units in the same banking group.

1.4 To minimise the risk of capital arbitrage, the Reporting Bank should ensure that –

(a) exposures falling within an IRBA asset sub-class or combination of IRBA asset sub-classes set out in paragraph 1.2 of this Annex within a given country or jurisdiction transition to the IRBA simultaneously; and

(b) IRBA asset sub-classes or combination of IRBA asset sub-classes across countries or jurisdictions in which the Reporting Bank operates, where arbitrage opportunities may be created by a phased IRBA rollout, transition to the IRBA simultaneously.

Section 2: IRBA Rollout Plan

2.1 A Reporting Bank which has been permitted to rollout the IRBA in a phased manner should –

(a) provide reasonable assurances to the Authority that all remaining exposures within each IRBA asset sub-class or combination of IRBA asset sub-classes set out in paragraph 1.2 of this Annex, except those that are permitted to be excluded from the IRBA, will be brought onto the IRBA steadily;

(b) complete its IRBA rollout for each IRBA asset sub-class or combination of IRBA asset sub-classes set out in paragraph 1.2 of this Annex across the entire banking group within 2 years of the IRBA adoption date for that IRBA asset sub-class or combination of IRBA asset sub-classes, save in exceptional circumstances[533]; and

(c) be able to demonstrate that its IRBA rollout plan is driven by the practicality and feasibility of moving to the IRBA, and not minimisation of its capital requirements.

2.2 On a continuing basis, the Reporting Bank should ensure that the percentage of exposures excluded from the IRBA in each IRBA asset sub-class or combination of IRBA asset sub-classes as set out in paragraph 1.2 of this Annex and calculated in accordance with paragraphs 7.4.33 to 7.4.36 does not exceed the following thresholds:

(a) 20% for the following IRBA asset sub-classes or combination of IRBA asset sub-classes:

(i) sovereign asset sub-class;

(ii) bank asset sub-class;

(iii) general corporate asset sub-class and corporate small business asset sub-class;

(iv) SL asset sub-class and HVCRE asset sub-class;

[533] For example, a significant merger or acquisition.

(v) residential mortgage asset sub-class;

(vi) purchased corporate receivables asset sub-class and purchased corporate small business receivables asset sub-class;

(b) 30% for the following IRBA asset sub-classes:

(i) QRRE asset sub-class;

(ii) other retail exposures asset sub-class;

(iii) purchased retail receivables asset sub-class.

Annex 7Z

GUIDELINES ON LGD AND EAD ESTIMATES FOR ALL ASSET CLASSES

Section 1: LGD Estimates for a Reporting Bank Adopting the A-IRBA or the IRBA for the IRBA Retail Asset Class

1.1 A Reporting Bank should have a rigorous and well documented process for assessing the effects, if any, of economic downturn conditions on recovery rates and for producing LGD estimates consistent with downturn conditions.

1.2 A Reporting Bank should identify downturn conditions at a granular level. Where recovery rates of exposures are sensitive to local economic conditions, a Reporting Bank should identify separate downturn conditions for each country or jurisdiction at the IRBA asset sub-class level. In those cases where a Reporting Bank is able to demonstrate that exposures in the same asset sub-class in different countries or jurisdictions exhibit strong co-movement in recovery rates, the Reporting Bank may group those countries or jurisdictions together for the purposes of defining downturn conditions. Where recovery rates of exposures are not sensitive to local economic conditions (e.g. exposures to internationally diversified obligors), a Reporting Bank may identify downturn conditions appropriate to the exposures, which may span national boundaries.

1.3 A Reporting Bank should, at a minimum, identify separate downturn conditions for each IRBA asset sub-class. The following examples are considered by the Authority as acceptable methods of identifying appropriate economic downturn conditions:

(a) periods of negative GDP growth and high unemployment rates (for a well-diversified wholesale portfolio);

(b) periods in which observed historical default rates have been high for a portfolio of exposures that is representative of the Reporting Bank's current portfolio;

(c) periods where common risk drivers (e.g. collateral values) that influence default and recovery rates are expected to be distressed.

1.4 For the purposes of paragraph 5.6(b) of Annex 7X, a Reporting Bank should meet the following guidelines when estimating economic loss for the calculation of historical LGDs and deriving forward-looking estimates of LGD:

(a) economic loss may be calculated using EAD, loss of principal, interest, and fees, and the present value of subsequent recoveries and related expenses discounted at a suitable rate. The Reporting Bank should discount the streams of recoveries received after a facility goes into default in order to compare the net present value of recovery streams as of a default date with a measure of EAD;

(b) the discount rate used to calculate economic loss should reflect the costs of holding defaulted assets over a workout period, including an appropriate risk premium. In establishing an appropriate discount rate, the Reporting Bank should take into account the following:

(i) when recovery streams are uncertain and involve risks which cannot be diversified away, net present value calculations should reflect the time value of money and risk premiums appropriate to such risks. In establishing appropriate risk premiums for the estimation of LGDs consistent with economic downturn conditions, the Reporting Bank should focus on the uncertainties in recovery cash flows associated with defaults which arise during economic downturn conditions;

(ii) when there is no uncertainty in recovery streams (e.g. recoveries derived from cash collateral), net present value calculations need only reflect the time value of money, and a risk-free discount rate may be appropriate;

(c) the Reporting Bank may estimate the present values of recovery rates by –

(i) discounting the stream of recoveries and the stream of workout costs by a risk-adjusted discount rate which is the sum of the risk-free rate and a spread appropriate for the risk of the recovery and workout cost cash flows;

(ii) converting the stream of recoveries and the stream of workout costs to certainty-equivalent cash flows[534] and discounting these by the risk-free rate; or

(iii) using a combination of adjustments to the discount rate and the stream of recoveries and the stream of workout costs which are consistent with sub-paragraphs (c)(i) and (c)(ii)[535];

(d) workout costs which can be clearly attributed to certain facilities or types of facilities should be reflected in the LGD assignments of the Reporting Bank for those exposures. When such allocation is not practical, the Reporting Bank may assign those costs using factors based on broad averages. The allocation of recovery costs may require judgement, but the process should be carefully designed to ensure that all true recovery costs are reasonably allocated;

(e) if a Reporting Bank chooses to close the period of observation before final resolution of the facility, for example, at a point in time when most costs have been incurred and when recoveries are substantially complete, it should have a well-founded process for estimating the additional costs and recoveries which would likely occur beyond that point in time and include them in its LGD estimates.

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534 A certainty-equivalent cash flow is defined as the cash payment required for a risk averse investor to be indifferent between receiving the cash payment with certainty at the payment date and holding an asset which would yield an uncertain payout at the payment date.

535 A Reporting Bank may use an "effective interest rate" in accordance with FRS 109 as the discount rate, but in that case should adjust the stream of net recoveries in a way which is consistent with paragraph 1.4(c)(i) and (ii) of this Annex.

1.5 For the purposes of paragraph 5.6(d) of Annex 7X, a Reporting Bank should identify and incorporate dependencies between default and recovery rates, so as to produce LGD estimates for its exposures which are consistent with downturn conditions identified according to paragraph 5.6(a) of Annex 7X. For example, the Reporting Bank may use some or all of the following techniques to identify adverse dependencies:

(a) a comparison of average recovery rates with recovery rates observed during appropriate downturn periods;

(b) a statistical analysis of the relationship between observed default and recovery rates over a complete economic cycle;

(c) for secured exposures where default is shown to be highly (negatively) correlated with collateral values, the Reporting Bank may compare –

(i) the recovery rate forecasts derived from robust statistical models that use "typical" assumptions about collateral value changes with those under identified downturn conditions; or

(ii) observed recovery rates for defaulted exposures given typical collateral values with those under identified downturn conditions;

(d) an identification of the underlying factors (risk drivers) that determine recovery rates and analysis of the relationship between those factors and default rates, combined with an assessment of the net impact of those factors on recovery rates under downturn conditions.

1.6 For those exposures for which adverse dependencies between default and recovery rates have been identified through analysis consistent with paragraph 1.5 of this Annex, a Reporting Bank may derive LGD estimates by –

(a) basing them on averages of observed loss rates during downturn periods identified according to paragraph 5.6(a) Annex 7X; or

(b) deriving them from forecasts based on stressing appropriate risk drivers in a manner consistent with downturn conditions identified according to paragraph 5.6(a) of Annex 7X.

1.7 For those exposures for which no material averse dependencies between default and recovery rates have been identified, a Reporting Bank may derive its LGD estimates by –

(a) basing them on long-run default-weighted averages of observed loss rates; or

(b) deriving them from forecasts that do not involve stressing appropriate risk drivers.

Section 2: EAD Estimates for all Asset Classes

2.1 A Reporting Bank should ensure that its EAD estimates are based on reference data that reflect the obligor, facility and bank management practice characteristics of the exposures to which the estimates are applied as set out in paragraph 5.2(d) of Annex 7X.

2.2 For the purposes of meeting paragraph 2.1 of this Annex, a Reporting Bank should ensure that its EAD estimates applied to particular exposures are not based on data that comingle the effects of disparate characteristics or data from exposures that exhibit different characteristics (e.g. same broad product grouping but different obligors that are managed differently by the Reporting Bank). The EAD estimates should be based on appropriately homogenous pools.

2.3 Alternatively, a Reporting Bank should ensure that its EAD estimates are based on an estimation approach that effectively disentangles the impact of the different characteristics exhibited within the relevant dataset. For example, practices that generally do not comply with paragraph 2.1 of this Annex include use of estimates based or partly based on:

(a) data from SME or midmarket obligors being applied to large corporate obligor;

(b) data from commitments with small unused limit availability being applied to facilities with large unused limit availability;

(c) data from obligors already identified as problematic at reference date being applied to current obligors with no known issues (e.g. obligors at reference date who were already delinquent, watchlisted by a Reporting Bank, subject to recent limit reductions initiated by a Reporting Bank, blocked from further drawdowns or subject to other types of collections activity);

(d) data that has been affected by changes in obligors' mix of borrowing and other credit-related products over the observation period unless that data has been effectively mitigated for such changes (e.g. by adjusting the data to remove the effects of the changes in the product mix). A Reporting Bank should, if required by the Authority, be able to demonstrate –

(i) a detailed understanding of the impact of changes in product mix on EAD reference data sets (and associated EAD estimates); and

(ii) that the impact is immaterial or has been effectively mitigated within the Reporting Bank's estimation process. Effective mitigation does not include –

(A) setting floors to CCF or EAD observations;

(B) use of obligor-level estimates that do not fully cover the relevant product transformation options or inappropriately combine products with very different characteristics (e.g. revolving loans and loans which are not revolving loans);

(C) adjusting only material observations affected by product transformation; and

(D) generally excluding observations affected by product profile transformation, thereby potentially distorting the representativeness of the remaining data.

Section 3: Use of the Undrawn Limit Factor (ULF) approach

3.1 In respect of the use of ULF approach as defined in paragraph 3.3 in this Annex to estimate CCFs, a Reporting Bank should ensure that their EAD estimates are effectively quarantined from the potential effects of the region of instability associated with facilities close to being fully drawn at reference date.

3.2 For the purposes of meeting paragraph 3.1 of this Annex, a Reporting Bank may, for example, –

(a) use an estimation method, other than the ULF approach, that avoids the instability issue by not using potentially small undrawn limits that could approach zero in the denominator or, as appropriate, switching to a method other than the ULF as the region of instability is approached (e.g. a limit factor, balance factor or additional utilisation factor approach as defined in paragraph 3.3 of this Annex);

(b) include limit utilisation as a driver in EAD models, which may quarantine much of the relevant portfolio from the instability issue. The Reporting Bank should consider other actions to develop appropriate EAD estimates to be applied to exposures within the region of instability; or

(c) not utilise approaches such as capping and flooring reference data (e.g. observed CCFs at one and zero respectively) or omitting observations that are judged to be affected.

3.3 For the purposes of this Section, the following definitions apply:

(a) ULF approach refers to the derivation of a specific type of CCF, where predicted additional drawings in the lead-up to default are expressed as a percentage of the undrawn limit that remains available to the obligor under the terms and conditions of a facility (i.e. EAD = B_0 = B_t + ULF [L_t - B_t], where B_0 = facility balance at date of default; B_t = current balance (for predicted EAD) or balance at reference date; L_t = current limit (for predicted EAD) or limit at reference date (for realised or observed EAD);

(b) A limit factor (LF) is a specific type of CCF where the predicted balance at default is expressed as a percentage of the total limit that is available to the obligor under the terms and conditions of a credit facility (i.e. EAD = B_0 = LF[L_t], where B_0 = facility balance at date of default; B_t = current balance (for predicted EAD) or balance at reference date (for observed EAD); L_t = current limit (for predicted EAD) or limit at reference date (for realised or observed EAD));

(c) A balance factor (BF) is a specific type of CCF where predicted balance at default is expressed as a percentage of the current balance that has been drawn down under a credit facility (i.e. EAD = B_0 = BF[B_t]);

(d) An additional utilisation factor (AUF) is a specific type of CCF, where predicted additional drawings in the lead-up to default are expressed as a percentage of the total limit that is available to the obligor under the terms and conditions of a credit facility (i.e. EAD = B_0 = B_t +AUF[L_t]).

Annex 7AA

ILLUSTRATIVE RISK WEIGHTS CALCULATED UNDER THE IRBA

1.1 Table 7AA-1 provides illustrative risk weights calculated for 5 exposure types under the IRBA. Each set of risk weights was produced using the appropriate risk weight function in paragraphs 7.4.62 (K_{corp}), 7.4.65 (K_{sm}), 7.4.82 (K_{mort}), 7.4.85 (K_{qrre}), and 7.4.86 (K_{oret}). The inputs used to calculate the illustrative risk weights include measures of PD, LGD, and an assumed effective maturity (M) of 2.5 years, where applicable.

1.2 In the case of exposures in the corporate small business asset sub-class, the risk weights set out in the third column of Table 7AA-1 incorporate the firm-size adjustment set out in paragraph 7.4.65.

Table 7AA-1 – Illustrative IRB risk weights

Asset sub-class	General corporate	Corporate small business	Residential mortgage		Other retail		QRRE	
LGD (%)	40	40	45	25	45	85	50	85
Reported annual sales	$100 million	$10 million						
Maturity	2.5 years							
PD (%)	**Risk weights (%)**							
0.05	17.47	13.69	6.23	3.46	6.63	12.52	1.68	2.86
0.10	26.36	20.71	10.69	5.94	11.16	21.08	3.01	5.12
0.25	43.97	34.68	21.30	11.83	21.15	39.96	6.40	10.88
0.40	55.75	43.99	29.94	16.64	28.42	53.69	9.34	15.88
0.50	61.68	48.81	35.08	19.49	32.36	61.13	11.16	18.97
0.75	73.58	57.91	46.46	25.81	40.10	75.74	15.33	26.06
1.00	82.06	64.35	56.40	31.33	45.77	86.46	19.14	32.53
1.30	89.73	70.02	67.00	37.22	50.80	95.95	23.35	39.70
1.50	93.86	72.99	73.45	40.80	53.37	100.81	25.99	44.19
2.00	102.09	78.71	87.94	48.85	57.99	109.53	32.14	54.63
2.50	108.58	83.05	100.64	55.91	60.90	115.03	37.75	64.18
3.00	114.17	86.74	111.99	62.22	62.79	118.61	42.96	73.03
4.00	124.07	93.37	131.63	73.13	65.01	122.80	52.40	89.08
5.00	133.20	99.79	148.22	82.35	66.42	125.45	60.83	103.41
6.00	141.88	106.21	162.52	90.29	67.73	127.94	68.45	116.37
10.00	171.63	130.23	204.41	113.56	75.54	142.69	93.21	158.47
15.00	196.92	152.81	235.72	130.96	88.60	167.36	115.43	196.23
20.00	211.76	167.48	253.12	140.62	100.28	189.41	131.09	222.86

Annex 7AB

ILLUSTRATION ON THE CALCULATION OF CREDIT RISK-WEIGHTED EXPOSURE AMOUNTS FOR EQUITY INVESTMENTS IN FUNDS

Section 1: Illustrative Example – Calculation using the LTA

1.1 Assume a Reporting Bank, which is using the SA(CR) for calculating capital requirements for credit risk and the SA-CCR for calculating pre-settlement counterparty exposures, owns 20% of the shares of an individual fund that replicates an equity index. Further assume that the fund holds forward contracts on listed equities that are cleared through a qualifying CCP of notional amount of $100, and presents the following balance sheet:

Assets	
Cash	$20
Government bonds (AAA rated)	$30
Variation margin receivable – forward contracts[536]	$50
Liabilities	
Notes payable	$5
Equity	
Shares	$95

1.2 The Reporting Bank must calculate the credit risk-weighted exposure amount for an equity investment in a fund as follows:

$$\text{Credit RWE}_{LTA} = \min[\text{Avg RW}_{fund} * \text{Lvg}, 1250\%] * E$$

$$= \min[\text{RWE}_{fund} / \text{Total Assets}_{fund} * \text{Lvg}, 1250\%] * E$$

where –

(a) RWE_{fund} is calculated as the sum of –

(i) the credit risk-weighted exposure amount for cash (i.e. $20), which will be risk-weighted according to the risk weight applied for cash (RW=0%), i.e. RWE_{cash} = $20*0% = $0;

(ii) the credit risk-weighted exposure amount for government bonds (i.e. $30), which will be risk-weighted according to the risk weight applied for government bonds (RW=0%), i.e. RWE_{bonds} = $30*0% = $0;

(iii) the credit risk-weighted exposure for the listed equities underlying the forward contract held by the fund based on the CCF applicable to forward contracts (i.e. 100%) multiplied by the notional amount (i.e $100) and risk weight associated with the underlying of the

[536] That is, the collateral posted by the Reporting Bank to the qualifying CCP in respect of the forward contracts.

derivative exposures, which in this case is listed equity exposures (RW=250%), i.e. $RWE_{underlying}$ = 100%*$100*250% = $250; and

(iv) the counterparty credit risk associated with the pre-settlement counterparty exposures of the fund's derivative transactions, in respect of the market value of the forward contracts and the collateral posted that is not held by the CCP on a bankruptcy remote basis, which will be risk-weighted according to the risk-weight applied for trade exposures to CCPs (i.e. 2%). Assuming that the application of SA-CCR results in a pre-settlement counterparty exposure of $56, the Reporting Bank must calculate the counterparty credit risk charge as RWE_{CCR} = $56*2% = $1.12. There is no CVA risk capital requirements assessed, since the forward contracts are cleared through a CCP;

(b) Lvg = (Total Assets) / (Total Equity)
= $100 / $95
= 1.05;

(c) E = Proportion of shares in fund * Total Equity
= 20% * $95
= $19, assuming that this is the same amount as the carrying amount of the Reporting Bank's equity investment in the fund as determined in accordance with paragraph 7.1.12(a).

Therefore, Credit RWE_{LTA} = ($0 + $0 + $250 + $1.12) / $100 * 1.05 * $19 = $50.22

Section 2: Illustrative Example – Calculation using the MBA

2.1 Assume a Reporting Bank, which is using the SA(CR) for calculating capital requirements for credit risk and the SA-CCR for calculating pre-settlement counterparty exposures, owns 20% (i.e. representing an investment of $18.18) of the shares of an individual fund that replicates an equity index. Further assume that the fund has assets of $100, and a mandate that permits investments in cash, listed equities, and long positions in equity index futures up to a maximum nominal amount equivalent to the size of the fund's balance sheet (that is, the total on-balance sheet and off-balance sheet exposures of the fund can reach $200), and a maximum financial leverage of 1.1.

2.2 The Reporting Bank must calculate the credit risk-weighted exposure amount of its equity investment in the fund as follows:

Credit RWE_{MBA} = min[Avg RW_{fund} * Lvg, 1250%] * E

= min[RWE_{fund} / Total $Assets_{fund}$ * Lvg, 1250%] * E

where –

(a) RWE_{fund} is calculated as the sum of –

(i) the credit risk-weighted exposure amount for on-balance sheet exposures of the fund (i.e. $100), which will be risk-weighted

according to the risk weight applied for listed equity exposures (RW=250%), i.e. $RWE_{on\text{-}balance}$ = \$100*250% = \$250;

(ii) the credit risk-weighted exposure amount for the listed equities underlying the equity index futures based on the CCF applicable to forward purchases (i.e. 100%) multiplied by the maximum notional amount of the derivative exposures (i.e. \$100) and risk weight associated with the underlying of the derivative exposures, which in this case is listed equity exposures (RW=250%), i.e. $RWE_{underlying}$ = 100%*\$100*250% = \$250; and

(iii) the counterparty credit risk associated with the pre-settlement counterparty exposures of the fund's derivative transactions. Assuming that the Reporting Bank does not know the replacement cost related to the futures contract, the Reporting Bank must use the maximum notional amount (i.e. \$100) as a proxy for the replacement cost. Assuming further that the Reporting Bank does not know the amount for potential future exposure related to the futures contract, the Reporting Bank must calculate the amount for potential future exposure as 15% of the maximum notional amount (i.e. 15%*\$100). Assuming further that the futures contract is cleared through a qualifying CCP, such that a risk-weight of 2% will apply, and there is no CVA risk capital requirements assessed, since the futures contract is cleared through a CCP, the Reporting Bank must calculate the counterparty credit risk charge as RWE_{CCR} = 1.4 * (\$100 + 15%*\$100) * 2% = \$3.22;

(b) Lvg (as given) = 1.1;

(c) Equity Investment (as given) = \$18.18.

Therefore, Credit $RWE_{investment}$ = (\$250 + \$250 +\$3.22) / \$100 * 1.1 * \$18.18 = \$100.63

Section 3: Illustrative Example – Calculation of the leverage adjustment

3.1 Assume a Reporting Bank, which is using the SA(CR) for calculating capital requirements for credit risk, has an equity investment in a fund with assets of \$100 that invests in corporate debt. Further assume that the fund is highly levered with equity of \$5 and debt of \$95 (i.e. the leverage of the fund = 100 / 5 = 20). Consider the following 2 cases:

Case 1

Assets

Cash	\$10
A+ to A- bonds	\$20
BBB+ to BBB- bonds	\$30
BB+ to BB- bonds	\$40

The average risk weight of the fund is 72.5% (i.e. (\$10*0% + \$20*50% + \$30*75% + \$40*100%) / \$100). The financial leverage of 20 would result in a risk weight of 1450%.

The Reporting Bank must apply the conservative risk weight of 1250% for its equity investment in the fund, in accordance with paragraphs 7.5.5 and 7.5.13;

Case 2

Assets

Cash	$5
AAA to AA- bonds	$75
A+ to A- bonds	$20

The average risk weight of the fund is 25% (i.e. ($5*0% + $75*20% + $20*50%) / $100). The financial leverage of 20 would result in a risk weight of 500%.

3.2 The above example illustrates that the rate at which the 1250% cap is reached is dependent on the underlying riskiness of the portfolio, which is determined by the average risk weight of the fund, as captured by the risk weights under the SA(CR) or the treatment under the IRBA. For example, the 1250% cap is reached fairly quickly for a portfolio with higher risk (e.g. 72.5% average risk weight) with a leverage of 17.2, while for a portfolio with lower risk (e.g. 25% average risk weight), the 1250% cap is reached at a leverage of 50.

Annex 7AC

REQUIREMENTS FOR EXCLUSION OF SECURITISED EXPOSURES FROM THE CALCULATION OF CREDIT RWA

Section 1: Traditional Securitisation

1.1 In the case of a traditional securitisation, a Reporting Bank may exclude securitised exposures from its calculation of credit RWA only if all of the following requirements have been complied with:

(a) except as provided for in sub-paragraph (h)(i), significant credit risk associated with the underlying exposures has been transferred to external parties. For the purposes of the assessment of whether significant credit risk has been transferred, the Reporting Bank must treat material costs of credit protection purchased that have not yet been recognised in earnings as a retained position of the Reporting Bank[537];

(b) the Reporting Bank does not have any effective control over the underlying exposures. For the purposes of this sub-paragraph, a Reporting Bank is deemed to have effective control over the transferred underlying exposures if –

(i) the Reporting Bank is able to repurchase from the transferee the previously transferred underlying exposures in order to realise the benefits of those exposures; or

(ii) the Reporting Bank is obligated to retain the risk of the transferred underlying exposures.

To avoid doubt, where a Reporting Bank acts as a servicer in respect of the transferred underlying exposures, this does not necessarily mean that the Reporting Bank has effective control of the exposures;

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[537] In determining whether the costs of credit protection are material, a Reporting Bank should consider factors such as –
(a) a comparison of the present value of the premiums and other costs not yet recognised in profit and loss relative to expected losses of the protected exposures over a variety of stress scenarios; and
(b) the pricing of the credit protection relative to market prices.

The Reporting Bank should consider costs of credit protection to be material when –
(a) the cost of credit protection over the life of the protection contract equals, or exceeds, the amount of the exposures for which the protection is being purchased; or
(b) the credit protection has rebate mechanisms, where the protection provider agrees to refund parts of the cost of credit protection to the Reporting Bank according to the performance of the protected exposure, as such mechanisms are indications of excessive premium.
For the purposes of the analysis of whether the costs of credit protection are material, the Reporting Bank should quantify the costs of credit protection that have yet to be recognised in profit and loss through an appropriately conservative present value calculation.

(c) the Reporting Bank obtains a written independent legal opinion [538] confirming that the underlying exposures are legally isolated from the Reporting Bank such that they are beyond the reach of the Reporting Bank and its creditors, even in an insolvency situation or receivership;

(d) the securities issued pursuant to the securitisation are not obligations of the Reporting Bank and any investor who purchases the securities only has a claim to the underlying exposures;

(e) the securities are issued pursuant to the securitisation by an SPE and the holders of the securities have the right to pledge, transfer or sell their interests without restriction, unless such restriction is imposed by a risk retention requirement under the legislation governing the securitisation;

(f) where a securitisation includes a clean up call, the call complies with the requirements set out in Section 3 of this Annex;

(g) where a securitisation includes early amortisation provisions, the provisions do not result in the securitisation transaction contravening the requirements set out in Section 4 of this Annex;

(h) the documentation of the securitisation does not contain any clauses that –

(i) other than clean-up calls, obliges the Reporting Bank to repurchase any of the underlying exposures, at any time, except where that obligation arises from the exercise of a representation or warranty given by the Reporting Bank. The Reporting Bank may give a representation or warranty solely in respect of the nature or existing state of facts of any underlying exposure that is capable of being verified at the time of its transfer, subject to the Reporting Bank undertaking due diligence prior to giving any such representation or warranty ;

(ii) requires the Reporting Bank to alter the underlying exposures such that the credit quality of the pool is improved unless this is achieved by selling exposures to independent external parties which are not related corporations or affiliates of the Reporting Bank, at market prices. To avoid doubt, this requirement does not preclude the substitution of non-defaulted assets which have been fully amortised ;

(iii) allows for increases in a retained first loss position or credit enhancement provided by the Reporting Bank after the inception of the securitisation;

[538] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, a Reporting Bank should ensure that the in-house legal counsel is independent of the parties involved in the origination and transfer of assets underlying the securitisation transaction.

(iv) increases the yield payable to parties other than the Reporting Bank[539], in response to a deterioration in the credit quality of the underlying exposures; or

(v) allow for termination options or triggers for termination, except for eligible clean-up calls or termination triggered by specific changes in tax or regulations;

(i) the transfer of the underlying exposures or the transfer of risk through sub-participation does not contravene the terms and conditions of any underlying agreement in respect of the underlying exposures and where applicable, all the necessary consents for the transfer or sub-participation have been obtained;

(j) the documentation of the securitisation specifies that, if cash flows relating to the underlying exposures are rescheduled or renegotiated, the SPE and not the Reporting Bank, would be subject to the rescheduled or renegotiated terms;

(k) the Reporting Bank receives a fixed amount of consideration for the underlying exposures. To avoid doubt, the amount of consideration received in the form of a fixed amount of securities in the SPE would be regarded as meeting this requirement if the transaction is conducted at arm's length and on market terms and conditions. Also, this requirement does not preclude excess cash from being channeled to the Reporting Bank after all claims connected with the securities issued by the SPE have been paid out;

(l) all transactions with the SPE are conducted at arm's length and on market terms and conditions, subject to paragraph 1.2 of this Annex;

(m) the RWA of the Reporting Bank's exposures to the securitisation is at all times not more than 20% of the sum of the RWA of all the securitisation exposures of the securitisation.

1.2 The requirement in paragraph 1.1(l) of this Annex does not apply where a Reporting Bank acquires securities in an SPE pursuant to an underwriting arrangement, provided that the Reporting Bank complies with paragraph 1.1(m) of this Annex no later than 8 weeks after the date on which the securities were acquired.

1.3 Despite paragraph 1.1(m) of this Annex, a Reporting Bank that holds more than 20% of the sum of the RWA of all securitisation exposures of a securitisation must seek the Authority's prior written approval if it intends to exclude the securitised exposures from its calculation of credit RWA. The Authority will not grant such approval unless the Reporting Bank is able to demonstrate to the Authority's satisfaction that a significant portion of the credit risk associated with the underlying exposures has been transferred to external parties, and the requirements in paragraph 1.1(a) to (l) of this Annex have been complied with.

[539] For example, investors or external providers of credit enhancements.

Section 2: Synthetic Securitisation

2.1 In the case of a synthetic securitisation, a Reporting Bank may recognise the credit protection obtained through the synthetic securitisation in its calculation of credit RWA only if all of the following requirements have been complied with:

(a) the Reporting Bank transfers significant credit risk associated with the underlying exposures to external parties. For the purposes of the assessment of whether significant credit risk has been transferred, the Reporting Bank must treat material costs of credit protection purchased that have not yet been recognised in earnings as a retained position of the Reporting Bank[540];

(b) the instrument used to transfer credit risk does not contain terms or conditions that limit the amount of credit risk transferred, including clauses that –

(i) materially limit the credit protection or credit risk transference[541];

(ii) require the Reporting Bank to alter the underlying exposures to improve the average credit quality of the pool. To avoid doubt, this requirement does not preclude the substitution of non-defaulted assets which have been fully amortised;

(iii) increase the cost of credit protection to the Reporting Bank in response to deterioration in the credit quality of the underlying exposures;

(iv) increase the yield payable to parties other than the Reporting Bank[542], in response to a deterioration in the credit quality of the underlying exposures; or

(v) allow for increases in a retained first loss position or credit enhancement provided by the Reporting Bank after the inception of the securitisation;

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[540] In determining whether the costs of credit protection are material, a Reporting Bank should consider factors such as –
(a) a comparison of the present value of the premiums and other costs not yet recognised in profit and loss relative to expected losses of the protected exposures over a variety of stress scenarios; and
(b) the pricing of the credit protection relative to market prices.

The Reporting Bank should consider costs of credit protection to be material when –
(a) the cost of credit protection over the life of the protection contract equals, or exceeds, the amount of the exposures for which the protection is being purchased; or
(b) the credit protection has rebate mechanisms, where the protection provider agrees to refund parts of the cost of credit protection to the Reporting Bank according to the performance of the protected exposure, as such mechanisms are indications of excessive premium.
For the purposes of the analysis of whether the costs of credit protection are material, the Reporting Bank should quantify the costs of credit protection that have yet to be recognised in profit and loss through an appropriately conservative present value calculation.

[541] For instance, by way of an early amortisation provision in a securitisation of revolving loans that effectively subordinates the Reporting Bank's interest, significant materiality thresholds below which credit protection is deemed not to be triggered even if a credit event occurs, or clauses that allow for the termination of the credit protection due to deterioration in the credit quality of the underlying exposures.

[542] For example, investors or external providers of credit enhancements.

(c) the Reporting Bank obtains a written independent legal opinion[543] that confirms the enforceability of the contracts in all relevant countries or jurisdictions;

(d) where a securitisation includes a clean up call, the call complies with the requirements set out in Section 3 of this Annex;

(e) when a securitisation includes early amortisation provisions, the provisions do not result in the securitisation transaction contravening the requirements set out in Section 4 of this Annex;

(f) in the case where the risks associated with the underlying exposures are transferred to an SPE –

(i) the securities issued by the SPE are not obligations of the Reporting Bank;

(ii) the holders of the interests in that SPE have the right to pledge or exchange their interests without restriction; and

(iii) all transactions with the SPE are conducted at arm's length and on market terms and conditions, subject to paragraph 2.2 of this Annex;

(g) the RWA of the Reporting Bank's exposures to the securitisation is at all times not more than 20% of the sum of the RWA of all the securitisation exposures of the securitisation.

2.2 The requirement in paragraph 2.1(f)(iii) of this Annex does not apply where a Reporting Bank acquires securities in an SPE pursuant to an underwriting arrangement, provided that the Reporting Bank complies with paragraph 2.1(g) of this Annex no later than 8 weeks after the date on which the securities were acquired.

2.3 Despite paragraph 2.1(g) of this Annex, a Reporting Bank that holds more than 20% of the sum of the RWA of all the securitisation exposures of the securitisation must seek the Authority's prior written approval if it intends to recognise the credit protection obtained through a synthetic securitisation in its calculation of credit RWA. The Authority will not grant such approval unless the Reporting Bank is able to demonstrate to the Authority's satisfaction that a significant portion of the credit risk associated with the underlying exposures has been transferred to external parties, and the requirements in paragraph 2.1(a) to (f) of this Annex have been complied with.

Section 3: Securitisation Containing Clean-Up Calls

3.1 If a securitisation includes a clean-up call, the Reporting Bank which has the ability to exercise the clean-up call must ensure that –

[543] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, the Reporting Bank should ensure that the in-house legal counsel should be independent of the parties executing the synthetic securitisation transaction.

(a) the exercise of the clean-up call is at its discretion and is not mandatory, in form or in substance;

(b) the clean-up call is not structured to avoid allocating losses to credit enhancements or positions held by investors or in any way structured to provide credit enhancement; and

(c) the clean-up call is exercisable by the Reporting Bank only when 10% or less of the original underlying exposures or securities issued remain or, for synthetic securitisation, when 10% or less of the original reference portfolio value remains.

3.2 Where a clean-up call, when exercised, is found to serve as a credit enhancement, the Reporting Bank must consider the exercise of the clean-up call as a form of implicit support and treat it in accordance with paragraph 7.6.105.

3.3 Where a securitisation includes a clean-up call which does not meet all of the criteria in paragraph 3.1 of this Annex, a Reporting Bank which is an originator of the securitisation must –

(a) in the case of a traditional securitisation, treat the underlying exposures as if they were not securitised. Additionally, the Reporting Bank must deduct from Common Equity Tier 1 capital any increase in equity capital due to a gain-on-sale in accordance with paragraph 6.1.5(f); and

(b) in the case of a synthetic securitisation, hold capital against the entire amount of the securitised exposure as if the Reporting Bank did not benefit from any credit protection.

3.4 Where a synthetic securitisation incorporates a call (other than a clean-up call) that effectively terminates the transaction and the purchased credit protection on a specific date, a Reporting Bank which is an originator of the synthetic securitisation must treat the transaction in accordance with paragraph 7.6.107.

Section 4: Securitisation Containing Early Amortisation Provisions

4.1 A Reporting Bank is deemed not to have met the requirements for exclusion of securitised exposures, or recognition of the credit protection obtained through the synthetic securitisation, set out in Section 1 and Section 2 of this Annex, and must not exclude securitised exposures, or recognise the credit protection obtained through the synthetic securitisation, in the calculation of credit RWA if –

(a) the securitisation originated by the Reporting Bank is a securitisation of one or more revolving loans in the underlying pool; and

(b) the securitisation transaction incorporates an early amortisation provision or similar provision that, if triggered, would –

(i) subordinate the Reporting Bank's senior or pari passu interest in the underlying revolving loans to the interest of other investors;

(ii) subordinate the Reporting Bank's subordinated interest to an even greater degree relative to the interests of other parties; or

(iii) in other ways increase the Reporting Bank's exposure to losses associated with the underlying revolving loans.

4.2 Despite paragraph 4.1 of this Annex, a Reporting Bank may exclude securitised exposures from, or recognise the credit protection obtained through the synthetic securitisation in, the calculation of credit RWA if the securitisation transaction meets the operational requirements in Section 1 (for a traditional securitisation) and Section 2 (for a synthetic securitisation) of this Annex, and contains one of the following early amortisation provisions:

(a) replenishment structures where the underlying exposures do not revolve and the early amortisation terminates the ability of the Reporting Bank to add new exposures;

(b) transactions of revolving loans containing early amortisation features that mimic term structures (i.e. where the risk on the underlying facilities does not return to the Reporting Bank) and where the early amortisation provisions do not effectively result in subordination of the Reporting Bank's interest;

(c) structures where the Reporting Bank securitises one or more revolving loans and where investors remain fully exposed to future draws by borrowers even after an early amortisation event has occurred;

(d) the early amortisation clause is triggered solely by events[544] not related to the performance of the securitised assets or the Reporting Bank.

[544] For example, material changes in tax laws or regulations.

Annex 7AD

OPERATIONAL REQUIREMENTS FOR USE OF SEC-ERBA

Section 1: Operational Requirements for Use of External Credit Assessments

1.1 A Reporting Bank must ensure that the following operational criteria are satisfied before it uses an external credit assessment to determine risk weights for a securitisation exposure:

(a) the external credit assessment must take into account and reflect the entire amount of credit risk exposure a Reporting Bank has with regard to all payments owed to it[545];

(b) the external credit assessment must be from a recognised ECAI listed in Annex 7N;

(c) the external credit assessment, procedures, methodologies, assumptions and the key elements underlying the external credit assessment must be publicly available in an accessible form on a non-selective basis and free of charge[546], and the external credit assessment must be included in the ECAI's transition matrix;

(d) the ECAI's loss and cash flow analysis of the securitisation transaction and the sensitivity of external credit assessments to changes in the underlying credit assessment assumptions must be publicly available;

(e) the external credit assessment must not be made available only to the parties to a transaction;

(f) recognised ECAIs must have a demonstrated expertise in assessing securitisations, which may be evidenced by common and widespread reliance by independent investors on the ECAI's external credit assessments;

(g) where 2 or more recognised ECAIs assess the credit risk of the same securitisation exposure differently, the Reporting Bank must apply paragraph 7.3.30;

(h) where CRM is provided to specific underlying exposures or the entire pool by an eligible protection provider, and is reflected in the external credit assessment assigned to a securitisation exposure, the Reporting Bank must apply the risk weight associated with that external credit assessment.

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[545] For example, if the Reporting Bank is owed both principal and interest, the assessment must fully take into account and reflect the credit risk associated with timely repayment of both principal and interest.

[546] Where the eligible credit assessment is not publicly available free of charge, a Reporting Bank should ensure that the ECAI provides an adequate justification within its own publicly available code of conduct, in accordance with the "comply or explain" nature of the IOSCO's Code of Conduct Fundamentals for Credit Rating Agencies.

In order to avoid any double-counting, the Reporting Bank must not recognise additional CRM in this case;

(i) where CRM is provided to specific underlying exposures or the entire pool by a protection provider which is not an eligible protection provider, and the effect of the CRM is reflected in the external credit assessment assigned to a securitisation exposure, the Reporting Bank must treat the securitisation exposure as unrated;

(j) where a CRM solely protects a specific securitisation exposure within a given structure and this protection is reflected in the external credit assessment of that securitisation exposure, the Reporting Bank must treat the exposure as if it is unrated and then recognise the effect of the CRM based on the CRM treatment for SA(CR) or F-IRBA exposures to recognise the CRM;

(k) where the external credit assessment of a securitisation exposure is at least partly based on unfunded support provided by the Reporting Bank, the Reporting Bank must treat the securitisation exposure as unrated[547].

Section 2: Operational Requirements for Use of Inferred Credit Assessments

2.1 A Reporting Bank must ensure that the following operational criteria are satisfied before it uses an inferred credit assessment to determine risk weights for an unrated securitisation exposure in the SEC-ERBA:

(a) the reference securitisation exposure from which the inferred credit assessment is derived must rank pari passu or be subordinate in all respects to the unrated securitisation exposure. Credit enhancements, if any, must be taken into account when assessing the relative subordination of the unrated securitisation exposure and the reference securitisation exposure[548];

(b) the maturity of the reference securitisation exposure must be equal to or longer than that of the unrated securitisation exposure;

(c) the Reporting Bank must update any inferred credit assessment on an ongoing basis to reflect any subordination of the unrated securitisation exposure or changes in the external credit assessment of the reference securitisation exposure;

[547] For example, if a Reporting Bank buys ABCP where it provides an unfunded securitisation exposure extended to the ABCP programme (e.g. liquidity facility or credit enhancement), and that exposure plays a role in determining the external credit assessment of the ABCP, the Reporting Bank must treat the ABCP as if it were an unrated exposure.

[548] For example, if the reference securitisation exposure benefits from any external party guarantees or other credit enhancements that are not available to the unrated securitisation exposure, the Reporting Bank must not assign an inferred credit assessment to the unrated securitisation exposure based on the reference securitisation exposure.

(d) the external credit assessment of the reference securitisation exposure must satisfy the operational requirements for use of external credit assessments in Section 1 of this Annex.

Annex 7AE

CRITERIA FOR SIMPLE, TRANSPARENT AND COMPARABLE (STC) SECURITISATIONS THAT ARE NOT ABCP PROGRAMMES (STC CRITERIA)

Section 1: Asset Risk

Nature of Assets

1.1 A Reporting Bank must ensure that the assets underlying the securitisation are credit claims or receivables that are homogeneous. In assessing homogeneity, the Reporting Bank must give consideration to asset type, country or jurisdiction, legal system and currency, in accordance with paragraph 1.3 of this Annex.

1.2 A Reporting Bank must ensure that credit claims or receivables for the more exotic asset classes have contractually identified periodic payment streams relating to rental[549], principal, interest, or principal and interest payments as such asset classes require deeper and more complex analysis. The Reporting Bank must ensure that any referenced interest payments or discount rates are based on commonly encountered market interest rates[550], but do not reference complex or complicated formulae or exotic derivatives. For the purposes of this paragraph, an "exotic instrument" is defined as a financial asset or instrument with features making it more complex than plain vanilla products[551].

1.3 A Reporting Bank may only assess the credit claims or receivables underlying a securitisation to be homogeneous where all of the following criteria are satisfied:

(a) The nature of assets are such that investors would not need to analyse and assess materially different legal or credit risk factors, or both, and risk profiles when carrying out risk analysis and due diligence checks;

(b) the assets underlying the securitisation have common risk drivers, including similar risk factors and risk profiles;

(c) credit claims or receivables included in the securitisation have obligations that are consistent with market practices, in terms of rights to payments or income, or both, from assets and that result in a periodic and well-defined stream of payments to investors. The Reporting Bank must deem

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549 Payments on operating and financing leases are considered to be rental payments rather than payments of principal and interest.

550 Commonly encountered market interest rates may include rates reflective of a lender's cost of funds, to the extent that sufficient data are provided to investors to allow them to assess their relation to other market rates. Examples of these include –

(a) interbank rates and rates set by monetary policy authorities, such as Libor, Euribor and the federal funds rate; and

(b) sectoral rates reflective of a lender's cost of funds, such as internal interest rates that directly reflect the market costs of a bank's funding or that of a subset of institutions.

551 As defined by the Global Association of Risk Professionals (GARP). Interest rate caps or floors would not be automatically considered exotic derivatives.

credit card facilities to result in a periodic and well-defined stream of payments to investors for the purposes of this criterion;

(d) repayment of noteholders rely on the principal and interest proceeds from the securitised assets;

(e) despite sub-paragraph (d), partial reliance on refinancing or re-sale of the asset securing the exposure may occur provided that re-financing is sufficiently distributed within the pool, and the residual values on which the repayment relies through re-financing or re-sale of assets are sufficiently low.

Asset Performance History

1.4 In order to provide investors with sufficient information on an asset class to conduct appropriate due diligence and access to a sufficiently rich data set to enable a more accurate calculation of expected loss in different stress scenarios, a Reporting Bank must ensure that verifiable loss performance data, including delinquency and default data, is available to investors for credit claims and receivables with substantially similar risk characteristics to those being securitised, for a time period long enough to permit meaningful evaluation of risk by investors[552]. The Reporting Bank must ensure that sources of and access to data and the basis for claiming similarity to credit claims or receivables being securitised are clearly disclosed to all market participants.

1.5 A Reporting Bank must satisfy itself that the originator of the securitisation, as well as the original lender who underwrites the assets, has sufficient experience in originating exposures similar to those securitised.

1.6 A Reporting Bank that is an investor in a securitisation must satisfy itself that the performance history of the originator and the original lender for substantially similar claims or receivables to those being securitised has been established for a time period that is –

(a) long enough to permit meaningful evaluation of risk[553]; and

(b) no shorter than a period of 5 years for retail exposures and purchased retail receivables, and no shorter than a period of 7 years for exposures that are not retail exposures[554].

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552 The time period used by the Reporting Bank should ideally cover a complete economic cycle.

553 The time period used by the Reporting Bank should ideally cover a complete economic cycle.

554 As an additional consideration, a Reporting Bank that is an investor in a securitisation should consider whether the servicer and other parties with a fiduciary responsibility to the securitisation have an established performance history in relation to substantially similar credit claims or receivables to those being securitised and for an appropriately long period of time. This additional consideration may form part of the Reporting Bank's due diligence process, but does not form part of the determination of whether the securitisation meets all the STC Criteria. It is not the intention of this consideration to form an impediment to the entry of new participants to the market, but rather that a Reporting Bank should also take into account the performance history of the transaction parties when deciding whether to invest in a securitisation.

Payment Status

1.7 Non-performing credit claims and receivables are likely to require more complex and heightened analysis. In order to ensure that only performing credit claims and receivables are assigned to a securitisation, a Reporting Bank must satisfy itself that credit claims or receivables being transferred to a securitisation do not include, at the time of inclusion in the pool, obligations that are in default or delinquent, or obligations for which the transferor[555] or parties to the securitisation[556] are aware of evidence indicating a material increase in expected losses or enforcement actions.

1.8 A Reporting Bank must satisfy itself that the originator does not transfer any credit claims or receivables to the securitisation unless the credit claims or receivables meet all of the following conditions:

(a) the obligor of the credit claim or receivable has not been the subject of an insolvency or debt restructuring proceedings due to financial difficulties within 3 years prior to the date of origination, unless the obligor's credit incidents have been removed from credit registries and the obligor belongs to a country or jurisdiction in which borrowers have the legal right to remove negative credit records after the passage of a period of time or after certain conditions have been met;

(b) the obligor of the credit claim or receivable is not recorded on a public credit registry of persons with an adverse credit history;

(c) the obligor of the credit claim or receivable does not have a credit assessment by an ECAI or a credit score indicating a significant risk of default;

(d) the credit claim or receivable is not subject to a dispute between the obligor and the original lender.

1.9 A Reporting Bank must satisfy itself that the originator assesses the credit claims or receivables in accordance with paragraph 1.8 of this Annex no earlier than 45 days prior to the closing date. In addition, at the time of this assessment, the Reporting Bank must satisfy itself that the originator has assessed that there is no evidence indicating likely deterioration in the performance status of the credit claim or receivable.

1.10 A Reporting Bank must satisfy itself that, at the time of the inclusion of the credit claims or receivables in the pool, at least one payment must have been made on each underlying exposure, except in the case of revolving asset trust structures (including those for credit card receivables and trade receivables) and other exposures payable in a single instalment at maturity.

Consistency of Underwriting

1.11 To ensure that the quality of the securitised credit claims and receivables is not affected by changes in underwriting standards, a Reporting Bank must satisfy itself that

[555] For example, the originator.
[556] For example, the servicer or a party with a fiduciary responsibility.

the originator demonstrates to investors that any credit claims or receivables being transferred to the securitisation have been originated in the ordinary course of the originator's business and are subject to sound and prudent underwriting standards that are materially non-deteriorating.[557] Where underwriting standards change, the Reporting Bank must satisfy itself that the originator will disclose the timing and purpose of such changes before the change. The Reporting Bank must satisfy itself that the originator does not impose less stringent standards than those applied to credit claims and receivables retained on the originator's balance sheet.

1.12 A Reporting Bank must satisfy itself that the credit claims or receivables transferred to the securitisation are credit claims or receivables which have satisfied materially non-deteriorating underwriting standards and are credit claims or receivables –

(a) for which the obligors have been assessed by the originator as having the ability and willingness to make timely payments on obligations; or

(b) on granular pools of obligors originated in the ordinary course of the originator's business where expected cash flows have been modelled to meet stated obligations of the securitisation under prudently stressed loan loss scenarios.

1.13 Where the originator is not the original lender who underwrote the credit claims or receivables being transferred to the securitisation, a Reporting Bank must satisfy itself that the originator –

(a) has verified that the original lender underwrote the credit claims or receivables based on sound and prudent underwriting standards;

(b) has ensured that the original lender has underwriting standards and assessed the quality of such underwriting standards; and

(c) has ascertained that the original lender has assessed the obligors of the credit claims and receivables as having the ability and willingness to make timely payments on their obligations.

Asset Selection and Transfer

1.14 Whilst recognising that credit claims or receivables transferred to a securitisation will be subject to defined eligibility criteria set out in the securitisation documentation[558], a Reporting Bank must satisfy itself that the performance of the securitisation does not rely upon the ongoing selection of assets through active management on a discretionary basis of the securitisation's underlying portfolio. The Reporting Bank need not deem –

(a) the addition of credit claims or receivables to the securitisation's underlying portfolio during the revolving periods; or

[557] Investor analysis should be simpler and more straightforward where the securitisation is of credit claims or receivables that satisfy materially non-deteriorating origination standards.

[558] Such as the size of the obligation, the age of the borrower or the LTV (loan-to-value) of the property, DTI (debt-to-income) or DSC (debt service coverage) ratios.

(b) the substitution or repurchasing of credit claims or receivables from the securitisation's underlying portfolio due to a breach of representations or warranties by the originator,

to be active management, if the credit claims or receivables referred to in sub-paragraphs (a) and (b) are not added or substituted on a discretionary basis.

1.15 For the purposes of paragraph 1.14 of this Annex, a Reporting Bank must –

(a) ensure that credit claims or receivables transferred to a securitisation satisfy clearly-defined eligibility criteria set out in the securitisation documentation;

(b) satisfy itself that credit claims or receivables transferred to a securitisation after the closing date will not be actively selected or actively managed; and

(c) ensure that sufficient information on the securitisation is made available to allow investors to assess the credit risk of the asset pool prior to their investment decisions.

1.16 In order to meet the principle of true sale, a Reporting Bank must ensure, and obtain a written independent legal opinion[559] confirming, that under the applicable laws governing the securitisation transaction, the securitisation effects a true sale such that the underlying credit claims or receivables –

(a) are legally enforceable against the respective obligors and such legal enforceability is included in the representations and warranties of the securitisation;

(b) are beyond the reach of the seller, its creditors or liquidators and are not subject to material re-characterisation or clawback risks;

(c) subject to paragraph 1.17 of this Annex, are not effected through credit default swaps, derivatives or guarantees, but by a transfer of the credit claims or the receivables to the securitisation; and

(d) demonstrate effective recourse to the ultimate obligation for the underlying credit claims or receivables and are not a securitisation of other securitisations.

1.17 The requirement in paragraph 1.16(c) of this Annex does not apply to a Reporting Bank where the securitisation is in a country or jurisdiction whose legal framework provides a means, other than by way of a transfer of the credit claims or receivables, to effect true sale in relation to the securitisation, provided that the Reporting Bank satisfies itself that the underlying credit claims or receivables meet the requirements

[559] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal opinion, a Reporting Bank should ensure that the in-house legal counsel providing the legal opinion should be independent of the parties involved in the origination and transfer of assets underlying the securitisation transaction.

in paragraph 1.16(a), (b) and (d) of this Annex. The Reporting Bank must satisfy itself that for a securitisation in relation to which a true sale is effected by means other than a transfer of the credit claims or receivables, the originator –

(a) clearly demonstrates the existence of material obstacles preventing the transfer of credit claims or receivables at the issuance of the securitisation[560] and the method of recourse to ultimate obligors[561]; and

(b) clearly discloses to investors any conditions where the transfer of the credit claims or receivables is delayed or contingent upon specific events, and any factors affecting timely perfection of claims by the securitisation.

1.18 A Reporting Bank must ensure that the originator has provided representations and warranties that the credit claims or receivables being transferred to the securitisation are not subject to any condition or encumbrance that can be foreseen to adversely affect the legal enforceability in respect of collections due from the respective obligors.

Initial and Ongoing Data

1.19 To assist investors in conducting appropriate due diligence prior to investing in a new offering, a Reporting Bank must ensure that sufficient data at the level of each credit claim or receivable subject to compliance with applicable laws governing the provision of such information, or in the case of granular pools, summary stratification data on the relevant risk characteristics of the underlying pool, is available to potential investors before pricing of a securitisation.

1.20 A Reporting Bank must satisfy itself that timely data at the level of each credit claim or receivable subject to compliance with applicable laws governing the provisions of such information or granular pool stratification data on the risk characteristics of the underlying pool and standardised investor reports is and will be made readily available to current and potential investors at least on a quarterly basis throughout the life of the securitisation, to assist investors in conducting appropriate and ongoing monitoring of their investments' performance and to enable investors that wish to purchase a securitisation in the secondary market to have sufficient information to conduct appropriate due diligence. The Reporting Bank must ensure that cut-off dates of the loan-level or granular pool stratification data are aligned with those used for investor reporting.

1.21 To provide a level of assurance that the reporting of the underlying credit claims or receivables is accurate and that the underlying credit claims or receivables meet the eligibility requirements, a Reporting Bank must ensure that the initial portfolio is reviewed for conformity with the eligibility criteria by an appropriate legally accountable and independent external party[562]. The Reporting Bank must ensure that the review of the initial portfolio confirms that the credit claims or receivables transferred to the securitisation meet the eligibility criteria set out in the securitisation documentation, and the Reporting Bank may allow the review to be undertaken on a representative sample of the initial portfolio with the application of a minimum confidence level. The Reporting Bank

560 Such as the immediate realisation of transfer tax or the requirement to notify all obligors of the transfer.

561 Such as equitable assignment or perfected contingent transfer.

562 For example, an independent accounting practice, the calculation agent or management company for the securitisation.

must ensure that the initial offering documentation of the securitisation contains a disclosure of the results of the review, including any material exceptions.

Section 2: Structural Risk

Redemption Cash Flows

2.1 Liabilities subject to the refinancing risk of the underlying credit claims or receivables are likely to require more complex and heightened analysis. To ensure that the underlying credit claims or receivables do not need to be refinanced over a short period of time, a Reporting Bank must satisfy itself that the securitisation does not rely on the sale or refinancing of the underlying credit claims or receivables in order to repay the liabilities, unless the underlying pool of credit claims or receivables is sufficiently granular and has sufficiently distributed repayment profiles. The Reporting Bank must consider rights to receive income from the assets specified to support redemption payments as eligible credit claims or receivables in this regard[563].

Currency and Interest Rate Asset and Liability Mismatches

2.2 To reduce the payment risk arising from the different interest rate and currency profiles of assets and liabilities and to improve investors' ability to model cash flows, a Reporting Bank must satisfy itself that the interest rate and foreign currency risks of the securitisation are appropriately mitigated at all times, and if any hedging transaction is executed, the Reporting Bank must ensure that the transaction is documented according to industry-standard master agreements. To avoid doubt, the term "appropriately mitigated" does not require a perfect hedge. Subject to paragraph 2.4 of this Annex, the Reporting Bank must ensure that the securitisation only conducts these hedging transactions with derivatives used for hedging of asset and liability mismatches of interest rate, currency, or both.

2.3 A Reporting Bank must satisfy itself that the originator will demonstrate the appropriateness of the mitigation of interest rate and foreign currency through the life of the transaction by making available to potential investors, in a timely and regular manner, quantitative information including the fraction of notional amounts that are hedged, as well as sensitivity analysis that illustrates the effectiveness of the hedge under extreme but plausible scenarios.

2.4 A Reporting Bank must satisfy itself that if the securitisation does not perform hedges through derivatives, then the securitisation must only use risk-mitigating measures that are specifically created and used for the purposes of hedging an individual and specific risk, and not multiple risks at the same time[564]. The Reporting Bank must satisfy itself that non-derivative risk mitigation measures used by the securitisation are fully funded and available at all times.

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563 For example, associated savings plans designed to repay principal at maturity.

564 Such as credit and interest rate risks.

Payment Priorities and Observability

2.5 A Reporting Bank must ensure that the priorities of payments for all liabilities in all circumstances at the time of securitisation are clearly defined, and that a written independent legal opinion[565] on the enforceability of the payment priorities is obtained.

2.6 To ensure that junior noteholders do not have inappropriate payment preference over senior noteholders that are due and payable, throughout the life of a securitisation, or, where there are multiple securitisations backed by the same pool of credit claims or receivables, throughout the life of the securitisation programme, a Reporting Bank must ensure that junior liabilities do not have payment preference over senior liabilities which are due and payable. The Reporting Bank must ensure that the securitisation is not structured as a "reverse" cash flow waterfall such that junior liabilities are paid where due and payable senior liabilities have not been paid.

2.7 To help provide investors with full transparency over any changes to the cash flow waterfall, payment profile or priority of payments that might affect a securitisation, a Reporting Bank must ensure that all triggers affecting the cash flow waterfall, payment profile or priority of payments of the securitisation are clearly and fully disclosed in both the offering documents and investor reports, with information in the investor report that clearly identifies any breach of any such trigger, the likelihood for the breach to be reversed and the consequences of the breach. The Reporting Bank must ensure that investor reports contain information that allows investors to monitor the evolution over time of the indicators that are subject to triggers. The Reporting Bank must also satisfy itself that any triggers breached between payment dates are disclosed to investors on a timely basis in accordance with the terms and conditions of all underlying transaction documents.

2.8 A Reporting Bank must ensure that securitisations featuring a revolving period include provisions for appropriate early amortisation events or triggers of termination of the revolving period, or both, including –

(a) deterioration in the credit quality of the underlying exposures;

(b) a failure to acquire sufficient new underlying exposures of similar credit quality; and

(c) the occurrence of an insolvency-related event with regard to the originator or the servicer.

2.9 Following the occurrence of a performance-related trigger, an event of default or an acceleration event, a Reporting Bank must ensure that the securitisation positions are repaid in accordance with a sequential amortisation priority of payments, in order of tranche seniority, and that there are no provisions requiring immediate liquidation of the underlying assets at market value.

[565] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, a Reporting Bank should ensure that the in-house legal counsel is independent of the parties executing the securitisation transaction.

2.10 To assist investors in their ability to appropriately model the cash flow waterfall of the securitisation, a Reporting Bank must satisfy itself that the originator makes available to investors, both before pricing of the securitisation and on an ongoing basis, a liability cash flow model or information on the cash flow provisions allowing appropriate modelling of the cash flow waterfall.

2.11 To ensure that debt forgiveness, forbearance, payment holidays and other asset performance remedies can be clearly identified, a Reporting Bank must ensure that policies and procedures, definitions, remedies and actions relating to delinquency, default or restructuring of underlying debtors are provided in clear and consistent terms, such that investors can clearly identify debt forgiveness, forbearance, payment holidays, restructuring and other asset performance remedies on an ongoing basis.

Voting and Enforcement Rights

2.12 A Reporting Bank must ensure that upon the insolvency of an originator of the securitisation, the originator transfers all voting and enforcement rights related to the credit claims or receivables to the securitisation. The Reporting Bank must ensure that investors' rights in the securitisation are clearly defined in all circumstances, including the rights of senior versus junior note holders.

Documentation Disclosure and Legal Review

2.13 To help investors to fully understand the terms, conditions, legal and commercial information prior to investing in a new offering and to ensure that this information is set out in a clear and effective manner for all programmes and offerings, a Reporting Bank must satisfy itself that sufficient initial offering documentation[566] and draft underlying [567] documentation are made available to investors, within a reasonably sufficient period of time prior to pricing, or when legally permissible, and such documentation are made available to potential investors, such that both investors and potential investors are provided with full disclosure of the legal and commercial information and comprehensive risk factors needed to make informed investment decisions. The Reporting Bank must also satisfy itself that final offering documents are made available to investors and potential investors from the closing date and all final underlying transaction documents shortly thereafter. The Reporting Bank must satisfy itself that the relevant information in the documentation mentioned in this paragraph is presented in a manner that allows such information to be readily found, understood and used.

2.14 To ensure that all the securitisation's underlying documentation has been subject to appropriate review prior to publication, a Reporting Bank must satisfy itself that the terms and documentation of the securitisation are reviewed by an appropriately

[566] Such as a draft offering circular, draft offering memorandum, draft offering document or draft prospectus.

[567] Such as any asset sale agreement, assignment, novation or transfer agreement; any servicing, backup servicing, administration or cash management agreement; any trust or management deed, security deed, agency agreement, account bank agreement, guaranteed investment contract, incorporated terms or master trust framework or master definitions agreement as applicable; any relevant inter-creditor agreements, swap or derivative documentation, subordinated loan agreements, start-up loan agreements and liquidity facility agreements; and legal opinions.

experienced and independent external legal practice[568]. The Reporting Bank must satisfy itself that investors are notified in a timely fashion of any changes in such documents that have an impact on the structural risks in the securitisation.

Alignment of Interest

2.15 In order to align the interests of those responsible for the underwriting of the credit claims or receivables with those of investors, a Reporting Bank must ensure that the originator of the credit claims or receivables retains a material net economic exposure and demonstrates a financial incentive in the performance of these assets following their securitisation.

Section 3: Fiduciary and Servicer Risk

Fiduciary and Contractual Responsibilities

3.1 A Reporting Bank must satisfy itself that servicers in a securitisation have extensive workout expertise, thorough legal and collateral knowledge and a proven track record in loss mitigation. The Reporting Bank must satisfy itself that –

(a) the servicer is able to demonstrate expertise in the servicing of the underlying credit claims or receivables, supported by a management team with extensive industry experience;

(b) the servicer at all times acts in accordance with reasonable and prudent standards;

(c) the servicer's policies, procedures and risk management controls are well documented and adhere to good market practices and relevant regulatory regimes, and where the servicer is not a bank, this is substantiated by a review by an external party; and

(d) the servicer has in place strong systems and reporting capabilities, and where the servicer is not a bank, this is substantiated by a review by an external party.

3.2 A Reporting Bank must ensure that both the initial offering and all underlying documentation contain provisions facilitating the timely resolution of conflicts between different classes of note holders by the trustees, to the extent permitted by applicable law.

3.3 A Reporting Bank must satisfy itself that the party or parties with fiduciary responsibility to the securitisation and to investors demonstrate sufficient skills and resources to comply with their duties of care in the administration of the securitisation vehicle, and to act on a timely basis in the best interests of securitisation note holders.

[568] For example, a legal counsel already instructed by one of the transaction parties, such as the arranger or the trustee.

3.4 A Reporting Bank must satisfy itself that remuneration to parties with fiduciary responsibility towards investors and to servicers is such that these parties are incentivised and able to meet their responsibilities in full and on a timely basis.

Transparency to Investors

3.5 To help provide full transparency to investors, assist investors in the conduct of their due diligence and to prevent investors being subject to unexpected disruptions in cash flow collections and servicing, a Reporting Bank must satisfy itself that the contractual obligations, duties and responsibilities of all parties with a fiduciary responsibility and all ancillary service providers to the securitisation, are defined clearly both in the initial offering and all underlying documentation. The Reporting Bank must satisfy itself that provisions are documented for the replacement of servicers, bank account providers, derivatives counterparties and liquidity providers in the event of failure or non-performance or insolvency or other deterioration of creditworthiness of any such counterparty to the securitisation.

3.6 To enhance transparency and visibility over all receipts, payments and ledger entries at all times, a Reporting Bank must satisfy itself that the performance reports to investors distinguish and report the securitisation's income and disbursements, which comprises scheduled principal, redemption principal, scheduled interest, prepaid principal, repurchases, past due interest and fees and charges, delinquent, defaulted and restructured amounts under debt forgiveness, payment holidays, deferment, and forbearance, including accurate accounting for amounts attributable to principal and interest deficiency ledgers.

Section 4: Additional Criteria

Credit Risk of Underlying Exposures

4.1 At the portfolio cut-off date, a Reporting Bank must ensure that the underlying exposures after recognising the effects of credit risk mitigation, are assigned a risk weight under the SA(CR) that is equal to or smaller than –

(a) 40% on a value-weighted average exposure basis for the portfolio where the exposures are regulatory RRE exposures;

(b) 50% on an individual exposure basis where the exposure is a regulatory CRE exposure, is in the other real estate asset sub-class as defined in paragraph 7.3.1(k)(iii), or is in the ADC asset sub-class as defined in paragraph 7.3.1(k)(i);

(c) 75% on an individual exposure basis where the exposure belongs to the regulatory retail asset class pursuant to paragraph 7.3.1(i); or

(d) 100% on an individual exposure basis for any other exposure.

Granularity of the Underlying Pool

4.2 At the portfolio cut-off date, a Reporting Bank must ensure that the aggregated value of all exposures to a single obligor do not exceed 1% of the aggregated outstanding exposure value of all exposures in the portfolio. However, subject to the Authority's prior approval, in the case of corporate exposures and if the country or jurisdiction where exposures in the underlying pool belong has structurally concentrated corporate loan markets available for securitisation, the threshold may be increased to 2%, provided –

(a) the originator retains the subordinated tranche or, where there are multiple tranches, all subordinated tranches, as the case may be, that form loss-absorbing credit enhancement, as defined in paragraph 7.6.35(a), and

(b) such subordinated tranche or tranches cover at least the first 10% of losses.

For the purposes of this paragraph, the Reporting Bank acting as an originator must not apply the alternative capital treatment for STC securitisations for any subordinated tranche that satisfies the requirements in sub-paragraphs (a) and (b) that it retains.

Annex 7AF

CRITERIA FOR SIMPLE, TRANSPARENT AND COMPARABLE (STC) SECURITISATIONS THAT ARE ABCP PROGRAMMES (SHORT-TERM STC CRITERIA)

Section 1: Overview

1.1 In this Annex –

(a) any reference to an ABCP conduit acquiring an interest in an asset in an ABCP transaction refers to –

(i) in the case where the law governing the transaction by which the interest was acquired recognises the acquisition of beneficial interests, a beneficial interest; and

(ii) in the case where the law governing the transaction by which the interest was acquired does not recognise the acquisition of beneficial interests, an interest; and

(b) any reference to an ABCP conduit being transferred an interest in an asset in an ABCP transaction refers to –

(i) in the case where the law governing the transaction by which the interest is transferred recognises the acquisition of beneficial interests, a beneficial interest; and

(ii) in the case where the law governing the transaction by which the interest is transferred does not recognise the acquisition of beneficial interests, an interest.

Section 2: Asset Risk

Nature of Assets (Conduit Level Criteria)

2.1 A Reporting Bank must ensure that the ABCP programme sponsor has –

(a) made representations and warranties to ABCP programme investors that ABCP transactions in the ABCP programme meet the criteria in paragraph 2.3 of this Annex; and

(b) explained to ABCP programme investors how ABCP transactions in the ABCP programme meet the criteria in paragraph 2.3 of this Annex on an overall basis, or if required by the Authority, the Reporting Bank must ensure that the ABCP programme sponsor has explained to ABCP programme investors how each ABCP transaction in the ABCP programme meets the criteria in paragraph 2.3 of this Annex.

2.2 A Reporting Bank is not precluded from considering any securitisation arising from any of the following as an STC securitisation:

(a) an ABCP conduit that finances ABCP transactions of different underlying asset types, provided that each individual ABCP transaction in the ABCP programme involving the ABCP conduit is homogeneous in terms of asset type as assessed in accordance with paragraph 2.4 of this Annex;

(b) an ABCP conduit of an ABCP programme for which there is programme-wide credit enhancement, regardless of whether such enhancement technically creates a resecuritisation exposure.

Nature of Assets (Transaction Level Criteria)

2.3 A Reporting Bank must ensure that the assets underlying the ABCP transaction are credit claims or receivables that –

(a) are homogeneous in terms of asset type;

(b) are not securitisation exposures;

(c) have contractually identified periodic payment streams relating to rental[569], principal, interest, or principal and interest payments; and

(d) reference interest payments or discount rates based on commonly encountered market interest rates[570], but do not reference complex or complicated formulae or exotic derivatives. For the purposes of this sub-paragraph, an "exotic instrument" is defined as a financial asset or instrument with features making it more complex than plain vanilla products[571].

2.4 For the purposes of paragraph 2.3(a) of this Annex, a Reporting Bank may only assess the credit claims or receivables underlying a ABCP transaction to be homogeneous in terms of asset type where all of the following criteria are satisfied:

(a) the nature of exposures underlying the ABCP transaction are such that ABCP programme investors would not need to analyse and assess materially different legal or credit risk factors, or both, and risk profiles when carrying out risk analysis and due diligence checks;

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569 Payments on operating and financing leases are considered to be rental payments rather than payments of principal and interest.

570 Commonly encountered market interest rates may include rates reflective of a lender's cost of funds, to the extent that sufficient data are provided to investors to allow them to assess their relation to other market rates. Examples of these include –

(a) interbank rates and rates set by monetary policy authorities, such as Libor, Euribor and the federal funds rate; and

(b) sectoral rates reflective of a lender's cost of funds, such as internal interest rates that directly reflect the market costs of a bank's funding or that of a subset of institutions.

571 As defined by the Global Association of Risk Professionals. Interest rate caps or floors would not be automatically considered exotic derivatives.

(b) the exposures underlying the ABCP transaction have common risk drivers, including similar risk factors and risk profiles;

(c) credit claims or receivables included in the ABCP transaction have obligations that are consistent with market practices, in terms of rights to payments or income, or both, from assets and that result in a periodic and well-defined stream of payments to investors. The Reporting Bank must deem credit card facilities to result in a periodic and well-defined stream of payments to investors of the ABCP programme for the purposes of this criterion;

(d) repayment of exposures of ABCP programme investors rely on the principal and interest proceeds from the securitised assets;

(e) despite sub-paragraph (d), partial reliance on refinancing or re-sale of the asset securing the exposure may occur, provided that re-financing is sufficiently distributed within the pool, and the residual values on which the repayment relies through re-financing or re-sale of assets are sufficiently low.

To avoid doubt, the criterion on homogeneity in this paragraph does not prevent an ABCP transaction that is a securitisation of equipment leases or a securitisation of auto loans and leases from being considered as a STC securitisation;

2.5 To avoid doubt, the criterion in paragraph 2.3(b) of this Annex does not prevent an ABCP transaction in which an ABCP conduit acquires an interest in the assets underlying the ABCP transaction in the form of a note which itself may be a securitisation exposure, from being considered as a STC securitisation, as long as such a securitisation exposure is not subject to any further tranching[572].

Asset Performance History (Conduit Level Criteria)

2.6 A Reporting Bank must ensure that the ABCP programme sponsor –

(a) makes available to ABCP programme investors sufficient loss performance data, including delinquency and default data, for credit claims and receivables with substantially similar risk characteristics to the assets underlying the ABCP transactions of the ABCP programme, for a time period long enough to permit meaningful evaluation of risk. For the purposes of this sub-paragraph, the ABCP programme sponsor may provide such data on a stratified basis[573]; and

[572] Where such a securitisation exposure is not subject to any further tranching, it would have the same economic characteristic as the ABCP conduit purchasing the assets underlying the ABCP transaction with a refundable purchase price discount.

[573] For example, by –
(a) providing materially relevant data on the assets underlying the ABCP transactions of the ABCP programme (such as outstanding balances, industry sector, obligor concentrations and maturities); and
(b) providing materially relevant data on the credit quality and performance of the ABCP transactions of the ABCP programme, allowing investors to identify collections, and as applicable, debt restructuring, forgiveness, forbearance, payment holidays, repurchases, delinquencies and defaults.

(b) discloses to ABCP programme investors the sources of the data provided under sub-paragraph (a), and the basis for claiming substantial similarity of risk characteristics.

Asset Performance History (Transaction Level Criteria)

2.7 A Reporting Bank must satisfy itself that –

(a) verifiable loss performance data, including delinquency and default data, is available to the ABCP sponsor for credit claims and receivables with substantially similar risk characteristics to the assets underlying the ABCP transaction, for a time period long enough to permit meaningful evaluation of risk by the ABCP sponsor, including for conducting due diligence and calculating expected loss in different stress scenarios;

(b) the ABCP programme sponsor, and the original lender who underwrote the assets underlying the ABCP transaction, have sufficient experience in the risk analysis and underwriting of exposures or transactions with underlying exposures similar to those securitised;

(c) the ABCP programme sponsor has well-documented procedures and policies regarding the underwriting of transactions and the ongoing monitoring of the performance of the assets underlying the ABCP transaction;

(d) the ABCP programme sponsor ensures that the ABCP transaction seller and all other parties involved in the origination of the assets underlying the ABCP transaction, have experience in originating same or similar assets, and are supported by a management with industry experience relevant to the type of assets being originated; and

(e) the ABCP programme sponsor has provided confirmation to ABCP programme investors that the performance history of the originator of the securitisation, and the original lender who underwrites the assets for substantially similar claims or receivables to those being securitised, has been established for a time period that is –

(i) long enough to permit meaningful evaluation of risk; and

(ii) no shorter than a period of 3 years for retail exposures and purchased retail receivables, and no shorter than a period of 5 years for exposures that are not retail exposures.

Payment Status (Conduit Level Criteria)

2.8 A Reporting Bank must satisfy itself that the ABCP programme sponsor has, to the best of its knowledge and based on representations from the ABCP transaction sellers under the ABCP programme, made representations and warranties to ABCP programme investors that ABCP transactions under the ABCP programme meet the requirements in paragraph 2.9 of this Annex.

Payment Status (Transaction Level Criteria)

2.9 A Reporting Bank must satisfy itself that –

(a) the ABCP programme sponsor has obtained representation from the ABCP transaction seller that at the time of acquisition of the interests to be financed by the ABCP conduit, the assets underlying the ABCP transaction do not include any credit claims or receivables that are in default or delinquent, or for which the ABCP transaction seller is aware of evidence indicating a material increase in expected losses or of enforcement actions;

(b) the ABCP programme sponsor or the ABCP transaction seller has carried out an assessment no earlier than 45 days prior to the date of the acquisition of the interests of the assets financed by the ABCP conduit under the ABCP transaction, or in the case of a revolving transaction, no earlier than 45 days prior to new exposures under the revolving transaction being added to the ABCP transaction, and verified that credit claims or receivables underlying the ABCP transaction meet all of the following criteria:

(i) the obligor of the credit claim or receivable has not been the subject of an insolvency or debt restructuring proceedings due to financial difficulties within 3 years prior to the date of origination, unless the obligor's credit incidents have been removed from credit registries and the obligor belongs to a country or jurisdiction in which borrowers have the legal right to remove negative credit records after the passage of a period of time or after certain conditions have been met;

(ii) the obligor of the credit claim or receivable is not recorded on a public credit registry of persons with an adverse credit history;

(iii) the obligor of the credit claim or receivable does not have a credit assessment by an ECAI or a credit score indicating a significant risk of default;

(iv) the credit claim or receivable is not subject to a dispute between the obligor of the credit claim or receivable and the original lender;

(v) at the time of this assessment, there is, to the best knowledge of the ABCP programme sponsor or ABCP transaction seller, as the case may be, no evidence indicating likely deterioration in the performance status of the credit claim or receivable; and

(c) at the time of the inclusion of a credit claim or receivable in the underlying pool of the ABCP programme through the ABCP transaction, at least one payment has been made on the credit claim or receivable, except in the case of revolving asset trust structures (including those for credit card receivables and trade receivables) and other exposures payable in a single instalment at maturity.

Consistency of Underwriting (Conduit Level Criteria)

2.10 A Reporting Bank must satisfy itself that an ABCP programme sponsor has –

(a) made representations and warranties to ABCP programme investors that the ABCP programme sponsor has verified that for ABCP transactions of the ABCP programme, any underlying credit claims and receivables have been subject to consistent underwriting standards;

(b) explained how the verification set out in sub-paragraph (a) has been undertaken;

(c) made representations and warranties to ABCP programme investors that when there are material changes to underwriting standards for any ABCP transaction, the ABCP programme sponsor will receive disclosure from the relevant ABCP transaction seller on the timing and purpose of such changes; and

(d) informed ABCP programme investors of the material selection criteria applied when selecting ABCP transaction sellers to participate in the ABCP programme.

Consistency of Underwriting (Transaction Level Criteria)

2.11 A Reporting Bank must satisfy itself that –

(a) where the ABCP transaction seller is the original lender who underwrote the credit claims or receivables being transferred to the ABCP conduit through the ABCP transaction –

(i) the ABCP transaction seller has satisfied the ABCP programme sponsor that –

(A) the credit claims or receivables have been originated in the ordinary course of the ABCP transaction seller's business and are subject to sound and prudent underwriting standards that are materially non-deteriorating and no less stringent than those applied to credit claims and receivables that are retained on the balance sheet of the ABCP transaction seller; and

(B) the obligors of the credit claims and receivables have been assessed by the ABCP transaction seller as having the ability and willingness to make timely payments on their obligations; and

(ii) the ABCP programme sponsor will ensure that the ABCP transaction seller discloses the timing and purpose of any material changes in its underwriting standards to the ABCP programme sponsor; and

(b) where the ABCP transaction seller is not the original lender who underwrote the credit claims or receivables being transferred to the ABCP conduit through the ABCP transaction[574], the ABCP programme sponsor –

(i) has verified that the original lender underwrote the credit claims or receivables based on sound and prudent underwriting standards;

(ii) has ensured that the original lender has underwriting standards, and assessed the quality of such underwriting standards; and

(iii) has ascertained that the original lender has assessed the obligors of the credit claims and receivables as having the ability and willingness to make timely payments on their obligations.

Asset Selection and Transfer (Conduit Level Criteria)

2.12 A Reporting Bank must satisfy itself that the ABCP programme sponsor has –

(a) provided representations and warranties to ABCP programme investors about the nature and frequency of checks that the ABCP programme sponsor has conducted and will conduct to ensure that the underlying assets held by the ABCP conduit are legally enforceable against their respective obligors; and

(b) disclosed and will disclose to ABCP programme investors the receipt and content of appropriate representations and warranties from the ABCP transaction sellers of ABCP transactions of the ABCP programme that the credit claims or receivables transferred to the ABCP conduit through each ABCP transaction are not subject to any condition or encumbrance that can be foreseen to adversely affect the legal enforceability in respect of collections due from their respective obligors.

Asset Selection and Transfer (Transaction Level Criteria)

2.13 A Reporting Bank must satisfy itself that –

(a) the ABCP programme sponsor has thoroughly assessed the credit risk of the assets underlying the ABCP transaction prior to the ABCP programme sponsor's decision to provide support to the ABCP transaction or the ABCP conduit;

(b) the ABCP programme sponsor has ensured that the credit claims or receivables underlying the ABCP transaction that are transferred to the ABCP conduit –

(i) satisfy clearly-defined eligibility criteria set out in the securitisation documentation; and

[574] For example, where the ABCP transaction seller had acquired the credit claims or receivables from external parties.

(ii) after the acquisition by the ABCP conduit of the interests of the assets under the ABCP transaction, will not be actively selected or actively managed;

(c) the ABCP programme sponsor has ensured, and obtained a written independent legal opinion[575] confirming that under the applicable laws governing the securitisation transaction, the ABCP transaction effects a true sale of the assets to the ABCP conduit, such that the credit claims or receivables underlying the ABCP transaction –

(i) are legally enforceable against their respective obligors;

(ii) are beyond the reach of the ABCP transaction seller, its creditors or liquidators and are not subject to material re-characterisation or clawback risks;

(iii) subject to paragraph 2.15 of this Annex, are not effected through credit default swaps, derivatives or guarantees, but by a transfer of the credit claims or the receivables to the securitisation; and

(iv) demonstrate effective recourse to the ultimate obligation for the underlying credit claims or receivables and are not a securitisation of other securitisations; and

(d) the ABCP programme sponsor has ensured that it has received representations and warranties from the ABCP transaction seller that the credit claims or receivables being transferred to the ABCP conduit through the ACBP transaction are not subject to any condition or encumbrance that can be foreseen to adversely affect the legal enforceability in respect of collections due from the respective obligors.

2.14 For the purposes of paragraph 2.13(b)(ii) of this Annex, the Reporting Bank need not deem the addition of credit claims or receivables during revolving periods, or the substitution or repurchasing of credit claims or receivables due to a breach of representations or warranties by the ABCP programme sponsor or the ABCP transaction seller, as active management provided that such credit claims or receivables concerned are not added or substituted on a discretionary basis.

2.15 The requirement in paragraph 2.13(c)(iii) of this Annex does not apply to a Reporting Bank where the securitisation is in a country or jurisdiction whose legal framework provides a means, other than by way of a transfer of the credit claims or receivables, to effect a true sale in relation to the securitisation, provided that the Reporting Bank satisfies itself that the underlying credit claims or receivables meet the requirements in paragraph 2.13(c)(i), (ii) and (iv) of this Annex. The Reporting Bank must satisfy itself that for a securitisation in relation to which a true sale is effected by means other than a transfer of the credit claims or receivables, the ABCP transaction seller –

[575] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal opinion, a Reporting Bank should ensure that the in-house legal counsel providing the legal opinion should be independent of the parties involved in the origination and transfer of assets underlying the ABCP transaction.

(a) clearly demonstrates to the ABCP programme sponsor the existence of material obstacles preventing the transfer of credit claims or receivables at the issuance of commercial paper under the ABCP programme[576], and the method of recourse to ultimate obligors[577]; and

(b) clearly discloses to the ABCP programme sponsor any conditions where the transfer of the credit claims or receivables to the ACBP conduit is delayed or contingent upon specific events, and any factors affecting timely perfection of claims by the ABCP conduit.

Initial and Ongoing Data (Conduit Level Criteria)

2.16 A Reporting Bank must satisfy itself that the ABCP programme sponsor provides current and potential ABCP programme investors with –

(a) timely and sufficient aggregated data that illustrate the relevant risk characteristics of the underlying pool in accordance with the applicable laws governing such ABCP programmes; and

(b) standardised investor reports on at least a monthly basis, which must include all of the following information:

(i) materially relevant data on the credit quality and performance of underlying pool, including data allowing ABCP programme investors to identify dilution, delinquencies and defaults, restructured receivables, forbearance, repurchases, losses, recoveries and other asset performance remedies in the pool;

(ii) the form and amount of credit enhancement provided by each ABCP transaction seller and the ABCP programme sponsor, at the level of the ABCP transaction and the ABCP conduit, respectively;

(iii) relevant information on the support provided to the ABCP programme by the ABCP programme sponsor;

(iv) the status and definitions of triggers, including performance, termination or counterparty replacement triggers.

2.17 A Reporting Bank must satisfy itself that the aggregated data provided under paragraph 2.16(a) of this Annex and the data in the standardised investor report provided under paragraph 2.16(b) of this Annex are based on the same cut-off date.

Initial and Ongoing Data (Transaction Level Criteria)

2.18 A Reporting Bank must satisfy itself that the ABCP transaction seller –

[576] For example, an immediate realisation of transfer tax or a requirement to notify all obligors of the transfer.
[577] For example, through equitable assignment or through perfected contingent transfer.

(a) prior to the transfer of any credit claims or receivables to the ABCP conduit through the ABCP transaction, has provided the ABCP programme sponsor with sufficient data at the level of each credit claim or receivable subject to compliance with applicable laws governing the provision of such information, or in the case of granular pools, summary stratification data on the relevant risk characteristics of the credit claims or receivables to be transferred to the ABCP conduit through the ABCP transaction; and

(b) on an ongoing basis, provides the ABCP programme sponsor with timely data at the level of each credit claim or receivable subject to compliance with applicable laws governing the provision of such information or granular pool stratification data on the risk characteristics of the underlying pool.

Where the ABCP transaction seller delegates any of these tasks set out in sub-paragraphs (a) and (b) to external parties, the Reporting Bank must satisfy itself ensure that there is appropriate oversight by the ABCP transaction seller of the performance of the delegated tasks.

Section 3: Structural Risk

Full Support (Conduit Level Criteria)

3.1 A Reporting Bank must satisfy itself that the ABCP programme sponsor provides liquidity facilities and credit protection support for the ABCP programme (either at the level of the ABCP conduit or at the level of every ABCP transaction of the ABCP programme) that meet all of the following criteria:

(a) such liquidity facilities and credit protection fully protect ABCP programme investors against risks (including credit risks, liquidity risks and any material dilution risks) of the underlying asset pools financed by the ABCP conduit, thus irrevocably and unconditionally ensuring that the liabilities of the ABCP programme will be paid in full and on time;

(b) subject to paragraph 3.2 of this Annex, where such liquidity facilities and credit protection support are provided by more than one ABCP programme sponsor, the majority of the support provided by the ABCP programme sponsors (assessed in terms of coverage) is provided by a single ABCP programme sponsor (referred to as the "main sponsor");

(c) the terms of the liquidity facilities must satisfy all of the following conditions:

(i) identify events the occurrence upon which the creditworthiness of the ABCP programme sponsor are deemed to be affected;

(ii) provide that upon the occurrence of the events identified in sub-paragraph (c)(i), the ABCP programme sponsor is obliged to –

(A) collateralise its commitment in cash to the benefit of the ACBP programme investors; or

(B) replace itself with another liquidity provider without any change to the terms of the liquidity facilities provided;

(iii) provide that if the ABCP programme sponsor does not renew its funding commitment for the entire ABCP conduit or for a specific ABCP transaction, as the case may be –

(A) the ABCP programme sponsor is required to collateralise its commitment to the ABCP conduit or specific ABCP transaction, as the case may be, in cash at least 30 days prior to the expiration of the liquidity facility; and

(B) the ABCP programme must not purchase any new receivables under the ABCP conduit or ABCP transaction, as the case may be, supported by the affected funding commitment;

(d) the ABCP programme sponsor provides ABCP programme investors with full information on the terms of the liquidity facilities and credit protection support that it provides to the ABCP conduit or to the ABCP transactions of the ABCP programme, as the case may be. Despite the above, the ABCP programme sponsor may redact certain information pertaining to the ABCP transactions only where this is necessary to comply with laws and regulations in relation to confidentiality.

3.2 For the purposes of paragraph 3.1(b) of this Annex –

(a) a Reporting Bank need not satisfy itself that the criterion in paragraph 3.1(b) of this Annex is met for the duration taken to replace the main sponsor, where the main sponsor has to be replaced due to a material deterioration in its credit standing; and

(b) any liquidity facilities and credit protection support provided by an ABCP transaction seller must not be considered for the purposes of determining if a single ABCP programme sponsor is the main sponsor.

Redemption Cash Flows (Transaction Level Criteria)

3.3 A Reporting Bank must satisfy itself that, unless the pool of credit claims or receivables underlying the ABCP transaction is sufficiently granular and has sufficiently distributed repayment profiles, the ABCP programme sponsor ensures that the repayment of the credit claims or receivables underlying the ABCP transaction –

(a) relies primarily on the general ability and willingness of the respective obligor(s) to pay, rather than the possibility of the sale or refinancing of the credit claims or receivables by the obligor in order to repay the liabilities; and

(b) does not primarily rely on the drawing of an external liquidity facility provided to this transaction.

To avoid doubt, the Reporting Bank must not consider any liquidity facilities or credit protection support provided by the ABCP programme sponsor in determining whether the criteria in this paragraph is met.

3.4 Paragraph 3.3(b) of this Annex does not apply to exposures in the form of notes issued by the ABCP conduit.

Currency and Interest Rate Asset and Liability Mismatches (Conduit Level Criteria)

3.5 A Reporting Bank must satisfy itself that the ABCP programme sponsor ensures that any payment risk arising from different interest rate and currency profiles of assets and liabilities that are not mitigated at the ABCP transaction level, or that arise at the ABCP conduit level, is appropriately mitigated. To avoid doubt, the term "appropriately mitigated" does not require a perfect hedge. A Reporting Bank must satisfy itself that the ABCP programme sponsor ensures that hedging transactions used to mitigate such interest rate and foreign currency risks are –

(a) documented according to industry-standard master agreements; and

(b) conducted with –

(i) derivatives used for hedging purposes; or

(ii) risk-mitigating measures other than derivatives where such risk-mitigating measures are specifically created and used for the purpose of hedging an individual and specific risk, and are fully funded and available at all times.

3.6 A Reporting Bank must satisfy itself that the ABCP programme sponsor provides ABCP programme investors with the following information in a timely and regular manner to allow them to assess how the payment risk arising from differences in the interest rate and currency profiles of the assets and liabilities under the ABCP programme are appropriately mitigated through the life of the ABCP programme (whether at the level of each ABCP transaction and at the level of the ABCP conduit):

(a) quantitative information on hedging transactions, including the fraction of notional amounts that are hedged;

(b) sensitivity analysis that illustrates the effectiveness of the hedge under extreme but plausible scenarios.

Currency and Interest Rate Asset and Liability Mismatches (Transaction level Criteria)

3.7 A Reporting Bank must satisfy itself that the ABCP programme sponsor ensures that any interest rate and foreign currency risks of the assets underlying the ABCP

transaction are appropriately mitigated. To avoid doubt, the term "appropriately mitigated" does not require a perfect hedge. A Reporting Bank must satisfy itself that the ABCP programme sponsor ensures that hedging transactions used to mitigate such interest rate and foreign currency risks of assets underlying the ABCP transaction are –

(a) documented according to industry-standard master agreements; and

(b) conducted with –

(i) derivatives used for hedging purposes; or

(ii) risk-mitigating measures other than derivatives where such risk-mitigating measures are specifically created and used for the purpose of hedging an individual and specific risk, and are fully funded and available at all times.

Payment Priorities and Observability (Conduit Level Criteria)

3.8 A Reporting Bank must ensure that –

(a) the commercial paper issued by the ABCP programme does not include features, including extension options, which may extend the final maturity of the commercial paper, where the right to extend the maturity of the commercial paper does not belong exclusively to ABCP programme investors;

(b) the ABCP programme sponsor has made representations and warranties to ABCP programme investors that every ABCP transaction of the ABCP programme meets the criteria set out in paragraph 3.9 of this Annex and that the ABCP programme sponsor has the ability to appropriately analyse the cash flow waterfall of every ABCP transaction of the ABCP programme that qualifies as a securitisation; and

(c) the ABCP programme sponsor has made available to ABCP programme investors a summary illustrating the functioning of –

(i) the cash flow waterfall of every ABCP transaction of the ABCP programme that is a securitisation; and

(ii) the credit enhancement within the ABCP programme provided at the level of the ABCP conduit and at the level of each ABCP transaction of the ABCP programme.

Payment Priorities and Observability (Transaction Level Criteria)

3.9 A Reporting Bank must satisfy itself that the ABCP programme sponsor ensures that –

(a) the priority of payments for liabilities pertaining to an ABCP transaction, at the time of the acquisition of the assets underlying the ABCP transaction

by the ABCP conduit, are clearly defined, and that a written independent legal opinion[578] on the enforceability of the payment priorities is obtained;

(b) the junior liabilities do not have payment preference over senior liabilities which are due and payable;

(c) where an ABCP transaction itself is a securitisation –

(i) all triggers affecting the cash flow waterfall, payment profile or priority of payments are clearly and fully disclosed to the ABCP programme sponsor in both the documentation and reports of the ABCP transaction;

(ii) the reports of the ABCP transaction –

(A) clearly identify any breach of any such trigger, the likelihood for the breach to be reversed and the consequences of the breach; and

(B) contain information that allows the ABCP programme sponsor to easily ascertain the likelihood of a trigger being breached and any such breach being reversed;

(iii) any breaches of such triggers that occur between payment dates of the securitisation are disclosed to the ABCP programme sponsor on a timely basis in accordance with the terms and conditions of the transaction documents; and

(iv) the ABCP programme sponsor receives, both prior to the ABCP conduit acquiring an interest in the ABCP transaction and thereafter on an ongoing basis, a liability cash flow model or information on the cash flow provisions allowing appropriate modelling of the cash flow waterfall;

(d) where an ABCP transaction transfers an interest that is a securitisation position to the ABCP conduit –

(i) the interest transferred to the ABCP conduit always ranks senior to any other position in the securitisation structure; and

(ii) any subordinated positions in the securitisation structure do not have payment preferences over payments to the ABCP conduit which are due and payable;

(e) where an ABCP transaction features a revolving period, it includes provisions for appropriate early amortisation events or triggers of termination of the revolving period, or both, including –

[578] While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal counsel, a Reporting Bank should ensure that the in-house legal counsel is independent of the parties executing the ABCP transaction.

(i) deterioration in the credit quality of the exposures underlying the ABCP transaction;

(ii) a failure to replenish sufficient new underlying exposures of similar credit quality; and

(iii) the occurrence of an insolvency-related event with regard to the ABCP transaction seller; and

(f) policies and procedures, definitions, remedies and actions relating to delinquency, default, dilution or restructuring of underlying debtors are provided in clear and consistent terms, such that the ABCP programme sponsor can clearly identify debt forgiveness, forbearance, payment holidays, restructuring, dilution and other asset performance remedies on an ongoing basis.

Voting and Enforcement Rights (Conduit Level Criteria)

3.10 A Reporting Bank must satisfy itself that the ABCP programme sponsor provides ABCP programme investors with sufficient information to understand their enforcement rights on the underlying credit claims or receivables acquired by the ABCP conduit in the event of insolvency of the ABCP programme sponsor.

Voting and Enforcement Rights (Transaction Level Criteria)

3.11 A Reporting Bank must satisfy itself that the ABCP programme sponsor ensures that –

(a) the voting and enforcement rights related to the credit claims or receivables underlying the ABCP transaction, including with respect to the rights of the ABCP conduit versus other parties with an interest in the ABCP transaction, are clearly defined under all circumstances; and

(b) upon insolvency of the ABCP transaction seller or when the obligor of a credit claim or receivable underlying the ABCP transaction is in default on its obligation to make payment in respect of the credit claim or receivable, all voting and enforcement rights related to the credit claims or receivables concerned are transferred to the ABCP conduit.

Documentation Disclosure and Legal Review (Conduit Level Criteria)

3.12 A Reporting Bank must satisfy itself that –

(a) the ABCP programme sponsor has received sufficient initial offering documentation for each ABCP transaction in the ABCP programme within a reasonably sufficient period of time prior to the acquisition by the ABCP conduit of the interests in the underlying assets under the ABCP transaction, where such documentation –

(i) contains full disclosure of the legal information and comprehensive risk factors needed to make an informed decision to supply liquidity facilities or credit support facilities or both to the ABCP programme; and

(ii) presents the information in sub-paragraph (a)(i) in a manner that allows such information to be readily found, understood and used;

(b) the ABCP programme sponsor has ensured that the terms and documentation for each ACBP transaction in the ABCP programme are reviewed and verified by an appropriately experienced and independent external legal practice prior to the acquisition by the ABCP conduit of the interests in the underlying assets under the ABCP transaction and in any case of material changes;

(c) the ABCP programme sponsor provides sufficient initial offering documentation on the ABCP programme to ABCP programme investors within a reasonably sufficient period of time prior to issuance, and makes such documentation available to potential ABCP programme investors, where such documentation –

(i) contains full disclosure of the legal information and comprehensive risk factors needed to make an informed investment decision in the ABCP programme; and

(ii) presents the information in sub-paragraph (c)(i) in a manner that allows such information to be readily found, understood and used;

(d) the ABCP programme sponsor has ensured that the terms and documentation of the ABCP conduit and the ABCP programme are reviewed and verified by an appropriately experienced and independent external legal practice both prior to publication and in any case of material changes; and

(e) the ABCP programme sponsor has committed in writing to notify ABCP programme investors in a timely fashion in the event of any change to the terms or document of the ACBP conduit and the ABCP programme where such change has an impact on the structural risk of the ABCP programme.

Alignment of Interest (Conduit Level Criteria)

3.13 A Reporting Bank must ensure that the ABCP programme sponsor has disclosed and demonstrated to ABCP programme investors that –

(a) the ABCP transaction seller or the ABCP programme sponsor has retained a material net economic interest at the ABCP transaction level, such that the ABCP transaction seller or the ABCP programme sponsor has a financial incentive in the performance of the assets underlying the ABCP transaction; or

(b) the ABCP programme sponsor has retained a material net economic interest at the ABCP conduit level, such that the ABCP programme sponsor has a financial incentive in the performance of the assets in the underlying pool of the ABCP conduit.

Cap on Maturity Transformation (Conduit Level Criteria)

3.14 A Reporting Bank must ensure that the ABCP programme sponsor has verified and disclosed to ABCP programme investors that the weighted average maturity of all ABCP transactions of the ABCP programme is 3 years or less, and must satisfy itself that this weighted average maturity is calculated as the higher of the following:

(a) the exposure-weighted average residual maturity of the beneficial interests held by, or the assets purchased by, the ABCP conduit (including any purchased securitisation notes, loans, asset-backed deposits and purchased credit claims or receivables held directly on the balance sheet of the ABCP conduit) in order to finance the ABCP transactions of the ABCP programme;

(b) the exposure-weighted average maturity of all the underlying assets financed by the ABCP conduit, which must be calculated as follows:

(i) Step 1: Taking an exposure-weighted average of residual maturities of the assets underlying each ABCP transaction in the ABCP programme. For an ABCP transaction for which it is impractical for the ABCP programme sponsor to calculate this statistic[579], the ABCP programme sponsor may use the maximum maturity of the assets in the pool of assets underlying the ABCP transaction as defined in the legal agreements governing the ABCP transaction[580];

(ii) Step 2: Taking an exposure-weighted average of –

(A) the ABCP transaction-level exposure-weighted average; or

(B) the maximum maturity of assets in the pool of assets underlying the ABCP transaction,

for each ABCP transaction, as the case may be, as calculated in Step 1.

Section 4: Fiduciary and Servicer Risk

Financial Institution (Conduit Level Criteria)

4.1 A Reporting Bank must ensure that the ABCP programme sponsor is a bank.

[579] For example, this may be because the pool of assets underlying the ABCP transaction is very granular or dynamic.

[580] For example, based on the investment criteria for the underlying pool of such ABCP transactions.

Fiduciary and Contractual Responsibilities (Conduit Level Criteria)

4.2 A Reporting Bank must satisfy itself that an ABCP programme sponsor –

(a) has made representations and warranties to ABCP programme investors, based on representations received by the ABCP programme sponsor from all ABCP transaction sellers and all other parties responsible for originating and servicing the asset pools, that for every ABCP transaction in the ABCP programme –

(i) the criteria in paragraph 4.4 of this Annex are met;

(ii) the policies, procedures, and risk management controls of all ABCP transaction sellers in relation to the origination and servicing of the assets underlying the ABCP transaction are properly documented, adhere to good market practices and comply with all regulatory regimes relevant to the origination and servicing of the underlying assets; and

(iii) all ABCP transaction sellers have strong systems and reporting capabilities in place to ensure appropriate origination and servicing of the assets underlying the ABCP transaction;

(b) has provided an explanation to ABCP programme investors how the criteria mentioned in sub-paragraph (a)(i) are met for every ABCP transaction in the ABCP programme;

(c) has demonstrated expertise in providing liquidity and credit support in the context of ABCP conduits;

(d) is supported by a management team with extensive industry experience;

(e) has well-documented policies, procedures and risk management controls;

(f) at all times, acts in accordance with reasonable and prudent standards, and in adherence to good market practices and all relevant regulatory regimes which the ABCP programme sponsor is subject to;

(g) has strong systems and reporting capabilities; and

(h) has demonstrated to the satisfaction of the Reporting Bank that remuneration to all parties with fiduciary responsibility towards the ABCP programmme (including any ABCP transaction of the ABCP programme) is such that these parties are incentivised to act on a timely basis in the best interests of the investors.

4.3 For the purposes of paragraph 4.2(a)(ii) and (iii) of this Annex, where the ABCP transaction seller is not a bank, the Reporting Bank must ensure that the representations and warranties made by the ABCP programme sponsor referred to in those sub-paragraphs, are substantiated by a review by an external party.

Fiduciary and Contractual Responsibilities (Transaction Level Criteria)

4.4 A Reporting Bank must satisfy itself that the ABCP programme sponsor has received representations from the ABCP transaction seller and all other parties responsible for originating and servicing the assets underlying the ABCP transaction that they –

(a) have well-documented procedures and policies in place to ensure appropriate servicing of the assets underlying the ABCP transaction;

(b) have expertise in the origination of assets that are identical or similar to the assets underlying the ABCP transaction;

(c) have extensive servicing and workout expertise, thorough legal and collateral knowledge and a proven track record in loss mitigation for assets that are identical or similar to the assets underlying the ABCP transaction;

(d) have expertise in the servicing of the assets underlying the ABCP transaction; and

(e) are supported by a management team with extensive industry experience.

Transparency to Investors (Conduit Level Criteria)

4.5 A Reporting Bank must satisfy itself that the ABCP programme sponsor –

(a) has ensured that the contractual obligations, duties and responsibilities of all parties with a fiduciary responsibility and all ancillary service providers (collectively, in this Annex, "key parties") to the ABCP conduit, are defined clearly both in the initial offering and any relevant underlying documentation[581] of the ABCP conduit and the ABCP programme. To avoid doubt, "underlying documentation" does not refer to the documentation of the ABCP transactions;

(b) has ensured that the initial offering documentation disclosed to ABCP programme investors contains adequate provisions regarding the replacement of key parties of the ABCP conduit[582] in the event of failure or non-performance or insolvency or deterioration of creditworthiness of any such counterparty;

(c) has made representations and warranties to ABCP programme investors that the duties and responsibilities of all key parties to each ABCP transaction are clearly defined at the level of each ABCP transaction;

[581] Such as any asset sale agreement, assignment, novation or transfer agreement; any servicing, backup servicing, administration or cash management agreement; any trust or management deed, security deed, agency agreement, account bank agreement, guaranteed investment contract, incorporated terms or master trust framework or master definitions agreement as applicable; any relevant inter-creditor agreements, swap or derivative documentation, subordinated loan agreements, start-up loan agreements and liquidity facility agreements; and legal opinions.

[582] For example, bank account providers or derivatives counterparties.

(d) has made representations and warranties to ABCP programme investors that any provisions regarding the replacement of key parties to each ABCP transaction (in particular the servicer or liquidity provider) are well-documented; and

(e) has provided sufficient information to ABCP programme investors about the liquidity and credit support facilities provided to the ABCP programme, in order for ABCP programme investors to understand their functioning and key risks.

Transparency to Investors (Transaction Level Criteria)

4.6 A Reporting Bank must satisfy itself that the ABCP programme sponsor –

(a) conducts due diligence with respect to the ABCP transaction on behalf of ABCP programme investors;

(b) has ensured that the duties and responsibilities of all key parties to the ABCP transaction are clearly defined in all underlying documentation[583] of the ABCP transaction and are made available to the ABCP programme sponsor, in order to assist the ABCP programme sponsor in meeting its financial and contractual obligations;

(c) has ensured that provisions regarding the replacement of key parties to the ABCP transaction (in particular the servicer or liquidity provider) in the event of failure or non-performance or insolvency or other deterioration of any such party for the ABCP transaction is documented in the documentation of the ABCP transaction; and

(d) has ensured that the performance reports for the ABCP transaction include the following:

(i) the income and disbursements, which comprises scheduled principal, redemption principal, scheduled interest, prepaid principal, past due interest and fees and charges, delinquent, defaulted, restructured and diluted amounts;

(ii) accurate accounting for amounts attributable to principal and interest deficiency ledgers.

[583] Such as any asset sale agreement, assignment, novation or transfer agreement; any servicing, backup servicing, administration or cash management agreement; any trust or management deed, security deed, agency agreement, account bank agreement, guaranteed investment contract, incorporated terms or master trust framework or master definitions agreement as applicable; any relevant inter-creditor agreements, swap or derivative documentation, subordinated loan agreements, start-up loan agreements and liquidity facility agreements; and legal opinions.

Section 5: Additional Criteria

Credit Risk of Underlying Exposures (Transaction Level Criteria)

5.1 A Reporting Bank must ensure, as at the date of acquisition by the ABCP conduit of the interests of the assets under an ABCP transaction, that the assets underlying the ABCP transaction after recognising the effects of credit risk mitigation, are assigned a risk weight under the SA(CR) that is equal to or smaller than –

(a) 40% on a value-weighted average exposure basis for the portfolio where the exposures are regulatory RRE exposures;

(b) 50% on an individual exposure basis where the exposure is a regulatory CRE exposure, is in the other real estate asset sub-class as defined in paragraph 7.3.1(k)(iii), or is in the ADC asset sub-class as defined in paragraph 7.3.1(k)(i);

(c) 75% on an individual exposure basis where the exposure belongs to the regulatory retail asset class pursuant to paragraph 7.3.1(i); or

(d) 100% on an individual exposure basis for any other exposure.

Granularity of the Underlying Pool (Conduit Level Criteria)

5.2 A Reporting Bank must ensure that, as at the date of acquisition by the ABCP conduit of the interests of the assets under any ABCP transaction, the aggregated value of all exposures to a single obligor do not exceed 2% of the aggregated outstanding exposure value of all exposures underlying the ABCP programme. However, subject to the Authority's prior approval, in the case of corporate exposures and if the country or jurisdiction where exposures in the underlying pool belong has structurally concentrated corporate loan markets available for securitisation, the threshold may be increased to 3%, provided that –

(a) the ABCP transaction seller or ABCP transaction sellers, as the case may be, or the ABCP programme sponsor, retains the subordinated tranche or, where there are multiple tranches, all subordinated tranches, as the case may be, that form loss absorbing credit enhancement, as defined in paragraph 7.6.35(a); and

(b) the subordinated tranche or tranches referred to in sub-paragraph (a) cover at least the first 10% of losses.

For the purposes of this paragraph, the Reporting Bank must not apply the alternative capital treatment for STC securitisations for any subordinated tranche that satisfies the requirements in sub-paragraphs (a) and (b) that the Reporting Bank retains in its capacity as a ABCP transaction seller or a ABCP programme sponsor.

Annex 7AG

ILLUSTRATION ON THE RECOGNITION OF DILUTION RISK WHEN APPLYING THE SEC-IRBA TO SECURITISATION EXPOSURES

Section 1: Illustrative Example – Recognition of Dilution Risk Assuming a Common Waterfall for Default and Dilution Losses

1.1 Assume a Reporting Bank is using the SEC-IRBA to calculate the credit risk-weighted exposure amount for the securitisation exposures to a securitisation with an underlying pool comprising purchased corporate receivables, and for which the loss allocation process does not distinguish between losses resulting from defaults and dilution within the underlying pool (i.e. common waterfall for default and dilution losses). In accordance with paragraph 7.6.32, the Reporting Bank must determine K_{IRB} for dilution risk and default risk respectively, and combine them into a single K_{IRB} prior to applying the SEC-IRBA.

1.2 For the purposes of this illustration, the underlying pool of the securitisation is comprised of exposures with uniform size, uniform PD, uniform LGD and uniform maturity, and is characterised as follows:

(a) Pool of $1,000,000 of purchased corporate receivables;

(b) N = 100;

(c) M = 2.5 years[584];

(d) PD_{dil} = 0.55%;

(e) LGD_{dil} = 100%;

(f) PD = 0.95%;

(g) LGD = 45%.

1.3 For the purposes of this illustration, the capital structure of the securitisation is composed of 3 tranches and is characterised as follows:

(a) Tranche A is a senior note of $700,000;

(b) Tranche B is a second-loss guarantee of $250,000;

(c) Tranche C is a purchase discount of $50,000;

(d) Final legal maturity of the transaction, and of all tranches, is 2.875 years. Hence, M_T is calculated in accordance with paragraph 6.1 of Annex 7V, as follows:

$$M_T = 1 + (2.875 - 1) \cdot 80\% = 2.5\ years$$

[584] For simplicity, the possibility to set M_{dil} = 1 year in accordance with paragraph 7.4.102(c)(ii) is not used in this example.

1.4 A Reporting Bank must determine the credit risk-weighted exposure amount for each tranche under the SEC-IRBA as follows:

(a) Step 1: Determine (1) the ratio of the IRB capital requirement for the underlying exposures in the pool in respect of dilution risk and the exposure amount of the underlying pool, $K_{IRB,\ Dilution}$, and (2) the ratio of the IRB capital requirement for the underlying exposures in the pool in respect of default risk and the exposure amount of the underlying pool, $K_{IRB,Default}$ respectively as follows:

(i) $K_{IRB,Dilution} = (UL_{Dilution} + EL_{Dilution}) / EAD_{Pool}$

$= [(EAD_{Pool} \times K_{dil,\ cp} \times 12.5 \times 8\%) + (EAD_{Pool} \times PD_{dil} \times LGD_{dil})\ ] / EAD_{Pool}$

$= [(\$1{,}000{,}000 \times 161.44\% \times 8\%) + (\$1{,}000{,}000 \times 0.55\% \times 100\%)] / \$1{,}000{,}000$

$= 13.47\%$

where –

(A) "$UL_{Dilution}$" and "$EL_{Dilution}$" refer to unexpected losses and expected losses respectively arising from dilution risk;

(B) "EAD_{Pool}" refers to the EAD amount of the underlying pool; and

(C) $K_{dil,\ cp}$ is calculated in accordance with paragraph 7.4.102;

(ii) $K_{IRB,Default} = (UL_{Default} + EL_{Default}) / EAD_{Pool}$

$= [\ (EAD_{Default} \times K_{df,\ cp} \times 12.5 \times 8\%) + (EAD_{Default} \times PD \times LGD)\ ] / EAD_{Pool}$

$= \{\ [\ (EAD_{Pool} - UL_{Dilution}) \times K_{df,\ cp} \times 12.5 \times 8\%\ ] + [\ (EAD_{Pool} - UL_{Dilution}) \times PD \times LGD)\ ]\ \} / EAD_{Pool}$

$= \{\ [\ (\$1{,}000{,}000 - \$129{,}200) \times 90.62\% \times 8\%\ ] + [\ (\$1{,}000{,}000 - \$129{,}200) \times 0.95\% \times 45\%)\ ]\ \} / \$1{,}000{,}000$

$= 6.69\%$

where –

(A) "$UL_{Default}$" and "$EL_{Default}$" refer to unexpected losses and expected losses respectively arising from default risk;

(B) "EAD_{Pool}" refers to the EAD amount of the underlying pool;

(C) "$EAD_{Default}$" refers to the EAD arising from default risk, which is calculated as (EAD_{Pool} – $UL_{Dilution}$) in accordance with paragraph 2.12(a)(iii) and (b)(iii) of Annex 7T; and

(D) $K_{df, cp}$ is calculated in accordance with paragraph 7.4.96(a);

(b) Step 2: Combine $K_{IRB,Dilution}$ and $K_{IRB,Default}$ to determine K_{IRB} for the underlying pool, as follows:

K_{IRB}= $K_{IRB,Dilution}$ + $K_{IRB,Default}$ = 13.47% + 6.69% = 20.16%;

(c) Step 3: Apply the SEC-IRBA to the 3 tranches of the securitisation as follows:

(i) determine pool-level parameters as follows:

(A) N = 100, in accordance with paragraph 1.2(b) of this Annex;

(B) LGD_{avg} = (LGD x $K_{IRB,Default}$ + LGD_{dil} x $K_{IRB,Dilution}$) / K_{IRB}
= [(45% x 6.69%) + (100% x 13.47%)] / 20.16%
= 81.75%

(ii) determine tranche-level parameters for each tranche as follows:

(A) M_T = 2.5 for all 3 tranches, in accordance with paragraph 1.3(d) of this Annex;

(B) tranche attachment and detachment points as follows:

Table 7AG-1: Tranche Attachment and Detachment Points

Tranche	Attachment Point	Detachment Point
Tranche A	30%	100%
Tranche B	5%	30%
Tranche C	0%	5%

(C) supervisory parameter p, calculated in accordance with paragraph 7.6.42, as follows:

Table 7AG-2: Supervisory Parameter p

Tranche	Characteristics	p
Tranche A	Wholesale, Senior, granular	0.300
Tranche B	Wholesale, Non-senior, granular	0.328
Tranche C	Wholesale, Non-senior, granular	0.328

(iii) determine tranche-level risk weights in accordance with paragraphs 7.6.45 and 7.6.46, and credit risk-weighted exposure amounts in accordance with paragraph 7.1.14, as follows:

Table 7AG-3: SEC-IRBA Risk Weights and Credit RWE

Tranche	SEC-IRBA Risk Weight	SEC-IRBA Credit RWE
Tranche A	21.22%	$148,540
Tranche B	1013.85%	$2,534,625
Tranche C	1250%	$625,000

Section 2: Illustrative Example – Recognition of Dilution Risk Assuming Separate Waterfalls for Default and Dilution Losses

2.1 Assume a Reporting Bank is using the SEC-IRBA to calculate the credit risk-weighted exposure amount for the securitisation exposures to a securitisation with an underlying pool comprising purchased corporate receivables, and for which the loss allocation process distinguishes between losses resulting from defaults and dilution within the underlying pool (i.e. separate waterfalls for default and dilution losses). This means that for the determination of the risk of a specific tranche, it is not only relevant to determine what losses might be realised within the pool, but also if such losses result from a default event or a dilution event.

2.2 As the SEC-IRBA assumes that there is one common waterfall for default and dilution losses, it cannot be applied to the case described in paragraph 2.1 of this Annex without adjustments. This example illustrates one possible scenario and a possible adjustment specific to this scenario. Despite this example, a Reporting Bank must consult the Authority as to how K_{IRB} must be calculated where default risk and dilution risk are subject to separate waterfalls, in accordance with paragraph 7.6.32.

2.3 Assume that the underlying pool of the securitisation is as described in paragraph 1.2 of this Annex.

2.4 Assume that the capital structure of the securitisation is composed of 3 tranches and is characterised as follows:

(a) Tranche A is a senior note of $950,000;

(b) Tranche C is a purchase discount of $50,000;

(c) Tranche A and Tranche C will cover both default and dilution losses;

(d) Tranche B is a fully cash-collateralised second-loss guarantee of $250,000 that covers only dilution losses exceeding a threshold of $50,000, up to a maximum aggregated amount of $300,000;

(e) M_T of all tranches is 2.5 years.

2.5 The capital structure of the securitisation thus leads to the following 2 waterfalls:

(a) default waterfall, comprising –

(i) Tranche A, which is a senior note of $950,000; and

(ii) Tranche C, which is a purchase discount of $50,000, subject to Tranche C not already having absorbed any realised dilution losses;

(b) dilution waterfall, comprising –

(i) Tranche A, which is a senior note of $700,000;

(ii) Tranche B, which is a fully cash-collateralised second-loss guarantee of $250,000; and

(iii) Tranche C, which is a purchase discount of $50,000, subject to Tranche C not already having absorbed any realised default losses.

2.6 A Reporting Bank must determine the credit RWE of Tranche C in accordance with paragraph 1.4 of this Annex, resulting in a credit RWE of $625,000.

2.7 For the purposes of calculating the credit RWE of Tranche B (the fully cash-collateralised second loss guarantee), a Reporting Bank must –

(a) limit K_{IRB} to $K_{IRB,Dilution}$ as defined in paragraph 1.4(a) of this Annex, as Tranche B is exposed only to dilution risk, but not to default risk; and

(b) assume that $50,000 of the securitised assets have already defaulted, hence –

(i) Tranche C (the purchase discount) is no longer available as credit enhancement; and

(ii) EAD of the underlying pool has been reduced to $950,000. To avoid doubt, the Reporting Bank may assume that the K_{IRB} calculated in respect of Tranche B is not affected by this assumed reduction in portfolio size.

For the purposes of sub-paragraph (b)(i), Tranche C must not be recognised as credit enhancement for dilution risk to ensure a prudent treatment, given that the holder of Tranche B cannot be sure that Tranche C will still be available to absorb the first dilution losses when they are realised, as such credit enhancement might already be depleted due to earlier default losses.

2.8 The Reporting Bank must determine the credit risk-weighted exposure amount for Tranche B under the SEC-IRBA as follows:

(a) Step 1: Determine K_{IRB} as follows: $K_{IRB} = K_{IRB,Dilution} = 13.47\%$;

(b) Step 2: Apply the SEC-IRBA to Tranche B as follows:

(i) determine pool-level parameters as follows:

(A) N = 100, in accordance with paragraph 1.2(b) of this Annex;

(B) LGD_{avg} = LGD_{dil} = 100%;

(ii) determine tranche-level parameters as follows:

(A) M_T = 2.5 for all 3 tranches, in accordance with paragraph 2.4(e) of this Annex;

(B) tranche attachment point = 0%;

(C) tranche detachment point = \$250,000 / \$950,000 = 26.32%;

(D) supervisory parameter p = 0.435, calculated in accordance with paragraph 7.6.42, for a non-senior tranche with a granular underlying pool comprising wholesale exposures;

(iii) determine tranche-level risk weight of 886.94% in accordance with paragraphs 7.6.45 and 7.6.46, and credit RWE of \$2,217,350 in accordance with paragraph 7.1.14.

2.9 The holder of Tranche A (senior note) will take all default losses not covered by the purchase discount and all dilution losses not covered by the purchase discount or the second-loss guarantee. A possible treatment for Tranche A under the SEC-IRBA would be to add $K_{IRB,Default}$ and $K_{IRB,Dilution}$ (as defined in paragraph 1.4 of this Annex), but not to recognise Tranche B as credit enhancement at all because it is covering only dilution risk. This approach is simple but fairly conservative. Therefore, a potential alternative treatment is set out in paragraphs 2.10 to 2.12 of this Annex.

2.10 The Reporting Bank may determine the credit RWE for Tranche A under the SEC-IRBA by –

(a) calculating the credit RWE for Tranche A under the assumption that it is only exposed to losses resulting from defaults, i.e. that Tranche A is benefiting from a credit enhancement of \$50,000;

(b) calculating the credit RWE for Tranche C and a hypothetical Tranche A*, under the assumption that both are only exposed to dilution losses. Tranche A* should be assumed to absorb losses only when losses for the underlying pool are above \$300,000 and up to \$1,000,000. With respect to dilution losses, this approach would recognise that the holder of Tranche A cannot be sure that Tranche C will still be available to absorb the first dilution losses when they are realised, as such credit enhancement might already be depleted due to earlier default losses. Consequently, the holder of Tranche A may recognise the credit enhancement provided by Tranche C in the calculation of $K_{IRB,default}$ or $K_{IRB,dilution}$, but not both;

(c) summing up the credit RWE for –

(i) Tranche A calculated under sub-paragraph (a); and

(ii) hypothetical Tranche A* calculated under sub-paragraph (b);

(d) applying any adjustments to the credit RWE calculated under sub-paragraph (c) as required under the risk weight floor –

(i) if the securitisation transaction meets the requirements of paragraph 7.6.93, as set out in paragraph 7.6.98; or

(ii) otherwise, as set out in paragraph 7.6.46; and

(e) applying any adjustments to the credit risk-weighted exposure amount calculated under sub-paragraph (c) and adjusted under sub-paragraph (d) to take into account the maximum risk weight that may be applied to Tranche A in accordance with paragraph 7.1.15(a).

2.11 For the purposes of the example set out in paragraph 2.10 of this Annex –

(a) the credit enhancement provided by Tranche C was recognised in the default risk calculation, but a Reporting Bank may choose to recognise Tranche C in the dilution risk calculation instead; and

(b) it was assumed that Tranche B explicitly covers dilution losses above $50,000 up to $300,000. If the Tranche B had instead been assumed to cover $250,000 of dilution losses after Tranche C has been depleted (irrespective of whether for dilution or default losses), then the holder of Tranche A must assume that he is exposed to dilution losses from $250,000 up to $1,000,000 (instead of from $0 to $50,000 and from $300,000 to $1,000,000).

2.12 The Reporting Bank must determine the credit RWE for Tranche A under the SEC-IRBA as follows:

(a) Step 1: Calculate the credit RWE for Tranche A based on paragraph 2.10(a) of this Annex, as follows:

(i) determine pool-level parameters as follows:

(A) $K_{IRB} = K_{IRB,Default} = 6.69\%$;

(B) $N = 100$, in accordance with paragraph 1.2(b) of this Annex;

(C) $LGD_{avg} = LGD = 45\%$;

(ii) determine tranche-level parameters as follows:

(A) $M_T = 2.5$, in accordance with paragraph 2.4(e) of this Annex;

(B) tranche attachment point = $50,000 / $1,000,000 = 5%;

(C) tranche detachment point = 100%;

(D) supervisory parameter p = 0.334, calculated in accordance with paragraph 7.6.42, for a senior tranche with a granular underlying pool comprising wholesale exposures;

(iii) determine tranche-level risk weight of 51.67% in accordance with paragraphs 7.6.45 and 7.6.46, and credit risk-weighted exposure amount of $490,865 in accordance with paragraph 7.1.14;

(b) Step 2: Calculate the credit risk-weighted exposure amount for Tranche C and hypothetical Tranche A* based on paragraph 2.10(b) of this Annex, as follows:

(i) determine pool-level parameters as follows:

(A) $K_{IRB} = K_{IRB,Dilution} = 13.47\%$;

(B) N = 100, in accordance with paragraph 1.2(b) of this Annex;

(C) $LGD_{avg} = LGD_{dil} = 100\%$;

(ii) determine tranche-level parameters for hypothetical Tranche A* as follows:

(A) $M_T = 2.5$, in accordance with paragraph 2.4(e) of this Annex;

(B) tranche attachment point = 30%;

(C) tranche detachment point = 100%;

(D) supervisory parameter p = 0.511, calculated in accordance with paragraph 7.6.42, for a senior tranche with a granular underlying pool comprising wholesale exposures;

(iii) determine tranche-level parameters for Tranche C as follows:

(A) $M_T = 2.5$, in accordance with paragraph 2.4(e) of this Annex;

(B) tranche attachment point = 0%;

(C) tranche detachment point = 5%;

(D) supervisory parameter p = 0.435, calculated in accordance with paragraph 7.6.42, for a non-senior tranche with a granular underlying pool comprising wholesale exposures;

(iv) for hypothetical Tranche A*, determine a tranche-level risk weight of 11.16% in accordance with paragraphs 7.6.45 and 7.6.46, and credit RWE of $78,120 in accordance with paragraph 7.1.14;

(v) for Tranche C, determine tranche-level risk weight of 1250% in accordance with paragraphs 7.6.45 and 7.6.46, and credit RWE of $625,000 in accordance with paragraph 7.1.14;

(c) Step 3: Sum up the credit risk-weighted exposure amounts calculated in sub-paragraphs (a) and (b), in accordance with paragraph 2.10(c) of this Annex, as follows:

Credit RWE for Tranche A
= $490,865 + $78,120 + $625,000
= $1,193,985; and

(d) Step 4: Determine that no adjustments to the credit risk-weighted amount for Tranche A are necessary in accordance with paragraph 2.10(d) and (e) of this Annex, as the implicit risk weight of Tranche A (calculated as $1,193,985 / $950,000 = 125.68%) is –

(i) larger than the risk weight floor of 15%; and

(ii) smaller than the exposure weighted-average risk weight applicable to the underlying exposures under the IRBA (taking into account the expected loss multiplied by 12.5) of 264.28%.

To avoid doubt, the correct application of the overall risk weight floor is such that the intermediate results (in this case the risk weight for Tranche A*) are calculated without the floor and the floor is only applied in the last step (i.e. Step 4).

PART VIII: MARKET RISK

Division 1: Overview of Market RWA Calculation

Sub-division 1: Introduction

8.1.1 A Reporting Bank must calculate market RWA of a Reporting Bank as the sum of –

(a) 12.5 times of –

(i) in the case where the Reporting Bank only uses the SA(MR), its market risk capital requirements using the SA(MR) calculated in accordance with Division 2 of this Part;

(ii) in the case where the Reporting Bank uses the IMA for one or more in-scope trading desks as specified in paragraph 8.3.17, the aggregation, calculated in accordance with paragraph 8.3.243, of its market risk capital requirements using the SA(MR) calculated in accordance with Division 2 of this Part, and its market risk capital requirements using the IMA calculated in accordance with Division 3 of this Part; or

(iii) in the case where the Reporting Bank only uses the SSA(MR), its market risk capital requirement using the SSA(MR) calculated in accordance with Division 4 of this Part;

(b) its Pillar 1 RWA surcharge calculated in accordance with paragraphs 8.1.39 to 8.1.41;

(c) 12.5 times of its capital requirements for net short positions in funds, calculated in accordance with paragraph 8.1.11; and

(d) its CVA RWA calculated in accordance with Division 5 of this Part.

Sub-division 2: Scope of Application for SA(MR), IMA and SSA(MR)

8.1.2 When calculating market risk capital requirements, a Reporting Bank must include –

(a) default risk, interest rate risk, credit spread risk, equity risk, FX risk, commodities risk, and other risks arising from movements in market prices, for instruments in the trading book; and

(b) FX risk and commodities risk, for instruments in the banking book.

8.1.3 A Reporting Bank must include every transaction which falls within paragraph 8.1.2, including any forward sale and forward purchase transaction, in its calculation of its market risk capital requirements from the date on which the transaction is entered into.

The Reporting Bank must ensure that it maintains an adequate level of capital to meet its market risk capital requirements at all times, including at the close of each business day[601], and must take immediate measures to rectify the situation if it fails to meet the market risk capital requirements at any time. A Reporting Bank must also maintain risk management systems to ensure that intra-day exposures are not excessive.

8.1.4 To avoid doubt, where a Reporting Bank lends securities or posts securities as collateral, the Reporting Bank must calculate market risk capital requirements for the securities if the market risks of the securities remain with the Reporting Bank.

8.1.5 For the purposes of calculating a Reporting Bank's market risk capital requirements for FX risk, a Reporting Bank may, subject to such directions as the Authority may issue and such conditions and restrictions as the Authority may impose, exclude certain positions from the calculation of its NOP in a currency (relevant currency), if the Reporting Bank meets all of the following conditions:

(a) the position is of a structural nature which is non-dealing;[602]

(b) the Reporting Bank has taken or maintained the position, for the purposes of hedging, partially or totally, against the potential adverse effect of changes in an exchange rate on the Reporting Bank's capital ratio;

(c) the exclusion is limited to the amount of the position that hedges the potential adverse effect of changes in an exchange rate on the Reporting Bank's capital ratio;

(d) the position which the Reporting Bank has excluded from the calculation of the Reporting Bank's NOP in a currency must be excluded for a minimum continuous period of 6 months;

(e) the Reporting Bank must implement a risk management framework and must have a risk management policy, for positions excluded from the calculation of the Reporting Bank's NOP in relevant currencies;

(f) the Reporting Bank must ensure that the establishment of the position referred to in sub-paragraph (a) and any changes in NOP in the relevant currency, are in accordance with the Reporting Bank's risk management policy referred to in sub-paragraph (e);

(g) the Reporting Bank must provide the Authority its risk management policy referred to in sub-paragraph (e);

(h) the Reporting Bank must report to the Authority, the positions and amounts that are excluded from market risk capital requirements, and such other information required by the Authority.

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601 A Reporting Bank should not window-dress to show significantly lower market risk positions on reporting dates.

602 For example, an investment in a subsidiary, branch or associate of the Reporting Bank, with a functional currency which is denominated in a currency other than the reporting currency of the Reporting Bank. The scope of a position that can be excluded is subject to the Authority's specifications in its approval.

8.1.6 A Reporting Bank must, in calculating its net open FX positions, exclude any position related to items that are deducted in the calculation of CET1 Capital, AT1 Capital or Tier 2 Capital.

8.1.7 A Reporting Bank must not, in calculating its market risk capital requirements, include holdings of capital instruments that are deducted in the calculation of CET1 Capital, AT1 Capital or Tier 2 Capital, or that are risk weighted at 1250%, which include –

(a) the Reporting Bank's own regulatory capital instruments;

(b) other financial institutions' regulatory capital instruments that are deducted in the Reporting Bank's calculation of CET1 Capital, AT1 Capital or Tier 2 Capital; and

(c) intangible assets.

8.1.8 A Reporting Bank with a consolidated trading book across the banking group may, in calculating its market risk capital requirements, include short and long positions in instruments in the trading book on a net basis, regardless of where they are booked, if –

(a) in the case where the Reporting Bank only uses the SA(MR), the instruments give rise to positions for which a full offset is allowed under the SA(MR);

(b) in the case where the Reporting Bank uses the IMA for one or more in-scope trading desks as specified in paragraph 8.3.17, the instruments give rise to positions for which a full offset is allowed under the SA(MR); and

(c) in the case where the Reporting Bank only uses the SSA(MR), the instruments give rise to positions for which a full offset is allowed under the SSA(MR).

8.1.9 Despite paragraph 8.1.8, where there are legal or operational impediments to the quick repatriation of profits from a foreign subsidiary of the Reporting Bank or timely management of risks on a consolidated basis, the Reporting Bank must capture the individual positions arising from the entities that face such legal or operational impediments into the Reporting Bank's market risk measurement system without any offsetting against positions arising from other banking group entities. The Authority retains the right to impose market risk capital requirements on a non-consolidated basis. A Reporting Bank must not conceal transactions in such a way as to avoid such transactions from being included in the Reporting Bank's market risk measurement system on reporting dates.

8.1.10 A Reporting Bank must include all pre-settlement counterparty exposures arising from OTC derivative transactions, long settlement transactions, repo-style transactions and other transactions, booked in the trading book, in CCR-SA RWA, CCR-IRBA RWA or CCP RWA under Part VII.[603]

[603] The treatment for UST exposures is set out in Division 8 of Part VII.

8.1.11 A Reporting Bank must not use the SA(MR), the SSA(MR) or the IMA to calculate market risk capital requirements for net short positions in funds where the Reporting Bank cannot look through or does not meet the requirements set out in paragraph 8.1.27(e). The Reporting Bank must calculate the capital requirements for a net short position in a fund as the net short position in the fund multiplied by 100%.

Sub-division 3: Transitional Arrangements

8.1.12 A Reporting Bank must apply this Part, and all definitions used in this Part which are set out in Part II, for the purposes of compliance with capital adequacy ratio requirements in Part IV and public disclosure requirements in Part XI, with effect from 1 January 2025.

8.1.13 A Reporting Bank must not apply this Part, and all definitions used in this Part which are set out in Part II, for the purposes of compliance with capital adequacy ratio requirements in Part IV and public disclosure requirements in Part XI, for the period from 1 July 2024 to 31 December 2024 (both dates inclusive).

8.1.14 Subject to the modifications specified in paragraph 8.1.15, a Reporting Bank must continue to apply Part VIII and Annex 7AI of MAS Notice 637, including all directions issued and all approvals granted by the Authority in respect of Part VIII and Annex 7AI of MAS Notice 637, and such conditions and restrictions specified in the directions or approvals, as the case may be, and all definitions used in Part VIII and Annex 7AI which are set out in Part II of MAS Notice 637, in force immediately before 1 July 2024, for the purposes of compliance with capital adequacy ratio requirements in Part IV and public disclosure requirements in Part XI, for the period from 1 July 2024 to 31 December 2024 (both dates inclusive).

8.1.15 The modification mentioned in paragraph 8.1.14 is that the following provision applies in place of paragraph 8.1.7 of MAS Notice 637 in force immediately before 1 July 2024:

> "A Reporting Bank must calculate its market RWA as the sum of –
>
> (a) 12.5 times of its market risk capital requirement calculated using the SA(MR) in accordance with Division 2 of Part VIII of MAS Notice 637 in force immediately before 1 July 2024;
>
> (b) 12.5 times of its market risk capital requirement calculated using the IMA in accordance with Division 3 of Part VIII of MAS Notice 637 in force immediately before 1 July 2024; and
>
> (c) its CVA RWA calculated in accordance with Annex 7AI of MAS Notice 637 in force immediately before 1 July 2024".

8.1.16 To avoid doubt, a Reporting Bank must apply the transitional arrangements in paragraphs 8.1.12 to 8.1.15 wherever Part VIII or "market RWA" is referenced in this Notice, unless specified otherwise[604].

[604] For example, a Reporting Bank must apply paragraph 8.1.15 to any reference to "market RWA" in paragraphs 4.1.1 to 4.1.4 during the period referred to in paragraph 8.1.13.

Sub-division 4: Methods of Measuring Market Risks

8.1.17 A Reporting Bank must –

(a) use the SA(MR); or

(b) subject to the approval of the Authority, use –

(i) the SSA(MR);

(ii) the IMA; or

(iii) a combination of both the SA(MR) and IMA,

to calculate its market risk capital requirements.

8.1.18 The Authority may grant approval in writing for a Reporting Bank to use the SSA(MR) if the Authority is satisfied that the Reporting Bank maintains an overall market risk portfolio that is small and simple. In determining whether to grant a Reporting Bank approval to use the SSA(MR), the Authority will consider –

(a) whether the Reporting Bank's market RWA (excluding CVA RWA) calculated using the SSA(MR) exceeds S$200 million, or exceeds 2% of the Reporting Bank's total RWA;

(b) the complexity of the market risk exposures undertaken by the Reporting Bank[605];

(c) whether the Reporting Bank is identified as a G-SIB at the level of consolidation of the Reporting Bank;

(d) whether the Reporting Bank or any of its banking group entities use the IMA to determine capital requirements for any trading desks; and

(e) whether the Reporting Bank or any of its banking group entities hold any exposures in a CTP.

8.1.19 The Authority may revoke its approval for a Reporting Bank to use the SSA(MR) where the Reporting Bank's market risk profile increases in size and complexity.

8.1.20 A Reporting Bank using the IMA for one or more of its trading desks that are in-scope of the IMA pursuant to paragraph 8.3.17 must calculate its market risk capital requirements using the SA(MR) for all of the following:

(a) securitisation exposures;

(b) equity investments in funds that cannot be looked through but are assigned to the trading book in accordance with the conditions set out in paragraph 8.1.27(e)(ii).

[605] For example, whether the Reporting Bank is exposed to significant non-linear risks arising from options, especially from exotic options.

Sub-division 5: Determination of the Trading Book

8.1.21 A Reporting Bank must assign all instruments that meet the specifications for instruments in the trading book as defined in paragraphs 8.1.22 to 8.1.35 to its trading book. To avoid doubt, the Reporting Bank must assign all instruments that are not in the trading book to the banking book.

8.1.22 A Reporting Bank may include an instrument in the trading book only when there is no legal impediment against selling or fully hedging it.

8.1.23 A Reporting Bank may only assign to the trading book an instrument that is subject to daily fair value, where any valuation change is recognised in the Reporting Bank's P&L account under the Accounting Standards. To avoid doubt, this includes an instrument designated under the fair value option under the Accounting Standards.

8.1.24 Subject to paragraphs 8.1.22 and 8.1.23, a Reporting Bank must assign to the trading book any instrument that is held for one or more of the following purposes when the Reporting Bank first recognises it in its books, unless paragraph 8.1.27 specifically provides otherwise, and must also ensure that any instrument assigned to the trading book, including instruments reassigned to the trading book in accordance with paragraph 8.1.36, is held for one or more of the following purposes on an ongoing basis:

(a) it is held by the Reporting Bank for short-term resale. To avoid doubt, periodic sale activity of an instrument by the Reporting Bank is insufficient for the Reporting Bank to consider an instrument as held for short-term resale;

(b) it is held by the Reporting Bank with the intention of profiting in the short term from actual or expected differences between its buying and selling price, or from other price or interest rate variations;

(c) it is held by the Reporting Bank to lock in arbitrage profits;

(d) it is held by the Reporting Bank to hedge risks that arise from instruments that are held for any of the purposes specified in sub-paragraph (a), (b) or (c).

8.1.25 Subject to paragraphs 8.1.22 and 8.1.23, a Reporting Bank must include all of the following instruments in the trading book, unless paragraph 8.1.27 specifically provides otherwise:

(a) instruments in the CTP;

(b) instruments that would give rise to a net short credit or equity position in the banking book[606, 607];

[MAS Notice 637 (Amendment) 2024]

[606] A Reporting Bank will have a net short credit position in the banking book if the present value of the banking book increases when a credit spread of an issuer or group of issuers of debt increases. The Reporting Bank will have a net short equity position in the banking book when the present value of the banking book increases when an equity price decreases.

[607] A Reporting Bank should continuously manage and monitor its banking book positions to ensure that any instrument that individually has the potential to create a net short credit or equity position in the banking book is not actually creating a non-negligible net short credit or equity position at any point in time.

(c) instruments resulting from underwriting commitments, where underwriting commitments are only for securities underwriting, and relate only to securities that the Reporting Bank expects to actually purchase on the settlement date.

8.1.26 A Reporting Bank must assign to the banking book any instrument which is not held for any of the purposes listed in paragraph 8.1.24 at inception and which is not within the scope of paragraph 8.1.25. The Reporting Bank must also ensure that any instrument assigned to the banking book, including instruments reassigned to the banking book in accordance with paragraph 8.1.36, is not held for any of the purposes listed in paragraph 8.1.24 and not within the scope of paragraph 8.1.25, on an ongoing basis.

[MAS Notice 637 (Amendment) 2024]

8.1.27 A Reporting Bank must assign to the banking book –

(a) unlisted equities;

(b) instruments designated for securitisation warehousing;

(c) direct holdings of real estate, and derivatives on direct holdings of real estate;

(d) credit exposures to individuals and small businesses, including commitments;

(e) equity investments in a fund, unless –

(i) the Reporting Bank is able to look through the fund to its individual components and is able to obtain sufficient and frequent information[608] on the composition of the fund, where the information is verified by an independent external party; or

(ii) the Reporting Bank obtains daily price quotes for the fund, and has access to the information contained in the fund's mandate or in the regulations governing such funds;

(f) hedge funds;

(g) derivative instruments and funds, for which the underlying assets comprise instruments of types listed in sub-paragraphs (a) to (f); and

(h) instruments held for the purposes of hedging a particular risk of a position in one or more instruments of types listed in sub-paragraphs (a) to (g).

8.1.28 Subject to paragraphs 8.1.22, 8.1.23, 8.1.27, 8.1.30 and 8.1.31, a Reporting Bank must assign the following instruments to the trading book:

[608] A Reporting Bank should be able to obtain information on the composition of the fund on a daily basis.

(a) instruments which are held within a business unit where the business unit's objective is achieved by selling such instruments, and where the instruments are measured at fair value through the P&L account under the Accounting Standards;

(b) instruments resulting from market-making activities;

(c) equity investments in a fund, other than those assigned to the banking book in accordance with paragraph 8.1.27(e);

(d) listed equities, other than any set of listed equities for which the Reporting Bank has obtained approval from the Authority to exclude from the trading book pursuant to paragraph 8.1.30 and that the Reporting Bank manages on a desk that is separate from trading desks for proprietary or short-term trading instruments[609];

[MAS Notice 637 (Amendment) 2024]

(e) trading-related repo-style transactions, other than repo-style transactions that are entered into for liquidity management and that are valued at accrual for accounting purposes;

(f) options[610], including embedded derivatives which are components of instruments that include a non-derivative host[611] and which arise from instruments that the Reporting Bank has issued out of its banking book and that relate to credit or equity risk,

unless the Reporting Bank has obtained approval from the Authority to treat an instrument otherwise in accordance with paragraph 8.1.30.

8.1.29 For liabilities issued out of a Reporting Bank's banking book that contain embedded derivatives, the Reporting Bank must split the liability into 2 components, and separately recognise 2 components on its balance sheet, namely the embedded derivative which is assigned to the trading book and the residual liability which is retained in the banking book, without the use of internal risk transfers for the splitting[612].

8.1.30 A Reporting Bank may assign an instrument listed in paragraph 8.1.28 to the banking book only where the Reporting Bank has obtained prior written approval from the Authority to do so. For the purposes of obtaining such approval, the Reporting Bank must provide evidence that the instrument is not held for any of the purposes specified in paragraph 8.1.24. Where the Reporting Bank has obtained such approval from the

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609 Examples of equities that the Reporting Bank may exclude from the trading book include, but are not limited to, equity positions arising from deferred compensation plans, convertible debt securities, loan products with interest paid in the form of "equity kickers", equity positions arising from a debt to equity swap made as part of the orderly realisation or restructuring of the debt, and life insurance products held by the Reporting Bank.

610 To avoid doubt, this includes an option that is used to manage FX risk in the banking book, unless the Reporting Bank has obtained approval from the Authority to assign such an option to the banking book.

611 An example of a non-derivative host is a liability issued out of a Reporting Bank's banking book. An example of an embedded derivative is a floor to an equity-linked bond, as a floor to an equity-linked bond is an embedded option with an equity or equities underlying the option.

612 To avoid doubt, internal risk transfers would similarly not be required in the case where the embedded derivative is exercised or the residual liability is closed out.

Authority, the Reporting Bank must document, on an ongoing basis, any assignment of instruments listed in paragraph 8.1.28 to the banking book.

8.1.31 A Reporting Bank must provide evidence, to the satisfaction of the Authority, that an instrument assigned to the trading book is held for at least one of the purposes specified in paragraph 8.1.24, if required to do so by the Authority. Where the Reporting Bank has not provided evidence to the satisfaction of the Authority, or where the Authority is of the view that the instrument would customarily belong in the banking book, the Authority may require the Reporting Bank to assign the instrument to the banking book, unless the instrument falls under a category listed in paragraph 8.1.25.

8.1.32 A Reporting Bank must provide evidence, to the satisfaction of the Authority, that an instrument assigned to the banking book is not held for any of the purposes specified in paragraph 8.1.24, if required to do so by the Authority. Where the Reporting Bank has not provided evidence to the satisfaction of the Authority, or where the Authority is of the view that the instrument would customarily belong in the trading book, the Authority may require the Reporting Bank to assign the instrument to the trading book, unless the instrument falls under a category listed in paragraph 8.1.27.

Documentation of instrument designation

8.1.33 A Reporting Bank must have policies, procedures, systems and documented practices for determining the assignment of instruments to the banking book or the trading book for the purposes of calculating regulatory capital requirements, which must comply with the requirements in this Sub-division.

8.1.34 A Reporting Bank must ensure that its risk control unit conducts an ongoing evaluation of whether the Reporting Bank's initial assignment of instruments to the trading book and the banking book complies with the requirements in this Sub-division.

8.1.35 A Reporting Bank must document its compliance with the policies and procedures referred to in paragraph 8.1.33, subject such compliance to internal audit at least annually, and make the results of such internal audits available for review by the Authority upon request.

Restrictions on moving instruments between the banking and trading books

8.1.36 Subject to the conditions set out in paragraphs 8.1.22 to 8.1.30, a Reporting Bank may reassign an instrument, after initial assignment, from the banking book to the trading book (or vice versa). The Reporting Bank must ensure that any reassignment from the banking book to the trading book (or vice versa) meets the conditions set out in paragraph 8.1.37 and the requirements in paragraphs 8.1.38 to 8.1.42.

[MAS Notice 637 (Amendment) 2024]

8.1.37 A Reporting Bank may reassign an instrument from the banking book to the trading book (or vice versa), including through outright sales from the banking book to the trading book (or vice versa) at arm's length, subject to all of the following conditions:

(a) apart from reassignments from the banking book to the trading book (or vice versa) required to comply with paragraphs 8.1.22 to 8.1.30, the Reporting Bank must ensure that the reassignment of instruments between the banking and trading books is rare and applied only in extraordinary circumstances[613];

[MAS Notice 637 (Amendment) 2024]

(b) the Reporting Bank must complete an internal review determining that reassignment of the instrument is in accordance with the Reporting Bank's policies for determining the assignment of instrument to the banking book or the trading book, obtain approval from the senior management of the Reporting Bank for the reassignment of the instrument, and document the internal review process and the approval of the senior management;

(c) with the exception of an instrument that is reassigned from the banking book to the trading book arising from its reclassification as a trading asset or liability under the Accounting Standards, the Reporting Bank must obtain the prior approval from the Authority for the reassignment of the instrument. In applying for such approval from the Authority, the Reporting Bank must provide the Authority with the documentation required under sub-paragraph (b);

(d) the Reporting Bank must disclose the reassignment of the instrument under Part XI of this Notice;

(e) the Reporting Bank must not revoke the reassignment of the instrument, unless such revocation is required by changes in the characteristics of the Reporting Bank's position in the instrument. The Reporting Bank must obtain the prior approval of the Authority for the revocation.

8.1.38 A Reporting Bank must not reassign an instrument from the banking book to the trading book (or vice versa) with the intention of achieving lower capital requirements.

8.1.39 Where a Reporting Bank has reassigned an instrument from the banking book to the trading book (or vice versa), the Reporting Bank must –

(a) determine its total RWA for both the banking and trading books immediately before and immediately after the reassignment; and

(b) if the Reporting Bank's total RWA immediately after the reassignment is reduced compared to that immediately before the reassignment, ensure

[613] Examples of extraordinary circumstances are major publicly announced events such as –
(a) a restructuring of a Reporting Bank that results in the permanent closure of certain trading desks, and thus termination of a trading business activity applicable to an instrument or portfolio; or
(b) a change in the Accounting Standards pertaining to the conditions under which an item may be fair-valued through P&L.
Market events, changes in the liquidity of an instrument, or a change in trading intent alone would not be considered as valid reasons for reassigning an instrument to a different book.

that the difference in the total RWA is included in market RWA as a Pillar 1 RWA surcharge[614], subject to paragraph 8.1.40.

8.1.40 The Reporting Bank may factor in a run-off of the Pillar 1 RWA surcharge referred to in paragraph 8.1.39(b) as the instruments contributing to the Pillar 1 RWA surcharge mature or expire, subject to prior written approval by the Authority and agreement with the Authority on the manner in which the run-off is calculated. The Reporting Bank must ensure that the instruments contributing to the Pillar 1 RWA surcharge, that have not matured or expired continue to be subject to the ongoing capital requirements of the book into which the instruments have been assigned.

8.1.41 A Reporting Bank must calculate the Pillar 1 RWA surcharge as specified in paragraph 8.1.39 as a result of reassigning instruments between the banking and trading books, regardless of whether the reassignment has been made at the discretion of the Reporting Bank or is beyond the Reporting Bank's control[615].

8.1.42 A Reporting Bank must –

(a) specify, in its policies referred to paragraph 8.1.33 for determining the assignment of instruments to the banking book or the trading book –

(i) that the Reporting Bank, after initially assigning an instrument to the banking book or the trading book, may only reassign the instrument, subject to the conditions set out in paragraphs 8.1.36 to 8.1.42;

(ii) a description of the circumstances or criteria where the Reporting Bank may consider reassigning an instrument from the banking book to the trading book (and vice versa);

(iii) the process by which the Reporting Bank would obtain approval from the senior management of the Reporting Bank and from the Authority, in a case where the Reporting Bank seeks a reassignment of an instrument;

(iv) how the Reporting Bank identifies an extraordinary circumstance for the purposes of paragraph 8.1.37(a); and

(v) a requirement that any reassignment of an instrument be publicly disclosed annually;

(b) review the policies referred to in sub-paragraph (a) and update them, at least annually[616];

(c) provide the policies referred to in sub-paragraph (a) to the Authority within 7 business days from the effective date, and where the Reporting Bank has made any updates to the policies mentioned in sub-paragraph

[614] For operational simplicity, the Reporting Bank is not required to calculate the capital surcharge on an ongoing basis.

[615] For example, in the case of the delisting of an equity.

[616] A Reporting Bank should update the policies based on an analysis of all reassignments performed during the previous year.

(a), provide to the Authority such updated policies and the changes made within 7 business days; and

(d) have systems in place to manage the reassignment of instruments between the banking and trading books on an ongoing basis, after initial assignment.

8.1.43 To avoid doubt, a Reporting Bank must treat risk transfers done from the banking book to the trading book as internal risk transfers, in accordance with paragraphs 8.1.45 to 8.1.59. The Reporting Bank must treat the reassignment of instruments between the trading and banking books in accordance with paragraphs 8.1.36 to 8.1.42.

Treatment of internal risk transfers from the trading book to the banking book

8.1.44 A Reporting Bank must not take into account any internal risk transfer from the trading book to the banking book when determining its regulatory capital requirements.

Treatment of internal risk transfers of credit and equity risk from the banking book to the trading book

8.1.45 Where a Reporting Bank hedges a banking book credit exposure by purchasing a hedging instrument from an external party through its trading book and engaging in an internal risk transfer of the credit risk from the banking book to the trading book, the Reporting Bank may deem the credit exposure in the banking book to be hedged for capital requirements purposes only if –

(a) the hedging instrument purchased through the trading book is purchased from an external party which is an eligible protection provider;

(b) there is an exact match between the hedging instrument and the internal risk transfer;

(c) subject to sub-paragraph (d), the hedging instrument meets the requirements specified in paragraphs 1.1, 2.7, 5.1, 5.2, 5.3 and 5.4 of Annex 7H; and

(d) in the case where the hedging instrument is a credit derivative which meets the requirements in sub-paragraph (c) other than paragraph 5.3(f)(iii) of Annex 7H, the Reporting Bank recognises the credit protection provided by the hedging instrument in accordance with paragraph 1.3 of Annex 7I. To avoid doubt, the Reporting Bank must ensure that the cap of 60% on a credit derivative without a restructuring obligation specified in paragraph 1.3 of Annex 7I does not reduce the notional amount of the internal risk transfer, and only limits the recognition of credit risk mitigation from the hedging instrument and the internal risk transfer for the purposes of calculating credit risk capital requirements.

8.1.46 For the purposes of paragraph 8.1.45, a Reporting Bank may recognise a hedge that comprises multiple hedging instruments with multiple counterparties, subject to –

(a) each hedging instrument meeting the requirements in paragraph 8.1.45(a) and (c), and where applicable, paragraph 8.1.45(d); and

(b) there being an exact match between the aggregate hedge and the internal risk transfer.

8.1.47 Where a Reporting Bank hedges a banking book equity exposure by purchasing a hedging instrument from an external party through its trading book and engaging in an internal risk transfer of the equity risk from the banking book to the trading book, the Reporting Bank can consider the equity exposure in the banking book to be hedged for capital requirements purposes only if –

(a) the hedging instrument purchased through the trading book is purchased from an external party which is an eligible protection provider;

(b) there is an exact match between the hedging instrument and the internal risk transfer;

(c) subject to sub-paragraph (d), the hedging instrument meets the requirements specified in paragraphs 1.1, 2.7, 5.1, 5.2, 5.3 and 5.4 of Annex 7H; and

(d) in the case where the hedging instrument is a credit derivative which meets the requirements in sub-paragraph (c) other than paragraph 5.3(f)(iii) of Annex 7H, the Reporting Bank recognises the credit protection provided by the hedging instrument, in accordance with paragraph 1.3 of Annex 7I. To avoid doubt, the Reporting Bank must ensure that the cap of 60% on a credit derivative without a restructuring obligation specified in paragraph 1.3 of Annex 7I does not reduce the notional amount of the internal risk transfer, and only limits the recognition of credit risk mitigation from the hedging instrument and the internal risk transfer for the purposes of calculating credit risk capital requirements.

8.1.48 Where the conditions specified in paragraphs 8.1.45 or 8.1.47 are fulfilled, a Reporting Bank may deem the banking book credit exposure or the banking book equity exposure, as the case may be, to be hedged by the banking book leg of the internal risk transfer for the purposes of calculating credit risk capital requirements. In such cases, the Reporting Bank must include both the trading book leg of the internal risk transfer and the external hedging instrument when calculating its market risk capital requirements.

8.1.49 Where the conditions specified in paragraphs 8.1.45 or 8.1.47, as the case may be, are not fulfilled, a Reporting Bank must not deem the banking book credit exposure or the banking book equity exposure, as the case may be, to be hedged by the banking book leg of the internal risk transfer for the purposes of calculating credit risk capital requirements. In such cases, the Reporting Bank must calculate market risk capital requirements for the external hedging instrument but not for the trading book leg of the internal risk transfer.

8.1.50 A Reporting Bank is subject to market risk capital requirements in respect of any short credit position or short equity position[617] in the banking book which is created

[617] Such a short credit position or short equity position in the banking book can occur when the Reporting Bank enters into an internal risk transfer from the banking book to the trading book that over-hedges its banking book credit exposure or banking book equity exposure.

by an internal risk transfer. The Reporting Bank is not subject to credit risk capital requirements for such a short credit or short equity position in the banking book.

Treatment of internal risk transfers of general interest rate risk from the banking book to the trading book

8.1.51 Where a Reporting Bank hedges a banking book interest rate risk exposure using an internal risk transfer with its trading book, the Reporting Bank may treat the trading book leg of the internal risk transfer under the market risk framework only if –

(a) the Reporting Bank documents the internal risk transfer with respect to the banking book interest rate risk being hedged and the sources of such risk;

(b) the Reporting Bank conducts the internal risk transfer with a dedicated internal risk transfer trading desk which has been specifically approved by the Authority for this purpose; and

(c) the Reporting Bank calculates market risk capital requirements for the internal risk transfer under the dedicated internal risk transfer trading desk mentioned in sub-paragraph (b), and the market risk capital requirements for the dedicated internal risk transfer trading desk are determined with no recognition of diversification or hedging effects with any position outside the dedicated internal risk transfer trading desk.

8.1.52 A Reporting Bank must treat an internal risk transfer trading desk referred to in paragraph 8.1.51(b) as a notional trading desk where –

(a) the internal risk transfer trading desk need not have any traders or trading accounts assigned to it; and

(b) the Reporting Bank need not ensure that the internal risk transfer trading desk meets the trading desk requirements set out in paragraph 8.1.65.

8.1.53 Where a Reporting Bank intends to use the IMA to calculate market risk capital requirements for the internal risk transfer trading desk referred to in paragraph 8.1.51(b), the Reporting Bank must apply to the Authority for prior written approval to use the IMA to calculate market risk capital requirements for the internal risk transfer trading desk. For the purposes of obtaining such approval, the Reporting Bank is only required to ensure that the internal risk transfer trading desk meets the quantitative trading desk requirements specified in paragraphs 8.3.17(b) and (c).

8.1.54 A Reporting Bank must not assign any positions to the internal risk transfer trading desk referred to in paragraph 8.1.51(b) other than –

(a) internal risk transfers of interest rate risk from the banking book to the trading book; and

(b) external hedges that meet the conditions specified in paragraph 8.1.56.

8.1.55 Where a Reporting Bank enters into an internal risk transfer that fulfils the requirements in paragraph 8.1.51, the Reporting Bank must include the banking book leg of the internal risk transfer in its measure of interest rate risk in the banking book in accordance with Section 5 of Annex 10A.

8.1.56 A Reporting Bank may include in the internal risk transfer trading desk referred to in paragraph 8.1.51(b), an instrument purchased from an external party that is –

(a) purchased by the internal risk transfer trading desk directly from the external party; or

(b) obtained by the internal risk transfer trading desk, through another trading desk of the Reporting Bank acting as an agent, only where such internal risk transfer exactly matches the instrument purchased from the external party. In such a case, the Reporting Bank must ensure that the respective legs of the internal risk transfer are included in the internal risk transfer desk and the other trading desk.

Treatment of internal risk transfers for market risk within the scope of application of the market risk capital requirement

8.1.57 Subject to paragraph 8.1.58, a Reporting Bank may recognise internal risk transfers between trading desks for market risk within the scope of application of the market risk capital requirements (including FX risk and commodities risk in the banking book), when calculating its market risk capital requirements, by including the respective legs of the internal risk transfer in the respective trading desks.

8.1.58 A Reporting Bank may recognise internal risk transfers between the internal risk transfer desk and other trading desks when calculating its market risk capital requirements only if the requirements specified in paragraphs 8.1.51 to 8.1.56 are fulfilled.

8.1.59 A Reporting Bank must ensure that the trading book leg of any internal risk transfers complies with the requirements in this Sub-division, no differently from instruments in the trading book transacted with external counterparties.

Treatment of eligible hedges for the CVA risk capital treatment

8.1.60 For the treatment of eligible CVA hedges, a Reporting Bank must ensure that it complies with the requirements specified in paragraphs 8.5.5 and 8.5.6.

8.1.61 A Reporting Bank may use internal risk transfers between the CVA portfolio and the market risk portfolio under the trading book to hedge the counterparty credit risk exposure of a derivative instrument in the trading or banking book, as long as the requirements specified in paragraph 8.1.45 are met.

Sub-division 6: Definition of Trading Desk and Trading Desk Structure

8.1.62 For the purposes of the calculation of market risk capital requirements –

(a) a trading desk is a group of traders or trading accounts defined by a Reporting Bank that implements a defined business strategy for managing market risk, and operates within a risk management structure; and

(b) a trading desk structure is the manner of organisation of all trading desks on which a Reporting Bank holds market risk positions, including the allocation of the Reporting Bank's market risk positions to each trading desk.

8.1.63 A Reporting Bank using the IMA must obtain the written approval of the Authority for its trading desk structure, prior to basing the calculation of its market risk capital requirements for IMA on its trading desk structure. For the purposes of obtaining such approval, the Reporting Bank must submit to the Authority –

(a) a proposal of its trading desk structure which sets out a definition of each trading desk, such that –

(i) the definition of each trading desk is sufficiently granular, based on the size of the Reporting Bank's overall trading operations; and

(ii) each trading desk meets the requirements in paragraph 8.1.65; and

(b) for each trading desk that the Reporting Bank defines under its trading desk structure, a policy document which clearly documents how the trading desk meets the requirements in paragraph 8.1.65.

8.1.64 Where a Reporting Bank has obtained the approval of the Authority for its trading desk structure, the Reporting Bank may define operational sub-desks within one or more of its approved trading desks without the need for approval from the Authority. The Reporting Bank may use such operational sub-desks only for the Reporting Bank's internal operational purposes, and must not use such operational sub-desks for the purposes of the calculation of market risk capital requirements.

8.1.65 For the purposes of paragraph 8.1.63, a Reporting Bank using the IMA must ensure that all of the following requirements are met by every trading desk defined by the Reporting Bank under its trading desk structure on an ongoing basis[618]:

(a) the trading desk must be a clearly defined group of traders or trading accounts, where a trading account is an indisputable and clearly defined unit of observation in accounting for trading activity;

(b) the trading desk must have one head trader who has direct oversight of the group of traders or trading accounts. As an exception, the trading desk may have 2 head traders if –

[618] A Reporting Bank that only uses the SA(MR) should consider the relevance of these requirements in reviewing its trading desk structure.

(i) the roles, responsibilities and authorities of the 2 head traders are clearly separated; or

(ii) one head trader has oversight over the other head trader;

(c) each trader or trading account, assigned to the trading desk must have one or more dedicated functions;

(d) a trading account must be assigned to only one trading desk, and each trading desk must have a clearly defined risk scope that includes specification of the trading desk's overall risk class and permitted risk factors. The Reporting Bank must ensure that the risk scope of the trading desk is consistent with its pre-established strategy referred to in paragraph 8.1.62(a);

(e) a trader, including a head trader, must not be assigned to more than one trading desk;

(f) the trading desk must have a clear reporting line to the senior management of the Reporting Bank[619];

(g) the trading desk must have a clearly defined and documented business strategy, which includes –

(i) an annual plan for the budget and staffing of the trading desk;

(ii) a clear description of the business strategy for the trading desk, including –

(A) what the business strategy involves[620];

(B) the extent to which trading activities are related to the Reporting Bank's customers; and

(C) whether the trading activities of the desk include trade origination and structuring, execution services, or both;

(iii) a clear description of the activities of the trading desk, including –

(A) a complete list of instruments that the trading desk is permitted to trade in; and

(B) the instruments that the trading desk is expected to trade in most frequently; and

(iv) a clear description of the trading and hedging strategies of the trading desk, including –

[619] The trading desk should have a clear and formal compensation policy which is clearly linked to the pre-established strategy of the trading desk referred to in paragraph 8.1.62(a).

[620] For example, whether the strategy involves trading on the shape of a yield curve.

(A) the means by which the positions taken by the trading desk are to be hedged, and the slippages and mismatches of hedges that the Reporting Bank would expect; and

(B) the expected holding period of positions taken by the trading desk;

(h) the trading desk must produce regular management information reports, which clearly state the revenue, costs and RWA attributable to the trading desk;

(i) the trading desk must have a clear risk management structure, which includes –

(i) clear identification of the groups and personnel responsible for overseeing the risk-taking activities at the trading desk; and

(ii) clearly defined trading limits, which are based on the business strategy of the trading desk, and which are reviewed at least annually by the senior management of the Reporting Bank;

(j) the Reporting Bank must –

(i) set trading limits at the trading desk level that are based on appropriate market risk metrics[621], and minimally set notional limits; and

(ii) set trader mandates for each trader assigned to the trading desk;

(k) the trading desk must produce risk management reports at least weekly, which must include at a minimum –

(i) profit and loss reports, which are periodically reviewed, validated and modified (if necessary) by the product control function of the Reporting Bank; and

(ii) internal and regulatory risk measure reports, including reports on trading desk VaR and ES, trading desk VaR sensitivities and ES sensitivities to risk factors, backtesting and the p-values of the risk measures.

8.1.66 For each trading desk defined by a Reporting Bank, the Reporting Bank must prepare, evaluate, and provide to the Authority upon request, all of the following:

(a) inventory ageing reports;

(b) daily limit reports, which have information on exposures, limit breaches, and follow-up actions taken to address limit breaches;

[621] For example, sensitivity of credit spread risk or jump-to-default risk for a credit trading desk.

(c) where the Reporting Bank has active intraday trading, reports on intraday limits, and respective utilisation and breaches;

(d) reports on the assessment of market liquidity.

8.1.67 A Reporting Bank using the IMA must treat FX risk and commodities risk for instruments in the banking book as if they were held on one or more notional trading desks within the trading book, where –

(a) the notional trading desk need not have any traders or trading accounts assigned to it; and

(b) a Reporting Bank need not ensure that the notional trading desk meets the trading desk requirements set out in paragraph 8.1.65.

8.1.68 Where a Reporting Bank intends to use the IMA to calculate market risk capital requirements for a notional trading desk referred to in paragraph 8.1.67, the Reporting Bank must take either or both of the following actions:

(a) use an internal risk transfer to transfer all or part of the FX risk or commodities risk arising from the notional trading desk to another trading desk for which the Reporting Bank has received approval from the Authority to use the IMA to calculate market risk capital requirements;

(b) apply to the Authority for approval to use the IMA to calculate market risk capital requirements for the notional trading desk. For the purposes of obtaining such approval, the Reporting Bank is only required to ensure that the notional trading desk meets the quantitative trading desk requirements specified in paragraphs 8.3.17(b) and (c).

8.1.69 Despite paragraph 8.1.65(e), a Reporting Bank may do either or both of the following:

(a) assign a trader[622] ownership and responsibilities in both trading book and banking book portfolios;

(b) assign a trader to more than one trading desk where the Reporting Bank is able to demonstrate to the satisfaction of the Authority upon request, that such an assignment was performed on the basis of sound management, business or resource allocation reasons. The Reporting Bank must not make such an assignment with the sole intention of avoiding any requirements which are specified in this Part[623].

[622] For example, global treasury desk heads or department heads.
[623] For example, a Reporting Bank must not make the assignment with the intention of optimising the likelihood of success in the backtesting and PLA tests.

Division 2: SA(MR)

Sub-division 1: General Requirements

8.2.1 A Reporting Bank must calculate the market risk capital requirements under the SA(MR), for positions for which the Reporting Bank is using the SA(MR), as the sum of the following 3 components:

(a) the sensitivities-based method (SBM) capital requirement in accordance with Sub-divisions 2 to 8 of this Division;

(b) the default risk capital (DRC) requirement in accordance with Sub-division 9 of this Division;

(c) the capital requirement for residual risk add-on (RRAO) in accordance with Sub-division 10 of this Division.

Sub-division 2: SBM - Calculation of Capital Requirement

Instruments subject to delta, vega and curvature risks

8.2.2 Subject to paragraph 8.2.3, a Reporting Bank must calculate capital requirements for delta risk for all instruments within the scope of Sub-division 2 of Division 1 of this Part.

8.2.3 A Reporting Bank must not calculate capital requirements for delta risk for an instrument with an exotic underlying as defined in Sub-division 10 of this Division, where the value of the instrument at any point of time is solely driven by an exotic underlying.

8.2.4 A Reporting Bank must subject the following instruments to capital requirements for vega risk and curvature risk –

(a) any instrument with optionality[624];

(b) any instrument with an embedded prepayment option; and

(c) any instrument whose cashflow cannot be written as a linear function of the underlying notional[625].

8.2.5 For the purposes of this Part, an instrument with an embedded prepayment option is an instrument which grants the debtor the right to repay part of, or the entire, principal amount before the contractual maturity of the instrument, without having to compensate for any foregone interest.

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[624] For example, an instrument that is an option or that includes an option (e.g. an embedded option such as convertibility or rate dependent prepayment), including calls, puts, caps, floors, swaptions, barrier options and exotic options.

[625] For example, plain-vanilla options or constant maturity swaps. The cash flows generated by a plain-vanilla option cannot be written as a linear function because they are the maximum of the spot and the strike. Instruments whose cash flows can be written as a linear function of underlying notional are instruments without optionality (e.g. cash flows generated by a coupon bearing bond can be written as a linear function) and are not subject to capital requirements for vega risk nor capital requirements for curvature risk.

8.2.6 A Reporting Bank must subject an instrument with an embedded prepayment option[626] to capital requirements for vega risk and curvature risk for the GIRR, CSR (non-securitisation) and CSR (securitisation: non-CTP) risk classes.

8.2.7 A Reporting Bank may calculate capital requirements for curvature risk for all instruments subject to capital requirements for delta risk, but are not included in the scope of paragraph 8.2.4[627], provided that the Reporting Bank calculates capital requirements for curvature risk for all instruments subject to capital requirements for delta risk under the SBM unless a change in treatment is approved by the Authority.

Process to calculate the SBM capital requirement

8.2.8 To calculate the SBM capital requirement, a Reporting Bank must –

(a) for each risk class, specify risk factors for delta, vega and curvature risks in accordance with paragraphs 8.2.15 to 8.2.54 and paragraphs 8.2.80 to 8.2.90;

(b) for each risk class, calculate the delta risk capital requirement in accordance with paragraph 8.2.10;

(c) for each risk class, calculate the vega risk capital requirement in accordance with paragraph 8.2.11;

(d) for each risk class, calculate the curvature risk capital requirement in accordance with paragraph 8.2.12;

(e) perform the calculations set out in sub-paragraphs (b) to (d) using adjusted correlation parameters for 2 additional correlation scenarios in accordance with paragraph 8.2.14(b) and (c); and

(f) calculate the SBM capital requirement by –

(i) for each of the 3 correlation scenarios set out in paragraph 8.2.14(a) to (c), calculating the sum of the delta risk, vega risk and curvature risk capital requirements, for all risk classes to obtain the aggregate capital requirement for that correlation scenario; and

(ii) taking the largest aggregate capital requirement from the 3 correlation scenarios as the SBM capital requirement.

8.2.9 A Reporting Bank must not apply a floor to the risk weights referred to in paragraphs 8.2.10(d), 8.2.11(d), and 8.2.12(b) when calculating the capital requirements

[626] A Reporting Bank must subject instruments with embedded prepayment options, including securitisation exposures where the assets underlying the securitisation have embedded prepayment options, to RRAO in accordance with Sub-division 10 of this Division, if the embedded prepayment option is a behavioural option.

[627] For example, where a Reporting Bank manages the non-linear risk of instruments with optionality and other instruments holistically, the Reporting Bank may choose to include instruments without optionality in the calculation of capital requirements for curvature risk. The Reporting Bank is not required to restrict the instruments for which it calculates capital requirements for curvature risk to the instruments set out in paragraph 8.2.4.

for delta, vega and curvature risks for the GIRR, CSR (non-securitisation), CSR (securitisation: non-CTP) and CSR (securitisation: CTP) risk classes.

Capital requirement for delta risk for each risk class

8.2.10 For each risk class, a Reporting Bank must calculate the delta risk capital requirement using the steps as follows:

(a) step 1: for each position in an instrument sensitive to a risk factor specified for that risk class in paragraphs 8.2.15 to 8.2.54 and paragraphs 8.2.80 to 8.2.90, calculate a sensitivity to the risk factor in accordance with paragraphs 8.2.55 to 8.2.89;

(b) step 2: for each risk factor k, calculate a net sensitivity s_k for all positions in instruments sensitive to the risk factor, by offsetting all sensitivities of opposite direction to the same risk factor, irrespective of the instruments from which the sensitivities are derived[628];

(c) step 3: assign the net sensitivity s_k for each risk factor k into a delta risk bucket in accordance with paragraphs 8.2.91 to 8.2.141;

(d) step 4: calculate the delta risk weighted sensitivity for each risk factor k, WS_k, by multiplying the net sensitivity s_k and the corresponding risk weight RW_k specified in paragraphs 8.2.91 to 8.2.141:

$$\boldsymbol{WS_k = RW_k s_k}$$

(e) step 5 (aggregation within buckets): calculate the risk position for delta risk bucket b, K_b, by aggregating the weighted sensitivities to risk factors within the same delta risk bucket. Subject to paragraphs 8.2.110, 8.2.117, 8.2.124 and 8.2.132, a Reporting Bank must aggregate the weighted sensitivities to risk factors within the same delta risk bucket by using the corresponding delta risk correlation parameter $\boldsymbol{\rho_{kl}}$, specified in paragraphs 8.2.91 to 8.2.141, and the following formula:

$$\boldsymbol{K_b = \sqrt{\max\left(0, \sum_k WS_k^2 + \sum_k \sum_{k \neq l} \rho_{kl} WS_k WS_l\right)}}$$

[MAS Notice 637 (Amendment) 2024]

(f) step 6 (aggregation across buckets): calculate the delta risk capital requirement by aggregating the risk positions for all the delta risk buckets within each risk class. Subject to paragraph 8.2.125(b) and sub-paragraph (g), a Reporting Bank must calculate the delta risk capital requirement by aggregating the risk positions for all the delta risk buckets within each risk

[628] For example, if the Reporting Bank's portfolio is made of 2 interest rate swaps on 3-month Euribor with the same fixed rate and same notional amount but of opposite direction, the GIRR on that portfolio would be zero.

class by using the prescribed correlation γ_{bc}, specified in paragraphs 8.2.91 to 8.2.141, for the risk class and the following formula:

$$\textbf{Delta risk capital requirement} = \sqrt{\sum_b K_b^2 + \sum_b \sum_{b \neq c} \gamma_{bc} S_b S_c}$$

where –

(i) $S_b = \sum_k WS_k$ for all risk factors in delta risk bucket b; and

(ii) $S_c = \sum_k WS_k$ in delta risk bucket c;

(g) step 7: if the values for S_b and S_c as defined in sub-paragraph (f) produce a negative number for the overall sum of $\sum_b K_b^2 + \sum_b \sum_{b \neq c} \gamma_{bc} S_b S_c$, the Reporting Bank must calculate the delta risk capital requirement using the following formula:

$$\textbf{Delta risk capital requirement} = \sqrt{\sum_b K_b^2 + \sum_b \sum_{b \neq c} \gamma_{bc} S_b S_c}$$

where –

(i) $S_b = \mathbf{max}[\mathbf{min}(\sum_k WS_k, K_b), -K_b]$ for all risk factors in delta risk bucket b; and

(ii) $S_c = \mathbf{max}[\mathbf{min}(\sum_k WS_k, K_c), -K_c]$ for all risk factors in delta risk bucket c.

Capital requirement for vega risk for each risk class

8.2.11 For each risk class, a Reporting Bank must calculate the vega risk capital requirement using the steps as follows:

(a) step 1: for each position in an instrument sensitive to a risk factor specified for that risk class in paragraphs 8.2.15 to 8.2.54 and paragraphs 8.2.80 to 8.2.90, calculate a sensitivity to the risk factor in accordance with paragraphs 8.2.55 to 8.2.90;

(b) step 2: for each risk factor k, calculate a net sensitivity s_k for all positions in instruments sensitive to the risk factor, by offsetting all sensitivities of opposite direction to the same risk factor, irrespective of the instruments from which the sensitivities are derived[629];

[MAS Notice 637 (Amendment) 2024]

[629] For example, if the Reporting Bank's portfolio is made of 2 interest rate swaps on 3-month Euribor with the same fixed rate and same notional amount but of opposite direction, the GIRR on that portfolio would be zero.

(c) step 3: assign the net sensitivity s_k for each risk factor k into a vega risk bucket in accordance with paragraphs 8.2.142 and 8.2.143;

(d) step 4: calculate the vega risk weighted sensitivity for each risk factor k, WS_k, by multiplying the net sensitivity s_k and the corresponding risk weight RW_k as defined in paragraph 8.2.144:

$$\boldsymbol{WS_k = RW_k s_k}$$

[MAS Notice 637 (Amendment) 2024]

(e) step 5 (aggregation within buckets): calculate the risk position for vega risk bucket b, K_b, by aggregating the weighted sensitivities to risk factors within the same vega risk bucket. Subject to paragraph 8.2.148, a Reporting Bank must aggregate the weighted sensitivities to risk factors within the same vega risk bucket by using the corresponding vega risk correlation parameter $\boldsymbol{\rho_{kl}}$, specified in paragraphs 8.2.145 to 8.2.147, and the following formula:

$$\boldsymbol{K_b = \sqrt{\max\left(0, \sum_k WS_k^2 + \sum_k \sum_{k \neq l} \rho_{kl} WS_k WS_l\right)}}$$

[MAS Notice 637 (Amendment) 2024]

(f) step 6 (aggregation across buckets): calculate the vega risk capital requirement by aggregating the risk positions for all the vega risk buckets within each risk class. Subject to paragraph 8.2.149(b) and sub-paragraph (g), a Reporting Bank must calculate the vega risk capital requirement by aggregating the risk positions for all vega risk buckets within each risk class by using the prescribed correlation $\boldsymbol{\gamma_{bc}}$, specified in paragraph 8.2.149, and the following formula:

$$\boldsymbol{Vega\ risk\ capital\ requirement = \sqrt{\sum_b K_b^2 + \sum_b \sum_{b \neq c} \gamma_{bc} S_b S_c}}$$

where –

(i) $\boldsymbol{S_b = \sum_k WS_k}$ for all risk factors in vega risk bucket b; and

(ii) $\boldsymbol{S_c = \sum_k WS_k}$ in vega risk bucket c;

(g) step 7: if the values for S_b and S_c as defined in sub-paragraph (f) produce a negative number for the overall sum of $\boldsymbol{\sum_b K_b^2 + \sum_b \sum_{b \neq c} \gamma_{bc} S_b S_c}$, the Reporting Bank must calculate the vega risk capital requirement using the following formula:

$$\boldsymbol{Vega\ risk\ capital\ requirement = \sqrt{\sum_b K_b^2 + \sum_b \sum_{b \neq c} \gamma_{bc} S_b S_c}}$$

where –

(i) $S_b = \max[\min(\sum_k WS_k, K_b), -K_b]$ for all risk factors in vega risk bucket b; and

(ii) $S_c = \max[\min(\sum_k WS_k, K_c), -K_c]$ for all risk factors in vega risk bucket c.

Capital requirement for curvature risk for each risk class

8.2.12 For each risk class, a Reporting Bank must calculate the curvature risk capital requirement using the steps as follows:

(a) step 1: for each position in an instrument sensitive to a curvature risk factor k specified for that risk class in paragraphs 8.2.15 to 8.2.54 and paragraphs 8.2.80 to 8.2.89, subject the curvature risk factor k to an upward shock and a downward shock of a magnitude equal to the risk weight for the curvature risk factor k ($RW_k^{Curvature}$), determined in accordance with paragraphs 8.2.151 and 8.2.153[630];

(b) step 2: for each risk factor k, subject to paragraph 8.2.152, calculate the net curvature risk position after applying an upward shock, CVR_k^+, and the net curvature risk position after applying a downward shock, CVR_k^-, by using the following formulas:

$$CVR_k^+ = -\sum_i \left\{V_i\left(X_k^{RW(Curvature)^+}\right) - V_i(X_k) - RW_k^{Curvature} \times S_{ik}\right\}$$

$$CVR_k^- = -\sum_i \left\{V_i\left(X_k^{RW(Curvature)^-}\right) - V_i(X_k) + RW_k^{Curvature} \times S_{ik}\right\}$$

where –

(i) i is an instrument subject to curvature risks associated with curvature risk factor k;

(ii) X_k is the current level of risk factor k;

(iii) $V_i(X_k)$ is the price of instrument i at the current level of risk factor k;

(iv) $V_i\left(X_k^{RW(Curvature)^+}\right)$ and $V_i\left(X_k^{RW(Curvature)^-}\right)$ is the price of instrument i after X_k is shocked upward and downward, respectively;

(v) $RW_k^{Curvature}$ is the risk weight for curvature risk factor k for instrument i, determined in accordance with paragraphs 8.2.151 and 8.2.153; and

630 For example, for GIRR, a Reporting Bank must shift all tenors of all risk-free yields for all risk-free interest rate yield curves for a given currency (e.g. the 3-month Euribor, 6-month Euribor or 1-year Euribor etc for the Euro) upward and downward by a magnitude determined in accordance with paragraph 8.2.153.

(vi) s_{ik} is calculated in accordance with paragraphs 8.2.74, 8.2.78 and 8.2.79 and is –

(A) for the FX and equity risk classes, the delta sensitivity of instrument i to the delta risk factor that corresponds to curvature risk factor k;

(B) for the GIRR, CSR and commodity risk classes, the sum of the delta sensitivities to all tenors of the relevant curve of instrument i with respect to curvature risk factor k;

(vii) $V_i\left(X_k^{RW(Curvature)^+}\right) - V_i(X_k) - RW_k^{Curvature} \times s_{ik}$ is the curvature risk position of instrument i after X_k is shocked upward; and

(viii) $V_i\left(X_k^{RW(Curvature)^-}\right) - V_i(X_k) + RW_k^{Curvature} \times s_{ik}$ is the curvature risk position of instrument i after X_k is shocked downward.

(c) step 3: assign the net curvature risk position after applying an upward shock, CVR_k^+, and the net curvature risk position after applying a downward shock, CVR_k^-, for each curvature risk factor k into a curvature risk bucket in accordance with paragraph 8.2.150;

(d) step 4 (aggregation within buckets): calculate the risk position for curvature risk bucket b, K_b, by aggregating the curvature risk positions within each curvature risk bucket. Subject to paragraph 8.2.156, a Reporting Bank must aggregate the curvature risk positions in each curvature risk bucket by using the corresponding curvature risk correlation parameter ρ_{kl}, determined in accordance with paragraphs 8.2.154 to 8.2.155, and the following formulas:

$$K_b = max(K_b^+, K_b^-)$$

$$where \begin{cases} K_b^+ = \sqrt{max\left(0, \sum_k max(CVR_k^+, 0)^2 + \sum_{l \neq k} \sum_k \rho_{kl} CVR_k^+ CVR_l^+ \psi(CVR_k^+ CVR_l^+)\right)} \\ K_b^- = \sqrt{max\left(0, \sum_k max(CVR_k^-, 0)^2 + \sum_{l \neq k} \sum_k \rho_{kl} CVR_k^- CVR_l^- \psi(CVR_k^- CVR_l^-)\right)} \end{cases}$$

where –

(i) the curvature bucket level capital requirement (K_b) is calculated as the greater of the capital requirement where an upward shock is applied (K_b^+) and the capital requirement where a downward shock is applied (K_b^-)[631]. In the case where $K_b^+ = K_b^-$ –

(A) if $\sum_k CVR_k^+ > \sum_k CVR_k^-$, calculate the K_b as K_b^+;

[631] To avoid doubt, whether K_b is calculated based on the capital requirement where an upward shock is applied, or the capital requirement where a downward shock is applied, is not necessarily the same across the "high correlations" scenario, "medium correlations" scenario and "low correlations" scenario set out in paragraph 8.2.14(a) to (c).

(B) if $\sum_k \boldsymbol{CVR}_k^+ < \sum_k \boldsymbol{CVR}_k^-$, calculate the K_b as $\boldsymbol{K}_b^-$;

(ii) $\boldsymbol{\psi}(\boldsymbol{CVR}_k, \boldsymbol{CVR}_l)$ takes the value of –

(A) zero, if $\boldsymbol{CVR}_k$ and $\boldsymbol{CVR}_l$ both have negative signs; and

(B) one, in all other cases;

[MAS Notice 637 (Amendment) 2024]

(e) step 5 (aggregation across buckets): calculate the curvature risk capital requirement by aggregating the curvature risk positions for all curvature risk buckets within each risk class, using the prescribed correlation $\boldsymbol{\gamma}_{bc}$, calculated in accordance with paragraph 8.2.157, and the following formula:

$$\boldsymbol{Curvature\ risk\ capital\ requirement} = \sqrt{\boldsymbol{max}\left(\boldsymbol{0}, \sum_b \boldsymbol{K}_b^2 + \sum_{c \neq b} \sum_b \boldsymbol{\gamma}_{bc} \boldsymbol{S}_b \boldsymbol{S}_c \boldsymbol{\psi}(\boldsymbol{S}_b, \boldsymbol{S}_c)\right)}$$

where –

(i) $\boldsymbol{S}_b = \sum_k \boldsymbol{CVR}_k^+$ for all risk factors in curvature risk bucket b, when K_b is calculated as $\boldsymbol{K}_b^+$ for curvature risk bucket b in sub-paragraph (d) and $\boldsymbol{S}_b = \sum_k \boldsymbol{CVR}_k^-$ when K_b is calculated as $\boldsymbol{K}_b^-$ for curvature risk bucket b in sub-paragraph (d); and

(ii) $\boldsymbol{\psi}(\boldsymbol{S}_b, \boldsymbol{S}_c)$ takes the value of –

(A) zero if $\boldsymbol{S}_b$ and $\boldsymbol{S}_c$ both have negative signs; and

(B) one, in all other cases.

8.2.13 For the purposes of paragraph 8.2.12, if the price of an instrument depends on several curvature risk factors, a Reporting Bank must calculate the curvature risk position arising from that instrument separately for each curvature risk factor.

Correlation scenarios

8.2.14 A Reporting Bank must perform the calculation of the delta risk capital requirement in accordance with paragraph 8.2.10, the calculation of the vega risk capital requirement in accordance with paragraph 8.2.11 and the calculation of the curvature risk capital requirement in accordance with paragraph 8.2.12 for 3 different scenarios using the following specified values for the correlation parameter $\boldsymbol{\rho}_{kl}$ (correlation between risk factors within a risk bucket) and $\boldsymbol{\gamma}_{bc}$ (correlation across risk buckets within a risk class)[632]:

(a) under the "medium correlations" scenario, apply the correlation parameters $\boldsymbol{\rho}_{kl}$ and $\boldsymbol{\gamma}_{bc}$, specified in paragraphs 8.2.91 to 8.2.157;

[632] This addresses the risk of correlations increasing or decreasing in periods of financial stress.

(b) under the "high correlations" scenario, apply the correlation parameters $\boldsymbol{\rho_{kl}^{high}}$ and $\boldsymbol{\gamma_{bc}^{high}}$, calculated by multiplying $\boldsymbol{\rho_{kl}}$ and $\boldsymbol{\gamma_{bc}}$, specified in paragraphs 8.2.91 to 8.2.157 by 1.25, subject to a cap at 100%;

(c) under the "low correlations" scenario, apply the correlation parameters $\boldsymbol{\rho_{kl}^{low}}$ and $\boldsymbol{\gamma_{bc}^{low}}$, calculated as follows (where $\boldsymbol{\rho_{kl}}$ and $\boldsymbol{\gamma_{bc}}$ are as specified in paragraphs 8.2.91 to 8.2.157):

$$\boldsymbol{\rho_{kl}^{low} = max(2 \times \rho_{kl} - 100\%; 75\% \times \rho_{kl})}$$
$$\boldsymbol{\gamma_{bc}^{low} = max(2 \times \gamma_{bc} - 100\%; 75\% \times \gamma_{bc})}$$

Sub-division 3: SBM – Risk Factor Definitions

8.2.15 If a risk factor is defined based on tenor, a Reporting Bank must define the risk factor based only on the tenors specified in this Sub-division[633].

Risk factors for GIRR risk class

8.2.16 A Reporting Bank must specify the following GIRR delta risk factors for each currency referenced by interest rate-sensitive instruments:

(a) the risk-free yield for each risk-free yield curve for each of the following tenors: 0.25 years, 0.5 years, 1 year, 2 years, 3 years, 5 years, 10 years, 15 years, 20 years and 30 years;

(b) the inflation rate for each flat curve of the market-implied inflation rate across all tenors. To avoid doubt, the Reporting Bank must not recognise the term structure of the inflation rate curve in specifying risk factors;

(c) the cross-currency basis[634] over either USD or EUR, for each flat curve of the cross-currency basis over either USD or EUR, respectively, across all tenors. To avoid doubt, the Reporting Bank must not recognise the term structure of the cross-currency basis curve in specifying risk factors.

8.2.17 For the purposes of paragraph 8.2.16(a), a Reporting Bank must construct the risk-free yield curves for each currency using –

(a) money market instruments held in the trading book that have the lowest credit risk[635]; or

633 The Reporting Bank should assign GIRR, CSR, equity, commodity and FX risk factors to the specified tenors by linear interpolation or a method that is used by the risk control function of the Reporting Bank to report market risks or P&L to senior management.

634 Cross-currency basis is a basis added to a yield curve in order to price a swap for which the 2 legs are paid in 2 different currencies. Cross-currency bases are used by market participants to price cross-currency interest rate swaps paying a fixed or floating leg in one currency, receiving a fixed or floating leg in a second currency, and including an exchange of the notional in the 2 currencies at the start date and at the end date of the swap.

635 For example, overnight index swaps or bond repurchase agreements.

(b) one or more market-implied swap curves used by the Reporting Bank to mark positions to market[636].

8.2.18 Where there is insufficient data to construct the risk-free yield curves referred to in paragraph 8.2.17, a Reporting Bank must derive the risk-free yield curve from the sovereign bond yield curve for a given currency. In the case where the risk-free yield curve is derived from the sovereign bond yield curve for a given currency, the Reporting Bank must ensure that –

(a) it calculates the delta risk capital requirement under the CSR (non-securitisation) risk class for the interest rate-sensitive instruments using the sensitivity to the credit spread of the sovereign bond; or

(b) in cases where the Reporting Bank cannot meet the requirement in sub-paragraph (a) as it cannot perform the decomposition of a sovereign bond yield curve risk factor into a GIRR delta risk factor and CSR (non-securitisation) delta risk factor as set out in the formula y=r+cs, where y is the sovereign bond yield curve risk factor, r is the GIRR delta risk factor and cs is the CSR (non-securitisation) delta risk factor, the Reporting Bank must assign the sensitivity to risk factor y to both the GIRR and CSR (non-securitisation) risk classes.

8.2.19 For the purposes of constructing the risk-free yield curves for each currency in accordance with paragraph 8.2.17, a Reporting Bank must treat the curves within each of the following pairs as 2 different curves:

(a) an overnight index swap curve[637] and an interbank offered rate swap curve[638];

(b) 2 interbank offered rate curves at different maturities[639];

(c) onshore and offshore currency curves[640].

8.2.20 A Reporting Bank must include the inflation rate referred to in paragraph 8.2.16(b) as a risk factor for an instrument whose cash flow is dependent on a measure of inflation[641]. To avoid doubt, the Reporting Bank must ensure that the GIRR delta risk factor referred to in paragraph 8.2.16(a) and where relevant, the GIRR delta risk factor referred to in paragraph 8.2.16(c), are included as risk factors for the instrument.

8.2.21 For an instrument with cross-currency basis risk, a Reporting Bank must include the cross-currency basis over either USD or EUR as a risk factor[642]. To avoid doubt, the Reporting Bank must ensure that the GIRR delta risk factor referred to in paragraph

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636 For example, interbank offered rate swap curves.

637 For example, Eonia or a new benchmark rate.

638 For example, 3-month Euribor or other benchmark rates.

639 For example, 3-month Euribor and 6-month Euribor.

640 For example, the onshore Indian rupee curve and the offshore Indian rupee curves.

641 For example, an instrument where the notional amount or interest payment is dependent on a consumer price index.

642 For example, a Reporting Bank trading a JPY/USD cross-currency basis swap would have JPY/USD cross-currency basis risk exposure and should specify JPY/USD, which is cross-currency basis over USD, as a cross-currency basis risk factor for the instrument.

8.2.16(a) and where relevant, the GIRR delta risk factor referred to in paragraph 8.2.16(b), are included as risk factors for the instrument.

8.2.22 For an instrument that has cross-currency basis risk and does not reference USD or EUR, a Reporting Bank must specify its GIRR delta risk factor for cross-currency basis risk as either the cross-currency basis over USD or the cross-currency basis over EUR, but not both.

8.2.23 A Reporting Bank must specify GIRR vega risk factors, for each currency referenced by interest rate-sensitive instruments with vega risks, as the implied volatilities of options that reference underlying interest rates or interest rate-sensitive instruments, further specified based on the following 2 dimensions[643]:

(a) the time to maturity of each option, where the Reporting Bank must map the implied volatility of each option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years;

(b) the residual maturity of the underlying interest rate or interest rate-sensitive instrument underlying each option at the maturity date of the option, where the Reporting Bank must map the implied volatility of each option to the following residual maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.24 A Reporting Bank must specify GIRR vega risk factors, for each currency referenced by inflation rate-sensitive instruments with vega risks, as the implied volatilities of options that reference underlying inflation rates or inflation rate-sensitive instruments, further specified based on the time to maturity of each option. The Reporting Bank must map the implied volatility of each option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.25 A Reporting Bank must specify GIRR vega risk factors, for each currency referenced by interest rate-sensitive instruments with vega risks and cross-currency basis exposure, as the implied volatilities of options that reference underlying interest rate-sensitive instruments with cross-currency basis risk exposure, further specified based on the time to maturity of each option. The Reporting Bank must map the implied volatility of each option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.26 In the case where the risk-free yield curve is derived from the sovereign bond yield curve for a given currency in accordance with paragraph 8.2.18, the Reporting Bank must assign the sensitivity to the implied volatility of options that reference the sovereign bond issuer to both the GIRR and CSR (non-securitisation) risk classes for vega risk factors.

[643] For example, an option with a forward starting cap, lasting 12 months, consisting of 4 consecutive caplets on USD 3-month Libor has 4 independent options, with option maturity dates in 12, 15, 18 and 21 months. Each of these options has USD 3-month Libor as the underlying, and the underlying matures 3 months after the option maturity date (in other words, the residual maturity of the underlying at the maturity date of each option is 3 months). Therefore, a Reporting Bank must specify the implied volatilities for such a forward starting cap, which would start in one year and last for 12 months along the following 2 dimensions: (i) the time to maturity of the option's individual components (caplets) – 12, 15, 18 and 21 months; and (ii) the residual maturity of the underlying of the option – 3 months.

8.2.27 A Reporting Bank must specify GIRR curvature risk factors as all the risk-free yield curves for each currency referenced by interest rate-sensitive instruments with curvature risks. To avoid doubt, the Reporting Bank must not recognise the term structure of the risk-free yield curves in specifying risk factors and must treat risk-free yield curves in the same currency as the same curvature risk factor.

8.2.28 In the case where the risk-free yield curve is derived from the sovereign bond yield curve for a given currency in accordance with paragraph 8.2.18, a Reporting Bank must assign the sensitivity to the credit spread of the sovereign bond issuer to both the GIRR and CSR (non-securitisation) risk classes for curvature risk factors.

8.2.29 A Reporting Bank must not calculate capital requirements for curvature risk for inflation and cross-currency basis risks.

Risk factors for the CSR (non-securitisation) risk class

8.2.30 A Reporting Bank must specify the delta risk factors for the CSR (non-securitisation) risk class for instruments which are sensitive to credit spreads and are not securitisation exposures, based on the following dimensions:

(a) the credit spread curve for each relevant issuer name, based on either credit spreads inferred from –

(i) bonds issued by the issuer; or

(ii) credit default swaps with the issuer as the underlying; and

(b) the following tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.31 A Reporting Bank must specify the vega risk factors for the CSR (non-securitisation) risk class for instruments, which are sensitive to credit spreads with vega risks and which are not securitisation exposures, as the implied volatilities of options that reference each relevant issuer name as underlyings, further specified based on the time to maturity of each option. The Reporting Bank must map the implied volatility of each option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.32 A Reporting Bank must specify the curvature risk factors for the CSR (non-securitisation) risk class for instruments which are sensitive to credit spreads with curvature risks and which are not securitisation exposures, as the credit spread curve for each relevant issuer name, which is based on either credit spreads inferred from –

(a) bonds issued by the issuer; or

(b) credit default swaps with the issuer as the underlying.

To avoid doubt, the Reporting Bank must not recognise the term structure of the credit spread curve for each issuer name in specifying risk factors.

Risk factors for the CSR (securitisation: non-CTP) risk class

8.2.33 A Reporting Bank must specify the delta risk factors for the CSR (securitisation: non-CTP) risk class for instruments sensitive to non-CTP securitisation credit spreads based on the following dimensions:

(a) the credit spread curve for each relevant securitisation tranche; and

(b) the following tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

To avoid doubt, a Reporting Bank must specify the delta risk factors based on the credit spreads of the securitisation tranches, and not on the credit spreads of the underlying exposures of the securitisation instruments.

8.2.34 A Reporting Bank must specify the vega risk factors for the CSR (securitisation: non-CTP) risk class for instruments sensitive to non-CTP securitisation credit spreads with vega risks, as the implied volatilities of options that reference non-CTP securitisation credit spreads as underlyings, further specified based on the time to maturity of each option. The Reporting Bank must map the implied volatility of the option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.35 A Reporting Bank must specify the curvature risk factors for the CSR (securitisation: non-CTP) risk class for instruments which are sensitive to non-CTP securitisation credit spreads with curvature risks, as the credit spread curve for each relevant securitisation tranche, which is based on either credit spreads inferred from –

(a) debt instruments of the securitisation tranche; or

(b) credit default swaps with the securitisation tranche as the underlying.

To avoid doubt, the Reporting Bank must not recognise the term structure of the credit spread curve for each securitisation tranche in specifying risk factors.

Risk factors for the CSR (securitisation: CTP) risk class

8.2.36 A Reporting Bank must specify the delta risk factors for the CSR (securitisation: CTP) risk class for securitisation instruments with CTP delta risks based on the following dimensions:

(a) the credit spread curve for each name underlying the securitisation instrument, based on credit spreads inferred from –

(i) bonds issued by the relevant name; or

(ii) credit default swaps with the relevant name as the underlying; and

(b) the following tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.37 A Reporting Bank must specify the vega risk factors for the CSR (securitisation: CTP) risk class for securitisation instruments with CTP vega risks, as the implied volatilities of options that reference credit spreads of relevant names underlying the securitisation

instruments, further specified based on the time to maturity of each option. The Reporting Bank must map the implied volatility of the option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.38 A Reporting Bank must specify the curvature risk factors for the CSR (securitisation: CTP) risk class for securitisation instruments with CTP curvature risks, as the underlying credit spread curve for each relevant name underlying the securitisation instrument, which is based on either credit spreads inferred from –

(a) bonds issued by the relevant name; or

(b) credit default swaps with the relevant name as the underlying.

To avoid doubt, the Reporting Bank must not recognise the term structure of the credit spread curve for each issuer name in specifying risk factors.

Risk factors for equity risk class

8.2.39 A Reporting Bank must specify the equity delta risk factors for instruments with equity delta risk as –

(a) equity spot prices; and

(b) equity repo rates.

8.2.40 A Reporting Bank must specify equity vega risk factors for instruments with equity vega risks as the implied volatilities of options that reference the equity spot prices as underlyings, further specified based on the time to maturity of each option. The Reporting Bank must map the implied volatility of each option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years. The Reporting Bank must not specify equity vega risk factors as equity repo rates.

8.2.41 A Reporting Bank must specify equity curvature risk factors for instruments with equity curvature risks as equity spot prices. The Reporting Bank must not specify equity curvature risk factors as equity repo rates.

Risk factors for commodity risk class

8.2.42 A Reporting Bank must specify commodity delta risk factors for instruments with commodity delta risks as commodity spot prices, further specified based on the following 2 dimensions:

(a) delivery location of each commodity as specified in the contract governing the instrument[644];

[644] For example, a Reporting Bank must consider an instrument governed by a contract that states that a commodity underlying the instrument can be delivered in 5 ports as having the same delivery location as another instrument governed by a contract that states that the same commodity underlying that other instrument can be delivered in the same 5 ports. The Reporting Bank must not consider an instrument governed by a contract that states that a commodity underlying the instrument can be delivered in 5 ports

(b) time to maturity of each instrument mapped to the following tenors: 0 years, 0.25 years, 0.5 years, 1 year, 2 years, 3 years, 5 years, 10 years, 15 years, 20 years and 30 years[645].

8.2.43 Despite paragraph 8.2.42, the Reporting Bank may specify commodity delta risk factors as commodity forward prices for commodities[646] further specified based on the 2 dimensions set out in paragraph 8.2.42(a) and (b), where transactions in instruments relating to such commodities based on forward prices are more frequent than transactions based on spot prices.

8.2.44 For the purposes of specifying commodity delta risk factors under paragraphs 8.2.42 and 8.2.43, a Reporting Bank must use the current prices for commodity futures and commodity forward contracts.

8.2.45 A Reporting Bank must specify commodity vega risk factors for instruments with commodity vega risks, as the implied volatilities of options that reference commodity spot prices as underlyings, further specified based on the time to maturity of each option. The Reporting Bank must map the implied volatility of each option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years. To avoid doubt, a Reporting Bank need not differentiate underlying commodity spot prices by the time to maturity of the underlying commodity or the delivery location of the underlying commodity.

8.2.46 A Reporting Bank must specify commodity curvature risk factors for instruments with commodity curvature risks as commodity spot prices. To avoid doubt, the Reporting Bank must not recognise the term structure of the commodities curve in specifying risk factors.

8.2.47 For the purposes of specifying delta, vega and curvature risk factors in accordance with paragraphs 8.2.42 to 8.2.46 for instruments with a commodity spread as their underlying, a Reporting Bank must specify the risk factors with respect to the 2 commodities on which the commodity spread is based[647].

Risk factors for FX risk class

8.2.48 A Reporting Bank must specify FX delta risk factors for instruments with FX delta risks as the exchange rates between the currency in which each instrument is denominated and the reporting currency of the Reporting Bank. For an instrument that references an exchange rate between a pair of currencies which are both not the Reporting Bank's reporting currency, the Reporting Bank must specify the FX delta risk factors as the exchange rates between the reporting currency of the Reporting Bank, the currencies in which the instrument is denominated and any other currencies referenced by the instrument.

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as having the same delivery location as another instrument governed by a contract that states that the same commodity underlying that other instrument can be delivered in only 4 or less of those 5 ports.

645 For example, for commodities futures or forward contracts, a Reporting Bank must specify the commodity delta risk factors based on the tenors of the contracts.

646 For example, electricity which falls within delta risk bucket 3 for energy – electricity and carbon trading.

647 For example, for a swap on the spread between WTI and Brent, the Reporting Bank must calculate delta risk weighted sensitivities to both WTI and Brent and aggregate the delta risk weighted sensitivities in accordance with paragraph 8.2.10(e), using the delta correlation parameter set out in paragraph 8.2.135.

8.2.49 Despite paragraph 8.2.48, a Reporting Bank may, subject to the Authority's written approval, calculate the delta risk capital requirement and the curvature risk capital requirement for the FX risk class relative to a base currency instead of the reporting currency of the Reporting Bank, provided that the Reporting Bank meets the following conditions:

(a) the Reporting Bank must specify only a single currency as its base currency;

(b) the Reporting Bank must demonstrate to the Authority, and ensure that calculating its delta risk capital requirement and its curvature risk capital requirement for the FX risk class relative to the proposed base currency –

(i) provides an appropriate risk representation of the Reporting Bank's portfolio; and

(ii) does not inappropriately reduce capital requirements relative to the capital requirements that would be calculated without applying the base currency approach;

(c) the Reporting Bank must, in its application for written approval, submit a written confirmation from the executive officer responsible for risk management in the Reporting Bank that the Reporting Bank meets the conditions in sub-paragraphs (a) and (b);

(d) where the Reporting Bank has received the Authority's written approval, the Reporting Bank must submit to the Authority on an annual basis, a written confirmation from the executive officer responsible for risk management in the Reporting Bank that the Reporting Bank continues to meet the conditions in sub-paragraphs (a) and (b).

8.2.50 A Reporting Bank which has obtained approval from the Authority to calculate the delta risk capital requirement and the curvature risk capital requirement for the FX risk class relative to a base currency instead of the reporting currency of the Reporting Bank under paragraph 8.2.49 must –

(a) specify FX delta risk factors for instruments with FX delta risks as the exchange rates between the currency in which each instrument is denominated and the base currency;

(b) for an instrument that references an exchange rate between a pair of currencies which are both not the base currency, specify the FX delta risk factors as the exchange rates between the base currency, the currencies in which an instrument is denominated and any other currencies referenced by the instrument;

(c) include as a risk factor the exchange rate between the base currency and the reporting currency of the Reporting Bank to account for the FX translation risk between the reporting currency of the Reporting Bank and the base currency;

(d) calculate the delta risk capital requirement for the FX risk class, in accordance with paragraph 8.2.10, in the base currency; and

(e) convert the delta risk capital requirement for the FX risk class calculated in sub-paragraph (d), to the delta risk capital requirement in the reporting currency of the Reporting Bank, using the spot exchange rate between the base currency and the reporting currency of the Reporting Bank.

8.2.51 A Reporting Bank must specify FX vega risk factors for instruments with FX vega risks as the implied volatilities of options that reference exchange rates between currency pairs as underlyings, further specified based on the time to maturity of the option. The Reporting Bank must map the implied volatility of each option to the following maturity tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years.

8.2.52 A Reporting Bank must specify FX curvature risk factors for instruments with FX curvature risks as the exchange rates between the currency in which each instrument is denominated and the reporting currency of the Reporting Bank. For an instrument that references an exchange rate between a pair of currencies which are both not the Reporting Bank's reporting currency, the Reporting Bank must specify FX curvature risk factors as the exchange rates between the reporting currency of the Reporting Bank, the currencies in which the instrument is denominated and any other currencies referenced by the instrument.

8.2.53 Where a Reporting Bank has obtained approval from the Authority to calculate the delta risk capital requirement and the curvature risk capital requirement for the FX risk class relative to a base currency instead of the reporting currency of the Reporting Bank under paragraph 8.2.49, the Reporting Bank must –

(a) specify FX curvature risk factors for instruments with FX curvature risks as the exchange rates between the currency in which each instrument is denominated and the base currency;

(b) for an instrument that references an exchange rate between a pair of currencies which are both not the base currency, specify the FX curvature risk factors as the exchange rates between the base currency, the currencies in which an instrument is denominated and any other currencies referenced by the instrument;

(c) calculate the curvature risk capital requirement for the FX risk class relative to a base currency in accordance with paragraph 8.2.12, in the base currency; and

(d) convert the curvature risk capital requirement for the FX risk class calculated in sub-paragraph (c), to the curvature risk capital requirement in the reporting currency of the Reporting Bank using the spot exchange rate between the base currency and the reporting currency of the Reporting Bank.

8.2.54 A Reporting Bank must not treat onshore and offshore variants, and deliverable and non-deliverable variants, of a currency as distinct risk factors for FX delta, vega and curvature risks.

Sub-division 4: SBM – Sensitivity Definitions

Overview

8.2.55 A Reporting Bank must calculate the sensitivities for each risk class in the reporting currency of the Reporting Bank.

8.2.56 A Reporting Bank must, for each position in an instrument sensitive to a risk factor specified in paragraphs 8.2.15 to 8.2.54 and paragraphs 8.2.80 to 8.2.90, calculate a sensitivity to the risk factor as the change in the market value of the position in the instrument as a result of applying a specified shift to each risk factor, assuming all the other risk factors are held at the current level, in accordance with paragraphs 8.2.58 to 8.2.90.

8.2.57 A Reporting Bank may, subject to the Authority's written approval, use an alternative formulation of sensitivities based on pricing models that the Reporting Bank's independent risk control unit uses to report market risks or actual P&L to senior management. A Reporting Bank seeking approval from the Authority to use an alternative formulation of sensitivities must demonstrate, to the satisfaction of the Authority, that the alternative formulation of sensitivities yields results that are very close to the prescribed formulations specified in paragraphs 8.2.58 to 8.2.90.

Sensitivity definitions for delta risk

8.2.58 A Reporting Bank must calculate the sensitivity to a GIRR delta risk factor which is a risk-free yield, referred to as PV01, using the following formula:

$$s_{k,r_t} = \frac{V_i(r_t + \mathbf{0.0001}, cs_t) - V_i(r_t, cs_t)}{\mathbf{0.0001}}$$

where –

(a) r_t is the risk-free yield at tenor t;

(b) cs_t is the credit spread at tenor t; and

(c) V_i is the market value of the instrument i as a function of the risk-free interest rate curve and credit spread curve.

8.2.59 Where inflation rate is included as a GIRR delta risk factor for an instrument in accordance with paragraph 8.2.20, a Reporting Bank must calculate the sensitivity to the GIRR delta risk factor which is an inflation rate using the following formula:

$$s_{k,\pi} = \frac{V_i(\pi + \mathbf{0.0001}, r, cs) - V_i(\pi, r, cs)}{\mathbf{0.0001}}$$

where –

(a) r is the risk-free yield;

(b) π is the inflation rate;

(c) cs is the credit spread; and

(d) $\boldsymbol{V_i}$ is the market value of the instrument i as a function of the risk-free interest rate, inflation rate and credit spread.

8.2.60 A Reporting Bank must calculate the sensitivity to a GIRR delta risk factor which is a cross-currency basis over either USD or EUR using the following formula:

$$\boldsymbol{s_{k,CCBS}} = \frac{\boldsymbol{V_i(CCBS + 0.0001, r, cs) - V_i(CCBS, r, cs)}}{\boldsymbol{0.0001}}$$

where –

(a) r is the risk-free yield;

(b) CCBS is the cross-currency basis spread over either the USD or EUR;

(c) cs is the credit spread; and

(d) $\boldsymbol{V_i}$ is the market value of the instrument i as a function of the risk-free interest rate, cross-currency basis spread and credit spread.

8.2.61 Despite paragraph 8.2.60, a Reporting Bank may use a term structure-based cross-currency basis spread curve and calculate sensitivities to the cross-currency basis over either USD or EUR for each tenor using the following formula:

$$\boldsymbol{s_{k,CCBS_t}} = \frac{\boldsymbol{V_i(CCBS_t + 0.0001, r_t, cs_t) - V_i(CCBS_t, r_t, cs_t)}}{\boldsymbol{0.0001}}$$

where –

(a) $\boldsymbol{r_t}$ is the risk-free yield at tenor t;

(b) $\boldsymbol{CCBS_t}$ is the cross-currency basis spread over either the USD or EUR at tenor t;

(c) $\boldsymbol{cs_t}$ is the credit spread at tenor t; and

(d) $\boldsymbol{V_i}$ is the market value of the instrument i as a function of the risk-free interest rate, cross-currency basis spread and credit spread.

8.2.62 Where a Reporting Bank adopts the approach in paragraph 8.2.61, the Reporting Bank must calculate the sum of the sensitivities to the cross-currency basis over either USD or EUR for each tenor pursuant to paragraph 8.2.61 to obtain the sensitivity to a GIRR delta risk factor specified under paragraph 8.2.16(c).

8.2.63 A Reporting Bank must calculate the sensitivity to a CSR (non-securitisation) delta risk factor, a CSR (securitisation: non-CTP) delta risk factor or a CSR (securitisation: CTP) delta risk factor, referred to as CS01, using the following formula:

$$s_{k,cs_t} = \frac{V_i(r_t, cs_t + 0.0001) - V_i(r_t, cs_t)}{0.0001}$$

where –

(a) r_t is the risk-free yield at tenor t;

(b) cs_t is the credit spread at tenor t; and

(c) V_i is the market value of the instrument i as a function of the risk-free interest rate curve and credit spread curve.

8.2.64 For the purposes of paragraph 8.2.63, a Reporting Bank may use PV01 as a proxy for CS01 for money market instruments where counterparty-specific credit spread curves are not available.

8.2.65 A Reporting Bank must calculate the sensitivity to an equity delta risk factor which is an equity spot price using the following formula:

$$s_k = \frac{V_i(1.01EQ_k) - V_i(EQ_k)}{0.01}$$

where –

(a) k is a given equity;

(b) EQ_k is the market value of equity k; and

(c) V_i is the market value of the instrument i as a function of the price of equity k.

8.2.66 A Reporting Bank must calculate the sensitivity to an equity delta risk factor which is an equity repo rate, by applying a parallel shift to the equity repo rate term structure using the following formula:

$$s_{k,} = \frac{V_i(RTS_k + 0.0001) - V_i(RTS_k)}{0.0001}$$

where –

(a) k is a given equity;

(b) RTS_k is the repo rate term structure of equity k; and

(c) V_i is the market value of the instrument i as a function of the repo rate term structure of equity k.

8.2.67 A Reporting Bank must calculate the sensitivity to a commodity delta risk factor using the following formula:

$$s_k = \frac{V_i(1.01CTY_k) - V_i(CTY_k)}{0.01}$$

where –

(a) k is a given commodity;

(b) $\boldsymbol{CTY_k}$ is the market value of commodity k; and

(c) $\boldsymbol{V_i}$ is the market value of the instrument i as a function of the price of commodity k.

8.2.68 A Reporting Bank must calculate the sensitivity to a FX delta risk factor using the following formula:

$$\boldsymbol{s_k = \frac{V_i(1.01FX_k) - V_i(FX_k)}{0.01}}$$

where –

(a) k is a given currency;

(b) $\boldsymbol{FX_k}$ is the exchange rate between a given currency and the Reporting Bank's reporting or base currency, where the exchange rate is the current market price of one unit of another currency expressed in the units of the reporting currency or base currency of the Reporting Bank, as the case may be; and

(c) $\boldsymbol{V_i}$ is the market value of the instrument i as a function of the price of exchange rate k.

Sensitivity definitions for vega risk

8.2.69 A Reporting Bank must calculate the vega risk sensitivity for a position in an instrument within the scope of paragraphs 8.2.4 and 8.2.6 to a given risk factor using the following formula:

$$\boldsymbol{s_k = vega \times implied\ volatility}$$

where –

(a) vega, $\boldsymbol{\frac{\partial V_i}{\partial \sigma_i}}$, is defined as the change in the market value of the instrument $\boldsymbol{V_i}$ as a result of a small amount of change to the implied volatility, $\boldsymbol{\sigma_i}$; and

(b) a Reporting Bank must determine the instrument's vega and implied volatility used in the calculation of vega risk sensitivities based on pricing models used by the risk control unit of the Reporting Bank.

8.2.70 A Reporting Bank must map options that do not have a maturity[648] to the 10-year maturity tenor when calculating its vega risk sensitivity[649].

[648] For example, a cancellable swap.

[649] The Reporting Bank must also subject such options to the RRAO in accordance with Sub-division 10 of this Division.

8.2.71 A Reporting Bank must use the strike prices and maturities, which are used internally to price the following instruments[650], to calculate their vega risk sensitivities:

(a) options that do not have a strike price or barrier;

(b) options that have multiple strike prices or barriers.

8.2.72 A Reporting Bank must not subject CTP securitisation exposures that do not have optionality to capital requirements for vega risks. To avoid doubt, the Reporting Bank must still subject CTP securitisation exposures that do not have optionality to capital requirements for delta and curvature risks.

Requirements on sensitivity calculations

8.2.73 A Reporting Bank must determine each delta risk sensitivity, vega risk sensitivity and curvature scenario based on market prices or sensitivities that are used in pricing models that a risk control unit within the Reporting Bank uses to report market risks or actual P&L to senior management. A Reporting Bank must establish a framework for prudent valuation that satisfies the requirements in Annex 6C.

8.2.74 When calculating a delta risk sensitivity or vega risk sensitivity for instruments subject to optionality, a Reporting Bank must assume that the implied volatility either –

(a) remains constant[651]; or

(b) does not vary with respect to a given level of delta[652].

8.2.75 For the calculation of vega risk sensitivities, a Reporting Bank must apply the following distribution assumptions for its pricing models:

(a) for the calculation of GIRR vega risk sensitivities, the Reporting Bank must use either the log-normal assumption or normal assumption[653] for each currency. To avoid doubt, the Reporting Bank may use different distribution assumptions for different currencies;

(b) for the calculation of CSR vega risk sensitivities, the Reporting Bank must use either the log-normal assumption or normal assumption[654];

(c) for the calculation of equity, commodity or FX vega risk sensitivities, the Reporting Bank must use the log-normal assumption.

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650 The Reporting Bank must also subject such options to the RRAO in accordance with Sub-division 10 of this Division.

651 This is referred to as a "sticky strike" approach.

652 This is referred to as a "sticky delta" approach.

653 Since vega $\left(\frac{\partial V}{\partial \sigma_i}\right)$ of an instrument is multiplied by its implied volatility (σ_i), the vega risk sensitivity for that instrument will be the same under the log-normal assumption and the normal assumption.

654 Since vega $\left(\frac{\partial V}{\partial \sigma_i}\right)$ of an instrument is multiplied by its implied volatility (σ_i), the vega risk sensitivity for that instrument will be the same under the log-normal assumption and the normal assumption.

8.2.76 If a Reporting Bank calculates vega risk sensitivities using different risk factor or sensitivity definitions from the definitions set out in Sub-divisions 3 and 4 of this Division, respectively, for internal risk management, the Reporting Bank may transform the vega risk sensitivities calculated for internal risk management to determine the vega risk sensitivities as defined in this Division.

8.2.77 A Reporting Bank must disregard the impact of credit valuation adjustments when calculating vega risk sensitivities.

8.2.78 A Reporting Bank must, for a given instrument, irrespective of whether a look-through approach is adopted or not, use the same delta sensitivity inputs for the delta risk and curvature risk calculation.

8.2.79 For the purposes of calculating the net curvature risk position after applying an upward shock or downward shock, referred to in paragraph 8.2.12(b), a Reporting Bank must use the same assumption in paragraph 8.2.74 that is applied in the calculation of the delta risk capital requirement, for calculating the price of the instrument after it is shocked upward or downward, referred to in paragraph 8.2.12(b)(iv).

Sub-division 5: SBM – Risk Factors and Sensitivities for Instruments with Multiple Constituents and Equity Investments in Funds

[MAS Notice 637 (Amendment) 2024]

8.2.80 For the purposes of this Division, a qualified index means a credit index or equity index, that is widely-recognised, and that satisfies all of the following conditions:

(a) the index is listed on an approved exchange or overseas exchange;

(b) the Reporting Bank is able to look through the credit index or equity index, such that the constituents of the credit index or equity index and their respective weightings are known to the Reporting Bank;

(c) the credit index or equity index contains at least 20 constituents;

(d) no single constituent within the credit index or equity index has a weighting of more than 25% of the index;

(e) the sum of the weightings of the largest 10% of the index constituents, based on the weightings of the index constituents, represent less than 60% of the credit index or equity index;

(f) the market capitalisation of all the constituents of the credit index or equity index is greater than or equal to USD 40 billion.

8.2.81 Subject to paragraphs 8.2.84 and 8.2.85, a Reporting Bank must use a look-through approach to calculate the capital requirements for delta risk and the capital requirements for curvature risk, arising from a multi-underlying instrument or an index instrument, for the following instruments:

(a) instruments referencing a qualified index;

(b) instruments referencing an index which is not a qualified index;

(c) multi-underlying instruments, including such instruments that reference a bespoke set of equities or credit positions.

8.2.82 A Reporting Bank applying the look-through approach pursuant to paragraph 8.2.81 must calculate the sensitivity of a multi-underlying instrument or index instrument, to all risk factors upon which the value of the multi-underlying instrument or index instrument depends, by –

(a) applying a specified shift of each risk factor, in accordance with paragraphs 8.2.58 to 8.2.79, to all constituents of the multi-underlying instrument or index instrument that are sensitive to the risk factor; and

(b) recalculating the changed value of the multi-underlying instrument or index instrument.

8.2.83 Where a Reporting Bank has applied the look-through approach pursuant to paragraph 8.2.81 and in accordance with paragraph 8.2.82 –

(a) the Reporting Bank is allowed to offset the sensitivities of the constituents of multi-underlying instruments or index instruments, to a risk factor, with sensitivities of single name instruments to the same risk factor; and

(b) the Reporting Bank must apply the look-through approach for all identical instruments that reference the same index.

8.2.84 Despite paragraph 8.2.81, a Reporting Bank must not apply the look-through approach set out in paragraph 8.2.82 for CTP instruments that reference index underlyings[655] and the Reporting Bank must not apply the offsetting mentioned in paragraph 8.2.83(a).

8.2.85 Despite paragraph 8.2.81(a), for delta and curvature risks of the CSR (non-securitisation) and equity risk classes arising from a multi-underlying instrument or an index instrument, that reference a qualified index, a Reporting Bank may choose to not use the look-through approach. If a Reporting Bank chooses not to use the look-through approach, the Reporting Bank must specify risk factors that directly correspond to the qualified index and calculate sensitivities to such risk factors by applying a specified shift of each risk factor, in accordance with paragraphs 8.2.58 to 8.2.90, to the qualified index. Once a Reporting Bank has applied the look-through approach pursuant to paragraph 8.2.81 and in accordance with paragraph 8.2.82, it must use the look-through approach, unless it obtains the written approval of the Authority to revert to not using the look-through approach.

8.2.86 For delta and curvature risks arising from an equity investment in a fund where the condition in paragraph 8.1.27(e)(i) is met, a Reporting Bank must apply the look-through approach set out in paragraph 8.2.82 and treat the underlying positions of the fund as if the positions were held directly by the Reporting Bank, based on the Reporting

[655] This means the Reporting Bank must specify risk factors that correspond to the underlying index.

Bank's share of the equity of the fund, and taking into account any leverage in the fund structure.

8.2.87 Despite paragraph 8.2.86, a Reporting Bank may choose not to apply the look-through approach in either of the following cases:

(a) for a fund that holds an index instrument that references a qualified index, a Reporting Bank may, for the index instrument, specify risk factors that directly correspond to a qualified index, and calculate sensitivities to such risk factors by applying a specified shift of each risk factor, in accordance with paragraphs 8.2.58 to 8.2.90, to the qualified index. To avoid doubt, the Reporting Bank must still apply the look-through approach for the other underlying positions of the fund;

(b) for a fund that tracks a qualified index benchmark, a Reporting Bank may specify risk factors that directly correspond to the tracked index and calculate sensitivities to such risk factors, by applying a specified shift of each risk factor, in accordance with paragraphs 8.2.58 to 8.2.90, to the tracked index, as if the position in the fund is a position in the tracked index, where –

(i) the fund has an absolute value of a tracking difference (ignoring fees and commissions) of less than 1%; and

(ii) the tracking difference, calculated as the annualised return difference between the fund and its tracked benchmark over the last 12 months of available data (or the longest period for which data is available, in the absence of a full 12 months of data), is checked by the Reporting Bank at least annually.

8.2.88 For an equity investment in a fund where the condition in paragraph 8.1.27(e)(i) is not met but the condition in paragraph 8.1.27(e)(ii) is met, a Reporting Bank must, for the purposes of calculating capital requirements for the fund –

(a) subject to the Authority's written approval, treat the fund as a hypothetical portfolio in which the fund invests to the maximum extent allowed under the fund's mandate in those exposures attracting the highest capital requirements, and then progressively in those exposures attracting lower capital requirements in descending order under the SBM until the total investment is reached. If more than one risk weight is applicable to a given exposure under the SBM, the Reporting Bank must use the maximum risk weight applicable, to determine which exposure attracts the higher capital requirement. The Reporting Bank must also –

(i) calculate the market risk capital requirements of the hypothetical portfolio on a stand-alone basis for all positions in that fund, by assuming the positions are in a discrete, non-diversifiable portfolio such that the risk positions in the hypothetical portfolio cannot be diversified, hedged or offset by other risk positions that are subject to market risk capital requirements; and

(ii) calculate the counterparty credit and CVA risks of the derivatives of the hypothetical portfolio in accordance with paragraph 7.5.14(c) of Division 5 of Part VII; or

(b) treat the equity investment in the fund as an unrated equity exposure and assign it to delta risk bucket 11 (Other sector).

8.2.89 Despite paragraph 8.2.88, for an equity investment in a fund where the condition in paragraph 8.1.27(e)(i) is not met but the condition in paragraph 8.1.27(e)(ii) is met, a Reporting Bank may specify risk factors that directly correspond to the tracked index and calculate sensitivities to such risk factors by applying a specified shift of each risk factor, in accordance with paragraphs 8.2.58 to 8.2.90, to the tracked index, as if the position in the fund is a position in the tracked index, only where –

(a) the fund tracks a qualified index benchmark; and

(b) the fund meets the requirements set out in paragraph 8.2.87(b)(i) and (ii).

8.2.90 For vega risk arising from a multi-underlying instrument or an index instrument, a Reporting Bank must apply one of the following methods for the purposes of the calculation of its vega risk capital requirement:

(a) the look-through approach, as if the Reporting Bank directly holds individual positions in the underlying constituents of the multi-underlying instrument or index instrument;

(b) an approach where the Reporting Bank specifies risk factors that directly correspond to the multi-underlying instrument or index instrument and calculates sensitivities to each risk factor by applying a specified shift of the risk factor, in accordance with paragraphs 8.2.58 to 8.2.90.

The Reporting Bank must apply either method, regardless of whether the Reporting Bank adopted a look-through approach for the calculation of its delta risk and curvature risk capital requirements[656].

Sub-division 6: SBM – Definition of Delta Risk Buckets, Risk Weights and Correlations

GIRR delta risk buckets, risk weights and correlations

8.2.91 A Reporting Bank must define each currency as a separate delta risk bucket. The Reporting Bank must assign the following GIRR delta risk sensitivities into the same delta risk bucket:

(a) GIRR delta risk sensitivities arising from risk factors that are risk-free yields of risk-free yield curves of the same currency;

[656] This is reflective of how multi-underlying options (including index options) are priced based on the implied volatility of the option, rather than the implied volatility of its underlying constituents.

(b) GIRR delta risk sensitivities arising from risk factors that are inflation rates of the same currency;

(c) GIRR delta risk sensitivities arising from risk factors that are cross-currency bases of the same currency over either USD or EUR.

8.2.92 For the purposes of calculating the delta risk weighted sensitivities pursuant to paragraph 8.2.10(d), a Reporting Bank must –

(a) divide the risk weights in Table 8-1 by the square root of 2 and apply the resultant risk weight for each tenor in the risk-free curves for the following currencies: EUR, USD, GBP, AUD, JPY, SEK, CAD and SGD;

(b) apply the risk weights in Table 8-1 for each tenor in the risk-free curves for currencies not set out in sub-paragraph (a);

(c) divide the risk weight of 1.6% by the square root of 2 and apply the resultant risk weight for the inflation risk factor and the cross-currency basis risk factor for the following currencies: EUR, USD, GBP, AUD, JPY, SEK, CAD and SGD; and

(d) apply a risk weight of 1.6% for the inflation risk factor and the cross-currency basis risk factor for currencies not set out in sub-paragraph (c).

Table 8-1: GIRR delta risk weights

Tenor	**0.25 years**	**0.5 years**	**1 year**	**2 years**	**3 years**
Risk weight (percentage points)	1.7%	1.7%	1.6%	1.3%	1.2%

Tenor	**5 years**	**10 years**	**15 years**	**20 years**	**30 years**
Risk weight (percentage points)	1.1%	1.1%	1.1%	1.1%	1.1%

8.2.93 For the purposes of calculating the GIRR delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$, arising from risk factors that are risk-free yields for risk-free yield curves, that are assigned to the same delta risk bucket, as –

(a) 99.90%, if the delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ have the same assigned tenor but are to different curves;

(b) a correlation value in accordance with Table 8-2[657], if the delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ have different tenors but are to the same curve; and

(c) the correlation value specified in sub-paragraph (b) multiplied by 99.90%[658], if the delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ have different tenors and are to different curves.

Table 8-2: GIRR delta risk correlations (ρ_{kl}) within the same GIRR delta risk bucket, with different tenors and same curve

	0.25 year	0.5 year	1 year	2 years	3 years	5 years	10 years	15 years	20 years	30 years
0.25 year	100.0%	97.0%	91.4%	81.1%	71.9%	56.6%	40.0%	40.0%	40.0%	40.0%
0.5 year	97.0%	100.0%	97.0%	91.4%	86.1%	76.3%	56.6%	41.9%	40.0%	40.0%
1 year	91.4%	97.0%	100.0%	97.0%	94.2%	88.7%	76.3%	65.7%	56.6%	41.9%
2 years	81.1%	91.4%	97.0%	100.0%	98.5%	95.6%	88.7%	82.3%	76.3%	65.7%
3 years	71.9%	86.1%	94.2%	98.5%	100.0%	98.0%	93.2%	88.7%	84.4%	76.3%
5 years	56.6%	76.3%	88.7%	95.6%	98.0%	100.0%	97.0%	94.2%	91.4%	86.1%
10 years	40.0%	56.6%	76.3%	88.7%	93.2%	97.0%	100.0%	98.5%	97.0%	94.2%
15 years	40.0%	41.9%	65.7%	82.3%	88.7%	94.2%	98.5%	100.0%	99.0%	97.0%
20 years	40.0%	40.0%	56.6%	76.3%	84.4%	91.4%	97.0%	99.0%	100.0%	98.5%
30 years	40.0%	40.0%	41.9%	65.7%	76.3%	86.1%	94.2%	97.0%	98.5%	100.0%

8.2.94 For the purposes of calculating the GIRR delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must –

(a) calculate the sum of all delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$, arising from inflation rates, that are assigned to the same delta risk bucket,

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657 The delta risk correlation parameters ($\boldsymbol{\rho_{kl}}$) set out in Table 8-2 is determined by $\max\left[e^{\left(-\theta\cdot\frac{|T_k-T_l|}{min\{T_k;T_l\}}\right)};40\%\right]$, where T_k (respectively T_l) is the tenor that relates to WS_k (respectively WS_l); and θ is set at 3%. For example, the correlation between a sensitivity to the one-year tenor of the Eonia swap curve and the sensitivity to the 5-year Eonia swap curve in the same currency is $\max\left[e^{\left(-3\%\cdot\frac{|1-5|}{min\{1;5\}}\right)};40\%\right] = 88.69\%$.

658 For example, the correlation between a sensitivity to the one-year tenor of the Eonia swap curve and a sensitivity to the 5-year tenor of the 3-month Euribor swap curve in the same currency is (88.69%).(0.999) = 88.60%.

if the delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ are to the same inflation curve; and

(b) set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$, arising from risk factors that are inflation rates, that are assigned to the same delta risk bucket, as 99.90%, if the delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ are to different inflation curves[659].

8.2.95 For the purposes of calculating the GIRR delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$, arising from risk factors that are cross-currency bases over either USD or EUR, that are assigned to the same delta risk bucket as 99.90%, if the delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ are to different curves.

8.2.96 Despite paragraph 8.2.95, if the delta risk weighted sensitivities, $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$, mentioned in paragraph 8.2.95 are to an onshore curve and an offshore curve, respectively, and both curves are over USD or both curves are over EUR, a Reporting Bank may aggregate the delta risk weighted sensitivities, $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$, by calculating the sum of the delta risk weighted sensitivities.

8.2.97 For the purposes of calculating the GIRR delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between –

(a) a delta weighted sensitivity $\boldsymbol{WS_k}$ to an inflation rate; and

(b) a delta weighted sensitivity $\boldsymbol{WS_l}$ to a risk-free yield of a given tenor of a risk-free yield curve,

assigned to the same delta risk bucket, as 40%.

8.2.98 For the purposes of calculating the GIRR delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between a delta weighted sensitivity $\boldsymbol{WS_k}$ to a cross-currency basis and a delta weighted sensitivity $\boldsymbol{WS_l}$ to each of the following, assigned to the same delta risk bucket, as 0% –

(a) a risk-free yield of a given tenor of the relevant risk-free yield curve;

(b) an inflation rate; or

(c) another cross-currency basis.

8.2.99 For the purposes of aggregating GIRR delta risk positions for all delta risk buckets pursuant to paragraph 8.2.10(f) and (g), a Reporting Bank must set the correlation parameter $\boldsymbol{\gamma_{bc}}$ as 50%.

[659] For example, the German and French inflation curves, which are in the same currency, EUR.

CSR (non-securitisation) delta risk buckets, risk weights and correlations

8.2.100 A Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivities, to the sector set out in Table 8-3 to which the reference entity underlying the CSR (non-securitisation) delta risk sensitivity belongs. To avoid doubt, a Reporting Bank must assign a CSR (non-securitisation) delta risk sensitivity to delta risk bucket 16 (Other sector) where the reference entity underlying the CSR (non-securitisation) delta risk sensitivity cannot be assigned to a specific sector in delta risk buckets 1 to 15.

8.2.101 Where a Reporting Bank uses a look-through approach pursuant to paragraph 8.2.81 or 8.2.86, a Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivities arising from positions in index constituents, to the sector set out in Table 8-3 to which the index constituent underlying the CSR (non-securitisation) delta risk sensitivity belongs. To avoid doubt, a Reporting Bank must assign a CSR (non-securitisation) delta risk sensitivity to delta risk bucket 16 (Other sector) where the index constituent underlying the CSR (non-securitisation) delta risk sensitivity cannot be assigned to a specific sector in delta risk buckets 1 to 15.

8.2.102 Where a Reporting Bank calculates delta risk sensitivities to the risk factors that directly correspond to an index –

(a) if more than 75% of the constituents of the index, based on the weightings of the constituents of the index, are mapped to the same sector, the Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivities to the index, to the sector set out in Table 8-3 corresponding to delta risk buckets 1 to 16; and

(b) in all other cases, the Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivities to the risk factors that directly correspond to the index to delta risk buckets 17 or 18 set out in Table 8-3.

8.2.103 For the purposes of paragraphs 8.2.100, 8.2.101 and 8.2.102, to assign a CSR (non-securitisation) delta risk sensitivity of a reference entity or index constituent to a sector, a Reporting Bank must –

(a) rely on a classification that is commonly used in the market for assigning issuers to industry sectors; and

(b) assign each reference entity or index constituent to only one of the sectors in Table 8-3, except for issuers of covered bonds. For an issuer of covered bonds, the Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivities arising from other credit instruments which are not covered bonds to the respective sectors, and the CSR (non-securitisation) delta risk sensitivities arising from the covered bonds to delta risk bucket 8.

8.2.104 Except for a CSR (non-securitisation) delta risk sensitivity assigned to delta risk bucket 16 (Other sector) of Table 8-3 pursuant to paragraphs 8.2.100, 8.2.101 or 8.2.102(a), a Reporting Bank must assign CSR (non-securitisation) delta risk sensitivities to delta risk buckets set out in Table 8-3 as follows:

(a) if a reference entity or an index constituent, underlying the CSR (non-securitisation) delta risk sensitivity, has one or more external credit assessments by recognised ECAIs, the Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivity to a delta risk bucket corresponding to –

(i) the sector assigned to the reference entity in paragraph 8.2.100 or the sector assigned to the index constituent in paragraph 8.2.101, as the case may be; and

(ii) the credit quality of the reference entity or index constituent, underlying the CSR (non-securitisation) delta risk sensitivity, as the case may be, where the credit quality is determined in accordance with paragraph 7.3.30 and is based on the external credit assessment of the reference entity or the index constituent, as the case may be, by recognised ECAIs;

(b) if a reference entity or an index constituent, underlying the CSR (non-securitisation) delta risk sensitivity does not have an external credit assessment by a recognised ECAI –

(i) in the case where the Reporting Bank has obtained approval from the Authority to adopt the IRBA pursuant to Division 4 of Part VII, the Reporting Bank may, with the prior written approval of the Authority, internally rate the reference entity or the index constituent, as the case may be, map the internal rating under the IRBA, of the reference entity or the index constituent, as the case may be, to a credit quality grade set out in Table 7M-1, and assign the CSR (non-securitisation) sensitivity, to a delta risk bucket corresponding to –

(A) the sector assigned to the reference entity in paragraph 8.2.100 or the sector assigned to the index constituent in paragraph 8.2.101, as the case may be; and

(B) the credit quality associated with the reference entity or the index constituent underlying the CSR (non-securitisation) delta risk sensitivity, as the case may be; and

(ii) in all other cases, the Reporting Bank must assign a delta risk bucket corresponding to –

(A) the sector assigned to the reference entity in paragraph 8.2.100 or the sector assigned to the index constituent in paragraph 8.2.101, as the case may be; and

(B) a credit quality of "not rated";

(c) where the Reporting Bank calculates delta risk sensitivities to the risk factors that directly correspond to an index –

(i) if 75% or more of the constituents of the index, based on the weightings of the constituents of the index, each has one or more

external credit assessments by recognised ECAIs which correspond to credit quality grades of "3" or better as set out in Table 7M-1, the Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivities to a delta risk bucket corresponding to the sector assigned under paragraph 8.2.102 and a credit quality grade of "3" or better as set out in Table 7M-1. The Reporting Bank must determine the credit quality of each constituent in accordance with paragraph 7.3.30; and

(ii) in all other cases, the Reporting Bank must assign the CSR (non-securitisation) delta risk sensitivities to a delta risk bucket corresponding to the sector assigned under paragraph 8.2.102, and a credit quality of "not rated".

Table 8-3: CSR (non-securitisation) delta risk buckets

Delta Risk Bucket number	Credit quality	Sector
1	Credit quality grade of "3" or better as set out in Table 7M-1	Sovereigns (comprising central governments, central banks, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism, and the European Financial Stability Facility) and MDBs
2		PSEs, education
3		Financial Institutions
4		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
5		Consumer goods and services, transportation and storage, administrative and support service activities
6		Technology, telecommunications
7		Health care, utilities, professional and technical activities
8		Covered bonds
9	Credit quality grade of "4" or worse as set out in Table 7M-1 or not rated	Sovereigns (comprising central governments, central banks, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism, and the European Financial Stability Facility) and MDBs
10		PSEs, education
11		Financial Institutions
12		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
13		Consumer goods and services, transportation and storage, administrative and support service activities
14		Technology, telecommunications
15		Health care, utilities, professional and technical activities
16	Other sector[660]	
17	Qualified indices with credit quality grades of "3" or better as set out in Table 7M-1	
18	Qualified indices with credit quality grades of "4" or worse as set out in Table 7M-1 or not rated	

8.2.105 A Reporting Bank must ensure that covered bonds assigned to delta risk bucket 8 in Table 8-3 meet the definition of covered bonds in Part II and the requirements specified in paragraph 7.3.2 of Division 3 of Part VII.

[660] Credit quality is not a differentiating consideration for this delta risk bucket.

8.2.106 For calculating the delta risk weighted sensitivities pursuant to paragraph 8.2.10(d), a Reporting Bank must apply the risk weights in Table 8-4, where the risk weights are the same for all tenors (i.e. 0.5 years, 1 year, 3 years, 5 years, 10 years) within each delta risk bucket.

Table 8-4: CSR (non-securitisation) delta risk weights

Delta Risk Bucket number	Risk weight
1	0.5%
2	1.0%
3	5.0%
4	3.0%
5	3.0%
6	2.0%
7	1.5%
8	2.5%
9	2.0%
10	4.0%
11	12.0%
12	7.0%
13	8.5%
14	5.5%
15	5.0%
16	12.0%
17	1.5%
18	5.0%

8.2.107 For covered bonds that have external credit assessments by a recognised ECAI and have credit quality grades of "1" as set out in Table 7M-1 and determined in accordance with paragraph 7.3.30, a Reporting Bank may apply a risk weight of 1.5%.

8.2.108 For delta risk buckets 1 to 15, for the purposes of calculating the CSR (non-securitisation) delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ within the same delta risk bucket, as follows[661]:

$$\boldsymbol{\rho_{kl} = \rho_{kl}^{(name)} \cdot \rho_{kl}^{(tenor)} \cdot \rho_{kl}^{(basis)}}$$

where –

(a) $\boldsymbol{\rho_{kl}^{(name)}}$ is equal to –

(i) 100%, if the 2 names underlying the 2 delta risk weighted sensitivities k and l are identical; and

(ii) 35%, in all other cases;

[661] For example, the delta risk correlation value that needs to be applied for aggregating a delta risk weighted sensitivity to the 5-year Apple bond curve and a delta risk weighted sensitivity to the 10-year Google CDS curve would be: 35%.65%.99.90% = 22.73%.

(b) $\boldsymbol{\rho_{kl}^{(tenor)}}$ is equal to –

(i) 100%, if the 2 tenors of the delta risk weighted sensitivities k and l are identical; and

(ii) 65%, in all other cases; and

(c) $\boldsymbol{\rho_{kl}^{(basis)}}$ is equal to –

(i) 100%, if the 2 delta risk weighted sensitivities are related to the same curves; and

(ii) 99.90% if one delta risk weighted sensitivity is related to the bond curve and the other is related to the CDS curve.

8.2.109 For delta risk buckets 17 and 18, for the purposes of calculating the CSR (non-securitisation) delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between 2 delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ within the same delta risk bucket, as follows:

$$\boldsymbol{\rho_{kl} = \rho_{kl}^{(name)} \cdot \rho_{kl}^{(tenor)} \cdot \rho_{kl}^{(basis)}}$$

where –

(a) $\boldsymbol{\rho_{kl}^{(name)}}$ is equal to –

(i) 100%, if the 2 names underlying the 2 delta risk weighted sensitivities k and l are identical; and

(ii) 80%, in all other cases;

(b) $\boldsymbol{\rho_{kl}^{(tenor)}}$ is equal to –

(i) 100%, if the 2 tenors of the delta risk weighted sensitivities k and l are identical; and

(ii) 65%, in all other cases; and

(c) $\boldsymbol{\rho_{kl}^{(basis)}}$ is equal to –

(i) 100%, if the 2 delta risk weighted sensitivities are related to the same curves; and

(ii) 99.90%, if one delta risk weighted sensitivity is related to the bond curve and the other related to the CDS curve.

8.2.110 A Reporting Bank must calculate the CSR (non-securitisation) delta risk position for delta risk bucket 16 (Other sector) by calculating the sum of the absolute values of the delta risk weighted sensitivities assigned to this delta risk bucket:

$$K_{b(other\ sector\ delta\ risk\ bucket)} = \sum_{k} |WS_k|$$

8.2.111 For the purposes of aggregating CSR (non-securitisation) delta risk positions for all delta risk buckets pursuant to paragraph 8.2.10(f) and (g), a Reporting Bank must use the correlation parameter γ_{bc} as follows:

$$\gamma_{bc} = \gamma_{bc}^{(rating)} \cdot \gamma_{bc}^{(sector)}$$

where –

(a) $\gamma_{bc}^{(rating)}$ is equal to –

(i) 50%, if the 2 delta risk buckets b and c are both in delta risk buckets 1 to 15 and have different credit qualities; and

(ii) 100%, in all other cases; and

(b) $\gamma_{bc}^{(sector)}$ is equal to –

(i) 100%, if the 2 delta risk buckets belong to the same sector; and

(ii) the specified numbers in Table 8-5, in all other cases.

8.2.112 For the purposes of paragraph 8.2.111(a), a Reporting Bank must treat the credit quality of 2 delta risk buckets to be the same in the following cases:

(a) if both delta risk buckets have credit quality grades of "3" or better, as set out in Table 7M-1;

(b) if both delta risk buckets have credit quality grades of "4" or worse, as set out in Table 7M-1;

(c) if one delta risk bucket has a credit quality of "4" or worse, as set out in Table 7M-1, and the other is unrated;

(d) if both delta risk buckets are unrated.

Table 8-5: Values of $\gamma_{bc}^{(sector)}$ where the delta risk buckets do not belong to the same sector

Delta Risk Bucket	1/9	2/10	3/11	4/12	5/13	6/14	7/15	8	16	17	18
1/9		75%	10%	20%	25%	20%	15%	10%	0%	45%	45%
2/10			5%	15%	20%	15%	10%	10%	0%	45%	45%
3/11				5%	15%	20%	5%	20%	0%	45%	45%
4/12					20%	25%	5%	5%	0%	45%	45%
5/13						25%	5%	15%	0%	45%	45%
6/14							5%	20%	0%	45%	45%
7/15								5%	0%	45%	45%
8									0%	45%	45%
16										0%	0%
17											75%
18											

CSR (securitisation: CTP) delta risk buckets, risk weights and correlations

8.2.113 A Reporting Bank must assign CSR (securitisation: CTP) delta risk sensitivities arising from –

(a) securitisation exposures; and

(b) exposures that are not securitisation exposures and that hedge the securitisation exposures,

in the CTP into the CSR (securitisation: CTP) risk class.

8.2.114 A Reporting Bank must apply the same delta risk bucket and correlation structure used for the CSR (non-securitisation) risk class as set out in paragraphs 8.2.100 to 8.2.112, to the CSR (securitisation: CTP) risk class, except that the Reporting Bank must not apply delta risk buckets 17 and 18.

8.2.114A Where a Reporting Bank calculates CSR (securitisation: CTP) delta risk sensitivities to the risk factors that directly correspond to an index –

(a) if more than 75% of the constituents of the index, based on the weightings of the constituents of the index, are mapped to the same sector, the Reporting Bank must assign the CSR (securitisation: CTP) delta risk sensitivities to the index, to the sector set out in Table 8-3 corresponding to delta risk buckets 1 to 15; and

(b) in all other cases, the Reporting Bank must assign the CSR (securitisation: CTP) delta risk sensitivities to the risk factors that directly correspond to the index, to delta risk bucket 16 set out in Table 8-3.

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8.2.115 For calculating the delta risk weighted sensitivities pursuant to paragraph 8.2.10(d), a Reporting Bank must apply the risk weights for delta risk buckets 1 to 16 in Table 8-6, where the risk weights are the same for all tenors (i.e. 0.5 years, 1 year, 3 years, 5 years, 10 years) within each delta risk bucket.

Table 8-6: CSR (securitisation: CTP) delta risk weights

Delta Risk Bucket number	Risk weight
1	4.0%
2	4.0%
3	8.0%
4	5.0%
5	4.0%
6	3.0%
7	2.0%
8	6.0%
9	13.0%
10	13.0%
11	16.0%
12	10.0%
13	12.0%
14	12.0%
15	12.0%
16	13.0%

8.2.116 For delta risk buckets 1 to 15, for the purposes of calculating the CSR (securitisation: CTP) delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between 2 delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ within the same delta risk bucket, as follows:

$$\boldsymbol{\rho_{kl} = \rho_{kl}^{(name)} \cdot \rho_{kl}^{(tenor)} \cdot \rho_{kl}^{(basis)}}$$

where –

(a) $\boldsymbol{\rho_{kl}^{(name)}}$ is equal to –

(i) 100%, if the 2 names underlying the 2 delta risk weighted sensitivities k and l are identical; and

(ii) 35%, in all other cases;

(b) $\boldsymbol{\rho_{kl}^{(tenor)}}$ is equal to –

(i) 100%, if the 2 tenors of the delta risk weighted sensitivities k and l are identical; and

(ii) 65%, in all other cases; and

(c) $\boldsymbol{\rho_{kl}^{(basis)}}$ is equal to –

(i) 100%, if the 2 delta risk weighted sensitivities are related to the same curves; and

(ii) 99.00%, if one delta risk weighted sensitivity is related to the bond curve and the other is related to the CDS curve.

8.2.117 A Reporting Bank must calculate the CSR (securitisation: CTP) delta risk position for delta risk bucket 16 (Other sector) by calculating the sum of the absolute values of the delta risk weighted sensitivities assigned to this delta risk bucket:

$$K_{b(other\ sector\ delta\ risk\ bucket)} = \sum_{k} |WS_k|$$

8.2.118 For the purposes of aggregating CSR (securitisation: CTP) delta risk positions for all delta risk buckets pursuant to paragraph 8.2.10(f) and (g), a Reporting Bank must use the correlation parameter γ_{bc} set out in paragraph 8.2.111.

CSR (securitisation: non-CTP) delta risk buckets, risk weights and correlations

8.2.119 A Reporting Bank must assign the CSR (securitisation: non-CTP) delta risk sensitivities to the delta risk buckets set out in Table 8-7.

8.2.120 For the purposes of paragraph 8.2.119, to assign a CSR (securitisation: non-CTP) delta risk sensitivity to a delta risk bucket, if a securitisation exposure has one or more external credit assessments by recognised ECAIs, a Reporting Bank must determine the credit quality of the securitisation exposure in accordance with paragraph 7.3.30.

Table 8-7: CSR (securitisation: non-CTP) delta risk buckets

Delta Risk Bucket number	Seniority and Credit quality	Sector
1	Senior, with a credit quality grade of "3" or better as set out in Table 7M-1	Residential mortgage-backed security (RMBS) – Prime
2		RMBS – Mid-prime
3		RMBS – Sub-prime
4		Commercial mortgage-backed securities (CMBS)
5		Asset-backed securities (ABS) – Student loans
6		ABS – Credit cards
7		ABS – Auto loans
8		Collateralised loan obligation (CLO) non-CTP
9	Subordinated, with a credit quality grade of "3" or better as set out in Table 7M-1	RMBS – Prime
10		RMBS – Mid-prime
11		RMBS – Sub-prime
12		CMBS
13		Asset-backed securities (ABS) – Student loans
14		ABS – Credit cards
15		ABS – Auto loans
16		CLO non-CTP
17	Credit quality grade of "4" or worse as set out in Table 7M-1 or not rated	RMBS – Prime
18		RMBS – Mid-prime
19		RMBS – Sub-prime
20		CMBS
21		Asset-backed securities (ABS) – Student loans
22		ABS – Credit cards
23		ABS – Auto loans
24		CLO non-CTP
25	Other sector[662]	

8.2.121 For the purposes of paragraph 8.2.119, to assign a CSR (securitisation: non-CTP) delta risk sensitivity to a sector, a Reporting Bank must –

(a) rely on a classification that is commonly used in the market for assigning securitisation exposures to sectors; and

(b) assign CSR (securitisation: non-CTP) delta risk sensitivities, where the securitisation exposure cannot be assigned to a specific sector to delta risk bucket 25 (Other sector).

8.2.122 For calculating the delta risk weighted sensitivities pursuant to paragraph 8.2.10(d), a Reporting Bank must apply the risk weights in Table 8-8.

[662] Credit quality is not a differentiating consideration for this delta risk bucket.

Table 8-8: CSR (securitisation: non-CTP) delta risk weights

Delta Risk Bucket number	Risk weight
1	0.9%
2	1.5%
3	2.0%
4	2.0%
5	0.8%
6	1.2%
7	1.2%
8	1.4%
9	1.125%
10	1.875%
11	2.5%
12	2.5%
13	1%
14	1.5%
15	1.5%
16	1.75%
17	1.575%
18	2.625%
19	3.5%
20	3.5%
21	1.4%
22	2.1%
23	2.1%
24	2.45%
25	3.5%

8.2.123 For delta risk buckets 1 to 24, for the purposes of calculating the CSR (securitisation: non-CTP) delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between 2 delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ within the same delta risk bucket, as follows[663]:

$$\boldsymbol{\rho_{kl} = \rho_{kl}^{(tranche)} \cdot \rho_{kl}^{(tenor)} \cdot \rho_{kl}^{(basis)}}$$

where –

(a) $\boldsymbol{\rho_{kl}^{(tranche)}}$ is equal to –

(i) 100%, if the 2 names of delta risk weighted sensitivities k and l are within the same delta risk bucket and related to the same securitisation tranche, where 2 securitisation tranches are deemed to be the same if they have more than 80% overlap in notional terms; and

[663] For example, the Reporting Bank must apply a correlation of 40% for 2 securitisation tranches with the same tenor and basis but different tranches.

(ii) 40%, in all other cases;

(b) $\boldsymbol{\rho_{kl}^{(tenor)}}$ is equal to –

(i) 100%, if the 2 tenors of the delta risk weighted sensitivities k and l are identical; and

(ii) 80%, in all other cases; and

(c) $\boldsymbol{\rho_{kl}^{(basis)}}$ is equal to –

(i) 100%, if the 2 delta risk weighted sensitivities are related to the same curves; and

(ii) 99.90%, if one delta risk weighted sensitivity is related to the bond curve and the other is related to the CDS curve.

8.2.124 A Reporting Bank must calculate the CSR (securitisation: non-CTP) delta risk position for delta risk bucket 25 (Other sector) by calculating the sum of the absolute values of the delta risk weighted sensitivities assigned to this delta risk bucket:

$$\boldsymbol{K_{b(other\ sector\ delta\ risk\ bucket)} = \sum_{k} |WS_k|}$$

8.2.125 For the purposes of aggregating CSR (securitisation: non-CTP) delta risk positions for all delta risk buckets pursuant to paragraph 8.2.10(f) and (g), a Reporting Bank must –

(a) aggregate CSR (securitisation: non-CTP) delta risk positions for delta risk buckets 1 to 24 by applying the formula in paragraph 8.2.10(f) and (g) and a correlation parameter $\boldsymbol{\gamma_{bc}}$ of 0%; and

(b) aggregate CSR (securitisation: non-CTP) delta risk positions between delta risk bucket 25 (Other sector) and delta risk buckets 1 to 24 by calculating the sum of –

(i) the delta risk position for delta risk bucket 25 (Other sector); and

(ii) the aggregated delta risk position for delta risk buckets 1 to 24 pursuant to sub-paragraph (a).

Equity delta risk buckets, risk weights and correlations

8.2.126 A Reporting Bank must assign the equity delta risk sensitivities to a delta risk bucket set out in Table 8-9 that corresponds to –

(a) the market capitalisation of the equity underlying the equity delta risk sensitivity; and

(b) the economy and sector to which the issuer of the equity underlying the equity delta risk sensitivity belongs.

8.2.127 Where a Reporting Bank uses a look-through approach pursuant to paragraphs 8.2.81 or 8.2.86, a Reporting Bank must assign the equity delta risk sensitivities arising from positions in index constituents to a delta risk bucket set out in Table 8-9 that corresponds to –

(a) the market capitalisation of the index constituent underlying the equity delta risk sensitivity; and

(b) the economy and sector to which the issuer of the index constituent belongs.

8.2.128 Where a Reporting Bank calculates delta risk sensitivities to the risk factors that directly correspond to an index, the Reporting Bank must –

(a) if more than 75% of the constituents of the index, based on the weightings of the constituents of the index, are mapped to the same sector, assign the equity delta risk sensitivities to the sector set out in Table 8-9 corresponding to delta risk buckets 1 to 11 of Table 8-9. In all other cases, the Reporting Bank must assign the equity delta risk sensitivities to delta risk bucket 12 or 13 of Table 8-9;

(b) for equity delta risk sensitivities that have been assigned to a specific sector set out in Table 8-9 corresponding to delta risk buckets 1 to 10 of Table 8-9 in accordance with sub-paragraph (a) –

(i) assign the equity delta risk sensitivities to a delta risk bucket that corresponds to large market capitalisation, if 75% or more of the constituents of the index, based on the weightings of the constituents of the index, have a large market capitalisation. In all other cases, the Reporting Bank must assign the equity delta risk sensitivities to a bucket that corresponds to small market capitalisation; and

(ii) assign the equity delta risk sensitivities to a delta risk bucket that corresponds to advanced economy, if 75% or more of the constituents of the index, based on the weightings of the constituents of the index, are from an advanced economy. In all other cases, the Reporting Bank must assign the equity delta risk sensitivities to a delta risk bucket that corresponds to emerging market economy; and

(c) for the equity delta risk sensitivities which have been assigned to delta risk bucket 12 or 13 of Table 8-9 in accordance with sub-paragraph (a), assign the equity delta risk sensitivities to delta risk bucket 12 if 75% or more of the constituents of the index, based on the weightings of the constituents of the index, each have a large market capitalisation and are from an advanced economy. In all other cases, the Reporting Bank must assign the equity delta risk sensitivities to delta risk bucket 13 of Table 8-9.

Table 8-9: Equity delta risk buckets

Delta Risk Bucket number	Market cap	Economy	Sector
1	Large	Emerging market economy	Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities
2			Telecommunications, industrials
3			Basic materials, energy, agriculture, manufacturing, mining and quarrying
4			Financial institutions, real estate activities, technology
5		Advanced economy	Consumer goods and services, transportation and storage, administrative and support service utilities, healthcare, utilities
6			Telecommunications, industrials
7			Basic materials, energy, agriculture, manufacturing, mining and quarrying
8			Financial institutions, real estate activities, technology
9	Small	Emerging market economy	All sectors described in delta risk bucket numbers 1, 2, 3 and 4
10		Advanced economy	All sectors described in delta risk bucket numbers 5, 6, 7 and 8
11	Other sector[664]		
12	Large market cap, advanced economy equity indices (non-sector specific)		
13	Other equity indices (non-sector specific)		

8.2.129 For the purposes of paragraphs 8.2.126, 8.2.127 and 8.2.128 –

(a) a large market capitalisation is a market capitalisation equal to or larger than USD 2 billion, and a small market capitalisation is a market capitalisation less than USD 2 billion, where –

(i) the Reporting Bank must calculate the market capitalisation of an equity or index constituent, as the sum of the market capitalisations, based on the market value of total outstanding shares issued by –

(A) the issuer of the equity or index constituent; and

(B) where applicable, all the issuer's subsidiaries,

[664] Market capitalisation or the type of economy (i.e. advanced or emerging market) is not a differentiating consideration for this delta risk bucket.

that are listed on an approved exchange or an overseas exchange; and

(ii) to avoid doubt, the Reporting Bank must not under any circumstances, include in the market capitalisation of an equity or index constituent, calculated pursuant to sub-paragraph (a)(i), the market capitalisations of related corporations of the issuer of the equity or index constituent, where such related corporations are not subsidiaries[665] of the issuer;

(b) an advanced economy is the economy of Canada, the United States, Mexico, the euro area, the United Kingdom, Norway, Sweden, Denmark and Switzerland, Japan, Australia, New Zealand, Singapore or Hong Kong SAR;

(c) an emerging market economy is an economy that is not an advanced economy; and

(d) to assign an equity delta risk sensitivity to a sector –

(i) the Reporting Bank must rely on a classification that is commonly used in the market for assigning issuers to industry sectors;

(ii) the Reporting Bank must assign each issuer to a sector in Table 8-9, and must assign all issuers from the same industry to the same sector;

(iii) the Reporting Bank must assign equity delta risk sensitivities from any issuer that cannot be assigned to a specific sector to delta risk bucket 11 (Other sector); and

(iv) for multinational multi-sector issuers, the Reporting Bank must allocate the issuer to a delta risk bucket according to the geographical region and sector in which the issuer conducts most of its business.

8.2.130 For the purposes of calculating the delta risk weighted sensitivities pursuant to paragraph 8.2.10(d), a Reporting Bank must apply the risk weights in Table 8-10 for calculating the delta risk weighted sensitivities to –

(a) the equity spot price; and

(b) equity repo rates,

for delta risk buckets 1 to 13.

[665] Examples of related corporations of an entity which are not subsidiaries of the entity are the parent company of the entity, and the other subsidiaries of the parent company of the entity.

Table 8-10: Equity delta risk weights

Delta Risk Bucket	Risk weight for equity spot price	Risk weight for equity repo rate
1	55%	0.55%
2	60%	0.60%
3	45%	0.45%
4	55%	0.55%
5	30%	0.30%
6	35%	0.35%
7	40%	0.40%
8	50%	0.50%
9	70%	0.70%
10	50%	0.50%
11	70%	0.70%
12	15%	0.15%
13	25%	0.25%

8.2.131 For the purposes of calculating the equity delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between 2 delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ within the same delta risk bucket as follows:

(a) 99.90%, where –

(i) one of the delta risk weighted sensitivities is a sensitivity to an equity spot price, and the other delta risk weighted sensitivity is a sensitivity to an equity repo rate; and

(ii) both delta risk weighted sensitivities are related to the same equity issuer name;

(b) where both delta risk weighted sensitivities are sensitivities to equity spot prices, the following –

(i) 15%, between 2 delta risk weighted sensitivities within the same delta risk bucket for delta risk bucket 1, 2, 3 or 4;

(ii) 25%, between 2 delta risk weighted sensitivities within the same delta risk bucket for delta risk bucket 5, 6, 7 or 8;

(iii) 7.5%, between 2 delta risk weighted sensitivities within the same delta risk bucket for risk delta risk bucket 9;

(iv) 12.5%, between 2 delta risk weighted sensitivities within the same delta risk bucket for delta risk bucket 10; or

(v) 80%, between 2 delta risk weighted sensitivities within the same delta risk bucket for delta risk bucket 12 or 13;

(c) the delta risk correlation parameter ρ_{kl} set out in sub-paragraphs (b)(i) to (b)(v), where both delta risk weighted sensitivities are sensitivities to equity repo rates;

(d) apply the delta risk correlation parameter ρ_{kl} set out in sub-paragraphs (b)(i) to (b)(v) multiplied by 99.90%, where –

(i) one of the delta risk weighted sensitivities is a sensitivity to an equity spot price, and the other delta risk weighted sensitivity is a sensitivity to an equity repo rate; and

(ii) the delta risk weighted sensitivities are not related to the same equity issuer name.

8.2.132 A Reporting Bank must calculate the equity delta risk position for delta risk bucket 11 (Other sector) by calculating the sum of the absolute values of the delta risk weighted sensitivities assigned to this delta risk bucket:

$$K_{b(\text{other sector delta risk bucket})} = \sum_{k} |WS_k|$$

8.2.133 For the purposes of aggregating equity delta risk positions for all delta risk buckets pursuant to paragraph 8.2.10(f) and (g), a Reporting Bank must set the correlation parameter γ_{bc} as –

(a) 15%, if delta risk bucket b and delta risk bucket c fall within delta risk buckets 1 to 10;

(b) 0%, if either of delta risk bucket b or delta risk bucket c is delta risk bucket 11;

(c) 75%, if delta risk bucket b and delta risk bucket c are delta risk buckets 12 and 13 (i.e. one is delta risk bucket 12, one is delta risk bucket 13); and

(d) 45%, in all other cases.

Commodity delta risk buckets, risk weights and correlations

8.2.134 A Reporting Bank must assign the commodity risk sensitivities to the delta risk buckets set out in Table 8-11. For calculating the delta risk weighted sensitivities pursuant to paragraph 8.2.10(d), a Reporting Bank must apply the risk weights in Table 8-11.

Table 8-11: Commodity delta risk buckets and risk weights

Delta Risk Bucket number	Commodity bucket	Examples of commodities assigned to each commodity bucket (non-exhaustive)	Risk weight
1	Energy – solid combustibles	Coal; charcoal; wood pellets; nuclear fuel (including uranium)	30%
2	Energy – liquid combustibles	Crude oil (including light-sweet, heavy, West Texas Intermediate and Brent); biofuels (including bioethanol and biodiesel); petrochemicals (including propane, ethane, gasoline, methanol and butane); refined fuels (including jet fuel, kerosene, gasoil, fuel oil, naphtha, heating oil and diesel)	35%
3	Energy – electricity and carbon trading	Electricity (including spot, day-ahead, peak and off-peak); carbon emissions trading (including certified emissions reductions, in-delivery month EU allowance, Regional Greenhouse Gas Initiative CO2 allowance and renewable energy certificate)	60%
4	Freight	Dry-bulk route (including Capesize, Panamax, Handysize and Supramax); liquid-bulk or gas shipping route (including Suezmax, Aframax and very large crude carriers)	80%
5	Metals – non-precious	Base metal (including aluminium, copper, lead, nickel, tin and zinc); steel raw materials (including steel billet, steel wire, steel coil, steel scrap and steel rebar); minor metals (including cobalt, manganese, molybdenum)	40%
6	Gaseous combustibles	Natural gas; liquefied natural gas	45%
7	Precious metals (including gold)	Gold; silver; platinum; palladium	20%
8	Grains and oilseed	Corn; wheat; soybean (including soybean seed, soybean oil and soybean meal); oats; palm oil; canola; barley; rapeseed (including rapeseed seed, rapeseed oil and rapeseed meal); red bean; sorghum;	35%

Delta Risk Bucket number	Commodity bucket	Examples of commodities assigned to each commodity bucket (non-exhaustive)	Risk weight
		coconut oil; olive oil; peanut oil; sunflower oil; rice	
9	Livestock and diary	Cattle (including live and feeder); hog; poultry; lamb; fish; shrimp; dairy (including milk, whey, eggs, butter and cheese)	25%
10	Soft commodity and other agricultural commodity	Cocoa; coffee (including arabica and robusta); tea; citrus and orange juice; potatoes; sugar; cotton; wool; lumber and pulp; rubber	35%
11	Other commodity	Industrial minerals (including potash, fertiliser and phosphate rocks); rare earths; terephthalic acid; flat glass	50%

8.2.135 For the purposes of calculating the commodity delta risk position for a delta risk bucket pursuant to paragraph 8.2.10(e), a Reporting Bank must set the delta risk correlation parameter $\boldsymbol{\rho_{kl}}$ between 2 delta risk weighted sensitivities $\boldsymbol{WS_k}$ and $\boldsymbol{WS_l}$ within the same delta risk bucket, as follows[666]:

$$\boldsymbol{\rho_{kl} = \rho_{kl}^{(cty)} \cdot \rho_{kl}^{(tenor)} \cdot \rho_{kl}^{(basis)}}$$

where –

(a) $\boldsymbol{\rho_{kl}^{(cty)}}$ is equal to –

(i) 100%, if the 2 commodities of delta risk weighted sensitivities k and l are identical; and

(ii) the values in Table 8-12, in all other cases,

(b) $\boldsymbol{\rho_{kl}^{(tenor)}}$ is equal to –

(i) 100%, if the 2 tenors of the delta risk weighted sensitivities k and l are identical; and

(ii) 99%, in all other cases, and

(c) $\boldsymbol{\rho_{kl}^{(basis)}}$ is equal to –

[666] For example, the correlation between –
(a) the sensitivity to Brent, at a tenor of one year, for delivery in Le Havre; and
(b) the sensitivity to WTI, at a tenor of 5 years, for delivery in Oklahoma,
is 95%.99.00%.99.90% = 93.96%.

(i) 100%, if the 2 delta risk weighted sensitivities are identical in the delivery location of a commodity; and

(ii) 99.90%, in all other cases.

Table 8-12: Values of $\rho_{kl}^{(cty)}$

Delta Risk Bucket number	Commodity bucket	Correlation ($\rho_{kl}^{(cty)}$)
1	Energy – solid combustibles	55%
2	Energy – liquid combustibles	95%
3	Energy – electricity and carbon trading	40%
4	Freight	80%
5	Metals – non-precious	60%
6	Gaseous combustibles	65%
7	Precious metals (including gold)	55%
8	Grains and oilseed	45%
9	Livestock and diary	15%
10	Soft commodity and other agricultural commodity	40%
11	Other commodity	15%

8.2.136 For the purposes of paragraph 8.2.135(a), a Reporting Bank must treat 2 commodities as non-identical commodities if there exists, in the market, 2 instruments –

(a) which are identical in every aspect other than the underlying commodity to be delivered; and

(b) the 2 instruments are treated as non-identical in the market[667].

8.2.137 For the purposes of aggregating commodity delta risk positions for all delta risk buckets pursuant to paragraph 8.2.10(f) and (g), a Reporting Bank must set the correlation parameter γ_{bc} as –

(a) 20%, if delta risk bucket b and delta risk bucket c fall within delta risk bucket numbers 1 to 10; and

(b) 0%, if either of delta risk bucket b or delta risk bucket c is delta risk bucket 11.

[667] Examples of non-identical commodities are as follows:
(a) for delta risk bucket 2 (energy – liquid combustibles): WTI and Brent;
(b) for delta risk bucket 3 (energy – electricity and carbon trading):
  (i) each time interval –
    (A) at which the electricity can be delivered; and
    (B) that is specified in a contract that is made on a financial market (e.g. peak and off-peak), is treated as a non-identical electricity commodity;
  (ii) electricity produced in a specific region (e.g. Electricity NE, Electricity SE or Electricity North) is treated as a non-identical electricity commodity.
(c) for delta risk bucket 4 (freight):
  (i) each combination of freight type and route is treated as a non-identical commodity;
  (ii) each week at which a good has to be delivered is treated as a non-identical commodity.

Foreign exchange delta risk buckets, risk weights and correlations

8.2.138 A Reporting Bank must define a FX delta risk bucket as a currency pair for each currency in which an instrument is denominated in, expressed against the reporting currency, or base currency, where the Reporting Bank has obtained approval from the Authority to calculate FX risk relative to the base currency, of the Reporting Bank.

8.2.139 Subject to paragraph 8.2.140, a Reporting Bank must apply a risk weight of 15% to all sensitivities to FX delta risk factors, for the purposes of calculating the delta risk weighted sensitivities pursuant to paragraph 8.2.10(d).

8.2.140 For the following currency pairs, a Reporting Bank must apply a risk weight of 15% divided by the square root of 2:

(a) USD/EUR, USD/JPY, USD/GBP, USD/AUD, USD/CAD, USD/CHF, USD/MXN, USD/CNY, USD/NZD, USD/RUB, USD/HKD, USD/SGD, USD/TRY, USD/KRW, USD/SEK, USD/ZAR, USD/INR, USD/NOK, USD/BRL;

(b) any currency pair forming first-order crosses across the currency pairs specified in sub-paragraph (a)[668].

8.2.141 For the purposes of aggregating FX delta risk positions for all delta risk buckets pursuant to paragraph 8.2.10(f) and (g), a Reporting Bank must set the correlation parameter γ_{bc} as 60%.

Sub-division 7: SBM – Definition of Vega Risk Buckets, Risk Weights and Correlations

8.2.142 For the purposes of calculating the vega risk capital requirement for each risk class, a Reporting Bank must –

(a) for the GIRR, CSR (non-securitisation), CSR (securitisation: CTP), CSR (securitisation: non-CTP), equity and commodity risk classes, use the same risk bucket definitions for each risk class, which have been defined in paragraphs 8.2.91, 8.2.100, 8.2.114, 8.2.119, 8.2.126 and 8.2.134 for the calculation of the delta risk capital requirement for each risk class; and

(b) for the FX risk class, define a FX vega risk bucket as a currency pair for each exchange rate referenced by an instrument with FX vega risk.

8.2.143 For a multi-underlying instrument that is an option or an index option, a Reporting Bank must –

(a) assign the vega risk sensitivities to the maturity tenors set out in paragraphs 8.2.16 to 8.2.54; and

(b) for index options, assign the vega risk sensitivities to a sector specific vega risk bucket or an index vega risk bucket in accordance with paragraphs 8.2.102 and 8.2.104(c) for the CSR (non-securitisation) risk class and in

[668] For example, EUR/AUD is a first-order cross of USD/EUR and USD/AUD.

accordance with paragraph 8.2.128 for the equity risk class, as the case may be, with the following modifications:

(i) "delta risk sensitivity" in paragraphs 8.2.102, 8.2.104(c) and 8.2.128 is read as referring to "vega risk sensitivity;

(ii) "delta risk bucket" in paragraphs 8.2.102, 8.2.104(c) and 8.2.128 is read as referring to "vega risk bucket".

8.2.144 For the purposes of calculating the vega risk weighted sensitivities pursuant to paragraph 8.2.11(d), a Reporting Bank must apply the risk weight for each risk class[669] set out in Table 8-13.

Table 8-13: Regulatory liquidity horizon, $LH_{risk\ class}$ and risk weights per risk class

Risk Class or Sub-set of Risk Class	$LH_{risk\ class}$	Risk weights
GIRR	60	100%
CSR (non-securitisation)	120	100%
CSR (securitisation: CTP)	120	100%
CSR (securitisation: non-CTP)	120	100%
Equity risk (vega risk buckets 1 – 8 and 12 - 13[670])	20	77.78%
Equity risk (vega risk buckets 9 - 11[671])	60	100%
Commodity risk	120	100%
FX risk	40	100%

8.2.145 For the purposes of calculating the vega risk position for a vega risk bucket within the GIRR risk class pursuant to paragraph 8.2.11(e), a Reporting Bank must set the vega risk correlation parameter $\boldsymbol{\rho_{kl}}$ as follows:

$$\boldsymbol{\rho_{kl}} = \boldsymbol{min}\left[\boldsymbol{\rho_{kl}^{(option\ maturity)}} \cdot \boldsymbol{\rho_{kl}^{(underlying\ maturity)}}; \mathbf{1}\right]$$

where –

(a) $\boldsymbol{\rho_{kl}^{(option\ maturity)}}$ is equal to $\boldsymbol{e}^{-\boldsymbol{\alpha}\cdot\frac{|T_k - T_l|}{min\{T_k;T_l\}}}$, where –

(i) $\boldsymbol{\alpha}$ is set as 1%; and

669 The risk weight for each given vega risk factor k (RW_k) in Table 8.13 is derived from the formula $RW_k = min\left[RW_\sigma \cdot \frac{\sqrt{LH_{risk\ class}}}{\sqrt{10}}; 100\%\right]$ where RW_σ is set at 55%; and $LH_{risk\ class}$ is the regulatory liquidity horizon for each risk class as defined in Table 8-13.

670 These vega risk buckets correspond to large market capitalisation or index risk buckets set out in Table 8-9.

671 These vega risk buckets correspond to small market capitalisation or Other Sector risk buckets set out in Table 8-9.

(ii) $\boldsymbol{T_k}$ (respectively $\boldsymbol{T_l}$) is the time to maturity of the option from which the vega sensitivity VR_k (VR_l) is derived, expressed as a number of years; and

(b) $\boldsymbol{\rho_{kl}^{(underlying\ maturity)}}$ is equal to $\boldsymbol{e^{-\alpha.\frac{\left|T_k^U - T_l^U\right|}{min\{T_k^U; T_l^U\}}}}$, where –

(i) $\boldsymbol{\alpha}$ is set as 1%; and

(ii) $\boldsymbol{T_k^U}$ (respectively $\boldsymbol{T_l^U}$) is the residual maturity of the underlying of the option from which the vega sensitivity VR_k (VR_l) is derived, after the maturity of the option, expressed as a number of years.

8.2.146 Subject to paragraph 8.2.148, for the purposes of calculating the vega risk position for a vega risk bucket for the risk classes other than the GIRR risk class pursuant to paragraph 8.2.11(e), a Reporting Bank must set the vega risk correlation parameter $\boldsymbol{\rho_{kl}}$ as follows:

$$\boldsymbol{\rho_{kl} = min\left[\rho_{kl}^{(DELTA)} . \rho_{kl}^{(option\ maturity)}; 1\right]}$$

where –

(a) $\boldsymbol{\rho_{kl}^{(DELTA)}}$ is equal to the correlation that applies between the delta risk factors that correspond to vega risk factors k and l[672]; and

(b) $\boldsymbol{\rho_{kl}^{(option\ maturity)}}$ is as defined in paragraph 8.2.145.

8.2.147 For the purposes of determining $\boldsymbol{\rho_{kl}^{(DELTA)}}$ for the CSR (non-securitisation), CSR (securitisation: CTP), CSR (securitisation: non-CTP) and commodity risk classes in paragraph 8.2.146(a), a Reporting Bank must only use the risk factor dimensions that are specified in both the delta risk factor and vega risk factor, as follows:

(a) for the CSR (non-securitisation) and CSR (securitisation: CTP) risk classes: underlying name ($\boldsymbol{\rho_{kl}^{(name)}}$);

(b) for the CSR (securitisation: non-CTP) risk class: securitisation tranche ($\boldsymbol{\rho_{kl}^{(tranche)}}$);

(c) for the commodity risk class: commodity ($\boldsymbol{\rho_{kl}^{(cty)}}$).

8.2.148 For the CSR (non-securitisation), CSR (securitisation: CTP), CSR (securitisation: non-CTP) and equity risk classes, a Reporting Bank must calculate the vega risk position for the Other sector vega risk bucket for each risk class pursuant to paragraph 8.2.11(e) by calculating the sum of the absolute values of the vega risk weighted sensitivities assigned to the vega risk bucket:

[672] For example, if k is the vega risk factor from equity option X and l is the vega risk factor from equity option Y, $\boldsymbol{\rho_{kl}^{(DELTA)}}$ is the delta risk correlation parameter applicable between X and Y.

$$K_{b(other\ sector\ vega\ risk\ bucket)} = \sum_{k} |WS_k|$$

8.2.149 For the purposes of aggregating vega risk positions for all vega risk buckets within a risk class pursuant to paragraph 8.2.11(f) and (g), a Reporting Bank must –

(a) apply the same correlation parameter for γ_{bc}, as specified for delta risk correlations for each risk class in paragraphs 8.2.99, 8.2.111, 8.2.118, 8.2.125(a), 8.2.133, 8.2.137 and 8.2.141[673]; and

(b) aggregate CSR (securitisation: non-CTP) vega risk positions between vega risk bucket 25 (Other sector) and vega risk buckets 1 to 24 by calculating the sum of –

(i) the vega risk position for vega risk bucket 25 (Other sector); and

(ii) the aggregated vega risk position for vega risk buckets 1 to 24 pursuant to sub-paragraph (a).

Sub-division 8: SBM – Definition of Curvature Risk Buckets, Risk Weights and Correlations

8.2.150 For the purposes of calculating the curvature risk capital requirement for each risk class, a Reporting Bank must use the same risk bucket definitions for each risk class, which have been defined in paragraphs 8.2.91, 8.2.100, 8.2.114, 8.2.119, 8.2.126, 8.2.134 and 8.2.138, for the calculation of the delta risk capital requirement for each risk class.

8.2.151 For the purposes of calculating the net curvature risk position for curvature risk factor k for the FX and equity risk classes pursuant to paragraph 8.2.12(a) and (b), a Reporting Bank must set the risk weight for the curvature risk factor k as the respective delta risk weight.

8.2.152 For the FX risk class, a Reporting Bank may calculate the net curvature risk position for instruments for which FX curvature risk capital requirement is calculated pursuant to paragraph 8.2.12(b), by either –

(a) using the formula in paragraph 8.2.12(b), except that for instruments that do not reference the reporting currency, or the base currency in the case where the Reporting Bank calculates FX risk relative to a base currency, of the Reporting Bank, the Reporting Bank must divide the curvature risk positions referred to in paragraph 8.2.12(b)(vii) and (viii) by a scalar of 1.5; or

(b) subject to the written approval of the Authority, dividing the net curvature risk positions (CVR_k^+ and CVR_k^-) calculated using the formula in paragraph 8.2.12(b) by a scalar of 1.5 for all instruments for which FX curvature risk capital requirement is calculated, provided the Reporting Bank calculates

[673] For example, for the GIRR risk class, the Reporting Bank must use γ_{bc}=50% for the aggregation of vega risk sensitivities across different GIRR vega risk buckets.

FX curvature risk positions by shocking all currencies, including shocking the reporting currency (or base currency) of the Reporting Bank relative to all other currencies.

8.2.153 For the purposes of calculating the net curvature risk position for GIRR, CSR (non-securitisation), CSR (securitisation: non-CTP), CSR (securitisation: CTP) and commodity risk classes pursuant to paragraph 8.2.12(a) and (b), a Reporting Bank must set the risk weight for the curvature risk factor k as the highest prescribed delta risk weight in the delta risk bucket[674] corresponding to the curvature risk bucket to which curvature risk factor k belongs. To avoid doubt, when calculating the net curvature risk position for the commodity risk class, the Reporting Bank must apply the same commodity delta risk weight to all commodity curvature risk factors in the same curvature risk bucket.

[MAS Notice 637 (Amendment) 2024]

8.2.154 For the purposes of calculating the curvature risk position for a curvature risk bucket pursuant to paragraph 8.2.12(d), a Reporting Bank must calculate the curvature risk correlation parameter $\boldsymbol{\rho_{kl}}$ by squaring the corresponding delta risk correlation parameters $\boldsymbol{\rho_{kl}}$, except for the CSR (non-securitisation), CSR (securitisation: CTP), CSR (securitisation: non-CTP) and commodity risk classes[675].

8.2.155 For the purposes of calculating the curvature risk correlation $\boldsymbol{\rho_{kl}}$ for the CSR (non-securitisation), CSR (securitisation: CTP), CSR (securitisation: non-CTP) and commodity risk classes, a Reporting Bank must only use the risk factor dimensions that are specified in both the delta risk factor and the curvature risk factor as follows:

(a) for the CSR (non-securitisation) and CSR (securitisation: CTP) risk classes, the Reporting Bank must set the curvature risk correlation parameter as the square of the correlation parameter $\boldsymbol{\rho_{kl}^{(name)}}$;

(b) for the CSR (securitisation: non-CTP) risk class, the Reporting Bank must set the curvature risk correlation parameter as the square of the correlation parameter $\boldsymbol{\rho_{kl}^{(tranche)}}$;

(c) for the commodity risk class, the Reporting Bank must set the curvature correlation risk parameter as the square of the correlation parameter $\boldsymbol{\rho_{kl}^{(cty)}}$.

8.2.156 Despite paragraphs 8.2.154 and 8.2.155, for the CSR (non-securitisation), CSR (securitisation: CTP), CSR (securitisation: non CTP) and equity risk classes, a Reporting Bank must aggregate the curvature risk positions within the Other sector curvature risk bucket for each risk class for the purposes of calculating the curvature risk position pursuant to paragraph 8.2.12(d) using the following formula:

$$\boldsymbol{K_{b(other\ sector\ curvature\ risk\ bucket)} = max\left(\sum_{k} \max(CVR_k^+, 0), \sum_{k} \max(CVR_k^-, 0)\right)}$$

[674] For example, in the case of GIRR, for a given currency (i.e. delta risk bucket), the risk weight assigned to the 0.25-year tenor (i.e. the most punitive tenor risk weight) is applied to all the tenors simultaneously for each risk-free yield curve.

[675] The curvature risk factor is defined differently from the corresponding delta risk factor for the CSR (non-securitisation), CSR (securitisation: CTP), CSR (securitisation: non-CTP) and commodity risk classes.

8.2.157 For the purposes of aggregating curvature risk positions for all curvature risk buckets pursuant to paragraph 8.2.12(e), a Reporting Bank must calculate the curvature risk correlations γ_{bc} by squaring the corresponding delta correlation parameters, γ_{bc}[676].

Sub-division 9: Default Risk Capital

Overview of DRC requirement calculation

8.2.158 A Reporting Bank must subject equity and credit instruments within the trading book, which are subject to default risk, to DRC requirements.

8.2.159 A Reporting Bank must assign each instrument within the scope of paragraph 8.2.158 to one of the following components:

(a) non-securitisations[677];

(b) securitisations (non-CTP);

(c) securitisations (CTP).

8.2.160 For the purposes of paragraph 8.2.159, a Reporting Bank must assign instruments that are not securitisation exposures and that hedge securitisation exposures in the CTP, to the securitisations (CTP) component. To avoid doubt, the Reporting Bank must not include such instruments in the non-securitisations component.

8.2.161 A Reporting Bank must calculate the DRC requirement for each component in paragraph 8.2.159 as follows:

(a) the Reporting Bank must calculate the gross JTD position of each exposure for each instrument subject to default risk separately, in accordance with paragraphs 8.2.168 to 8.2.175 for the non-securitisations component, paragraphs 8.2.188 to 8.2.189 for the securitisations (non-CTP) component, and paragraphs 8.2.198 to 8.2.200 for the securitisations (CTP) component;

(b) with respect to the same reference entity[678], the Reporting Bank must offset, where permissible, the JTD amounts of long and short exposures to produce net long or net short JTD positions, for each reference entity;

(c) the Reporting Bank must assign net JTD positions to the buckets set out in paragraph 8.2.183 for the non-securitisations component, paragraph 8.2.194 for the securitisations (non-CTP) component and in accordance with paragraph 8.2.206 for the securitisations (CTP) component;

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676 For example, when aggregating CVR_{EUR} and CVR_{USD} for the GIRR risk class, the curvature risk correlation is $50\%^2 = 25\%$.

677 To avoid doubt, this comprises credit instruments, including equity instruments, which are not securitisation exposures.

678 The reference entity is the issuer (in the case of a bond or equity), or an obligor (in the case of other credit obligations).

(d) the Reporting Bank must calculate a bucket-level DRC requirement for each bucket in accordance with paragraph 8.2.184 for the non-securitisations component, paragraph 8.2.196 for the securitisations (non-CTP) component and paragraph 8.2.208 for the securitisations (CTP) component;

(e) the Reporting Bank must aggregate the bucket-level DRC requirement for each component in accordance with paragraph 8.2.187 for the non-securitisations component, paragraph 8.2.197 for the securitisations (non-CTP) component and paragraph 8.2.209 for the securitisations (CTP) component.

8.2.162 A Reporting Bank must calculate the overall DRC requirement for the components in paragraph 8.2.159 by calculating the sum of the DRC requirement for each component calculated under paragraph 8.2.161(e)[679].

8.2.163 For a non-securitisation credit derivative or an equity derivative, a Reporting Bank must determine the JTD position with respect to the underlying reference entity.

8.2.164 For a multi-underlying instrument or an index instrument[680], a Reporting Bank must determine the JTD position for each constituent reference entity as the difference between –

(a) the value of the instrument, assuming that each reference entity of the instrument defaults independently with zero recovery; and

(b) the value of the instrument, assuming that none of the reference entities of the instrument default.

8.2.165 Subject to paragraph 8.2.166, for exposures in an equity investment in a fund that is treated as an unrated equity exposure and assigned to delta risk bucket 11 (Other sector) in accordance with paragraph 8.2.88(b), a Reporting Bank must treat the equity investment in the fund as an unrated equity instrument.

8.2.166 Despite paragraph 8.2.165, where the mandate of the fund allows the fund to invest in primarily high-yield or distressed instruments, the Reporting Bank must calculate the effective average risk weight of the fund assuming that the fund first invests, to the maximum possible extent allowed under the fund's mandate, in instruments falling under the credit quality category attracting the highest risk weight, as set out in Table 8-14, and then progressively makes investments in instruments attracting lower risk weights in descending order until the total investment is reached.

8.2.167 A Reporting Bank must not recognise offsetting or diversification between the exposures assumed in accordance with paragraph 8.2.166, and other exposures.

[679] This means that a Reporting Bank must not recognise diversification benefit between the DRC requirements across the components in paragraph 8.2.159.

[680] For example, an index option.

Gross JTD for non-securitisations

8.2.168 A Reporting Bank must calculate the gross JTD position for each long or short exposure[681].

8.2.169 A Reporting Bank must determine whether the direction of an exposure is long or short based on whether the instrument results in a loss or gain in the event of a default of the reference entity, regardless of the type of instrument creating the exposure. A Reporting Bank must treat an instrument that results in a loss for the Reporting Bank in the case of a default of the reference entity[682] as a long exposure. A Reporting Bank must treat an instrument that results in a gain for the Reporting Bank in the case of a default of the reference entity as a short exposure.

8.2.170 A Reporting Bank must calculate the gross JTD position for each exposure, as follows:

$$\boldsymbol{JTD(long) = \max(LGD \times notional + P\&L, 0)}$$
$$\boldsymbol{JTD(short) = \min(LGD \times notional + P\&L, 0)}$$

where –

(a) notional is the notional amount of an exposure, as defined in paragraph 8.2.173; and

(b) P&L is the cumulative mark-to-market loss or gain that the Reporting Bank has already taken on the exposure.

8.2.171 For the purposes of paragraph 8.2.170, a Reporting Bank must assign LGD values as follows:

(a) the Reporting Bank must assign equity instruments and subordinated debt instruments an LGD value of 100%[683];

(b) the Reporting Bank must assign senior debt instruments an LGD value of 75%;

(c) the Reporting Bank must assign covered bonds an LGD value of 25%.

8.2.172 In calculating the gross JTD position as set out in paragraph 8.2.170, a Reporting Bank must record –

(a) the notional amount of an instrument that gives rise to a long (short) exposure as a positive (negative) value; and

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681 For example, if the Reporting Bank has a long position on a bond issued by Apple, and another short position on a bond issued by Apple, the Reporting Bank must calculate 2 separate gross JTD positions.

682 For example, a seller of a put option on a bond has a long credit exposure, since a default of the bond results in a loss to the seller of the put option.

683 To avoid doubt, the Reporting Bank must assign exposures in an equity investment in a fund that is treated as an unrated equity exposure and assigned to delta risk bucket 11 (Other sector) in accordance with paragraph 8.2.88(b) an LGD value of 100%, consistent with the requirement in paragraph 8.2.165 to treat such exposures as an unrated equity instrument.

(b) the P&L loss (gain) as a negative (positive) value.

8.2.173 For the purposes of paragraph 8.2.170(a), "notional amount of an exposure" in an instrument means the notional amount which the Reporting Bank uses to determine the loss of principal in the event of default[684].

8.2.174 Despite paragraph 8.2.170, a Reporting Bank must –

(a) not multiply the notional by the LGD for an exposure in an instrument, where the market value of an instrument is not linked to the recovery rate of the reference entity[685]; and

(b) set the gross JTD position as zero, if the contractual or legal terms of a derivative instrument allow for the unwinding of the derivative instrument with no exposure to default risk.

8.2.175 For the purposes of paragraph 8.2.170(b), a Reporting Bank must include the P&L of the equity option embedded within a convertible bond when calculating the gross JTD position for an exposure in a convertible bond[686].

Net JTD for non-securitisations

8.2.176 To account for defaults within a one-year horizon, a Reporting Bank must weight the gross JTD position for an exposure with a residual maturity less than one year, by multiplying the gross JTD position of the exposure by the weighting factor mentioned in paragraph 8.2.177.

8.2.177 Subject to paragraph 8.2.179, the Reporting Bank must apply a weighting factor of the ratio of the exposure's residual maturity relative to one year. To avoid doubt, the Reporting Bank must perform the weighting for gross JTD positions and not for net JTD positions.

8.2.178 A Reporting Bank must not weight the gross JTD position for an exposure with a residual maturity of one year or greater[687].

8.2.179 For the purposes of paragraph 8.2.177, a Reporting Bank must –

(a) for exposures with a residual maturity of less than 3 months, weight the gross JTD position by a minimum weighting factor of one-fourth[688];

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684 Annex 8A provides details on how the notional value of various instruments are calculated.

685 For example, a foreign exchange-credit hybrid option where there is an exchange of EUR coupons and USD coupons, together with a knockout feature that ends the exchange of cashflows in the event of a default of a particular bond issuer or equity issuer.

686 A convertible bond can be decomposed into a vanilla bond and a long equity option. As a result, treating a convertible bond as a vanilla bond when calculating its DRC requirement would potentially underestimate the JTD risk of the instrument.

687 For example, a Reporting Bank must weight the gross JTD position for an exposure with a 6 month residual maturity by one-half, while a Reporting Bank must not apply any weighting to the gross JTD position for an exposure with a one year residual maturity.

688 This is equivalent to the exposure having a residual maturity of 3 months.

(b) assign exposures to non-derivative equity instruments[689] a residual maturity of either more than one year or 3 months; and

(c) for exposures to derivative instruments, use the residual maturity of the derivative instrument, rather than the maturity of the underlying instrument, to calculate the weighting to be applied to the gross JTD position[690].

8.2.180 For the purposes of calculating the net JTD positions pursuant to paragraph 8.2.161(b), a Reporting Bank may offset the maturity-weighted gross JTD positions of long and short exposures to the same reference entity, where the short exposure has the same or lower seniority relative to the long exposure[691].

8.2.181 For the purposes of calculating the net JTD position pursuant to paragraph 8.2.161(b), a Reporting Bank must treat the maturity-weighted gross JTD position as a maturity-weighted gross JTD position to the credit protection provider, in cases where the Reporting Bank has bought eligible credit protection from an eligible protection provider.

8.2.182 In the case where a derivative transaction[691A] is hedged by the underlying equity or bond, a Reporting Bank may fully offset the maturity-weighted gross JTD positions of the derivative transaction and the underlying equity or bond[692] if the contractual and legal terms of the derivative transaction allow the Reporting Bank to unwind both the exposure in the derivative transaction and the exposure in the underlying equity or bond, at the time of expiry of the first exposure to mature, with no exposure to the default risk of the underlying equity or bond beyond the point of unwinding.

[MAS Notice 637 (Amendment) 2024]

Calculation of DRC requirement for non-securitisations

8.2.183 For the purposes of paragraph 8.2.161(c), a Reporting Bank must assign each net JTD position to one of the following buckets:

(a) companies;

(b) central governments, central banks and MDBs;

(c) PSEs.

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689 For example, shares.

690 For example, consider a hypothetical portfolio which contains an equity index futures with a residual maturity of one month and a negative market value of SGD 10 million, hedged with the underlying equity position with a positive market value of SGD 10 million. The Reporting Bank must treat the equity index futures as having a residual maturity of 3 months, while the Reporting Bank may treat the position in the underlying equity as similarly having a residual maturity of 3 months. The maturity-weighted gross JTD positions would be calculated as (1/4 x SGD -10 mil = SGD -2.5 mil) for the equity index future, and (1/4 x SGD 10 mil = SGD 2.5 mil) for the position in the underlying equity.

691 For example, the Reporting Bank may offset a long exposure in a bond with a short exposure in an equity, but the Reporting Bank must not offset a long exposure in the equity with a short exposure in the bond.

691A For example, a total return swap.

[MAS Notice 637 (Amendment) 2024]

692 This means that the net JTD of the 2 positions is zero.

8.2.184 A Reporting Bank must calculate the DRC requirement for each bucket as follows:

$$\boldsymbol{DRC_b = max\left[\left(\sum_{i \in Long} RW_i . net\ JTD_i\right) - HBR.\left(\sum_{i \in Short} RW_i . |net\ JTD_i|\right); 0\right]}$$

where –

(a) i refers to an instrument belonging to bucket b;

(b) $\boldsymbol{RW_i}$ refers to –

(i) the risk weight for instrument i set out in Table 8-14 corresponding to the credit quality category of the reference entity, in accordance with paragraph 8.2.185;

(ii) despite sub-paragraph (b)(i), 0% for instruments whose reference entities are central governments, central banks, entities referred to in paragraph 7.3.46, PSEs, or MDBs, that attract a 0% risk weight under the SA(CR) in accordance with paragraphs 7.3.42 to 7.3.51;

(iii) in the case of an exposure in an equity investment in a fund that is treated as an unrated equity instrument pursuant to paragraph 8.2.165, 15%; and

(iv) despite sub-paragraph (b)(iii), the risk weight determined in accordance with paragraph 8.2.166, for an exposure in an equity investment in a fund that is treated as an unrated equity exposure and assigned to delta risk bucket 11 (Other sector) in accordance with paragraph 8.2.88(b), and whose mandate allows it to invest in primarily high-yield or distressed instruments.

To avoid doubt, the Reporting Bank must apply the same risk weight for instruments of the same credit quality across all 3 buckets mentioned in paragraph 8.2.183; and

(c) HBR is the hedge benefit ratio which is calculated as follows:

$$\boldsymbol{HBR = \frac{\sum net\ JTD_{long}}{\sum net\ JTD_{long} + \sum |net\ JTD_{short}|}}$$

where –

(i) $\boldsymbol{\sum net\ JTD_{long}}$ is the sum of the net long, non risk-weighted JTD positions, where the summation is across all credit quality categories; and

(ii) $\boldsymbol{\sum |net\ JTD_{short}|}$ is the sum of the absolute values of the net short, non risk-weighted JTD positions, where the summation is across the credit quality categories.

Table 8-14: Risk weights for non-securitisations by credit quality category

Credit quality category	Risk weight
AAA	0.5%
AA	2%
A	3%
BBB	6%
BB	15%
B	30%
CCC	50%
Unrated	15%
Defaulted	100%

8.2.185 For the purposes of determining the risk weight pursuant to paragraph 8.2.184(b)(i) –

(a) if an underlying reference entity has defaulted, a Reporting Bank must use the risk weight for the Defaulted credit quality category of 100%;

(b) subject to sub-paragraph (a), if an underlying reference entity has one or more external credit assessments by recognised ECAIs, the Reporting Bank must determine the credit quality of that reference entity in accordance with paragraph 7.3.30; and

(c) subject to sub-paragraph (a) and paragraph 8.2.186, if an underlying reference entity does not have an external credit assessment by a recognised ECAI, the Reporting Bank must use the risk weight for the Unrated credit quality category of 15%.

8.2.186 Despite paragraph 8.2.185(c), if an underlying reference entity does not have an external credit assessment by a recognised ECAI, where a Reporting Bank has obtained approval from the Authority to adopt the IRBA pursuant to Division 4 of Part VII, the Reporting Bank may, with the prior written approval of the Authority, internally rate the reference entity and map the internal rating under the IRBA to a credit quality grade set out in Table 7M-1.

8.2.187 A Reporting Bank must calculate the DRC requirement for non-securitisations as the sum of the bucket level DRC requirements calculated pursuant to paragraph 8.2.184.

Gross JTD for securitisations (non-CTP)

8.2.188 A Reporting Bank must calculate the gross JTD position for each long or short exposure. A Reporting Bank must determine whether the direction of the exposure is long or short in accordance with paragraph 8.2.169[693].

8.2.189 A Reporting Bank must calculate the gross JTD position of each exposure as the market value of the exposure.

[693] For example, the Reporting Bank has a long securitisation exposure if it incurs losses in the event of a default in the securitised portfolio.

Net JTD for securitisations (non-CTP)

8.2.190 A Reporting Bank must apply the maturity-weighting in accordance with paragraphs 8.2.176 to 8.2.179 to the gross JTD positions arising from exposures in the securitisations (non-CTP) component.

8.2.191 A Reporting Bank must not offset –

(a) securitisation (non-CTP) exposures with different underlying securitised asset pools, even if the attachment and detachment points are the same; and

(b) securitisation (non-CTP) exposures arising from different tranches with the same securitised asset pool.

8.2.192 A Reporting Bank may –

(a) offset the maturity-weighted gross JTD positions of securitisation (non-CTP) exposures, arising from the same tranches with the same underlying securitised asset pools, but with different maturities; and

(b) offset the maturity-weighted gross JTD positions of the exposures in the following cases:

(i) where long (short) positions in a set of securitisation tranches are combined to perfectly replicate a short (long) tranche of a securitisation with the same underlying securitised asset pool[694];

(ii) where long (short) positions in a set of securitisation exposures with different underlying securitised asset pools are combined to perfectly replicate a short (long) securitisation exposure;

(iii) where a set of long (short) non-securitisation positions in individual names or a non-tranched index are combined to perfectly replicate a short (long) securitisation exposure[695].

8.2.193 Where a Reporting Bank offsets non-securitisation positions in individual names or a non-tranched index pursuant to paragraph 8.2.192(b)(iii), the Reporting Bank must exclude the non-securitisation positions from the non-securitisations component.

Calculation of DRC requirement for securitisations (non-CTP)

8.2.194 For the purposes of paragraph 8.2.161(c), a Reporting Bank must assign each net JTD position to one of the following buckets based on the asset class and region of the underlying securitised asset pool:

[694] For example, the Reporting Bank may also offset securitisation exposures if a collection of long securitisation exposures is perfectly replicated by a collection of short securitisation exposures.

[695] In other words, the Reporting Bank decomposes the non-securitisation positions in individual names, or in a non-tranched index, proportionately into securitisation tranches that span the entire tranche structure of the securitisation exposure, and perfectly replicate the securitisation exposure.

Table 8-15: Buckets for securitisations (non-CTP)

Bucket number	Regions	Asset Classes
1	All Regions	Companies (excluding small businesses)
2	Asia	Asset-backed commercial paper
3		Auto loans and auto leases
4		Residential mortgage-backed securities (RMBS)
5		Credit cards
6		Commercial MBS
7		Collateralised loan obligations
8		Collateralised debt obligations (CDO)-squared
9		Companies which are small businesses
10		Student loans
11		Other retail
12		Other wholesale
13	Europe	Asset-backed commercial paper
14		Auto loans and auto leases
15		Residential mortgage-backed securities (RMBS)
16		Credit cards
17		Commercial MBS
18		Collateralised loan obligations
19		Collateralised debt obligations (CDO)-squared
20		Companies which are small businesses
21		Student loans
22		Other retail
23		Other wholesale
24	North America	Asset-backed commercial paper
25		Auto loans and auto leases
26		Residential mortgage-backed securities (RMBS)
27		Credit cards
28		Commercial MBS
29		Collateralised loan obligations
30		Collateralised debt obligations (CDO)-squared
31		Companies which are small businesses
32		Student loans
33		Other retail
34		Other wholesale
35	All other	Asset-backed commercial paper
36		Auto loans and auto leases
37		Residential mortgage-backed securities (RMBS)
38		Credit cards
39		Commercial MBS
40		Collateralised loan obligations
41		Collateralised debt obligations (CDO)-squared
42		Companies which are small businesses
43		Student loans
44		Other retail
45		Other wholesale
46	Others	

8.2.195 For the purposes of paragraph 8.2.194, a Reporting Bank must rely on a classification that is commonly used in the market for assigning securitisation exposures based on asset class and region of the underlying. The Reporting Bank must –

(a) assign each securitisation (non-CTP) exposure to only one of the buckets defined in paragraph 8.2.194 and the Reporting Bank must assign all securitisations with the same asset class and region of underlying to the same bucket; and

(b) assign any securitisation (non-CTP) exposure that it is unable to assign based on the asset class and region of the underlying to the "Others" bucket.

8.2.196 A Reporting Bank must calculate the DRC requirement for each bucket as follows:

$$\boldsymbol{DRC_b = max\left[\left(\sum_{i \in Long} RW_i . net\ JTD_i\right) - HBR.\left(\sum_{i \in Short} RW_i . |net\ JTD_i|\right); 0\right]}$$

where –

(a) i refers to a securitisation (non-CTP) exposure assigned to bucket b;

(b) $\boldsymbol{RW_i}$ refers to the risk weight for securitisation (non-CTP) exposure i. To determine the $\boldsymbol{RW_i}$ to be applied, the Reporting Bank must –

(i) set the risk weight for the securitisation (non-CTP) exposure as the risk weight that would apply to the securitisation (non-CTP) exposure if the Reporting Bank were to hold it in the banking book, as determined by paragraph 7.1.14(b)(iii), in accordance with the hierarchy of approaches determined by paragraphs 7.6.13 to 7.6.19, divided by 12.5, except that the Reporting Bank must assume a tranche maturity of one year for the securitisation (non-CTP) exposure; and

(ii) cap the DRC requirement for an individual non-derivative securitisation (non-CTP) exposure at the fair value of the exposure; and

(c) HBR is the hedge benefit ratio which is calculated as follows:

$$\boldsymbol{HBR = \frac{\sum net\ JTD_{long}}{\sum net\ JTD_{long} + \sum |net\ JTD_{short}|}}$$

where –

(i) $\boldsymbol{\sum net\ JTD_{long}}$ is the sum of the net long, non risk-weighted JTD positions assigned to bucket b; and

(ii) $\boldsymbol{\sum |net\ JTD_{short}|}$ is the sum of the absolute value of the net short, non risk-weighted JTD positions assigned to bucket b.

8.2.197 A Reporting Bank must calculate the DRC requirement for securitisations (non-CTP) as a sum of the bucket level DRC requirements calculated pursuant to paragraph 8.2.196.

Gross JTD for securitisations (CTP)

8.2.198 A Reporting Bank must calculate the gross JTD position for each individual exposure. A Reporting Bank must determine whether the direction of the exposure is long or short in accordance with paragraph 8.2.169.

8.2.199 A Reporting Bank must calculate the gross JTD position as the market value of the exposure for –

(a) a securitisation exposure in a CTP; and

(b) an exposure that is not a securitisation exposure and that hedges securitisation exposures in a CTP.

8.2.200 A Reporting Bank must treat Nth-to-default instruments in a CTP as securitisation exposures with attachment and detachment points as defined below, where "Total names" is the total number of names in the underlying basket or pool:

(a) attachment point = (N – 1) / Total names;

(b) detachment point = N / Total names.

Net JTD for securitisations (CTP)

8.2.201 A Reporting Bank must apply the maturity-weighting in accordance with paragraphs 8.2.176 to 8.2.179 to the gross JTD positions arising from exposures in the securitisations (CTP) component.

8.2.202 A Reporting Bank may –

(a) for index securitisation exposures, offset the maturity-weighted gross JTD positions for securitisation exposures to the same index family[696], series[697] and tranche[698], across maturities;

(b) for index securitisation exposures and non-securitisation exposures, in an index in the same index family and series, offset the maturity-weighted gross JTD positions in the following cases[699]:

[696] For example, CDX.NA.IG.

[697] For example, series 18.

[698] For example, the (0% - 3%) tranche.

[699] For example, a long securitisation exposure in a 10% – 15% tranche can be offset by combined short securitisation exposures in the 10% – 12% and 12% – 15% tranches on the same index and series. Similarly, long securitisation exposures in the various tranches that, when combined, replicate an exposure in the index series (non-tranched) can be offset against a short securitisation exposure in the index series if all the exposures are to the same index and series.

(i) where long (short) positions in a set of individual index securitisation tranches are combined to replicate a short (long) securitisation tranche, of the same index family and series;

(ii) where long (short) positions in a set of individual index securitisation tranches are combined to replicate a short (long) non-securitisation exposure, in the same index family and series; and

(c) provided the conditions in paragraph 8.2.203 are met, for securitisation exposures and non-securitisation exposures, referencing an index or single name constituents of the index –

(i) where long (short) positions in a set of single name securitisation exposures are combined to perfectly replicate a short (long) securitisation exposure in an index, offset the maturity-weighted gross JTD positions of the long (short) positions in the set of single name securitisation exposures against the maturity-weighted gross JTD position of the short (long) securitisation exposure in the index;

(ii) where long (short) positions in a set of single name non-securitisation exposures are combined to perfectly replicate a short (long) securitisation exposure in an index, offset the maturity-weighted gross JTD positions of the long (short) positions in the set of single name non-securitisation exposures against the maturity-weighted gross JTD position of the short (long) securitisation exposure in the index; and

(iii) where perfect replication in accordance with sub-paragraph (c)(i) is not possible, and the long (short) positions in a set of single name securitisation exposures are combined to replicate a short (long) securitisation exposure in an index with a residual component, offset the maturity-weighted gross JTD positions of the long (short) positions in the set of single name securitisation exposures against the maturity-weighted gross JTD position of the short (long) securitisation exposure in the index, provided that the Reporting Bank reflects the residual maturity-weighted gross JTD position as the net JTD position[700].

8.2.203 For the purposes of applying the offsetting pursuant to paragraph 8.2.202(c), a Reporting Bank must –

(a) determine the JTD position of each of the single name exposures in the securitisation exposure, based on the difference between –
(i) the value of the securitisation exposure, assuming that each single name exposure defaults independently with zero recovery; and

(ii) the value of the securitisation exposure, assuming no single name exposure defaults;

[700] For example, a long securitisation exposure in an index of 125 names and short securitisation exposures of the exact replicating amounts in 124 of the names would result in a net long securitisation exposure in the missing 125th name of the index.

(b) ensure that the sum of the values of the decomposed single name exposures is equal to the undecomposed value of the securitisation exposure[701]; and

(c) apply the offsetting only for vanilla securitisation exposures[702].

8.2.204 A Reporting Bank must not offset the maturity-weighted gross JTD positions for any of the following:

(a) different tranches of the same index or series;

(b) different series of the same index;

(c) different index families.

Calculation of DRC requirement for securitisations (CTP)

8.2.205 For the calculation of the DRC requirement for the securitisations (CTP) component, a Reporting Bank must define each index as a separate bucket[703].

8.2.206 A Reporting Bank must assign each net JTD position arising from exposures in a CTP, including a bespoke securitisation exposure in a CTP, to a bucket corresponding to the index that is the reference instrument of the CTP[704].

8.2.207 A Reporting Bank must apply the risk weights to each net JTD position as follows:

(a) for a securitisation exposure in a CTP, the Reporting Bank must apply the risk weight in accordance with paragraph 8.2.196(b);

(b) for an exposure that is not a securitisation exposure and that hedges securitisation exposures in a CTP, the Reporting Bank must apply the risk weights referred to in paragraph 8.2.184(b).

8.2.208 A Reporting Bank must calculate the DRC requirement for each bucket (i.e. for each index) as follows:

$$\boldsymbol{DRC_b} = \left(\sum_{\boldsymbol{i \in Long}} \boldsymbol{RW_i . net\ JTD_i} \right) - \boldsymbol{HBR_{ctp}} \left(\sum_{\boldsymbol{i \in Short}} \boldsymbol{RW_i . |net\ JTD_i|} \right)$$

701 The Reporting Bank may perform the decomposition using a valuation model, where a single name equivalent constituent of a securitisation exposure is valued as the difference between the unconditional value of a securitisation exposure and the conditional value of the securitisation exposure, assuming that the single name defaults with zero recovery.

702 To avoid doubt, the Reporting Bank is not allowed to offset the maturity-weighted gross JTD positions of exotic securitisation exposures pursuant to paragraph 8.2.202(c). Examples of exotic securitisation exposures are CDO squared securitisation instruments.

703 A non-exhaustive list of indices include: CDX NA.IG, iTraxx Europe IG, CDX HY, iTraxx XO, LCDX (loan index), iTraxx LevX (loan index), Asia Corp, Latin America Corp, Other Regions Corp, Major Sovereign (G7 and Western Europe) and Other Sovereign.

704 To avoid doubt, exposures in a CTP assigned to a bucket encompasses all exposures arising from the CTP relating to an index, which comprises securitisation exposures, non-securitisation exposures that hedge the securitisation exposures in the CTP, and single-name exposures that replicate the index.

where –

(a) i refers to an exposure belonging to bucket b;

(b) $\boldsymbol{RW_i}$ refers to the risk weight that is to be applied in accordance with paragraph 8.2.207; and

(c) $\boldsymbol{HBR_{ctp}}$ is the hedge benefit ratio which is calculated as follows:

$$\boldsymbol{HBR_{ctp}} = \frac{\sum \boldsymbol{net\ JTD_{long}}}{\sum \boldsymbol{net\ JTD_{long}} + \sum |\boldsymbol{net\ JTD_{short}}|}$$

where –

(i) $\sum \boldsymbol{net\ JTD_{long}}$ is the sum of the net long, non risk-weighted JTD positions, where the summation is across all buckets (i.e. not only the long exposures within the bucket); and

(ii) $\sum |\boldsymbol{net\ JTD_{short}}|$ is the sum of the absolute value of the net short, non risk-weighted JTD positions, where the summation is across all buckets (i.e. not only the short exposures within the bucket).

8.2.209 A Reporting Bank must calculate the DRC requirement for securitisations (CTP) by[705] –

(a) for each bucket, calculating the contribution to the DRC requirement for securitisations (CTP) as follows:

$$\boldsymbol{Contribution\ to}\ \mathbf{DRC\ requirement_b} = (\boldsymbol{max}[\boldsymbol{DRC_b}, \mathbf{0}] + \mathbf{0.5} \times \boldsymbol{min}[\boldsymbol{DRC_b}, \mathbf{0}])$$

(b) aggregating the bucket level contributions to DRC requirements as follows:

$$\boldsymbol{DRC_{CTP}} = \boldsymbol{max}\left[\sum_{\boldsymbol{b}} \boldsymbol{Contribution\ to}\ \mathbf{DRC\ requirement_b}, \mathbf{0}\right]$$

Sub-division 10: Residual Risk Add-on (RRAO)

Instruments subject to the RRAO

8.2.210 A Reporting Bank must subject all of the following instruments to the RRAO:

(a) instruments with an exotic underlying. Instruments with an exotic underlying are instruments in the trading book with an underlying exposure that is not within the scope of delta, vega and curvature risk

[705] For example, if the DRC requirement for the index CDX North America IG is +100 and the DRC requirement for the index Major Sovereign (G7 and Western Europe) is -100, the total DRC requirement for the CTP is 100 – 0.5 x 100 = 50. The procedure for the DRC_b and DRC_{CTP} terms accounts for the basis risk in cross index hedges as the hedge benefit from the cross-index short positions is discounted twice, first by the hedge benefit ratio in DRC_b and again by the term 0.5 in the Contribution to DRC $requirement_b$ equation.

treatment in any risk class under the SBM set out in Sub-division 2 of this Division and of the DRC requirements set out in paragraph 8.2.158[706];

(b) instruments bearing other residual risks, which are instruments that meet any of the following criteria[707]:

(i) instruments subject to vega or curvature risk capital requirements in the trading book and with pay-offs that cannot be written or perfectly replicated as a finite linear combination of vanilla options with a single underlying equity price, commodity price, exchange rate, bond price, credit default swap or interest rate swap;

(ii) instruments which fall under a CTP as defined in Part II, except for instruments that are not securitisation exposures and that hedge the securitisation exposures in the CTP;

(c) instruments with embedded prepayment options (including securitisation exposures where the assets underlying the securitisation exposure have embedded prepayment options), where the embedded prepayment option is a behavioural option;

(d) options that do not have a maturity;

(e) options that do not have a strike price and do not have a barrier;

(f) options that have multiple strike prices or barriers.

8.2.211 A Reporting Bank must reflect behavioural patterns in the pricing model of instruments with embedded behavioural options, referred to in paragraph 8.2.210(c).

8.2.212 To avoid doubt, a Reporting Bank must not consider an instrument as falling within the scope of paragraph 8.2.210 and subject the instrument to the RRAO, only because the instrument is subject to one or more of the following risk types:

(a) risk from a cheapest-to-deliver option;

(b) smile risk: the risk of a change in an implied volatility parameter used for determining the value of an instrument with optionality, relative to the

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[706] Examples of exotic underlying exposures are longevity risk, weather, natural disasters and future realised volatility.

[707] Examples of other residual risk types and instruments that may fall within paragraph 8.2.210(b) are –
(a) gap risk: risk of a significant change in vega parameters in options due to small movements in the underlying, which results in hedge slippage. Relevant instruments subject to gap risk include all path dependent options, such as barrier options, Asian options, digital options and bonds with multiple call dates;
(b) correlation risk: risk of a change in a correlation parameter necessary for determining the value of an instrument with multiple underlyings. Relevant instruments subject to correlation risk include all basket options, best-of-options, spread options, basis options, Bermudan options and quanto options; and
(c) behavioural risk: risk of a change in exercise or prepayment outcomes such as those that arise in fixed rate mortgage products where retail clients may make decisions motivated by factors other than pure financial gain (such as demographical features or other social factors). A callable bond may have behavioural risk if the right to call lies with a retail client.

implied volatility of other instruments with optionality with the same underlying and maturity but different moneyness;

(c) correlation risk arising from multi-underlying instruments that are European or American plain vanilla options, or from any options that can be written as a linear combination of multi-underlying instruments that are European and American plain vanilla options;

(d) dividend risk arising from a derivative instrument whose underlying does not consist solely of dividend payments.

8.2.213 To avoid doubt, a Reporting Bank must subject index instruments and multi-underlying instruments that are options to the RRAO if they fall within the scope of paragraph 8.2.210. For funds that are subject to the treatment specified in paragraph 8.2.88(b) (i.e. treated as an unrated "Other sector" equity), the Reporting Bank must assume the fund is exposed to exotic underlying exposures or to other residual risks, to the maximum possible extent allowed under the fund's mandate.

8.2.214 Despite paragraph 8.2.210, a Reporting Bank must not subject a position in an instrument that is matched with an equal but opposite position in the same instrument from a transaction with an external party (i.e. a back-to-back transaction) to the RRAO. In such cases, the Reporting Bank must exclude the positions in the instrument from the RRAO[708].

8.2.215 Despite paragraph 8.2.210(b), a Reporting Bank must exclude any instrument that is listed or eligible for central clearing, or both, from the RRAO. To avoid doubt, a Reporting Bank must subject any instrument with an exotic underlying to the RRAO even if it is listed or eligible for central clearing, or both.

Calculation of the RRAO

8.2.216 A Reporting Bank must ensure that the scope of instruments that are subject to RRAO does not change the scope of risk factors subject to the delta risk, vega risk, curvature risk under the SBM, or DRC requirements.

8.2.217 A Reporting Bank must calculate the capital requirement for RRAO as the sum of the gross notional amount multiplied by the following risk weights, for all instruments bearing residual risk:

(a) for instruments with an exotic underlying as specified in paragraph 8.2.210(a), 1.0%;

(b) instruments referred to in paragraph 8.2.210(b) to (f), 0.1%.

8.2.218 Where the Authority is of the view that the RRAO is not sufficient to address the risk arising from an instrument, the Authority may impose additional capital requirements under Part X.

[708] For example, in cases where a dividend swap is used to hedge dividend risks or where a total return swap is used to hedge the underlying product, the Reporting Bank can only exclude the dividend swap and total return swap from RRAO only if there is an equal and opposite exposure in the same dividend swap or the total return swap.

Division 3: IMA

Sub-division 1: General Requirements and Application Process to Adopt the IMA

8.3.1 A Reporting Bank must comply with the requirements in Sub-division 6 of Division 1 of this Part, and in this Division, before applying for approval from the Authority to adopt the IMA[709].

8.3.2 A Reporting Bank must perform an internal assessment against the requirements and guidance set out in the footnotes in Sub-division 6 of Division 1 of this Part, and in this Division, to ascertain its readiness to adopt the IMA, before applying for approval from the Authority.

Application to Adopt the IMA

8.3.3 A Reporting Bank that intends to adopt the IMA to calculate its market risk capital requirements must apply in writing to the Authority for approval.

8.3.4 To avoid doubt, a Reporting Bank which complies with the requirements in this Division does not automatically qualify for IMA adoption.[710] In considering whether the approval mentioned in paragraph 8.3.3 should be granted to a Reporting Bank, the Authority –

(a) has to be satisfied that the intention of the Reporting Bank in adopting the IMA is to seek continual improvements in its risk management practices; and

(b) will consider the willingness and ability of the Reporting Bank to maintain and improve its systems to ensure the continuing appropriateness of the market risk capital requirements.

8.3.5 A Reporting Bank that has received approval from the Authority to use the IMA to calculate its market risk capital requirements for one or more trading desks must comply with the requirements in Sub-division 6 of Division 1 of this Part, this Division and with paragraph 8.3.9(a) to (g) on an ongoing basis[711].

8.3.6 A Reporting Bank must, in its application to adopt the IMA pursuant to paragraph 8.3.3, nominate each trading desk, defined by a Reporting Bank under paragraphs 8.1.62 to 8.1.69, to be either –

(a) in-scope for approval to adopt the IMA (i.e. the Reporting Bank intends to calculate market risk capital requirements for the trading desk using the IMA); or

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709 A Reporting Bank should also meet the guidance set out in the footnotes in Sub-division 6 of Division 1 of this Part, and in this Division, before applying for approval from the Authority to adopt the IMA.

710 The Reporting Bank should not regard the requirements in this Division as an exhaustive checklist of requirements to be satisfied in order to adopt the IMA.

711 A Reporting Bank that has received approval from the Authority to use the IMA to calculate its market risk capital requirements for one or more trading desks should meet the guidance set out in the footnotes in Sub-division 6 of Division 1 of this Part, and in this Division, on an ongoing basis.

(b) out-of-scope of the IMA (i.e. the Reporting Bank intends to calculate market risk capital requirements for the trading desk using the SA(MR)).

The Reporting Bank must specify in writing in its application a basis for the nomination of each trading desk. The Reporting Bank must not nominate a trading desk to be out-of-scope of the IMA for the sole reason that market risk capital requirements for the trading desk determined using the SA(MR) are lower than that determined using the IMA.

8.3.7 A Reporting Bank must ensure that the application to adopt the IMA pursuant to paragraph 8.3.3 contains all of the following:

(a) a written confirmation from the executive officer responsible for risk management in the Reporting Bank that –

(i) the Reporting Bank has conducted an internal assessment and has ascertained that it fulfils the requirements set out in this Division;

(ii) the use of IMA forms an integral part of the process and system of the Reporting Bank for managing market risk;

(iii) the Reporting Bank has considered the implications of the use of IMA on market risk assessment and capital management;

(iv) the Reporting Bank has a process for continually determining the suitability of its market risk management strategy and framework and its IMA process and system, taking into account any regulations, Notices and guidelines that the Authority may issue from time to time; and

(v) the Reporting Bank has policies, procedures, systems and controls to calculate its market risk capital requirements under the IMA accurately and that those policies, procedures, systems and controls are subject to internal audit at least annually;

(b) a written confirmation from the executive officer responsible for internal audit of the Reporting Bank that –

(i) he agrees with the confirmation by the executive officer responsible for risk management pursuant to sub-paragraph (a); and

(ii) the Reporting Bank has conducted an internal audit to independently verify, and has ascertained that, it has the systems, processes and controls necessary for adopting the IMA;

(c) a report on the latest internal assessment conducted by the Reporting Bank prior to the application, which must include –

(i) a report on backtesting and PLA test results, where the backtesting and PLA tests are performed in accordance with paragraphs 8.3.138 to 8.3.157, and 8.3.159 to 8.3.176, for a period of one year preceding the application; and

(ii) any relevant supporting documentation relating to the adoption of the IMA.

8.3.8 For the purposes of paragraph 8.3.7(c)(i), a Reporting Bank must, if required by the Authority, perform the backtesting and PLA tests for a period longer than one year preceding the application.

Approval to Adopt the IMA

8.3.9 The Authority may grant approval for a Reporting Bank to adopt the IMA for each trading desk nominated to be in-scope for approval to adopt the IMA, for the purposes of calculating its market risk capital requirements, subject to such conditions or restrictions as the Authority may impose. The Authority will only grant approval if the Authority is, at the minimum, satisfied that –

(a) the Reporting Bank's market risk management process and system is conceptually sound and is implemented with integrity;

(b) the Reporting Bank has a sufficient number of staff skilled in the use of sophisticated models in the functions of trading, risk control, audit, and back office;

(c) the Reporting Bank's market risk management model has, in the Authority's view, a proven track record of reasonable accuracy in measuring risk;

(d) the Reporting Bank conducts stress tests of its market risk positions held in the trading desks at least once a month, in accordance with the requirements set out in paragraphs 8.3.87 to 8.3.97;

(e) the Reporting Bank meets the requirements in Sub-division 6 of Division 1 of this Part, and the qualitative standards set out in paragraphs 8.3.22 to 8.3.97;

(f) the trading desks meet the requirements in paragraph 8.3.17(b) and (c); and

(g) the proportion of the Reporting Bank's aggregated market risk capital requirement, calculated in accordance with paragraph 8.3.243, that is based on positions held in trading desks that meet the requirements in paragraph 8.3.17(b) and (c), is more than or equal to 10%.

8.3.10 For trading desks which the Reporting Bank had nominated to be out-of-scope of the IMA in an IMA application pursuant to paragraph 8.3.6, a Reporting Bank must use the SA(MR) to calculate market risk capital requirements for those trading desks for a period of at least one year, from the date of the Authority's approval, or rejection, of that IMA application by the Reporting Bank.

8.3.11 The Authority may require a period of monitoring and live testing of a Reporting Bank's IMA framework, including the monitoring and testing of the Reporting Bank's

internal models[712] used for the purposes of calculating market risk capital requirements, prior to granting the approval in paragraph 8.3.9.

8.3.12 A Reporting Bank that has received approval to use the IMA to calculate its market risk capital requirements for a trading desk must not revert to calculating the market risk capital requirements for that trading desk using the SA(MR) or SSA(MR), unless directed by the Authority to do so.

8.3.13 If a Reporting Bank becomes aware, after adopting the IMA for a trading desk, that any of the confirmations made pursuant to paragraph 8.3.7(a) or (b) are no longer valid, it no longer meets the requirement in paragraph 8.3.5, or that it no longer complies with any of the conditions or restrictions imposed by the Authority pursuant to paragraph 8.3.9, it must –

(a) inform the Authority in writing as soon as practicable and, in any case, no later than 5 business days of the Reporting Bank becoming aware, of the invalidity of any confirmation, failure to meet the requirement, or any non-compliance with the conditions or restrictions, as the case may be;

(b) assess the effect of the invalidity of the confirmation(s), failure to meet the requirement, or non-compliance with the conditions or restrictions, as the case may be, in terms of the risk(s) posed to the Reporting Bank (if any);

(c) prepare a plan to rectify the issues that led to the invalidity of the confirmation(s), failure to meet the requirement, or non-compliance with the conditions or restrictions, as the case may be, and inform the Authority of its plan (including its target completion date for the plan) as soon as practicable; and

(d) undertake prompt corrective action within a reasonable time in accordance with the plan prepared pursuant to sub-paragraph (c).

8.3.14 The Authority may –

(a) suspend or revoke its approval for a Reporting Bank to adopt the IMA;

(b) subject a Reporting Bank to higher capital requirements pursuant to section 10(3) of the Banking Act; or

(c) take any other actions,

if –

[712] To avoid doubt, internal models include market risk management models, and models for the calculation of market risk capital requirements comprising ES models, SES models and DRC requirement models, used by a Reporting Bank. Market risk management models are used by the Reporting Bank for risk management purposes, and include trading desk risk management models used by trading desks which are in-scope of the IMA. Trading desk risk management models are based on the methodologies used in the Reporting Bank's risk management models used for internal risk management purposes but can differ in aspects such as risk factor identification, parameter estimation and proxy concepts, so as to meet the requirements specified in this Sub-division.

(i) the Reporting Bank has not fulfilled any of the conditions or restrictions imposed by the Authority pursuant to paragraph 8.3.9;

(ii) the Reporting Bank fails to comply with paragraph 8.3.13;

(iii) the Authority subsequently becomes aware that the Reporting Bank has furnished information that is false or misleading in a material manner to the Authority in connection with its application for approval to adopt the IMA; or

(iv) the Authority is not satisfied that the Reporting Bank is in compliance with the requirements in this Division, or that the risk management process and system of the Reporting Bank are adequate to support the IMA.

8.3.15 A Reporting Bank must seek the approval of the Authority before it makes any significant change to its IMA framework (including its internal models) for market risk. Prior to receiving approval for any significant change to its internal models, the Reporting Bank must continue to use its existing internal models to calculate its market risk capital requirements for the affected exposures, unless required by the Authority to use the SA(MR).

Scope of IMA

8.3.16 A Reporting Bank must –

(a) use the IMA to calculate market risk capital requirements only for positions held in trading desks that are in-scope of the IMA; and

(b) ensure that its internal models address all positions held in trading desks that are in-scope of the IMA.

8.3.17 A Reporting Bank must treat a trading desk as being in-scope of the IMA only if –

(a) the Reporting Bank has obtained the Authority's approval for the use of its internal models, including the DRC requirement model in cases where the trading desk has exposure to issuer default risk, in respect of the trading desk;

(b) the trading desk satisfies the backtesting requirements at both the IMA portfolio level and at the trading desk level in accordance with paragraphs 8.3.149 to 8.3.162; and

(c) the trading desk satisfies the PLA test at the trading desk level as specified in paragraphs 8.3.165 to 8.3.180, meaning that the trading desk is assigned to the green or amber zone by the Reporting Bank in accordance with paragraph 8.3.175.

8.3.18 To avoid doubt, a Reporting Bank must treat a trading desk that is not in-scope of the IMA as being out-of-scope of the IMA.

8.3.19 The Reporting Bank must conduct the PLA test and backtesting on a quarterly basis to determine –

(a) if the trading desk is eligible to be in-scope of the IMA in accordance with paragraph 8.3.17; and

(b) the classification of the trading desk under the PLA test in accordance with paragraph 8.3.175.

8.3.20 A Reporting Bank must not assign any securitisation position to a trading desk that is in-scope of the IMA. The Reporting Bank must assign a securitisation position to a trading desk that is out-of-scope of the IMA, and may assign a position in an instrument hedging the securitisation position to the same trading desk.

8.3.21 A Reporting Bank must assess the proportion of the Reporting Bank's aggregated market risk capital requirement (as calculated in accordance with paragraph 8.3.243) that is based on positions held in trading desks that are in-scope of the IMA, on a quarterly basis. If this proportion is less than 10% for the Reporting Bank, the Reporting Bank must not use the IMA for calculating its market risk capital requirements for that quarter and on an ongoing basis thereafter, until the Reporting Bank reapplies for and is granted approval from the Authority to use the IMA for the purposes of calculating its market risk capital requirements.

Sub-division 2: Qualitative Standards

Role of the Board and Senior Management

8.3.22 A Reporting Bank must understand the nature and level of market risks taken by the Reporting Bank and how this is aligned with its business strategy. The Reporting Bank must ensure that the Board reviews the market risk-return strategy of the Reporting Bank at least annually or more frequently if market conditions warrant. The Reporting Bank must ensure that senior management keeps the Board apprised on a regular basis of the market risk exposures and transactions of the Reporting Bank which have a significant impact on market risk.

8.3.23 A Reporting Bank must ensure that the Board has ultimate responsibility for the continuing effectiveness of the market risk management process and system, and stress tests, and that sufficient resources are devoted to the market risk control function. The Board may delegate some of its market risk management responsibilities to senior management or to staff, or committees comprising senior management or staff. However, the Reporting Bank must ensure that accountability of the Board is not delegated and that the Board continues to exercise oversight of its delegated responsibilities.

8.3.24 A Reporting Bank must ensure that senior management exercises active oversight exceeding the level of involvement by the Board to ensure the continuing effectiveness of the market risk management process and system, and stress tests, and that sufficient resources are devoted to the market risk control function. The Reporting

Bank must ensure that senior management has a good understanding of the market risk management process and system[713].

8.3.25 A Reporting Bank must ensure that the Board reviews and approves all material aspects relating to the IMA framework of the Reporting Bank. The Reporting Bank must ensure that senior management –

(a) reviews and approves material aspects of the use of the IMA;

(b) reviews and approves material differences between established policies and procedures set out in the IMA framework and actual practice; and

(c) reports significant issues to the Board on a regular and timely basis.

8.3.26 A Reporting Bank must ensure that the Board establishes comprehensive and adequate written policies, procedures and controls relating to the use of the IMA by the Reporting Bank, including setting out, as part of its written polices, the risk tolerance of the Board. The Reporting Bank must ensure that these policies, procedures and controls are aligned with the risk tolerance of the Board and clearly delineate lines of authority and responsibility for managing market risk[714]. The Reporting Bank must also ensure that the Board ensures that the actions of senior management are aligned with the policies[715].

8.3.27 A Reporting Bank must ensure that senior management establishes clear delineations of lines of responsibility for managing market risk, adequate systems for measuring market risk, a comprehensive set of risk limits, effective internal controls and a comprehensive market risk reporting process. A Reporting Bank must ensure that senior management establishes processes for ensuring compliance with the Reporting Bank's market risk management policies, procedures and controls[716].

8.3.28 A Reporting Bank must ensure that senior management ensures that the market risk management process and system of the Reporting Bank are regularly reviewed and evaluated[717].

8.3.29 A Reporting Bank must ensure that the Board and senior management exercise oversight over the stress testing process of the Reporting Bank in relation to market risk. The Reporting Bank must ensure that the Board reviews and approves all material aspects relating to the stress tests of the Reporting Bank. The Reporting Bank must ensure that senior management regularly reviews the techniques, assumptions, results and appropriateness of the stress tests. The Reporting Bank must ensure that the Board and senior management approve significant changes to the stress test techniques and

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713 A Reporting Bank should ensure that senior management has the requisite skills to manage the market risks arising from business activities of the Reporting Bank and that there is sufficient depth of market risk management knowledge and experience across different levels and functions within the Reporting Bank.

714 The Reporting Bank should ensure that the Board ensures that there is adequate representation from independent risk management units on committees responsible for decisions which may impact the market risk of the Reporting Bank. These committees should have written terms of reference with clearly defined objectives, roles and responsibilities.

715 This is part of the checks and balances embodied in sound corporate governance.

716 The Reporting Bank should ensure that senior management articulates its expectations and provides guidance on technical and operational aspects of the market risk management process and system.

717 The Reporting Bank should ensure that such review takes into account changes in the activities of the Reporting Bank and market conditions.

assumptions. The Reporting Bank must communicate results of the stress tests to the Board regularly.

8.3.30 A Reporting Bank must keep the Board informed of material changes to the IMA framework of the Reporting Bank, any significant exceptions from established policies and procedures set out in the IMA framework, and any weaknesses associated with the use of the IMA by the Reporting Bank or the stress tests of the Reporting Bank.

Role of Independent Risk Management Unit

8.3.31 A Reporting Bank must have one or more risk management units which are independent from its market risk-taking units and which have a functional reporting line to the Board Risk Committee, or the Chief Risk Officer or a person of an equivalent position in the Reporting Bank. The Reporting Bank must ensure that the remuneration of such independent risk management unit or units is not directly linked to the performance of market risk-taking units. In addition, the Reporting Bank must ensure that there is no conflict of interest and that the staff in the independent risk management unit or units is able to provide objective and effective challenge to the staff of the market risk-taking units.

8.3.32 A Reporting Bank must ensure that the responsibilities of the independent risk management unit or units include –

(a) designing and implementing the market risk management process and system of the Reporting Bank;

(b) establishing a comprehensive set of risk limits to align the business goals of the Reporting Bank with the market risk threshold approved by the Board;

(c) approving limit excesses within the Board's limit framework;

(d) establishing procedures for market risk identification, measurement, monitoring and control;

(e) monitoring the compliance of the Reporting Bank with established policies, controls and procedures;

(f) conducting backtesting of the internal models in accordance with paragraphs 8.3.149 to 8.3.162, and PLA tests of the internal models in accordance with paragraphs 8.3.165 to 8.3.180; and

(g) performing stress tests on the market risk exposures of the Reporting Bank.

8.3.33 A Reporting Bank must ensure that a model validation unit of the bank that is independent of the unit that designs and implements the internal models of the Reporting Bank conducts the initial and ongoing validation of all internal models of the Reporting Bank. The Reporting Bank must ensure that the model validation unit conducts a validation of all internal models of the Reporting Bank at least annually.

8.3.34 A Reporting Bank must ensure that its independent risk management unit or units –

(a) produce daily reports; and

(b) analyse the daily reports based on the output of the market risk management model of the Reporting Bank, including evaluating the relationship between measures of market risk exposure and risk limits.

The Reporting Bank must ensure that these reports are disseminated to market risk-taking units on a timely basis so that action can be taken, where appropriate.

8.3.35 A Reporting Bank must ensure that its independent risk management unit or units provide senior management with an analysis of the market risk exposures of the Reporting Bank on a regular basis. The Reporting Bank must ensure that reports, including the daily reports referred to in paragraph 8.3.34, prepared by the independent risk management unit or units, are reviewed by a level of management that has the authority to enforce both reductions in positions taken by individual traders and reductions in the Reporting Bank's overall risk exposure.

Risk Management Process and System– Overview

8.3.36 A Reporting Bank must ensure that its market risk management process and system are commensurate with the scope, size and complexity of its trading and other financial activities and the market risks that it assumes.[718]

8.3.37 Where a Reporting Bank is part of a banking group, the Reporting Bank must manage the market risk of all the entities within the banking group and, where practicable, integrate its market risk management process and system across the banking group.

Risk Management Process and System – Policies, Procedures and Controls

8.3.38 A Reporting Bank must establish policies to reflect its trading strategy, including its approach to managing market risk. The Reporting Bank must ensure that these policies address the identification, measurement, monitoring and control of market risk.

8.3.39 The Reporting Bank must ensure that the policies are reviewed on a regular basis.

8.3.40 A Reporting Bank must establish and document procedures to implement the market risk policies. The Reporting Bank must also have a process in place for ensuring compliance with the documented set of internal manuals, policies, controls and procedures concerning the operation of the market risk management process and system, including its market risk management model.

8.3.41 A Reporting Bank must ensure that its market risk management model is documented. The Reporting Bank must ensure that such documentation explains the

[718] This is to enable the Reporting Bank's market risk exposures to be identified, measured, monitored and controlled on a timely basis.

principles of the market risk management model, the empirical techniques used by the Reporting Bank to measure market risk, and the theoretical basis for these techniques.

8.3.42 A Reporting Bank must ensure that its staff has access to the documentation concerning the operation of the risk management process and system referred to in paragraph 8.3.40, and are able to perform their respective risk management functions according to the documented policies, procedures and controls.

8.3.43 A Reporting Bank must ensure that senior management ensures that policies, procedures and controls in place to manage market risk are clearly and comprehensively documented and communicated to relevant staff of the Reporting Bank. The Reporting Bank must also ensure that senior management regularly evaluates the policies, procedures and controls in place to manage market risk to ensure that those policies, procedures and controls are appropriate and sound.

8.3.44 A Reporting Bank must ensure that its management information system is able to support its use of the IMA, in particular, for the identification, measurement, monitoring and control of market risks.

8.3.45 A Reporting Bank must have a process to ensure the integrity, accuracy and timeliness of data in its management information system and the reports produced.

8.3.46 A Reporting Bank must ensure that its management information system has the capability to support the Reporting Bank's conduct of backtesting and the PLA test, in accordance with the requirements set out in Sub-division 4 of this Division.

Risk Management Process and System - Assessment Process for New Instruments

8.3.47 A Reporting Bank must have a policy to ensure that every new instrument that it takes a position in is assessed minimally against the criteria set out in paragraphs 8.3.48 and 8.3.49. The Reporting Bank must ensure that the policy clearly explains what is to be considered a new instrument for which an assessment before taking a position in the instrument is necessary. The Reporting Bank must ensure that the policy also identifies a functional unit independent of the market risk-taking units to be accountable for the approval process for a new instrument.

8.3.48 Before a Reporting Bank takes a position in a new instrument, it must ensure that its market risk management process and system can identify, measure, monitor and control the risks arising from a position in the instrument.

8.3.49 A Reporting Bank must ensure that every proposal to take a position in a new instrument comprises –

(a) a description of the proposed instrument, the targeted market and the underlying objectives of the transactions[719];

[719] For example, customer service, risk management, or trading.

(b) an analysis of the risks that may arise and details of the identification, measurement, monitoring and control of those risks, including the validation of pricing models and valuation techniques;

(c) the identification of resources required to establish sound and effective market risk management of the proposed instrument;

(d) an analysis of the appropriateness of the proposed instrument in relation to the overall financial condition and capital levels of the Reporting Bank;

(e) an analysis of whether the proposed instrument complies with the relevant legal and regulatory requirements;

(f) a description of the relevant accounting guidelines and tax treatment for the proposed instrument; and

(g) a record of the review and approvals from staff with the appropriate level of authority in the relevant areas[720] to proceed with taking a position in the proposed instrument.

8.3.50 A Reporting Bank must conduct a post-implementation review of a new instrument at an appropriate time after its introduction. The Reporting Bank must also perform periodic reviews of approved product proposals to ensure their continued relevance. The Reporting Bank must document these reviews and take appropriate steps to address any issues that arise from such reviews.

Risk Management Process and System – Risk Identification

8.3.51 A Reporting Bank must have a policy in place to ensure that all market risks are identified and understood before the Reporting Bank undertakes the market risks. The Reporting Bank must establish procedures to identify all market risks arising from all its business activities.

8.3.52 A Reporting Bank must take into consideration the risk-return relationship of its business activities in deciding on its market risk threshold and the types of business activities to engage in.

8.3.53 Once a Reporting Bank has determined its market risk threshold, it must develop a trading strategy to align its business goals with the market risks that it is prepared to undertake. The Reporting Bank must review the risk-return relationship of its business activities regularly and evaluate whether its trading strategy needs to be adjusted based on changes in its business goals and in market conditions[721]. The Reporting Bank must document these evaluations and adjust the trading strategy if it deems it necessary to do so.

[720] For example, risk management, operations, accounting, legal or compliance.

[721] The Reporting Bank should ensure that the Board and senior management actively participate in such reviews.

Risk Management Process and System – Risk Measurement

8.3.54 A Reporting Bank must ensure that its market risk management model is comprehensive and accurate, and closely integrated with the day-to-day risk management process and system of the Reporting Bank[722]. The Reporting Bank must ensure that the output of its market risk management model is an integral part of its market risk management process and system.

8.3.55 A Reporting Bank must have a robust model validation and approval process for its market risk management model.

8.3.56 A Reporting Bank must ensure that the ES and VaR measures calculated by the market risk management model are denominated in the reporting currency of the Reporting Bank.

8.3.57 A Reporting Bank must ensure that the mathematical and statistical basis of the market risk management model is disclosed by the third-party vendor, where the market risk management model is not developed by the Reporting Bank.

8.3.58 A Reporting Bank must not rely on the use of a market risk management model obtained from a third-party vendor ("vendor model") that claims proprietary technology as a justification for exemption from any documentation or other requirement relating to its use of the IMA. The Reporting Bank must, where necessary, rely more heavily on alternative validation techniques or methods designed to compensate for the lack of access to full information. Where vendor models are used, the Reporting Bank must –

(a) document and explain the role of the vendor model and the extent to which it is used within the market risk management process and system of the Reporting Bank;

(b) demonstrate a thorough understanding of the vendor model;

(c) ensure that the vendor model is appropriate for measuring the market risk of the Reporting Bank[723]; and

(d) have clearly described strategies for regularly reviewing the performance of the vendor model.

8.3.59 In cases where market risks are not adequately captured in its market risk management model, a Reporting Bank must make appropriate adjustments to its risk measurement or set aside reserves to incorporate those risks.

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[722] The Reporting Bank should ensure that the market risk management model is able to easily accommodate volume increases, new valuation methodologies and new instruments. In particular, the computer systems used should be capable of handling the volume of transactions and the complexity of market risks assumed. The Reporting Bank should also consider the ease with which processing and other software errors can be corrected. As model development and implementation is a complex process, the Reporting Bank should ensure that its staff and, where applicable, its vendors and consultants have the requisite skills to manage the inherent complexity involved.

[723] For example, the Reporting Bank should ensure that the vendor model can measure all identified market risks arising from instruments for which the vendor model is used.

8.3.60 A Reporting Bank must ensure that the Board and senior management understand the basis of the internal models used by the Reporting Bank, including their major assumptions, strengths and limitations.

Model Validation

8.3.61 A Reporting Bank must have policies and processes in place to ensure that its internal models are validated by suitably qualified parties independent of the development process to ensure that they are robust, conceptually sound and adequately capture all market risks.

8.3.62 A Reporting Bank must conduct a model validation when an internal model is initially developed and when any significant change is made to the internal model. The Reporting Bank must validate all internal models at least annually, and where there are structural changes in the market or changes to the composition of portfolios, which might lead to the internal models no longer being adequate to capture the market risks of the Reporting Bank. Where necessary, the Reporting Bank must recalibrate the internal models. The Reporting Bank must take into account academic and market developments as part of its model review process. The Reporting Bank must ensure that significant issues are escalated to senior management and promptly addressed.

8.3.63 Where a Reporting Bank has outsourced its validation function to an external party, it must have qualified staff independent of the development process to assess the quality of the work done by the external party in validating the internal models. The Reporting Bank must be ultimately responsible for all model validation work.

8.3.64 A Reporting Bank must have sound model validation policies which include all of the following elements:

(a) on the model approval process, the Reporting Bank must ensure that –

(i) there is a centralised unit responsible for model validation and this unit comprises staff with the necessary experience and expertise;

(ii) responsibilities of the centralised unit mentioned in sub-paragraph (a)(i) include ensuring that the current systems setup is capable of supporting the internal models;

(iii) all changes made to the internal models being used, or to the modelling process, are validated by the centralised unit mentioned in sub-paragraph (a)(i);

(iv) the Reporting Bank maintains previous versions of the internal models being altered; and

(v) internal models are subject to change-control procedures, so that computer codes cannot be changed except by authorised staff;

(b) on definition of responsibilities, the Reporting Bank must ensure that –

(i) the responsibilities for model construction and model validation are clearly and formally defined;

(ii) the staff performing model validation are independent of the staff who construct the internal model, and there is no conflict of interest and that the staff performing the validation work can provide objective and effective challenge to the staff who construct the model; and

(iii) the parties (whether within the Reporting Bank or external parties) responsible for model validation ascertain that the internal model is robust and suitable for its proposed usage, before an internal model can be used;

(c) on documentation, the Reporting Bank must ensure that –

(i) the unit responsible for model validation maintains a log of all internal models used and how they are applied within the market risk management process and system of the Reporting Bank; and

(ii) all internal models used are clearly documented and such documentation includes –

(A) a summary of the procedures used when applying each internal model;

(B) a description of the mathematical and statistical aspects of each internal model, model applications and limitations;

(C) an identification of key staff involved in model construction and in model validation;

(D) a log of all the activities related to the construction or alteration of each internal model, including the thought process the Reporting Bank went through to arrive at the decisions taken; and

(E) a description of the validation procedures and results.

8.3.65 A Reporting Bank must perform all of the following procedures when validating an internal model:

(a) review the logical and conceptual soundness of the internal model;

(b) verify the model accuracy through conducting backtesting and PLA tests in accordance with Sub-division 4 of this Division, and validate the HPL calculation methodology;

(c) for pricing models, compare the pricing model against –

(i) an identical model constructed by staff independent of those who constructed the first-mentioned pricing model[724]; or

(ii) where the independent construction of an identical model mentioned in sub-paragraph (c)(i) cannot be done, another model chosen as a benchmark. The Reporting Bank must identify a suitable benchmark model, validate the benchmark model, and ensure that the model inputs and theory of the benchmark model are similar to the Reporting Bank's pricing model.

8.3.66 A Reporting Bank must have a model validation process which validates all of the following components of each internal model:

(a) all model inputs components, which deliver data and assumptions to the model;

(b) all model processing components, which encompass the theoretical model and the computer codes which transform the model inputs into mathematical estimates;

(c) all reporting components, which translate the mathematical estimates into information used to support decision-making.

8.3.67 In validating any model inputs component referred to in paragraph 8.3.66(a), a Reporting Bank must –

(a) ensure that data from both internal and external sources is consistent, timely, reliable, independent and complete;

(b) have procedures to filter out and inspect data to surface potential data errors, which include the Reporting Bank verifying the potential data errors with an alternate data source;

(c) automate the extraction of data to the maximum extent possible;

(d) where manual extraction of data is used, assess whether additional validation procedures are necessary to validate such data and perform the additional validation, if necessary;

(e) ensure that all data required for risk measurement is captured by the market risk management model;

(f) ensure that assumptions required to model market risks are appropriately derived and justified, and do not underestimate risk. This may include the assumption of the normal distribution, volatility and correlation assumptions, the underlying assumptions where extrapolation or interpolation techniques are used, or the assumptions underlying pricing models; and

[724] If the pricing model is working as expected, the results of the 2 models would coincide.

(g) check all its assumptions at least annually, and when there are structural changes in the market or changes to the composition of portfolios, to ensure that they do not diverge from observed behaviour.

8.3.68 In validating any model processing component referred to in paragraph 8.3.66(b), a Reporting Bank must –

(a) validate all internal models, whether they are purchased from a vendor or developed by the Reporting Bank, to ensure the accuracy of valuation and risk factor calculations, and must not rely solely on a model validation done by the vendor;

(b) apply the same validation standards to all internal models;

(c) apply procedures to test the programmed model and the mathematics used against the functional specifications of each internal model; and

(d) use hypothetical portfolios to ensure that each internal model is able to account for structural features in the IMA portfolio, including –

(i) ensuring that basis risks are captured, including mismatches between long and short positions by maturity or by issuer; and

(ii) ensuring that the internal model captures concentration risk which may arise in an undiversified portfolio.

8.3.69 In validating the reporting component mentioned in paragraph 8.3.66(c), a Reporting Bank must –

(a) validate the reports in view of their context, and ensure that senior management understands the context in which the model results are generated; and

(b) have a system of checks to ensure that the flow of information from the model outputs to the final production of the reports does not contain any error.

Risk Monitoring

8.3.70 A Reporting Bank must have a process to monitor its market risks on an ongoing basis and to ensure that any change in its risk profile is promptly addressed. The Reporting Bank must ensure that the monitoring process includes a mechanism for reviewing and reporting compliance with established risk management policies, controls and procedures and for addressing exceptions.

8.3.71 A Reporting Bank must provide the Board, senior management and, where appropriate, individual business unit managers with reports on a regular and timely basis. The Reporting Bank must ensure that these reports include comparisons of risk taken against the corresponding limits.

8.3.72 A Reporting Bank must ensure that any significant failures in complying with its policies, controls or procedures are reported promptly and, in any case, no later than 5 business days from becoming aware, to the Board.

8.3.73 In addition to the reports referred to in paragraph 8.3.71, a Reporting Bank must ensure that the Board is given a report at least annually on the extent to which the Reporting Bank has complied with its risk management policies, controls and procedures, and the effectiveness in managing its market risk.

Risk Control

8.3.74 A Reporting Bank must have in place a comprehensive set of risk limits to align its business goals with its market risk threshold and to set boundaries for its risk-taking. The Reporting Bank must ensure that the set of risk limits enables the effectiveness of the overall risk management process and system of the Reporting Bank and the adequacy of its capital levels, and allows the Reporting Bank to control exposures, to identify opportunities and risks and to monitor actual risk-taking against the set of risk limits.

8.3.75 A Reporting Bank must ensure that the Board and senior management establish, approve and review the structure of risk limits and high-level risk limits at least annually. The Reporting Bank must reassess its risk limits when there are changes in market conditions, or the Reporting Bank's resources, that lead to the risk limits no longer aligning the Reporting Bank's business goals with its market risk threshold or that necessitate a change in the boundaries for the Reporting Bank's risk-taking.

8.3.76 A Reporting Bank must ensure that a review of the structure of risk limits compares risk limits to actual exposures and considers whether these exposures and risk limits are appropriate in view of the past performance and current capital levels of the Reporting Bank.

8.3.77 A Reporting Bank must have a clear structure of risk limits across the banking group[725]. The Reporting Bank must ensure consistency between the different types of risk limits. The Reporting Bank must ensure that these risk limits are communicated to all relevant staff and that positions which exceed these risk limits (i.e. limit excesses) receive prompt management attention in accordance with the Reporting Bank's risk management policy.

8.3.78 A Reporting Bank must establish procedures prescribing the course of action for limit excesses. The Reporting Bank must ensure that these procedures include the actions required for the approval of temporary limit excesses and limit increases, the investigation of the reasons for the infringement of limits and the escalation of limit excesses to management in accordance with the Reporting Bank's risk management policy.

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[725] The Reporting Bank should set risk limits for trading desks and for traders, which are commensurate with the complexity of trading activities of the Reporting Bank, including its overseas branches and subsidiaries, by one or more of the following:
(a) products;
(b) tenors;
(c) concentrations;
(d) markets.
The Reporting Bank should utilise its market risk management model to quantify and assign risk limits by individual portfolio, trading desks, activity and trader.

Independent Review

8.3.79 A Reporting Bank must have an IA which is independent of the activities of the market risk-taking units, the risk management unit or units and the model validation unit.

8.3.80 A Reporting Bank must ensure that the IA is subject to proper oversight by the Audit Committee.

8.3.81 A Reporting Bank must ensure that the IA carries out an independent review of its market risk management process and system, including its market risk management model, at least annually[726]. The Reporting Bank must ensure that this review includes both the activities of the trading units and of the independent risk management unit or units. The Reporting Bank must ensure that the independent review is sufficiently detailed to determine which trading desks are impacted by any findings, and must review, at a minimum, the following:

(a) the organisation of the risk management unit or units;

(b) the adequacy of the documentation of the market risk management model, process and system;

(c) the accuracy and appropriateness of internal models, including any significant changes;

(d) the verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources;

(e) the approval process for risk pricing models and valuation systems used by the Reporting Bank's front-office and back-office personnel;

(f) the scope of market risks reflected in the market risk management models;

(g) the integrity of the management information system;

(h) the accuracy and completeness of position data;

(i) the accuracy and appropriateness of volatility and correlation assumptions;

(j) the accuracy of valuation and risk transformation calculations;

(k) the general alignment between the internal models used for the purposes of calculating market risk capital requirements and the market risk management model.

8.3.82 A Reporting Bank must ensure that the IA reviews the internal validation processes for all internal models at least annually, and that every review by the IA of an internal model includes –

[726] The Reporting Bank should increase the depth and frequency of internal audits if significant issues are discovered, or if significant changes have been made to product lines, modelling methodologies, the risk management process, internal controls or the overall risk profile of the Reporting Bank.

(a) verification that the internal validation processes described in paragraphs 8.3.61 to 8.3.69 are operating in a satisfactory manner;

(b) confirmation that the formulae used in the calculation process, as well as for the pricing of options and other non-vanilla instruments, are validated by a qualified unit, which must be independent from the Reporting Bank's trading functions;

(c) confirmation that the structure of the internal model is adequate given the scope and geographical coverage of the Reporting Bank's activities;

(d) a review of the results of the backtesting and PLA tests of the internal model to ensure that the internal model provides a reliable measure of potential losses over time; and

(e) confirmation that data flows and processes associated with the internal model are transparent and accessible.

8.3.83 In performing the independent reviews in paragraphs 8.3.81 and 8.3.82, the IA may seek the assistance of other internal or third-party specialists, so long as overall responsibility remains with the IA. In the event where the IA has sought assistance from internal or third-party specialists in the review process for any class of exposures, a Reporting Bank must ensure that such specialists are not involved in or responsible for market risk-taking, risk management or model validation activities of the Reporting Bank.

8.3.84 In performing the independent reviews in paragraphs 8.3.81 and 8.3.82, a Reporting Bank must ensure that the IA takes into account any changes in its risk profile. The Reporting Bank must update the audit programme used by the IA to reflect any changes to the workflow processes of the trading units, risk management unit or units and model validation unit.

8.3.85 A Reporting Bank must ensure that the findings of any independent review are reported directly to the Board. If there are corrective actions to be taken, the Reporting Bank must carry out such actions within a reasonable time.

8.3.86 A Reporting Bank must ensure that the staff of the Reporting Bank are not involved in the internal audit of a trading unit, independent risk management unit or model validation unit if they have been involved in the activities of that respective unit in the preceding 12 months.

Stress testing

8.3.87 A Reporting Bank must have in place a rigorous and comprehensive stress testing framework, both at the trading desk level and at the IMA portfolio level. The Reporting Bank must ensure that the results of any stress testing conducted in accordance with the stress testing framework are –

(a) reviewed at least monthly by the senior management of the Reporting Bank;

(b) used in the Reporting Bank's internal assessment of capital adequacy; and

(c) reflected in the policies and limits set by the Reporting Bank's Board, senior management, or both.

8.3.88 A Reporting Bank must ensure that all stress testing incorporates both market risk and liquidity risk aspects of market disturbances and comprises 3 components –

(a) identifying plausible stress scenarios to which the Reporting Bank could be exposed;

(b) evaluating the ability of the Reporting Bank's capital to absorb potential large losses; and

(c) identifying steps which the Reporting Bank can take to reduce its risk and conserve capital.

8.3.89 A Reporting Bank must use stress testing as a means for setting its policies and limits, under both stressed and normal business conditions, and for monitoring new instruments where no historical data is available.

8.3.90 A Reporting Bank must use its stress test results as a basis for identifying vulnerabilities in its portfolios.

8.3.91 A Reporting Bank must incorporate stress testing in its day-to-day risk management process. Where stress tests reveal a particular vulnerability to a given set of circumstances, the Reporting Bank must take prompt steps to manage those risks appropriately[727].

8.3.92 A Reporting Bank must take into consideration the nature of its portfolios and the environment in which it operates when formulating stress scenarios. The Reporting Bank must ensure that stress scenarios cover a range of factors which can create extraordinary losses or gains in trading portfolios, or make the control of risk in those portfolios very difficult[728]. The Reporting Bank must ensure that the stress scenarios are designed to assess the impact of such factors on all traded positions, including positions which display both linear and non-linear price characteristics[729].

8.3.93 A Reporting Bank must ensure that the stress tests in its stress testing framework are conducted by the Reporting Bank at least once a month.

8.3.94 A Reporting Bank must use stress test scenarios developed by the Reporting Bank in combination with stress test scenarios provided by the Authority. The Reporting Bank must provide the stress test scenarios and results to the Authority upon the Authority's request. The Reporting Bank must, at the minimum, perform stress tests based on all of the following stress scenarios:

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727 For example, by hedging that outcome or reducing the size of the exposures or increasing capital.

728 Factors include events in all major types of risks, including various components of market, credit, and operational risks, regardless of the probability of the event occurring.

729 Examples of such positions are options and instruments with optionality.

(a) scenarios requiring no simulations by the Reporting Bank –

(i) the Reporting Bank must document its 5 largest daily trading losses over the last 250 trading days, computed on a rolling basis. The Reporting Bank must compare this information to the level of capital requirements that would result from the internal models of the Reporting Bank[730];

(b) scenarios requiring a simulation by the Reporting Bank –

(i) the Reporting Bank must test its portfolios against past periods of significant disturbance[731];

(ii) the Reporting Bank must evaluate the sensitivity of its market risk exposures to changes in the assumptions about volatilities and correlations. In applying this test, the Reporting Bank must evaluate the historical range of variation for volatilities and correlations and evaluate the positions of the Reporting Bank against the extreme values of the historical range[732]; and

(iii) the Reporting Bank must conduct ad-hoc stress tests on specific areas whenever this is warranted under special circumstances[733];

(c) scenarios to capture the specific characteristics of a portfolio –

(i) a Reporting Bank must develop its own stress scenarios which it identifies as most adverse, based on the characteristics of the portfolio. The Reporting Bank must provide the Authority with a description of the methodology used to identify the stress scenarios.

8.3.95 For each stress scenario, a Reporting Bank must –

(a) incorporate the price movements and reduction in liquidity associated with the stress scenario;

(b) recognise the potential for feedback effects, which measure the second-round impact arising from its own activities;

730 For example, by assessing the number of days over the last 12 months of which largest daily trading losses would have been covered by a given ES estimate.

731 Examples of past periods of significant disturbance include the 1987 equity crash, the Exchange Rate Mechanism crises of 1992 and 1993, the increase in interest rates in the first quarter of 1994, the 1997 Asian financial crisis, the 1998 Russian financial crisis, the 2000 bursting of the technology stock bubble, the 2007/2008 sub-prime mortgage crisis, or the 2011/2012 Euro zone crisis.

732 A Reporting Bank should consider the sharp variation in volatilities and correlations that at times has occurred in a matter of days in periods of significant market disturbance. For example, the examples of past periods of significant disturbance mentioned in footnote 731 involved correlations within risk factors approaching the extreme values of 1 or -1 for several days at the height of the disturbance.

733 For example, in light of rapidly deteriorating economic or political conditions in a country or industry, the Reporting Bank may need to make a quick assessment of the likely impact on its exposures to that country or industry.

(c) evaluate the impact of the failure of a major player in a concentrated market; and

(d) evaluate the impact if assumptions made in the internal model do not hold[734].

8.3.96 A Reporting Bank must ensure that the stress tests conducted are meaningful and reasonably conservative. The Reporting Bank must construct stress test scenarios with input from trading units and review the stress test scenarios on an ongoing basis to ensure they are relevant and plausible.

8.3.97 A Reporting Bank must ensure that the stress tests are not limited to quantitative exercises which compute potential losses or gains.[735] The Reporting Bank must ensure that stress tests also include more qualitative analyses of the actions that senior management might take under each stress test scenario, and that contingency plans outlining operating procedures and lines of communication, both formal and informal, are developed as a result of such qualitative analyses.

Sub-division 3: Model Requirements

Specification of Risk Factors

8.3.98 A Reporting Bank must ensure that risk factors specified in its internal models –

(a) are sufficient to represent the risks inherent in the Reporting Bank's IMA portfolio; and

(b) fulfil the requirements of paragraphs 8.3.99 to 8.3.107.

8.3.99 A Reporting Bank must ensure that its internal models include –

(a) all risk factors that are incorporated in the Reporting Bank's corresponding pricing model, unless the Reporting Bank is able to justify the omission to the satisfaction of the Authority; and

(b) all risk factors, except for risk factors for securitisation exposures[736], that are specified in the SA(MR) for the corresponding risk class, in Division 2 of this Part, unless the Reporting Bank is able to justify the omission to the satisfaction of the Authority.

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734 For example, if a breakdown in historical correlation occurs.

735 The Reporting Bank should, in designing its stress tests, consider the following:
(a) the possibility of not being able to unwind some less liquid positions as quickly as intended during a crisis situation and that the values of these positions may be very volatile. Such considerations are particularly important for concentrated positions or positions in emerging markets;
(b) possible linkages across different markets;
(c) supplementing its scenario testing with sensitivity tests on individual risk factors.

736 Risk factors for securitisation exposures are not specified under the IMA, as a Reporting Bank must use the SA(MR) to determine market risk capital requirements for securitisation exposures under paragraph 8.1.20.

8.3.100 Where a Reporting Bank has omitted a risk factor pursuant to paragraph 8.3.99, the Reporting Bank must document the omission, together with an estimate of the risks not captured by the model as a result of the omission of the risk factor, in a "Risk-Not-Captured" report to the Board and senior management.

8.3.101 A Reporting Bank must ensure that its internal models and any stress scenarios used to calculate capital requirements for NMRFs address non-linearities[737], correlation risk and basis risks[738].

8.3.102 For general interest rate risk, a Reporting Bank must use risk factors that correspond to the interest rates associated with each currency in which the Reporting Bank has one or more interest rate-sensitive market risk positions. The Reporting Bank must –

(a) model each relevant yield curve using a generally accepted approach[739]; and

(b) divide each modelled yield curve into maturity segments, with each maturity segment corresponding to a risk factor, in order to capture variation in the volatility of rates along the yield curve, and in so doing –

(i) determine the number of risk factors to be used based on the nature of the Reporting Bank's trading strategies, using a greater number of risk factors where the Reporting Bank engages in complex arbitrage strategies or has positions in various types of instruments across many points of a yield curve; and

(ii) model a yield curve pertaining to the Reporting Bank's material exposures to interest rate movements in major currencies and markets using a minimum of 6 risk factors.

8.3.103 For credit spread risk, a Reporting Bank must use risk factors that correspond to credit spreads which the Reporting Bank has credit risk exposure to.[740]

8.3.104 For equity risk, a Reporting Bank must use risk factors that correspond to each equity market which the Reporting Bank has equity risk exposure to. For each equity market, the Reporting Bank must ensure that the sophistication and nature of the modelling of risk factors for each equity market is commensurate with the Reporting Bank's exposure to the equity market and the concentration of the Reporting Bank's exposure to individual equities in the equity market. The Reporting Bank must ensure that the risk factors capture the volatility and correlation effects of individual equities in the equity market. Where it is not possible to have risk factors corresponding to individual equities in the equity market –

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737 For example, for options or other products with non-linear risks, such as mortgage-backed securities.

738 For example, basis risks between credit default swaps and bonds.

739 For example, estimating the forward rates of zero coupon yields.

740 The Reporting Bank may use a variety of approaches to model credit spread risk arising from less-than-perfectly correlated movements between government-issued instruments and non-government-issued fixed income instruments. For example, the Reporting Bank may model credit spread risk –
(a) by specifying a separate yield curve for non-government-issued fixed income instruments such as swaps or municipal securities; or
(b) by estimating the credit spread between non-government-issued fixed income instruments and government-issued instruments at various points along the yield curve.

(a) the Reporting Bank must, at a minimum, use risk factors that reflect market-wide movements in equity price[741]. For this purpose, the Reporting Bank may express a position in an individual equity or a sector equity index as a beta-equivalent relative to a market-wide equity index; and

(b) the Reporting Bank may utilise risk factors that correspond to various sectors of the equity market[742]. For this purpose, the Reporting Bank may express a position in an individual equity within a given sector as a beta-equivalent relative to the relevant sector equity index.

8.3.105 For foreign exchange risk, a Reporting Bank must use risk factors that correspond to the exchange rates between the Reporting Bank's reporting currency and each foreign currency which the Reporting Bank has exposure to.

8.3.106 For commodity risk, a Reporting Bank must use risk factors that correspond to each commodity market which the Reporting Bank has commodity risk exposure to. The Reporting Bank must ensure that –

(a) the modelling of commodity risk factors captures –

(i) directional risk, which is the exposure to changes in spot prices arising from net open positions;

(ii) forward gap and interest rate risk, which is the exposure to changes in forward prices arising from maturity mismatches;

(iii) basis risk, which is the exposure to changes in the price relationships between 2 similar but not identical commodities;

(iv) market characteristics, including delivery dates and the scope provided to traders to close out positions; and

(v) variation in the "convenience yield" between derivatives positions[743] and cash positions in the commodity, if the Reporting Bank is engaged in active commodities trading; and

(b) the risk factors used are commensurate with the commodity exposure of the Reporting Bank.

8.3.107 For a position in an equity investment in a fund[744] that meets the criterion set out in paragraph 8.1.27(e)(i), a Reporting Bank must –

(a) assign the position to the trading desk to which the fund is assigned; and

(b) treat the position and specify risk factors as if the constituent positions of the fund were held directly by the Reporting Bank, taking into account –

741 For example, a market index.
742 For example, industry sectors, cyclical and non-cyclical sectors.
743 For example, forwards and swaps.
744 To avoid doubt, a Reporting Bank must use the SA(MR) to calculate the market risk capital requirements for a position in an equity investment in a fund that does not meet the criterion set out in paragraph 8.1.27(e)(i) but meets the criterion set out in paragraph 8.1.27(e)(ii) as set out in paragraph 8.1.20.

(i) the risks of the fund and any associated hedges;

(ii) the share of the equity of the fund held by the Reporting Bank; and

(iii) any leverage in the structure of the fund.

Model Eligibility of Risk Factors

8.3.108 A Reporting Bank must include a risk factor within trading desks that are in-scope of the IMA in the Reporting Bank's ES model only where the Reporting Bank has assessed that the risk factor has passed the risk factor eligibility test in accordance with paragraph 8.3.111 and meets the requirements for the modellability of risk factors as defined in paragraph 8.3.127. Otherwise, the Reporting Bank must treat such a risk factor as a NMRF.

8.3.109 For the purposes of the risk factor eligibility test in paragraph 8.3.111, a real price refers to a price that meets at least one of the following criteria:

(a) it is a price at which the Reporting Bank has conducted a transaction;

(b) it is a verifiable price for an actual transaction between parties on an arm's length basis;

(c) it is a price obtained from a committed quote made by the Reporting Bank or another party. The Reporting Bank must ensure that the committed quote is collected and verified through a third-party vendor, a trading platform or an exchange;

(d) it is a price that is obtained from a third-party vendor, where –

(i) the transaction or committed quote has been processed through the vendor;

(ii) the vendor agrees to provide evidence of the transaction or committed quote to the Authority or bank regulatory agencies upon request; or

(iii) the price meets any of the criteria in sub-paragraphs (a) to (c).

8.3.110 For the purposes of paragraph 8.3.109, a committed quote means a price provided at arm's length at which the provider of the price must buy or sell an instrument.

8.3.111 A Reporting Bank must assess a risk factor to have passed the risk factor eligibility test for a given quarter, only if the risk factor meets at least one of the following criteria as at the end of the quarter:

(a) the Reporting Bank has identified at least 24 real price observations for the risk factor per year over the period used to calibrate the ES model, and has ensured that over the previous 250 trading days, there is no 90-

day period in which fewer than 4 real price observations in respect of the risk factor are identified;

(b) the Reporting Bank has identified at least 100 real price observations for the risk factor over the previous 250 trading days.

For the purposes of sub-paragraphs (a) and (b), the Reporting Bank must count only one real price observation per day. The Reporting Bank must also monitor whether each risk factor meets the criteria in sub-paragraph (a) on a monthly basis.

8.3.112 When performing the risk factor eligibility test defined in paragraph 8.3.111 for a new benchmark rate, a Reporting Bank may, until one year after the discontinuation of the old benchmark rate, use both –

(a) real price observations of the old benchmark rate (that has been replaced by the new benchmark rate) before the discontinuation of the old benchmark rate; and

(b) real price observations of the new benchmark rate.

For the purposes of this paragraph, discontinuation of an old benchmark rate refers to cessation of the old benchmark rate or an event whereby the old benchmark rate is deemed by its regulator to no longer be representative of the underlying market.

8.3.113 For the purposes of paragraph 8.3.111, where a Reporting Bank uses data for real price observations from an internal or external data source that can only provide such real price observations with a time lag[745], the Reporting Bank must ensure that the difference between the date on which the period used for the risk factor eligibility test ends and the date on which the period used to calibrate the ES model ends must not be greater than one month.

8.3.114 A Reporting Bank may replace a NMRF with –

(a) a combination of one or more modellable risk factors; and

(b) a basis between the combination of modellable risk factors referred to in sub-paragraph (a) and the NMRF being replaced.

The Reporting Bank must treat the basis referred to in sub-paragraph (b) as a NMRF.

8.3.115 For the purposes of performing the risk factor eligibility test in paragraph 8.3.111 for a risk factor, a Reporting Bank may include in the count a real price observation based on information collected from a third-party vendor, provided that all of the following criteria are met:

(a) the third-party vendor has communicated to the Reporting Bank the date on which the real price observation was observed;

(b) the third-party vendor has provided the Reporting Bank identifier information on the real price observation to enable the Reporting Bank to

[745] For example, where data for a particular day is made available a number of weeks later.

map the real price observed to the relevant risk factor for which the risk factor eligibility test is being carried out;

(c) the third-party vendor is subject to an audit regarding the validity of its pricing information on an annual basis, and the results and reports of each audit are available to the Authority and to the Reporting Bank upon request. Where the process or the results of an audit of the third-party vendor are not satisfactory to the Authority, the Authority may disallow the Reporting Bank from counting any real price observations based on information collected from the third-party vendor for the purposes of the risk factor eligibility test in paragraph 8.3.111. To avoid doubt, the Reporting Bank may be permitted to use real price observations from the third-party vendor for other risk factors if the third-party vendor meets the criteria specified in this paragraph for the other risk factors.

8.3.116 A Reporting Bank may treat a real price as being representative of a risk factor only where the Reporting Bank is able to derive the value of the risk factor from the value of the real price. The Reporting Bank must have policies and procedures that set out the Reporting Bank's methodologies for mapping real price observations to risk factors, and must demonstrate to the satisfaction of the Authority that such methodologies are appropriate. Where the Authority is not satisfied that a methodology for mapping real price observations to a risk factor is appropriate, the Authority may disallow the Reporting Bank from counting the real price observations for a risk factor derived using the methodology for the purposes of the risk factor eligibility test in paragraph 8.3.111.

Bucketing Approach for the Risk Factor Eligibility Test

8.3.117 Where a risk factor is a point on a curve, a surface or other higher dimensional objects including cubes, a Reporting Bank may employ either of the following bucketing approaches in order to count real price observations for the risk factor for the risk factor eligibility test set out in paragraph 8.3.111:

(a) the own bucketing approach set out in paragraph 8.3.118;

(b) the regulatory bucketing approach set out in paragraph 8.3.119.

8.3.118 Under the own bucketing approach, a Reporting Bank must define the buckets and ensure that the buckets defined meet the following requirements:

(a) each bucket must include only one risk factor, and the risk factors used for the purposes of bucket definition must be the same as the risk factors used to calculate the RTPL of the Reporting Bank for the purposes of the PLA test set out in paragraphs 8.3.165 to 8.3.171[746];

(b) the buckets must not overlap.

[746] The Reporting Bank, when designing its ES model, should consider that defining more granular buckets may facilitate a trading desk's success in meeting the requirements of the PLA test, but may also challenge the Reporting Bank's ability to source a sufficient number of real price observations to meet the requirements of the risk factor eligibility test.

8.3.119 Under the regulatory bucketing approach, a Reporting Bank must use the following bucket structure:

(a) for interest rate, foreign exchange and commodity risk factors that have one maturity dimension and that are not implied volatilities, the Reporting Bank must use the buckets in Table 8-16;

(b) for interest rate, foreign exchange and commodity risk factors that have 2 or more maturity dimensions and that are not implied volatilities, the Reporting Bank must use the buckets in Table 8-17;

(c) for credit spread and equity risk factors that have one or more maturity dimensions and that are not implied volatilities, the Reporting Bank must use the buckets in Table 8-18;

(d) for any risk factors with one or more strike dimensions and that are not implied volatilities, the Reporting Bank must use the buckets in Table 8-19. In a case of an options market where an alternative definition of moneyness other than delta δ is the applicable market standard convention, the Reporting Bank must map the applicable market standard convention to the buckets in Table 8-19 using internal pricing models which have been approved by the Authority for this purpose;

(e) for the expiry and strike dimensions of risk factors that are implied volatilities and that do not arise from interest rate swaptions, the Reporting Bank must use the buckets in Table 8-20;

(f) for the maturity, expiry and strike dimensions of risk factors that are implied volatilities and that arise from interest rate swaptions, the Reporting Bank must use the buckets in Table 8-21.

Table 8-16: Regulatory bucket structure for interest rate, foreign exchange and commodity risk factors that have one maturity dimension and that are not implied volatilities

Bucket	1	2	3	4	5
Maturity, t (in years)	$0 \le t < 0.75$	$0.75 \le t < 1.5$	$1.5 \le t < 4$	$4 \le t < 7$	$7 \le t < 12$
Bucket	**6**	**7**	**8**	**9**	
Maturity, t (in years)	$12 \le t < 18$	$18 \le t < 25$	$25 \le t < 35$	$35 \le t < \infty$	

Table 8-17: Regulatory bucket structure for interest rate, foreign exchange and commodity risk factors that have 2 or more maturity dimensions and that are not implied volatilities

Bucket	1	2	3	4	5	6
Maturity, t (in years)	$0 \le t < 0.75$	$0.75 \le t < 4$	$4 \le t < 10$	$10 \le t < 18$	$18 \le t < 30$	$30 \le t < \infty$

Table 8-18: Regulatory bucket structure for credit spread and equity risk factors that have one or more maturity dimensions and that are not implied volatilities

Bucket	1	2	3	4	5
Maturity, t (in years)	$0 \le t < 1.5$	$1.5 \le t < 3.5$	$3.5 \le t < 7.5$	$7.5 \le t < 15$	$15 \le t < \infty$

Table 8-19: Regulatory bucket structure for any risk factors that have one or more strike dimensions and that are not implied volatilities

Bucket	1	2	3	4	5
Probability that an option is "in the money" at maturity, delta δ	$0 \leq \delta < 0.05$	$0.05 \leq \delta < 0.3$	$0.3 \leq \delta < 0.7$	$0.7 \leq \delta < 0.95$	$0.95 \leq \delta < 1$

Table 8-20: Regulatory bucket structure for any risk factors that are implied volatilities and that do not arise from interest rate swaptions

Bucket	1	2	3	4	5
Expiry, t (in years)	$0 \leq t < 1.5$	$1.5 \leq t < 3.5$	$3.5 \leq t < 7.5$	$7.5 \leq t < 15$	$15 \leq t < \infty$
Bucket	**A**	**B**	**C**	**D**	**E**
Probability that an option is "in the money" at maturity, delta δ	$0 \leq \delta < 0.05$	$0.05 \leq \delta < 0.3$	$0.3 \leq \delta < 0.7$	$0.7 \leq \delta < 0.95$	$0.95 \leq \delta < 1$

Table 8-21: Regulatory bucket structure for any risk factors that are implied volatilities and that arise from interest rate swaptions

Bucket	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Maturity, t (in years)	$0 \leq t < 0.75$	$0.75 \leq t < 4$	$4 \leq t < 10$	$10 \leq t < 18$	$18 \leq t < 30$	$30 \leq t < \infty$
Bucket	**1**	**2**	**3**	**4**	**5**	
Expiry, t (in years)	$0 \leq t < 1.5$	$1.5 \leq t < 3.5$	$3.5 \leq t < 7.5$	$7.5 \leq t < 15$	$15 \leq t < \infty$	
Bucket	**A**	**B**	**C**	**D**	**E**	
Probability that an option is "in the money" at maturity, delta δ	$0 \leq \delta < 0.05$	$0.05 \leq \delta < 0.3$	$0.3 \leq \delta < 0.7$	$0.7 \leq \delta < 0.95$	$0.95 \leq \delta < 1$	

8.3.120 For each risk factor, a Reporting Bank must assign a real price observation that is representative of the risk factor, determined in accordance with paragraph 8.3.116, to the bucket to which the risk factor belongs and count all real price observations that are representative of the risk factor and assigned to the bucket, to assess whether the risk factor would pass the risk factor eligibility test.

8.3.121 A Reporting Bank must not assign a real price observation to more than one bucket for the purposes of the risk factor eligibility test.

8.3.122 As debt instruments mature, a Reporting Bank may re-assign the real price observations representative of the credit spread risk factor to a bucket with a shorter

maturity that is adjacent to the bucket the real price observations were initially assigned in accordance with paragraph 8.3.117[747], if –

(a) the real price observations for those debt instruments have been identified within the 250 trading days prior to each reporting date; and

(b) the Reporting Bank no longer needs to model a credit spread risk factor for the bucket the real price observations were initially assigned.

8.3.123 Where a Reporting Bank uses a parametric function, calibrated using market data, to represent a curve, a surface or higher dimensional objects including cubes and defines the function's parameters as the risk factors in its internal models, the Reporting Bank must pass the risk factor eligibility test at the level of the market data used to calibrate the function's parameters, and not at the level of these risk factor parameters[748].

8.3.124 A Reporting Bank may use systematic credit or equity risk factors, within its internal models, that are designed to capture market-wide movements for a given economy, region or sector but not the idiosyncratic risk of a specific issuer. The Reporting Bank may treat real price observations of market indices or instruments of individual issuers as being representative of a systematic risk factor only if the real price observation shares the same economy, region or sector attributes as the systematic risk factor.

8.3.125 In cases where the systematic credit or equity risk factor includes a maturity dimension[749], a Reporting Bank must use one of the bucketing approaches set out in paragraph 8.3.117 to assign the real price observations for the risk factor eligibility test.

8.3.126 Subject to paragraph 8.3.127, a Reporting Bank must calibrate the ES model for a risk factor that has passed the risk factor eligibility test using data that is representative of the risk factor. To avoid doubt, the Reporting Bank may use data that is different from the data used to pass the risk factor eligibility test for each risk factor.

Requirements for the modellability of risk factors that pass the risk factor eligibility test

8.3.127 A Reporting Bank must ensure that the requirements set out in paragraphs 8.3.128 to 8.3.137 and Annex 8B for the modellability of risk factors, including on the use of data, are met for a risk factor that has passed the risk factor eligibility test, in order for that risk factor to be modellable using the ES model and calibrated in accordance with paragraph 8.3.126. Otherwise, the Reporting Bank must subject the risk factor to capital requirements as a NMRF. The Reporting Bank must be able to demonstrate to the satisfaction of the Authority that these requirements are met. Where the Reporting Bank has not met these requirements to the satisfaction of the Authority for a particular risk factor, the Authority may require the Reporting Bank to deem the data unsuitable for use

[747] For example, if a bond with an original maturity of 4 years had a real price observation on its issuance date 8 months ago, the Reporting Bank may opt to assign the real price observation to the bucket associated with a maturity between 1.5 and 3.5 years instead of to the bucket associated with a maturity between 3.5 and 7.5 years, if the Reporting Bank no longer needs to model a credit spread risk factor for the bucket associated with the maturity between 3.5 and 7.5 years.

[748] This is due to the fact that real price observations that are directly representative of these risk factor parameters may not exist.

[749] For example, a credit spread curve.

to calibrate the ES model, and, in such a case, the Reporting Bank must exclude the risk factor from its ES model and subject the risk factor to capital requirements as a NMRF.

8.3.128 A Reporting Bank may treat a risk factor that is derived solely from a combination of modellable risk factors as a modellable risk factor[750], provided that the Reporting Bank ensures that all of the following requirements are met:

(a) the risk factor that is derived solely from a combination of modellable risk factors itself must pass the risk factor eligibility test;

(b) interpolations based on combinations of modellable risk factors must be consistent with the mappings used for PLA testing (to determine the RTPL) and not based on alternative bucketing approaches. Subject to written approval from the Authority, the Reporting Bank may extrapolate up to a reasonable distance from the closest modellable risk factor[751]. In the event that the Reporting Bank uses extrapolation, the Reporting Bank must factor in the extrapolation in the determination of the RTPL.

8.3.129 A Reporting Bank may compress risk factors into a smaller dimension of orthogonal risk factors[752] and derive parameters from observations of modellable risk factors[753] without the parameters being directly observable in the market.

8.3.130 A Reporting Bank must use data that allow the ES model to capture both idiosyncratic and general market risk. If the Reporting Bank uses data that do not reflect either idiosyncratic or general market risk in the ES model, the Reporting Bank must calculate capital requirements for those risk factors that are not adequately captured in the ES model as a NMRF.

8.3.131 A Reporting Bank must use data that allow the ES model to reflect volatility and correlation of its risk positions. The Reporting Bank must ensure that the data do not understate the volatility of an asset[754] and that the data accurately reflect the correlation of asset prices, rates across yield curves and volatilities within volatility surfaces. The Reporting Bank must choose data sources to ensure that –

(a) the data are representative of real price observations;

(b) price volatility is not understated by the choice of data; and

(c) correlations are reasonable approximations of correlations among real price observations.

The Reporting Bank must ensure that any transformations of data accurately reflect the correlations arising from risk factors used in the Reporting Bank's ES model, and do not understate the volatility arising from risk factors.

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750 For example, the Reporting Bank may classify risk factors derived through multifactor beta models for which inputs and calibrations are based solely on modellable risk factors as modellable, and include these risk factors within its ES model.

751 The Reporting Bank should ensure that the extrapolation is reliant on more than one modellable risk factor, and not solely on the closest modellable risk factor.

752 For example, principal components.

753 For example, in models of stochastic implied volatility.

754 For example, by using inappropriate averaging of data or proxies.

8.3.132 A Reporting Bank must use data that are derived from prices observed or quoted in the market. Where it is not possible to use data derived from real price observations, the Reporting Bank must ensure that the data used are reasonably representative of real price observations. The Reporting Bank must periodically reconcile price data used in risk models with front office and back office prices[755]. The Reporting Bank must document its approach to deriving risk factors from market prices.

8.3.133 A Reporting Bank must update the data used in the ES model minimally on a monthly basis, and as often as possible to account for turnover of positions in its trading portfolio and changing market conditions.[756] A Reporting Bank must have a workflow process for updating its sources of data. Where the Reporting Bank uses regressions to estimate risk factor parameters, the Reporting Bank must re-estimate these no less frequently than every 2 weeks. The Reporting Bank must also calibrate pricing models to current market prices on a sufficiently frequent basis, and no less frequently than the calibration of front office pricing models[757].

8.3.134 In calculating the ES measure in a period of stress in accordance with paragraphs 8.3.186 to 8.3.191, a Reporting Bank must use data that are reflective of market prices observed or quoted in the period of stress, and must source the data directly from the period of stress where possible. The Reporting Bank must empirically justify any instances where the market prices used for the period of stress are different from the market prices actually observed during that period and –

(a) where instruments that are currently traded did not exist during the period of stress, the Reporting Bank must demonstrate that the prices used match changes in prices or spreads of similar instruments during the period of stress;

(b) where the Reporting Bank is unable to demonstrate to the satisfaction of the Authority that it has sufficient justification for the use of market data observed after the period of stress for products whose characteristics have changed since the period of stress, the Reporting Bank must omit the risk factor for the period of stress and meet the requirement in paragraph 8.3.186(e) that the reduced set of risk factors explain 75% of the fully specified ES model; and

(c) where name-specific risk factors are used to calculate the ES measure for the current period, and these names were not available in the period of stress, the Reporting Bank must presume that the idiosyncratic part of these risk factors are not in the reduced set of risk factors referred to in paragraph 8.3.186. The Reporting Bank must map exposures to risk factors that are included in the full set of risk factors but not in the reduced set of risk factors, to the most suitable risk factor in the reduced set of risk factors for the purposes of calculating the ES measure in the period of stress.

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755 In comparing front or back office prices with price data used in risk models, the Reporting Bank should compare price data used in risk models with real price observations, where available.

756 The Reporting Bank should update its data daily.

757 Where appropriate, the Reporting Bank should have clear policies for backfilling or gap-filling missing data, or both.

8.3.135 A Reporting Bank must limit its use of proxies to represent risk factors. Where the Reporting Bank uses proxies, the Reporting Bank must ensure that the proxies used are representative of the risk factors[758], have sufficiently similar characteristics to the positions they represent, and are appropriate for the region, quality and type of instrument they are intended to represent. The Reporting Bank must be able to justify the use of any proxy to the satisfaction of the Authority.

8.3.136 Where a risk factor is represented by proxy data in the ES model, the Reporting Bank must either –

(a) use the proxy data representation of the risk factor (i.e. not the risk factor itself) in the RTPL; or

(b) use the actual data representation of the risk factor in the RTPL, and identify the basis between the proxy and the actual risk factor as a separate risk factor, and –

(i) if the basis passes the risk factor eligibility test in accordance with paragraph 8.3.111, include the basis in the Reporting Bank's ES model; and

(ii) in all other cases, treat the basis as a NMRF.

8.3.137 Where a Reporting Bank's use of proxies involves use of a multifactor model, the Reporting Bank must ensure that –

(a) the use of indices in the multifactor model captures the correlated risk of the assets represented by the indices, and the Reporting Bank is able to demonstrate to the satisfaction of the Authority that the remaining idiosyncratic risk is uncorrelated across different issuers;

(b) the multifactor model has significant explanatory power for the price movements of assets and provides an assessment of the uncertainty in the final outcome due to the use of a proxy; and

(c) the coefficients[759] of a multifactor model are empirically based and are not determined based on judgement. To avoid doubt, the Reporting Bank must treat a risk factor for which a proxy is determined using a multifactor model with coefficients determined based on judgement as a NMRF.

Sub-division 4: Backtesting and P&L Attribution Test Requirements

8.3.138 A Reporting Bank must implement the backtesting programme and the PLA test from and inclusive of the date that the Reporting Bank adopts the IMA to determine its market risk capital requirements.

[758] For example, the Reporting Bank may use an equity index as a proxy for a position in an individual stock.
[759] The coefficients can also be referred to as betas.

Definition of profits and losses used for backtesting and the PLA test

8.3.139 A Reporting Bank must ensure that the APL includes –

(a) P&L arising from FX and commodity risks, from positions held in the banking book;

(b) P&L arising from intraday trading;

(c) P&L arising from transactions that are newly made or modified, on the date for which the APL is being calculated;

(d) P&L arising from the passage of time[760]; and

(e) subject to paragraph 8.3.140(b) and (c), any market risk-related valuation adjustment, irrespective of the frequency at which they are calculated. The Reporting Bank must not perform smoothing of valuation adjustments that are not calculated daily.

8.3.140 A Reporting Bank must exclude all of the following from the APL:

(a) fees and commissions;

(b) credit valuation adjustments for which the Reporting Bank calculates CVA RWA in accordance with Division 5 of this Part;

(c) valuation adjustments that are deducted from CET1 Capital pursuant to paragraph 6.1.5(h) and (n) of Part VI.

[MAS Notice 637 (Amendment) 2024]

8.3.141 A Reporting Bank must ensure that the HPL includes –

(a) P&L arising from FX and commodity risks, from positions held in the banking book; and

(b) subject to paragraph 8.3.142(d) and (e), valuation adjustments that are calculated daily, unless a Reporting Bank has obtained written approval from the Authority to exclude these valuation adjustments.

8.3.142 A Reporting Bank must exclude all of the following from the HPL:

(a) fees and commissions;

(b) P&L arising from intraday trading;

(c) P&L arising from transactions that are newly made or modified on the date for which the HPL is being calculated;

[760] For example, theta effect (i.e. the first-order derivative of price relative to time), costs of carry, or costs of funding.

(d) credit valuation adjustments for which the Reporting Bank calculates CVA RWA in accordance with Division 5 of this Part;

(e) valuation adjustments that are deducted from CET1 Capital pursuant to paragraph 6.1.5(h) and (n) of Part VI.

[MAS Notice 637 (Amendment) 2024]

8.3.143 A Reporting Bank may exclude valuation adjustments that the Reporting Bank is unable to calculate at the trading desk level[761] from the APL and the HPL, for the purposes of backtesting at the trading desk level. The Reporting Bank must be able to demonstrate to the satisfaction of the Authority, at the Authority's request, that it is unable to calculate the valuation adjustments at the trading desk level. To avoid doubt, the Reporting Bank must include such valuation adjustments for the purposes of backtesting at the IMA portfolio level.

8.3.144 A Reporting Bank must calculate both APL and HPL based on the same pricing models as the ones used to produce the daily P&L that the Reporting Bank uses in its reports. The Reporting Bank must ensure that the models used to calculate APL and HPL have the same pricing functions, pricing configurations, model parameterisation, market data and systems as the pricing models used to produce the daily P&L that the Reporting Bank uses in its reports.

8.3.145 The Reporting Bank must ensure that for each trading desk, the market risk management model includes all modellable risk factors that are included in the ES model and the NMRFs. The Reporting Bank must ensure that the RTPL does not take into account any risk factors that the Reporting Bank does not include in its market risk management model.

8.3.146 A Reporting Bank must treat P&L resulting from the passage of time consistently in both HPL and RTPL.

8.3.147 A Reporting Bank must use the same HPL for the PLA test and for backtesting required under paragraph 8.3.149.

8.3.148 A Reporting Bank must include in APL, HPL and RTPL, movements in all risk factors contained in the Reporting Bank's market risk management model for each trading desk, even if the forecasting component of the model uses data that incorporates additional residual risk.

Backtesting Overview

8.3.149 A Reporting Bank must perform backtesting at both the IMA portfolio level in accordance with paragraphs 8.3.150 to 8.3.152, and paragraphs 8.3.153 to 8.3.158, and the trading desk level in accordance with paragraphs 8.3.150 to 8.3.152, and paragraphs 8.3.159 to 8.3.162[762].

[761] For example, because the valuation adjustments are assessed in terms of the bank's overall positions or risks, or because of other constraints around the assessment process.

[762] A Reporting Bank may implement additional backtesting using VaR measures at a confidence level other than the 97.5th percentile or 99th percentile one-tailed confidence level, or may perform other statistical tests not set out in this Notice.

8.3.150 A Reporting Bank must ensure that the returns used for VaR calculation are equally weighted.

8.3.151 Despite paragraph 8.3.150, a Reporting Bank may use volatility scaling of returns for all observations for a selected risk factor or group of risk factors to reflect a more recent period of stress if the volatility scaling of returns does not result in a shorter observation period being used for VaR calculation. The Reporting Bank must notify the Authority before using this scaled data to calculate VaR and ES estimates.

8.3.152 A Reporting Bank must document all of the exceptions generated from its ongoing backtesting at both the IMA portfolio level and at the trading desk level, including an explanation for each exception.

Backtesting at the IMA portfolio level

8.3.153 A Reporting Bank must conduct backtesting for the portfolio of all the positions attributed to trading desks that are in-scope of the IMA (i.e. IMA portfolio level) by comparing the one-day VaR measure at the 99^{th} percentile, one-tailed confidence level, against each of the APL and against each of the HPL, registered in a day over 250 trading days prior to each reporting date. A Reporting Bank must ensure that the one-day VAR measure is calibrated to a one-day holding period and to the most recent 250 trading days' data.

8.3.154 The Reporting Bank must count the number of exceptions under the backtesting conducted in paragraph 8.3.153 as follows:

(a) the Reporting Bank must count each observation when either the actual loss or the hypothetical loss of the IMA portfolio registered in a day of the backtesting period exceeds the corresponding daily VaR measure given by the Reporting Bank's internal model;

(b) in the event that either the P&L or the daily VaR measure is not available or is impossible to calculate for a given day over the prior 250 trading days, the Reporting Bank must count this as an exception;

(c) the Reporting Bank must count exceptions for actual losses separately from exceptions for hypothetical losses, and count the overall number of exceptions as the greater of these 2 amounts.

8.3.155 For the purposes of counting the number of exceptions in paragraph 8.3.154, subject to the Authority's written approval, a Reporting Bank may exclude an exception if the Reporting Bank has demonstrated to the satisfaction of the Authority that the exception was caused by a NMRF, and the stress scenario capital requirement for that NMRF, which is calculated in accordance with paragraph 8.3.203, exceeds the actual or hypothetical loss for that day.

8.3.156 When a Reporting Bank excludes an exception pursuant to paragraph 8.3.155, the Reporting Bank must document the historical movement of the value of the relevant NMRF and the evidence that the NMRF caused the relevant loss.

8.3.157 A Reporting Bank must classify its backtesting results into 3 zones according to the number of exceptions counted pursuant to paragraphs 8.3.154 and 8.3.155, in accordance with Table 8-22.

Table 8-22: Backtesting zones – Number of exceptions and backtesting add-ons

Backtesting zone	Number of exceptions	Backtesting add-on
Green	0	0
	1	0
	2	0
	3	0
	4	0
Amber	5	0.20
	6	0.26
	7	0.33
	8	0.38
	9	0.42
Red	10 or more	0.50

8.3.158 For a Reporting Bank in the backtesting amber zone or the backtesting red zone, as classified in accordance with paragraph 8.3.157, the Reporting Bank must apply the backtesting add-on as set out in Table 8-22 when calculating its aggregate capital requirement for market risks in accordance with paragraph 8.3.243. If the Authority determines that there are severe problems with the integrity of the Reporting Bank's internal models or if the Reporting Bank is in the backtesting red zone, the Authority may disallow the Reporting Bank's use of the IMA for market risk capital requirements.

Backtesting at the trading desk level

8.3.159 A Reporting Bank must conduct backtesting of each trading desk risk management model on a daily basis.

8.3.160 A Reporting Bank must conduct backtesting at the trading desk level by comparing the one-day VaR measure at both the 97.5th percentile and 99th percentile, one-tailed confidence levels, against each of the APL and against each of the HPL, of each trading desk registered in a day over 250 trading days prior to each date on which backtesting is conducted. A Reporting Bank must ensure that the one-day VAR measure is calibrated to a one-day holding period and to the most recent 250 trading days' data.

8.3.161 A Reporting Bank must count the number of exceptions under the backtesting conducted in paragraph 8.3.160 as follows:

(a) the Reporting Bank must count each observation when either the actual loss or the hypothetical loss of the trading desk registered in a day of the backtesting period exceeds the corresponding daily VaR measure given by the Reporting Bank's internal model;

(b) in the event that either the P&L or the daily VaR measure is not available or impossible to calculate for a given day over the 250 trading days prior

to the current reporting date, the Reporting Bank must count this as an exception;

(c) the Reporting Bank must count exceptions for actual losses separately from exceptions for hypothetical losses, and count the overall number of exceptions as the greater of these 2 amounts.

8.3.162 For the purposes of counting the number of exceptions in paragraph 8.3.161, subject to the Authority's written approval, a Reporting Bank may exclude an exception if the Reporting Bank has demonstrated to the satisfaction of the Authority that the exception was caused by a NMRF, and the stress scenario capital requirement for that NMRF for that trading desk, which is calculated in accordance with paragraph 8.3.203, exceeds the actual or hypothetical loss for that day. The Reporting Bank must calculate the stress scenario capital requirement for the NMRF for the specific trading desk.

8.3.163 When the Reporting Bank excludes an exception pursuant to paragraph 8.3.162, the Reporting Bank must document the historical movement of the value of the relevant NMRF and the evidence that the NMRF caused the relevant loss.

8.3.164 If a Reporting Bank counts, for a trading desk, either more than 30 exceptions when compared against the one-day VaR measure at the 97.5th percentile, one-tailed confidence level, or more than 12 exceptions when compared against the one-day VaR measure at the 99th percentile, one-tailed confidence level, over 250 trading days prior to each date on which backtesting is conducted, the Reporting Bank must determine the market risk capital requirement for all of the positions in that trading desk using the SA(MR).

PLA test requirements

8.3.165 A Reporting Bank must perform the PLA test for each trading desk that is in-scope of the IMA. The Reporting Bank must ensure that the PLA test for each trading desk is performed on a standalone basis, with no recognition of diversification or hedging effects with any position outside the trading desk.

8.3.166 A Reporting Bank must perform the PLA test for each trading desk by comparing the RTPL with the daily HPL for each trading desk[763] over the 250 trading days prior to each reporting date.

PLA test data input alignment

8.3.167 A Reporting Bank may adjust the RTPL input data for its risk factors to align with the data used in HPL for the purposes of the PLA test in accordance with paragraph 8.3.168, provided that the Reporting Bank meets all of the following requirements:

[763] The objective of the PLA test is to determine if there is a significant degree of association between the HPL and RTPL for each trading desk, so as to assess whether the risk factors included and the valuation engines used in the trading desk risk management model of the trading desk captures the material drivers of the P&L. A Reporting Bank's HPL and RTPL for each trading desk can differ for a number of reasons. However, a Reporting Bank's trading desk risk management model for each trading desk should provide a reasonably accurate assessment of the risks of a trading desk to be deemed eligible for the IMA.

(a) the Reporting Bank must ensure that the HPL input data can be used for RTPL purposes, and that neither risk factor differences nor valuation engine differences are omitted when transforming HPL input data into a format which can be applied to the risk factors used in RTPL calculation;

(b) the Reporting Bank must document and validate any adjustment of RTPL input data, and be able to justify any adjustment of RTPL input data to the satisfaction of the Authority, at the request of the Authority;

(c) the Reporting Bank must have procedures in place to identify changes to the adjustments of RTPL input data. The Reporting Bank must notify the Authority of any adjustment of RTPL input data and any change to such adjustments within 7 business days of such changes;

(d) the Reporting Bank must perform assessments on the effect these adjustments to the input data would have on the RTPL and the PLA test. To do so, the Reporting Bank must compare RTPL based on HPL-aligned market data with the RTPL based on market data without alignment. The Reporting Bank must perform this comparison when designing or changing the input data alignment process, and provide the assessment to the Authority upon request.

8.3.168 Subject to paragraph 8.3.167, a Reporting Bank may make adjustments to the RTPL input data when the input data for a given risk factor that is included in both the RTPL and the HPL differs due to different providers of market data sources, different time fixing of market data sources, or transformations of market data into input data for the risk factor in the underlying pricing model. The Reporting Bank may adjust the RTPL input data either by –

(a) directly replacing the RTPL input data with the HPL input data[764];

(b) using the HPL input data as a basis to calculate the risk factor data needed in the RTPL[765]; or

(c) aligning the time of the RTPL input data to the time of the HPL input data, in cases where the trading desk of the Reporting Bank operates in a different time zone compared to the time zone for the location of the Reporting Bank's risk control department.

8.3.169 If a Reporting Bank uses market data in the calculation of HPL in a different manner from in the calculation of RTPL, the Reporting Bank must reflect these differences in the PLA test and in the calculation of HPL and RTPL.

8.3.170 For the purposes of paragraph 8.3.168, where a Reporting Bank transforms market data into input data for a risk factor in an underlying pricing model, the Reporting Bank may adjust the market data used in RTPL to align with the market data used in HPL,

[764] For example, a Reporting Bank may replace the RTPL input data with the HPL input data in cases where the RTPL and HPL use input data for the same GIRR risk factor, but from different data providers.

[765] For example, a Reporting Bank may use HPL input data relating to a GIRR risk factor, which is a par rate, as a basis to determine the RTPL input data relating to another GIRR risk factor, which is a zero rate of the same tenor.

before the transformation of the market data by the Reporting Bank, but not after the transformation of the market data.

8.3.171 A Reporting Bank must not –

(a) adjust the HPL input data for risk factors to align with the RTPL input data; and

(b) adjust HPL or RTPL to address residual operational noise arising from calculating HPL and RTPL in 2 different systems at 2 different points in time[766].

PLA test metrics

8.3.172 A Reporting Bank must calculate the following test metrics for each trading desk using the time series of the most recent 250 trading days of observations of HPL and RTPL:

(a) the Spearman correlation metric, in accordance with paragraph 8.3.173, to assess the correlation between HPL and RTPL;

(b) the Kolmogorov-Smirnov (KS) test metric, in accordance with paragraph 8.3.174, to assess similarity of the distributions of HPL and RTPL.

8.3.173 A Reporting Bank must calculate the Spearman correlation metric using the following steps:

(a) step 1: for a time series of HPL, produce a corresponding time series of ranks (R_{HPL}) based on ascending order of HPL (i.e. the lowest value in the HPL time series receives a rank of 1, the next lowest value receives a rank of 2 and so on);

(b) step 2: similarly, for a time series of RTPL, produce a corresponding time series of ranks (R_{RTPL}) based on ascending order of RTPL;

(c) step 3: calculate the Spearman correlation coefficient of the 2 time series R_{RTPL} and R_{HPL} using the following formula:

$$r_s = \frac{\text{cov}(R_{HPL}, R_{RTPL})}{\sigma_{R_{HPL}} \times \sigma_{R_{RTPL}}}$$

where –

(i) $\sigma_{R_{HPL}}$ and $\sigma_{R_{RTPL}}$ are the standard deviations of R_{HPL} and R_{RTPL}; and

(ii) $\text{cov}(R_{HPL}, R_{RTPL})$ is the covariance between R_{HPL} and R_{RTPL}.

[766] Residual operational noise may originate from –
(a) transitioning large portions of data across systems, where potential data aggregations may result in minor reconciliation gaps below tolerance levels for intervention;
(b) small differences in static or reference data; or
(c) differences in the configurations of the systems.

8.3.174 A Reporting Bank must calculate the KS test metric using the following steps:

(a) step 1: calculate the empirical cumulative distribution function of HPL. For any value of HPL, the empirical cumulative distribution is the product of 0.004 and the number of HPL observations that are less than or equal to the corresponding HPL;

(b) step 2: calculate the empirical cumulative distribution function of RTPL. For any value of RTPL, the empirical cumulative distribution is the product of 0.004 and the number of RTPL observations that are less than or equal to the corresponding RTPL;

(c) step 3: calculate the KS test metric by taking the largest absolute difference observed between the 2 empirical cumulative distribution functions calculated in steps 1 and 2 at any P&L value.

8.3.175 A Reporting Bank must assign each trading desk to a PLA test red zone, amber zone or green zone, based on the Spearman correlation metric and the KS test metric, in accordance with the following steps, and as set out in Table 8-23:

(a) assign a trading desk to the PLA test green zone if both of the following conditions are met:

(i) the Spearman correlation metric is above 0.8;

(ii) the KS test metric is below 0.09;

(b) assign a trading desk to the PLA test red zone if either of the following conditions are met:

(i) the Spearman correlation metric is below 0.7;

(ii) the KS test metric is above 0.12;

(c) assign a trading desk to the PLA test amber zone if it is not assigned to the green zone or red zone.

Table 8-23: PLA test zones

KS test metric / Spearman correlation metric	< 0.09	0.09 to 0.12	> 0.12
> 0.8	Green	Amber	Red
0.7 to 0.8	Amber	Amber	Red
< 0.7	Red	Red	Red

8.3.176 A Reporting Bank must treat a trading desk that is in the PLA test red zone as ineligible to use the IMA to determine market risk capital requirements, and hence out-of-scope of the IMA.

8.3.177 A Reporting Bank must continue to treat a trading desk as ineligible to use the IMA, and hence out-of-scope of the IMA, until –

(a) the Reporting Bank performs the PLA test for the trading desk in accordance with paragraphs 8.3.165 to 8.3.174 for a reporting date, and is required to assign the trading test to the PLA test green zone in accordance with paragraph 8.3.175; and

(b) the Reporting Bank conducts backtesting in accordance with paragraphs 8.3.159 to 8.3.162 for the same reporting date referred to in sub-paragraph (a), and the Reporting Bank counts, for the trading desk –

(i) less than or equal to 30 exceptions when compared against the one-day VaR measure at the 97.5^{th} percentile, one-tailed confidence level; and

(ii) less than or equal to 12 exceptions when compared against the one-day VaR measure at the 99^{th} percentile, one-tailed confidence level,

over 250 trading days prior to the reporting date.

8.3.178 To avoid doubt, a Reporting Bank must not treat a trading desk that is in the PLA test amber zone as out-of-scope of the IMA.

8.3.179 For a trading desk that has been assigned to the PLA test amber zone, a Reporting Bank must not assign the trading desk to the PLA test green zone until –

(a) the Reporting Bank performs the PLA test for the trading desk in accordance with paragraphs 8.3.165 to 8.3.174 for a reporting date, and is required to assign the trading test to the PLA test green zone in accordance with paragraph 8.3.175; and

(b) the Reporting Bank conducts backtesting in accordance with paragraphs 8.3.159 to 8.3.162 for the same reporting date referred to in sub-paragraph (a), and the Reporting Bank counts, for the trading desk, –

(i) less than or equal to 30 exceptions when compared against the one-day VaR measure at the 97.5^{th} percentile, one-tailed confidence level; and

(ii) less than or equal to 12 exceptions when compared against the one-day VaR measure at the 99^{th} percentile, one-tailed confidence level,

over 250 trading days prior to the reporting date.

8.3.180 A Reporting Bank must apply a capital surcharge to trading desks in the PLA test amber zone in accordance with paragraph 8.3.243.

Sub-division 5: Calculation of IMA Capital Requirements

8.3.181 For each trading desk that is determined to be in-scope of the IMA in accordance with paragraph 8.3.17, a Reporting Bank must determine market risk capital requirements in respect of the trading desk –

(a) using ES models, in accordance with paragraphs 8.3.182 to 8.3.202, for all modellable risk factors; and

(b) using SES models, in accordance with paragraphs 8.3.203 to 8.3.212, for all non-modellable risk factors.

Calculation of expected shortfall for modellable risk factors

8.3.182 A Reporting Bank must calculate ES on a daily basis, and at a 97.5th percentile, one-tailed confidence level, for the Reporting Bank's IMA portfolio and for each trading desk that is in-scope of the IMA.

8.3.183 Subject to prior written approval by the Authority, a Reporting Bank need not require all products to be simulated using full revaluation and may use simplifications[767] in its internal models. The Authority will consider if the method used by the Reporting Bank is adequate for the instruments covered prior to granting approval.

8.3.184 A Reporting Bank must calculate ES by scaling an ES calculated on a base liquidity horizon of 10 days to reflect the liquidity horizons specified in paragraph 8.3.196, by using the following formula:

$$\mathbf{ES} = \sqrt{(\mathbf{ES_T(P)})^2 + \sum_{\mathbf{j \geq 2}} \left(\mathbf{ES_T(P, j)} \sqrt{\frac{(\mathbf{LH_j - LH_{j-1}})}{\mathbf{T}}} \right)^2}$$

where –

(a) ES = regulatory liquidity-adjusted ES;

(b) T = 10 days (length of the base liquidity horizon);

(c) $\mathbf{ES_T(P)}$ = ES at horizon T of a portfolio with positions $\mathbf{P} = (\mathbf{p_i})$ with respect to shocks to all risk factors that the positions P are exposed to, calculated over the time interval T without scaling from a shorter horizon;

(d) $\mathbf{ES_T(P, j)}$ = ES at horizon T of a portfolio with positions $\mathbf{P} = (\mathbf{p_i})$ with respect to shocks for each position p_i to the subset of risk factors $\mathbf{Q(P_i, j)}$, with all other risk factors held constant, calculated over the time interval T without scaling from a shorter horizon;

[767] For example, sensitivities-based valuation.

(e) $\mathbf{Q(P_i, j)}$ = subset of risk factors for which liquidity horizons, as specified in paragraph 8.3.196, for the trading desk where p_i is booked are at least as long as LH_j[768];

(f) the time series of changes in risk factors over the length of the base liquidity horizon T may be determined by overlapping observations; and

(g) $\mathbf{LH_j}$ = liquidity horizon j, with lengths specified in Table 8-24.

Table 8-24: Liquidity horizons

j	Liquidity horizon j (LH_j) in days
1	10
2	20
3	40
4	60
5	120

8.3.185 A Reporting Bank must calculate the ES measure in a period of stress in accordance with paragraphs 8.3.186 to 8.3.191, such that the ES measure replicates an ES outcome that would be generated on the Reporting Bank's current portfolio if all the modellable risk factors in the Reporting Bank's ES model were subject to a period of stress.

8.3.186 A Reporting Bank must calculate the ES measure in a period of stress using a reduced set of risk factors. The Reporting Bank must ensure that the reduced set of risk factors satisfies all of the following conditions:

(a) the reduced set of risk factors must be relevant for the Reporting Bank's IMA portfolio;

(b) there must be a sufficiently long history of observations for the reduced set of risk factors that spans back to and includes 2007;

(c) the Reporting Bank must seek the Authority's approval for its choice of the reduced set of risk factors;

(d) the reduced set of risk factors must meet the data quality requirements for a modellable risk factor set out in paragraphs 8.3.108 to 8.3.137;

(e) the ES measure based on the reduced set of risk factors must be, on average, at least equal to 75% of the ES measure based on the full set of risk factors at the IMA portfolio level for the aggregate of all trading desks that are in-scope of the IMA, over the 12-week period preceding the calculation date.

8.3.187 A Reporting Bank must calculate its internally modelled capital requirement at the IMA portfolio level using the Reporting Bank's ES model, with no supervisory constraints on cross-risk class correlations ($\mathbf{IMCC(C)}$), by using the following formula:

[768] For example, $\mathbf{Q(P_i, 4)}$ would contain risk factors with liquidity horizons, which are at least as long as 60 days. This would include risk factors with liquidity horizons, which are at least as long as 120 days, which are contained in $\mathbf{Q(P_i, 5)}$. To avoid doubt, $\mathbf{Q(P_i, j)}$, is a subset of $\mathbf{Q(P_i, j-1)}$.

$$\mathbf{IMCC(C)} = \mathbf{ES_{R,S}} \times \mathbf{max}\left(\frac{\mathbf{ES_{F,C}}}{\mathbf{ES_{R,C}}}, \mathbf{1}\right)$$

where –

(a) $\mathbf{ES_{R,S}}$ is the ES measure calculated in accordance with paragraph 8.3.184, using only the reduced set of risk factors specified by the Reporting Bank in accordance with paragraph 8.3.186, based on the most severe 250-trading day period of stress over the observation horizon identified in accordance with paragraph 8.3.188 and taking into account stressed correlation measures across the reduced set of risk factors;

(b) $\mathbf{ES_{F,C}}$ is the ES measure calculated in accordance with paragraph 8.3.184, using the full set of risk factors, based on the most recent 250-trading day observation period; and

(c) $\mathbf{ES_{R,C}}$ is the ES measure calculated in accordance with paragraph 8.3.184, using only the reduced set of risk factors specified by the Reporting Bank in accordance with paragraph 8.3.186, based on the most recent 250-trading day observation period.

[MAS Notice 637 (Amendment) 2024]

8.3.188 For the purposes of paragraph 8.3.187(a), a Reporting Bank must identify the most severe 250-trading day period of stress during which the Reporting Bank's IMA portfolio experiences the largest loss, available over an observation horizon, where –

(a) the Reporting Bank must ensure that the observation horizon for determining the most severe 250-trading day period of stress, at a minimum, spans back to and includes 2007;

(b) the Reporting Bank must ensure that the observations are equally weighted; and

(c) the Reporting Bank must ensure that the aggregate capital requirement for modellable risk factors (IMCC) calculated based on the 250-trading day period of stress in accordance with paragraph 8.3.200 is the maximum value possible.

[MAS Notice 637 (Amendment) 2024]

8.3.189 For the purposes of calculating $\mathbf{ES_{R,S}}$, a Reporting Bank must update the 250-trading day period of stress identified in accordance with paragraph 8.3.188 at least quarterly, and whenever there are material changes in the risk factors of its portfolio. The Reporting Bank must also update the reduced set of risk factors specified by the Reporting Bank in accordance with paragraph 8.3.186 whenever it updates the 250-trading day period of stress, for the purposes of calculating $\mathbf{ES_{R,S}}$ and $\mathbf{ES_{R,C}}$.

[MAS Notice 637 (Amendment) 2024]

8.3.190 For the purposes of calculating $\mathbf{ES}_{\mathbf{F},\mathbf{C}}$, a Reporting Bank must update its data sets at least quarterly, and must also reassess its data sets whenever market prices are subject to material changes. The Reporting Bank must ensure that its updating process is able to allow for updates on an ad hoc basis.

8.3.191 The Authority may require a Reporting Bank to calculate $\mathbf{ES}_{\mathbf{F},\mathbf{C}}$ using a shorter observation period of at least 6 months if the Authority is of the opinion that a shorter observation period is justified by a significant increase in price volatility.

8.3.192 When a new benchmark rate is able to meet the data quality requirements for a modellable risk factor set out in paragraphs 8.3.108 to 8.3.137, but did not exist during a period of stress, the Reporting Bank may, for the purposes of calculating $\mathbf{IMCC}(\mathbf{C})$ in paragraph 8.3.187, use –

(a) for the most recent 250-trading day observation period, the new benchmark rate in the full set of risk factors ($\mathbf{ES}_{\mathbf{F},\mathbf{C}}$), and in the reduced set of risk factors ($\mathbf{ES}_{\mathbf{R},\mathbf{C}}$); and

(b) for the stressed period, the old benchmark rate in the reduced set of risk factors ($\mathbf{ES}_{\mathbf{R},\mathbf{S}}$).

To avoid doubt, the Reporting Bank must ensure that the reduced set of risk factors meets the conditions specified in paragraph 8.3.186(c) and (d).

[MAS Notice 637 (Amendment) 2024]

8.3.193 A Reporting Bank may use any type of ES model[769], as long as the ES model satisfies the requirements set out in this Part.

8.3.194 A Reporting Bank may recognise empirical correlations within risk classes (namely interest rate risk, equity risk, foreign exchange risk, commodity risk and credit spread risk), including related option volatilities in each risk class. The Reporting Bank may only recognise empirical correlations across risk classes in accordance with paragraphs 8.3.199 to 8.3.202. Where the Reporting Bank recognises empirical correlations across risk classes, the Reporting Bank must calculate and use these correlations in a manner consistent with the applicable liquidity horizons, clearly document the use of these correlations, and be able to justify the use of these correlations to the Authority upon request.

8.3.195 A Reporting Bank must ensure that its internal models accurately capture the risks associated with options within each risk class. The Reporting Bank must ensure that –

(a) its internal models capture the non-linear price characteristics of options positions; and

(b) its risk measurement systems have a set of risk factors that captures the volatilities of the rates and prices underlying options positions (i.e. vega

[769] For example, models based on historical simulation, Monte Carlo simulation, or other appropriate analytical methods.

risk). The Reporting Bank must model the volatility surface across both strike price and tenor. The Reporting Bank must also have detailed specifications of the relevant volatilities if it has a large or complex options portfolio.

8.3.196 For the purposes of paragraph 8.3.184, a Reporting Bank must calculate the liquidity horizon, n, for each risk factor, in accordance with all of the following:

(a) the Reporting Bank must map each of its risk factors to one of the risk factor categories in Table 8-25. The Reporting Bank must ensure that the procedures for mapping the risk factors are –

(i) set out in writing;

(ii) validated by the Reporting Bank's risk management function;

(iii) made available to the Authority upon request; and

(iv) subject to internal audit;

(b) the Reporting Bank may, subject to written approval by the Authority, increase the liquidity horizon above the values set out in Table 8-25 for particular trading desks. Where the Reporting Bank increases the liquidity horizon for a particular trading desk, the increased horizon must be set as 20, 40, 60 or 120 days, capped at the maturity of the related instrument. The Reporting Bank must also document the rationale for increasing the liquidity horizon;

(c) for risk factors in instruments that mature before the liquidity horizon of the respective risk factor as set out in Table 8-25, the Reporting Bank must assign to the risk factor the shortest liquidity horizon (out of 10, 20, 40, 60 or 120 days) that is equal to or longer than the maturity of the instrument[770];

(d) for credit and equity indices where different risk factor categories are involved, the Reporting Bank must assign to the risk factor the shortest liquidity horizon (out of 10, 20, 40, 60 and 120 days) that is equal to or longer than the weighted average liquidity horizon of the index, where the weighted average liquidity horizon is calculated by multiplying the liquidity horizon of each of the underlying instruments of the index by its weight in the index, and summing across all underlying instruments[771];

(e) the Reporting Bank must assign the same liquidity horizons to inflation risk factors and interest rate risk factors of the same currency.

[770] For example, although the liquidity horizon for interest rate volatility is prescribed as 60 days, if an instrument matures in 30 days, the Reporting Bank must assign a 40-day liquidity horizon to the instrument's interest rate volatility.

[771] For example, if the weighted average liquidity horizon is 12 days, the Reporting Bank must assign a liquidity horizon of 20 days to the index.

Table 8-25: Liquidity horizon n by risk factor

Risk factor category	n
Interest rate: specified currencies – EUR, USD, GBP, AUD, JPY, SEK, CAD and SGD[772]	10
Interest rate: Currencies other than EUR, USD, GBP, AUD, JPY, SEK, CAD and SGD[773]	20
Interest rate: volatility	60
Interest rate: other types	60
Credit spread: sovereign (investment grade)	20
Credit spread: sovereign (high yield)	40
Credit spread: corporate (investment grade)	40
Credit spread: corporate (high yield)	60
Credit spread: volatility	120
Credit spread: other types	120
Equity price (large cap)	10
Equity price (small cap)	20
Equity price (large cap): volatility	20
Equity price (small cap): volatility	60
Equity repo (large cap)	20
Equity repo (small cap)	60
Equity dividends (large cap)	20
Equity dividends (small cap)	60
Equity: other types	60
FX rate: specified currency pairs – USD/EUR, USD/JPY, USD/GBP, USD/AUD, USD/CAD, USD/CHF, USD/MXN, USD/CNY, USD/NZD, USD/RUB, USD/HKD, USD/SGD, USD/TRY, USD/KRW, USD/SEK, USD/ZAR, USD/INR, USD/NOK, USD/BRL, EUR/JPY, EUR/GBP, EUR/CHF, and JPY/AUD; and currency pairs forming first-order crosses across these specified currency pairs	10
FX rate: unspecified currency pairs	20
FX: volatility	40
FX: other types	40
Energy and carbon emissions trading price	20
Precious metals and non-ferrous metals price	20
Other commodities price	60
Energy and carbon emissions trading price: volatility	60
Precious metals and non-ferrous metals price: volatility	60
Other commodities price: volatility	120
Commodity: other types	120

Calculation of capital requirement for modellable risk factors

8.3.197 A Reporting Bank must calculate its internally modelled capital requirement at the IMA portfolio level using its ES model, with no supervisory constraints on cross-risk class correlations ($\mathbf{IMCC}(\mathbf{C})$), in accordance with paragraph 8.3.187.

[772] To avoid doubt, the liquidity horizon of 10 days applies to mono-currency and cross-currency basis risk in the specified currencies.

[773] To avoid doubt, the liquidity horizon of 20 days applies to mono-currency and cross-currency basis risk in currencies other than EUR, USD, GBP, AUD, JPY, SEK, CAD and SGD.

8.3.198 A Reporting Bank must include in its ES model all modellable risk factors for trading desks that are in-scope of the IMA.

8.3.199 A Reporting Bank must calculate a series of partial ES capital requirements for each risk class (namely interest rate risk, equity risk, foreign exchange risk, commodity risk and credit spread risk), holding risk factors for other risk classes constant. The Reporting Bank must calculate the partial ES capital requirement for the risk class $\mathbf{i}$ ($\mathbf{IMCC}(\mathbf{C_i})$), by using the following formula:

$$\mathbf{IMCC}(\mathbf{C_i}) = \mathbf{ES_{R,S,i}} \times \mathbf{max}(\frac{\mathbf{ES_{F,C,i}}}{\mathbf{ES_{R,C,i}}}, \mathbf{1})$$

where –

(a) $\mathbf{ES_{R,S,i}}$ is the ES measure calculated in accordance with paragraph 8.3.184, using only the reduced set of risk factors specified by the Reporting Bank in accordance with paragraph 8.3.186 and holding risk factors for other risk classes constant, based on the most severe 250-trading day period of stress over the observation horizon identified in accordance with paragraph 8.3.188;

(b) $\mathbf{ES_{F,C,i}}$ is the ES measure calculated in accordance with paragraph 8.3.184, using the full set of risk factors and holding risk factors for other risk classes constant, based on the most recent 250-trading day observation period; and

(c) $\mathbf{ES_{R,C,i}}$ is the ES measure calculated in accordance with paragraph 8.3.184, using only the reduced set of risk factors specified by the Reporting Bank in accordance with paragraph 8.3.186 and holding risk factors for other risk classes constant, based on the most recent 250-trading day observation period.

[MAS Notice 637 (Amendment) 2024]

8.3.200 A Reporting Bank must calculate its aggregate capital requirement for modellable risk factors (IMCC), using either the following formula or the formula set out in paragraph 8.3.201:

$$\mathbf{IMCC} = \boldsymbol{\rho}\big(\mathbf{IMCC}(\mathbf{C})\big) + (\mathbf{1} - \boldsymbol{\rho})\left(\sum_{\mathbf{i=1}}^{\mathbf{B}} \mathbf{IMCC}(\mathbf{C_i})\right)$$

where –

(a) the stress period used in the risk class level must be the same as that used to calculate the IMA portfolio-wide ES;

(b) $\boldsymbol{\rho}$ is 0.5;

(c) B stands for the risk classes as specified in paragraph 8.3.199, namely interest rate risk, equity risk, foreign exchange risk, commodity risk and credit spread risk;

(d) $\mathbf{IMCC}(\mathbf{C})$ is the unconstrained ES capital requirement as specified in paragraph 8.3.197; and

(e) $\mathbf{IMCC}(\mathbf{C_i})$ is the partial ES capital requirement as specified in paragraph 8.3.199.

8.3.201 A Reporting Bank may choose to calculate its aggregate capital requirement for modellable risk factors (IMCC) using the following formula[774]:

$$\mathbf{IMCC} = \left(\boldsymbol{\rho} + (\mathbf{1} - \boldsymbol{\rho}) \times \frac{(\sum_{\mathbf{i=1}}^{\mathbf{B}} \mathbf{IMCC}(\mathbf{C_i}))}{(\mathbf{IMCC}(\mathbf{C}))}\right) \times (\mathbf{IMCC}(\mathbf{C}))$$

where –

(a) $\mathbf{IMCC}(\mathbf{C})$ is the unconstrained ES capital requirement as specified in paragraph 8.3.187 and is calculated daily; and

(b) $\frac{(\sum_{\mathbf{i=1}}^{\mathbf{B}} \mathbf{IMCC}(\mathbf{C_i}))}{(\mathbf{IMCC}(\mathbf{C}))}$ is calculated weekly.

8.3.202 A Reporting Bank that chooses to use the formula in paragraph 8.3.201 to calculate IMCC must have procedures and controls in place to ensure that the weekly calculation of the ratio in paragraph 8.3.201(b) does not lead to a systematic underestimation of risks relative to a daily calculation of the ratio, and must be in a position to switch to a daily calculation of the ratio within 7 business days, upon request by the Authority.

Calculation of capital requirement for NMRFs

8.3.203 A Reporting Bank must calculate a stress scenario capital requirement for each NMRF, where the stress scenario capital requirement for each NMRF is the loss that is incurred when the NMRF is subject to a 250-trading day period of stress. The Reporting Bank must ensure that the stress scenario capital requirement for each NMRF, calculated using a 250-trading day period of stress, is at least as high as the ES for each NMRF, which is calculated at a 97.5th percentile, one-tailed confidence level, over the same 250-trading day period of stress.

[MAS Notice 637 (Amendment) 2024]

8.3.204 For the purposes of calculating the stress scenario capital requirement for each NMRF pursuant to paragraph 8.3.203, a Reporting Bank must determine a common 250-trading day period of stress across all NMRFs in the same risk class.

[MAS Notice 637 (Amendment) 2024]

[774] The specified formula reduces the number of ES measures that a Reporting Bank needs to calculate.

8.3.205 Despite paragraph 8.3.204, subject to prior written approval from the Authority, a Reporting Bank may calculate stress scenario capital requirements for NMRFs at the bucket level for risk factors that belong to curves, surfaces or cubes, using the same buckets that the Reporting Bank uses for the purposes of the risk factor eligibility test based on the bucketing approach adopted by the Reporting Bank pursuant to paragraph 8.3.117.

[MAS Notice 637 (Amendment) 2024]

8.3.206 A Reporting Bank must assign a liquidity horizon to each NMRF that is the greater of the liquidity horizon assigned to the risk factor in accordance with paragraph 8.3.196 and 20 days. The Authority may require the Reporting Bank to apply a higher liquidity horizon to any NMRF.

8.3.207 Despite paragraph 8.3.204, a Reporting Bank may apply a common 250-trading day period of stress to all NMRFs arising from idiosyncratic credit spread risk that is different from the 250-trading day period of stress for NMRFs arising from non-idiosyncratic credit spread risk, and a common 250-trading day period of stress to all NMRFs arising from idiosyncratic equity risk arising from spot, futures and forward prices, equity repo rates, dividends and volatilities that is different from the 250-trading day period of stress for NMRFs arising from non-idiosyncratic equity risk.

[MAS Notice 637 (Amendment) 2024]

8.3.208 A Reporting Bank may assume zero correlation when aggregating gains and losses for the NMRFs arising from the idiosyncratic risk factors referred to in paragraph 8.3.207, provided that the Reporting Bank conducts analysis and demonstrates to the satisfaction of the Authority that this is appropriate[775].

8.3.209 A Reporting Bank must recognise correlation or diversification effects between non-idiosyncratic NMRFs in accordance with the formula in paragraph 8.3.212.

8.3.210 A Reporting Bank must ensure the period of stress determined in accordance with paragraphs 8.3.203 and 8.3.207 is acceptable to the Authority.

8.3.211 In the event that a Reporting Bank is unable to provide a period of stress which is acceptable to the Authority, the Reporting Bank must use the maximum possible loss as the stress scenario.

8.3.212 A Reporting Bank must calculate SES, the aggregate regulatory capital measure for I (non-modellable idiosyncratic credit spread risk factors that have been aggregated with zero correlation in accordance with paragraphs 8.3.207 and 8.3.208), J (non-modellable idiosyncratic equity risk factors that have been aggregated with zero

[775] Such analysis generally involves tests on the residuals of panel regressions where the dependent variable is the change in issuer spread, while the independent variables can be either a change in a market factor or a dummy variable for sector or region or both. The assumption is that the data on the names used to estimate the model suitably proxies the names in the portfolio and the idiosyncratic residual component captures the multifactor-name basis. If the model is missing systematic explanatory factors or the data suffers from measurement error, then the residuals would exhibit one or some of the following: heteroscedasticity (which can be tested via White, Breuche Pagan tests etc), serial correlation (which can be tested with Durbin Watson, Lagrange multiplier (LM) tests etc), or cross-sectional correlation (clustering).

correlation in accordance with paragraphs 8.3.207 and 8.3.208) and the remaining K (non-modellable risk factors in trading desks that are in-scope of the IMA), by using the following formula:

$$SES = \sqrt{\sum_{i=1}^{I} ISES_{NM,i}^2} + \sqrt{\sum_{j=1}^{J} ISES_{NM,j}^2} + \sqrt{\left(\rho \times \sum_{k=1}^{K} SES_{NM,k}\right)^2 + (1-\rho^2) \times \sum_{k=1}^{K} SES_{NM,k}^2}$$

where –

(a) $ISES_{NM,i}$ is the stress scenario capital requirement for the non-modellable idiosyncratic credit spread risk factor i from the I non-modellable idiosyncratic credit spread risk factors that are aggregated with zero correlation;

(b) $ISES_{NM,j}$ is the stress scenario capital requirement for the non-modellable idiosyncratic equity risk factor j from the J non-modellable idiosyncratic equity risk factors that are aggregated with zero correlation;

(c) $SES_{NM,k}$ is the stress scenario capital requirement for non-modellable risk factor k from the remaining K non-modellable risk factors; and

(d) ρ = 0.6.

Calculation of default risk capital requirement

8.3.213 A Reporting Bank must have a separate internal default risk capital (DRC) requirement model to measure the default risk of trading book positions.

8.3.214 For the purposes of this Division, default risk is the risk of –

(a) direct loss due to a reference entity's default; and

(b) the potential for indirect losses that may arise from in the event of default of a reference entity,

where a reference entity refers to the issuer in the case of a bond or equity, or an obligor in the case of other credit obligations.

8.3.215 The Reporting Bank must ensure that its DRC requirement model satisfies the general criteria in paragraphs 8.3.2 to 8.3.21 and the qualitative standards in paragraphs 8.3.22 to 8.3.86.

8.3.216 A Reporting Bank must subject all trading book positions subject to market risk capital requirements that have default risk, with the exception of positions subject to the SA(MR), to the DRC requirement model. To avoid doubt, trading book positions include –

(a) all exposures to central governments, central banks and PSEs, including those denominated in the domestic currency of a country or jurisdiction;

(b) all equity positions; and

(c) all defaulted debt positions.

8.3.217 For the purposes of paragraph 8.3.216(b), a Reporting Bank must model the default of an issuer as the equity price of the issuer dropping to zero.

8.3.218 A Reporting Bank must calculate its default risk measure using a VaR model, as VaR at the 99.9th percentile, one-tailed confidence level, based on a one-year time horizon. The Reporting Bank must calculate its default risk measure weekly.

8.3.219 For the purposes of paragraph 8.3.218, a Reporting Bank must use a default simulation model with 2 types of systematic risk factors. The Reporting Bank must define the random variable that determines whether an entity defaults as an entity-specific function of multiple systematic factors of 2 different types, and of an idiosyncratic factor[776].

8.3.220 A Reporting Bank must calculate default correlations for the default risk model based on credit spread or listed equity price data, that cover a period of at least 10 years, and which includes a period of stress identified in accordance with paragraph 8.3.188. The Reporting Bank must not include data sources other than credit spreads or listed equity prices[777] for the purposes of calculating default correlations.

8.3.221 A Reporting Bank must calculate default correlations for its default risk model based on a one-year liquidity horizon. The Reporting Bank may apply a liquidity horizon of 60 days, or a longer period where appropriate[778], to –

(a) equity positions; and

(b) equity sub-portfolios, provided that the Reporting Bank calculates the default risk of the equity sub-portfolios separately and the trading desks to which positions in the equity sub-portfolios are assigned deal predominantly in equity exposures.

To avoid doubt, if a trading desk has both equity and bond exposures, and the bank performs a joint calculation for the default risk of equities and bonds, the Reporting Bank must calculate default correlations based on a one-year liquidity horizon.

8.3.222 A Reporting Bank must have clear policies and procedures on the process for calculating default correlations, and must document the cases in which credit spreads or equity prices are used.

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776 For example, in a Merton-type model, entity $\boldsymbol{i}$ defaults when its asset return $\boldsymbol{X_i}$ falls below an entity-specific threshold that determines the entity's probability of default. Systematic risk may be described via $\boldsymbol{M}$ systematic regional factors $\boldsymbol{Y_j^{region}(j = 1, \ldots, M)}$ and $\boldsymbol{N}$ systematic industry factors $\boldsymbol{Y_j^{industry}(j = 1, \ldots, N)}$. For each entity $\boldsymbol{i}$, a Reporting Bank must choose region factor loadings $\boldsymbol{\beta_{i,j}^{region}}$ and industry factor loadings $\boldsymbol{\beta_{i,j}^{industry}}$that describe the sensitivity of the entity's asset return to each systematic factor, such that there is at least one non-zero factor loading for the region type and at least one non-zero factor loading for the industry type. The asset return of entity $\boldsymbol{i}$ may then be represented as $\boldsymbol{X_i = \sum_{j=1}^{M} \beta_{i,j}^{region} Y_j^{region} + \sum_{j=1}^{N} \beta_{i,j}^{industry} Y_j^{industry} + \gamma_i \varepsilon_i}$ where $\boldsymbol{\varepsilon_i}$ is the idiosyncratic risk factor and $\boldsymbol{\gamma_i}$ is the idiosyncratic factor loading.

777 For example, rating time series.

778 For example, where equity is held to hedge hybrid positions such as convertibles.

8.3.223 A Reporting Bank must calculate its DRC requirement as the greater of –

(a) the average of the default risk measures over the most recent 12 weeks; or

(b) the most recent default risk measure,

as of the date of calculation, where the default risk measure is derived based on the DRC requirement model and in accordance with paragraphs 8.3.213 to 8.3.222 and paragraphs 8.3.224 to 8.3.240.

8.3.224 A Reporting Bank must assume constant positions over the liquidity horizon applied for each position pursuant to paragraph 8.3.221. For instruments with a maturity shorter than the applied liquidity horizon, the Reporting Bank must account for the maturity of any long or short position when the ability to maintain a constant position within the liquidity horizon cannot be contractually assured.

8.3.225 A Reporting Bank must measure default risk for each reference entity.

8.3.226 A Reporting Bank must not use probabilities of default (PDs) implied from market prices, unless they are corrected to obtain an objective probability of default. The Reporting Bank must subject PDs to a floor of 0.03%.

8.3.227 A Reporting Bank may reflect offsetting of long and short exposures to the same reference entity in its DRC requirement model. If such exposures span different instruments with exposure to the same reference entity, the Reporting Bank must ensure that the effect of the offsetting accounts for different losses in the different instruments[779].

8.3.228 A Reporting Bank must explicitly model the basis risk between long and short exposures of different reference entities, and must include the ability to offset default risk among long and short exposures across different reference entities through the modelling of defaults. The Reporting Bank must not offset positions before they are input into the DRC requirement model, except where specified in paragraph 8.3.227.

8.3.229 A Reporting Bank must recognise in its DRC requirement model the impact of correlations between defaults among obligors, including the effect on correlations of periods of stress. The Reporting Bank must –

(a) base the correlations on objective data, and must not choose the correlations such that a higher correlation is used for portfolios with a mix of long and short positions and a low correlation is used for portfolios with only long exposures;

(b) validate that its modelling approach for the correlations is appropriate for its portfolio, including the choice and weights of its systematic risk factors;

(c) document its modelling approach and the time period used to calibrate the model;

[779] For example, due to differences in seniority of the instruments.

(d) measure the correlations over a liquidity horizon as applied pursuant to paragraph 8.3.221;

(e) calibrate the correlations based on data covering a period of at least 10 years; and

(f) reflect all significant basis risks in recognising the correlations[780].

8.3.230 A Reporting Bank must capture any material mismatch between a position and its hedge in its DRC requirement model. With respect to default risk within the one-year capital horizon, the Reporting Bank must ensure that its DRC requirement model accounts for the risk in the timing of defaults, to capture the relative risk from the maturity mismatch of long and short positions with maturity of less than one year.

8.3.231 A Reporting Bank must reflect the effect of issuer and market concentrations, and concentrations that can arise within and across product classes during stressed conditions, in its DRC requirement model.

8.3.232 As part of a Reporting Bank's DRC requirement model, the Reporting Bank must calculate, for each position subject to the model, an incremental loss amount relative to the current valuation that the Reporting Bank would incur in the event that the reference entity of the position defaults.

8.3.233 A Reporting Bank must ensure that its DRC requirement model reflects the economic cycle in its loss estimates[781].

8.3.234 A Reporting Bank must ensure that its DRC requirement model reflects the non-linear impact of options, and other positions with material non-linear behaviour, with respect to default. Subject to prior written approval by the Authority, the Reporting Bank may apply simplified modelling approaches[782] to only equity derivative positions with multiple underlyings.

8.3.235 A Reporting Bank must assess default risk from the perspective of the incremental loss from default, in excess of the mark-to-market losses already taken into account in the current valuation.

8.3.236 A Reporting Bank must conduct validation of its DRC requirement model to assess its qualitative and quantitative reasonableness, particularly with regard to the model's treatment of concentrations[783]. The Reporting Bank must ensure that tests to validate the model are not limited to the range of events experienced historically.

8.3.237 Where a Reporting Bank seeks written approval from the Authority to use the IMA for a trading desk with exposure to both credit spread risk and default risk, the

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780 For example, maturity mismatches, internal or external ratings, or vintage.

781 For example, by incorporating the dependence of the recovery on the systematic risk factors.

782 For example, modelling approaches that rely solely on individual jump-to-default sensitivities to estimate losses when multiple underlyings default.

783 Owing to the high confidence standard and long capital horizon of the DRC requirement, robust direct validation of the DRC requirement model through standard backtesting methods at the 99.9%/one-year soundness standard will not be possible. Accordingly, validation of a DRC requirement model would necessarily rely more heavily on indirect methods including but not limited to stress tests, sensitivity analyses and scenario analyses. The Reporting Bank should develop relevant internal modelling benchmarks to assess the overall accuracy of their DRC requirement model.

Reporting Bank must seek approval to use the IMA to determine market risk capital requirements for both credit spread risk and default risk for that trading desk. The Reporting Bank must treat trading desks which do not receive approval as out-of-scope of the IMA.

8.3.238 A Reporting Bank must establish a hierarchy ranking its preferred sources for PD and loss-given-default (LGD) estimates and must not cherry-pick model parameters.

8.3.239 Where a Reporting Bank has approved PD estimates as part of the IRBA, the Reporting Bank must use this data for the purposes of the DRC requirement model. In all other cases, the Reporting Bank must calculate PDs using a methodology consistent with the IRBA, and must satisfy all of the following conditions:

(a) the Reporting Bank must not use risk-neutral PDs as estimates of observed historical PDs;

(b) the Reporting Bank must measure PDs based on historical default data including both formal default events and price declines equivalent to default losses[784], over a minimum historical observation period of 5 years;

(c) the Reporting Bank must estimate PDs based on historical data of default frequency over a one-year period. The Reporting Bank may also calculate PD on a theoretical basis[785] provided that the Reporting Bank is able to demonstrate to the satisfaction of the Authority, that such theoretical derivations are in line with historical default experience;

(d) the Reporting Bank may use PDs provided by external sources, provided the Reporting Bank ensures that they are relevant for the Reporting Bank's portfolio.

8.3.240 Where a Reporting Bank has approved LGD estimates as part of the IRBA, the Reporting Bank must use this data for the purposes of the DRC requirement model. In all other cases, the Reporting Bank must calculate LGDs using a methodology consistent with the IRBA, and must satisfy all of the following conditions:

(a) the Reporting Bank must determine LGDs based on a position's current market value less the position's expected market value subsequent to default. The Reporting Bank must measure LGD as (1 – recovery rate) and the Reporting Bank must ensure that the LGD reflects the type and seniority of the position, and is not less than zero;

(b) the Reporting Bank must estimate LGDs based on an amount of historical data that is sufficient to derive robust, accurate estimates;

(c) the Reporting Bank may use LGDs provided by external sources, provided the Reporting Bank ensures that they are relevant for the Reporting Bank's portfolio.

[784] Where possible, a Reporting Bank should base this data on publicly traded securities over a complete economic cycle.

[785] For example, using geometric scaling.

Calculation of capital requirement for trading desks that are out-of-scope of the IMA

8.3.241 A Reporting Bank must calculate $\boldsymbol{C_u}$, the capital requirement for trading desks that are out-of-scope of the IMA using the SA(MR). To avoid doubt, the Reporting Bank must ensure that all positions held on trading desks that are out-of-scope of the IMA, including positions that are held by trading desks that were nominated to be out-of-scope of the IMA pursuant to paragraph 8.3.6, are combined for the purposes of determining capital requirements using the SA(MR).

Aggregation of IMA capital requirement

8.3.242 A Reporting Bank must calculate $\boldsymbol{C_A}$, the aggregate capital requirement for market risks excluding DRC, for trading desks in-scope of the IMA, by using the following formula:

$$\boldsymbol{C_A = max\{IMCC_{t-1} + SES_{t-1}, m_c \times IMCC_{avg} + SES_{avg}\}}$$

where –

(a) $\boldsymbol{IMCC_{t-1}}$ is the most recent observation of the Reporting Bank's IMCC calculated in accordance with paragraph 8.3.200 or paragraph 8.3.201;

(b) $\boldsymbol{SES_{t-1}}$ is the most recent observation of the Reporting Bank's SES calculated in accordance with paragraph 8.3.212;

(c) $\boldsymbol{IMCC_{avg}}$ is the average of the previous 60 observations of the Reporting Bank's IMCC calculated in accordance with paragraph 8.3.200 or paragraph 8.3.201;

(d) $\boldsymbol{SES_{avg}}$ is the average of the previous 60 observations of the Reporting Bank's SES calculated in accordance with paragraph 8.3.212; and

(e) $\boldsymbol{m_c = 1.5 + m_b + m_q}$, where –

(i) $\boldsymbol{m_b}$ is the backtesting add-on, which ranges from 0 to 0.5 based on the outcome of the backtesting of the Reporting Bank's daily VaR at the 99th percentile, one-tailed confidence level, based on current observations on the full set of risk factors, as specified in Table 8-22; and

(ii) $\boldsymbol{m_q}$ is the qualitative add-on determined by the Authority[786].

[786] If the Reporting Bank meets all of the qualitative standards set out in paragraphs 8.3.22 to 8.3.97, the qualitative add-on may be zero.

8.3.243 A Reporting Bank must calculate the aggregate capital requirement for market risk, $\boldsymbol{ACR_{total}}$, by using the following formula:

$$\boldsymbol{ACR_{total} = min\{IMA_{G,A} + C_S + C_U\ , SA_{all\ desk}\} + max\{0, IMA_{G,A} - SA_{G,A}\}}$$

where –

(a) $\boldsymbol{IMA_{G,A} = C_A + C_{DRC}}$ is the aggregate capital requirement for trading desks that are approved and eligible for IMA;

(b) $\boldsymbol{C_A}$ is the aggregate capital requirement for market risks excluding DRC, for trading desks that are approved and eligible for the IMA calculated in accordance with paragraph 8.3.242;

(c) $\boldsymbol{C_{DRC}}$ is the DRC requirement calculated in accordance with paragraph 8.3.223;

(d) $\boldsymbol{C_S}$ is the capital surcharge that is applied if at least one of the Reporting Bank's trading desks that are in-scope of the IMA is in the PLA test amber zone, calculated in accordance with paragraph 8.3.244;

(e) $\boldsymbol{C_U}$ is the standardised approach capital requirement for trading desks that are out-of-scope of the IMA, calculated in accordance with paragraph 8.3.241;

(f) $\boldsymbol{SA_{all\ desk}}$ is the capital requirement calculated in accordance with the SA(MR) for all the positions of all the Reporting Bank's trading desks; and

(g) $\boldsymbol{SA_{G,A}}$ is the capital requirement calculated in accordance with the SA(MR) for all the positions of the Reporting Bank's trading desks that are in-scope of the IMA, and that are in the PLA test green zone or amber zone.

8.3.244 A Reporting Bank that has at least one trading desk that is in-scope of the IMA and is in the PLA test amber zone, must calculate the capital surcharge, $\boldsymbol{C_S}$, by using the following formula:

$$\boldsymbol{C_S = k \times max\{0, SA_{G,A} - IMA_{G,A}\}}$$

where –

(a) $\boldsymbol{k = 0.5 \times \frac{\sum_{i \in A} SA_i}{\sum_{i \in G,A} SA_i}}$;

(b) $\boldsymbol{SA_i}$ denotes the capital requirement calculated in accordance with the SA(MR) for all the positions of trading desk "$\boldsymbol{i}$";

(c) $\boldsymbol{i \in A}$ denotes the indices of all the Reporting Bank's trading desks that are in-scope of the IMA, and that are in the PLA test amber zone;

(d) $\boldsymbol{i} \in \boldsymbol{G}, \boldsymbol{A}$ denotes the indices of all the Reporting Bank's trading desks that are in-scope of the IMA, and that are in the PLA test green zone or amber zone;

(e) $\boldsymbol{SA}_{\boldsymbol{G},\boldsymbol{A}}$ is the capital requirement calculated in accordance with the SA(MR) for all the positions of the Reporting Bank's trading desks that are in-scope of the IMA, and that are in the PLA test green zone or amber zone; and

(f) $\boldsymbol{IMA}_{\boldsymbol{G},\boldsymbol{A}}$ is the capital requirement calculated in accordance with the IMA for all the positions of the Reporting Bank's trading desks that are in scope of the IMA.

8.3.245 A Reporting Bank must calculate the 60-day average of IMCC and SES, as set out in paragraph 8.3.242, and the 12-week average of the default risk measures, as set out in paragraph 8.3.223(a), at the end of each quarter for the purposes of calculating market risk capital requirements.

8.3.245A A Reporting Bank must –

(a) for the calculation of the 60-day average of the Reporting Bank's IMCC as set out in paragraph 8.3.242(c) –

(i) determine a set of trading desks that are in-scope of the IMA based on the results of backtesting, the PLA test and the risk factor eligibility test which are determined at the beginning of the 60-day period; and

(ii) determine the reduced set of risk factors and the 250-trading day period of stress pursuant to paragraph 8.3.188 using the set of trading desks that are in-scope of the IMA and the results of the risk factor eligibility test which are determined in sub-paragraph (a)(i);

(b) for the calculation of the 60-day average of the Reporting Bank's SES as set out in paragraph 8.3.242(d) –

(i) determine a set of trading desks that are in-scope of the IMA based on the results of backtesting, the PLA test and the risk factor eligibility test which are determined at the beginning of the 60-day period; and

(ii) determine the 250-trading day period of stress pursuant to paragraph 8.3.204 using the set of trading desks that are in-scope of the IMA and the results of the risk factor eligibility test which are determined in sub-paragraph (b)(i);

(c) for the calculation of the 12-week average of the Reporting Bank's default risk measures, as set out in paragraph 8.3.223(a), determine a set of trading desks that are in-scope of the IMA based on the results of backtesting, the PLA test and the risk factor eligibility test which are calculated at the beginning of the 12-week period; and

(d) ensure that the dates on which the backtesting and PLA test end and the date on which the risk factor eligibility test is performed is sufficiently close to the beginning of the 60-day period and the beginning of the 12-week period.

[MAS Notice 637 (Amendment) 2024]

Sub-division 6: Transitional arrangements

8.3.246 For the period from 1 January 2025 to 31 Dec 2025 (both dates inclusive) (referred to in this Sub-division as the "transition period") –

(a) paragraphs 8.3.176 and 8.3.177 do not apply. A Reporting Bank using the IMA may apply the IMA to determine the market risk capital requirements for each trading desk that meets the requirements set out in paragraph 8.3.17(a) and (b), regardless of the zone the trading desk is assigned to; and

(b) paragraph 8.3.180 does not apply.

8.3.247 During the transition period, a Reporting Bank using the IMA must, in its ICAAP, ensure that it maintains sufficient capital for market risk, taking into account the PLA test results.

Division 4: SSA(MR)

Sub-division 1: General Requirements

8.4.1 A Reporting Bank using the SSA(MR) must calculate its market risk capital requirement in accordance with the requirements set out in this Division.

8.4.2 A Reporting Bank that uses the SSA(MR) to calculate its market risk capital requirements must calculate its market risk capital requirements under the SSA(MR) using the following formula:

$$Capital\ Requirements = (CR_{IRR} \times 1.3) + \left(CR_{EQ} \times 3.5\right) + (CR_{FX} \times 1.2) + (CR_{COMM} \times 1.9)$$

where –

(a) CR_{IRR} = aggregate of capital requirements for interest rate risk calculated in accordance with paragraphs 8.4.3 to 8.4.25, and capital requirements for options pertaining to debt and for options pertaining to interest rate-related instruments, calculated in accordance with paragraphs 8.4.62 to 8.4.85;

(b) CR_{EQ} = aggregate of capital requirements for equity risk calculated in accordance with paragraphs 8.4.26 to 8.4.40, and capital requirements for options pertaining to equity-related instruments calculated in accordance with paragraphs 8.4.62 to 8.4.85;

(c) CR_{FX} = aggregate of capital requirements for foreign exchange risk calculated in accordance with paragraphs 8.4.41 to 8.4.49, and capital requirements for options pertaining to foreign exchange-related instruments and for options pertaining to gold, calculated in accordance with paragraphs 8.4.62 to 8.4.85; and

(d) CR_{COMM} = aggregate of capital requirements for commodity risk calculated in accordance with paragraphs 8.4.50 to 8.4.61, and capital requirements for options pertaining to commodity-related instruments calculated in accordance with paragraphs 8.4.62 to 8.4.85.

Sub-division 2: Interest Rate Risk

8.4.3 A Reporting Bank must calculate its market risk capital requirement for interest rate risk by –

(a) identifying the positions in its trading book which have interest rate risk;

(b) allocating the positions into individual currency portfolios;

(c) for each currency portfolio –

(i) calculating the net positions in accordance with paragraphs 8.4.11 to 8.4.14;

(ii) including these net positions in the calculation of its specific risk capital requirement after applying any offsets allowed under paragraph 8.4.15; and

(iii) including these net positions in the calculation of its general market risk capital requirement; and

(d) summing all specific risk and general market risk capital requirements for each currency portfolio.

Scope

8.4.4 In calculating its market risk capital requirement for interest rate risk, a Reporting Bank must include all its trading book positions[787] within the scope of application set out in Sub-Division 2 of Division 1 of this Part, whether such positions are long or short, in instruments (including derivatives and off-balance sheet instruments) whose market values are affected by changes in interest rates. A Reporting Bank must ensure that such instruments include, but are not limited to, the following:

(a) fixed rate and floating rate debt securities;

(b) traded mortgage securities and mortgage derivative products, even though these carry the risk of prepayment;

(c) non-convertible preference shares;

(d) convertible securities which are traded like debt securities;

(e) bond futures, interest rate swaps and cross-currency swaps, forward rate agreements, and forwards including foreign exchange forwards.

8.4.5 A Reporting Bank, in calculating its market risk capital requirement for interest rate risk under this Sub-division, must not include a position in any of the following:

(a) a convertible security which is traded like an equity;

(b) an option or a position hedging an option, which is caught under Sub-division 6 of this Division, except where the Reporting Bank is required under that Sub-division to include the delta-weighted position in this Sub-division.

8.4.6 For the purposes of paragraphs 8.4.4, 8.4.5, 8.4.28, 8.4.29 and 8.4.30 –

(a) "convertible security" means a debt issue or preference share which is convertible at a stated price into ordinary shares of the issuer; and

[787] To avoid doubt, this includes positions in any interest rate-related instrument that is sold or lent under an SFT, but excludes any interest rate-related instrument that is bought or borrowed under an SFT.

(b) a Reporting Bank must treat a "convertible security" as debt if it is traded like debt securities, and as equity if it is traded like equity. In the case where a convertible security is treated as debt, the Reporting Bank must include the position in the convertible security in calculating its market risk capital requirement for interest rate risk. In the case where a convertible security is treated as equity, the Reporting Bank must include the position in the convertible security in calculating its market risk capital requirement for equity risk.

Measurement of Positions with Interest Rate Risk

8.4.7 Except for any interest rate-related derivative referred to in paragraph 8.4.8 and any credit derivative referred to in paragraph 8.4.9, a Reporting Bank must use the current market value of the principal amount of its positions in interest rate-related instruments to calculate its market risk capital requirement for interest rate risk.

8.4.8 A Reporting Bank must convert its interest rate-related derivatives into notional positions in the relevant underlying instruments in accordance with Annex 8C and use the current market value of the principal amount of the underlying instruments to calculate its market risk capital requirement for interest rate risk.

8.4.9 A Reporting Bank must convert its credit derivatives into notional positions in the relevant reference obligations in accordance with Annex 8D and use the current market value of the principal amount of the reference obligations to calculate its market risk capital requirement for interest rate risk, except in the case of credit linked notes, where the Reporting Bank must use the current market value of the notes.

8.4.10 In determining the value of the positions or notional positions, a Reporting Bank must use the valuation of the relevant position with reference to readily observable market prices[788] or, for contracts for which there are no readily observable market prices, the Reporting Bank must base the valuation on appropriate valuation models or discounted cash flows using market quoted rates. The Reporting Bank must also ensure that the valuation it uses meets the standards set out in Annex 6C. For instruments where the apparent notional amount differs from the effective notional amount, the Reporting Bank must use the effective notional amount in determining the market value.

Allowable Offsetting of Matched Positions

8.4.11 For the purposes of calculating the specific risk and general market risk capital requirements for its positions in interest rate-related instruments, or notional positions in interest rate-related derivatives, a Reporting Bank may offset –

(a) a long and a short position, including any notional position, in an identical issue[789]; or

[788] Examples are prices quoted by exchanges or dealers.

[789] To avoid doubt, no offsetting is permitted between different issues, even where the issuer is the same, since differences in coupon rates, liquidity, call features, etc. mean that prices may diverge in the short run.

(b) a matched position in –

(i) a futures contract; or

(ii) a forward,

and its corresponding underlying exposures or underlying instruments. To avoid doubt, the Reporting Bank must include the position representing the time to expiry of a futures contract or forward in the calculation of the market risk capital requirements.

8.4.12 Where a Reporting Bank applies the offsetting in accordance with paragraph 8.4.11, the Reporting Bank must calculate the net position as the difference between the value of the long positions of the Reporting Bank (including notional positions) in a security and the value of its short positions (including notional positions) in the same security.

8.4.13 Where a futures contract or forward comprises a range of deliverable debt securities, a Reporting Bank may offset a short position in the futures contract or forward and a long position in the corresponding "cheapest-to-deliver" underlying security only where the Reporting Bank has sold the futures contract or forward and the "cheapest-to-deliver" underlying security is identifiable and the Reporting Bank is able to deliver it.

8.4.14 A Reporting Bank may offset opposite positions in the same category of interest rate-related instruments (including the delta-equivalent value of options and the separate legs of different swaps) if –

(a) the positions relate to the same underlying instruments;

(b) the positions are of the same notional value; and

(c) the positions are denominated in the same currency;

and –

(i) in the case of futures contracts, the offsetting positions in the notional or underlying instrument to which the futures contract relates are for identical products and mature within 7 days of each other;

(ii) in the case of swaps and FRAs, the reference rates for floating rate positions are identical and the coupons are within 15 basis points; and

(iii) in the case of swaps, FRAs and forwards, the next interest fixing dates or, for fixed coupon positions or forwards, the residual maturities are as follows:

(A) on the same day as each other, if the period between the next interest fixing date and the time of calculation, or the residual maturity as of the time of calculation, is less than one month;

(B) within 7 days of each other, if the period between the next interest fixing date and the time of calculation, or the residual maturity as of the time of calculation, is between one month and one year;

(C) within 30 days of each other, if the period between the next interest fixing date and the time of calculation, or residual maturity as of the time of calculation, is more than a year.

Allowable Offsets for Positions Hedged by Credit Derivatives

8.4.15 For the purposes of calculating the specific risk capital requirement for a credit derivative and its hedged position, a Reporting Bank may –

(a) apply a full offset when the values of the 2 legs (i.e. long and short) always move in opposite directions and broadly to the same extent. This would be the case when –

(i) the 2 legs consist of completely identical instruments; or

(ii) a long cash position is hedged by a total return swap (or vice versa) and there is an exact match between the reference obligation of the total return swap and the long cash position[790];

(b) after taking into account any restrictive payout provisions[791] applicable to the hedged position and the credit derivative, apply an 80% offset to the side of the transaction with the higher specific risk capital requirement and a zero specific risk capital requirement on the other side when the values of the 2 legs always move in opposite directions but not broadly to the same extent. This would be the case when –

(i) a long cash position or credit derivative (referred to in this paragraph as the "initial derivative"), as the case may be, is hedged by a credit default swap or a credit linked note (or vice versa);

(ii) there is an exact match in terms of –

(A) the long cash position or the reference obligation of the initial derivative, as the case may be (such long cash position or reference obligation of the initial derivative is referred to in this paragraph as the "underlying instrument"), and the reference obligation of the credit default swap or credit linked note, as the case may be;

(B) the maturity of the long cash position or initial derivative, as the case may be, and the credit default swap or credit linked note, as the case may be; and

(C) the currency of the long cash position or initial derivative, as the case may be, and the credit default swap or credit linked note, as the case may be; and

[790] The maturity of the total return swap may be different from that of the long cash position.

[791] Examples of restrictive payout provisions are fixed payouts and materiality thresholds below which no payment will be made.

(iii) the key features of the credit default swap or credit linked note[792], as the case may be, do not cause its price movement to materially deviate from the price movement of the long cash position or initial derivative, as the case may be; and

(c) apply the higher of the 2 specific risk capital requirements when the values of the 2 legs usually move in opposite directions. This would be the case when –

(i) the position would have been captured in sub-paragraph (a)(ii) but for an asset mismatch between the reference obligation of the total return swap and the long cash position where –

(A) the reference obligation of the total return swap ranks *pari passu* with or is junior to the long cash position; and

(B) the long cash position and reference obligation of the total return swap share the same obligor and legally enforceable cross-default or cross acceleration clauses are in place;

(ii) the position would have been captured in sub-paragraph (a)(i) or (b) but for a mismatch in maturities referred to in sub-paragraph (b)(ii)(B) or a mismatch in currencies referred to in sub-paragraph (b)(ii)(C); or

(iii) the position would have been captured in sub-paragraph (b) but for an asset mismatch between –

(A) the underlying instrument; and

(B) the reference obligation of the credit default swap or credit linked note, as the case may be,

and the underlying instrument is included in the deliverable obligations in the documentation of the credit default swap or credit linked note, as the case may be.

8.4.16 Where there is a mismatch in currencies referred to in paragraph 8.4.15(c)(ii), a Reporting Bank must treat the foreign exchange risk arising from the currency mismatch in accordance with Sub-division 4 of this Division.

8.4.17 A Reporting Bank must calculate a specific risk capital requirement for both the credit derivative and the hedged position if paragraph 8.4.15 does not apply to them.

[792] Examples are credit event definitions, settlement mechanisms.

Specific Risk Capital Requirement

8.4.18 Except for notional positions in zero-specific risk securities[793], that do not attract specific risk, a Reporting Bank must calculate the specific risk capital requirement[794] for each net position in an interest rate-related instrument[795] or a credit derivative, including the net delta-weighted position of options on that interest rate-related instrument or credit derivative where the Reporting Bank is using the delta-plus method or the scenario approach to calculate its market risk capital requirement for options, by –

(a) in the case of a securitisation exposure, multiplying the market value of each net position (ignoring the sign) by the relevant specific risk charge. The Reporting Bank must calculate the specific risk charge as the risk weight that would apply to the securitisation exposure if the Reporting Bank were to hold it in the banking book, as determined by paragraph 7.1.14(b)(iii), in accordance with the hierarchy of approaches determined by paragraphs 7.6.13 to 7.6.19, divided by 12.5, and converting the resultant amount into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates;

(b) in the case of a credit derivative and its hedged position for which the Reporting Bank has applied an offset pursuant to paragraph 8.4.15, multiplying the market value of the resulting net position (ignoring the sign) by the relevant specific risk charge in accordance with Table 8E-1, and converting this amount into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates;

(c) in the case of a CTP, using the larger of –

(i) the aggregate of each of the net long positions from the net long correlation trading exposures multiplied by the relevant specific risk charge in accordance with the relevant table of Annex 8E, and converting this amount into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates; and

(ii) the aggregate of each of the net short positions from the net short correlation trading exposures multiplied by the relevant specific risk charge in accordance with the relevant table of Annex 8E, and converting this amount into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates; and

(d) in all other cases, multiplying the market value of each net position (ignoring the sign) by the relevant specific risk charge in accordance with Table 8E-1, and converting this amount into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates.

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793 Examples are interest rate and currency swaps, FRAs, forward foreign exchange contracts, interest rate futures and futures on an interest rate index.

794 The specific risk capital requirement is intended to protect against an adverse movement in the price of an individual instrument owing to factors related to the individual issuer.

795 This includes both actual and notional positions (e.g. futures contracts where the underlying is a debt security or an index representing a basket of debt securities).

8.4.19 A Reporting Bank must calculate the maximum possible loss for each individual position[796]. Despite paragraph 8.4.18, the Reporting Bank may limit the specific risk capital requirement for an individual position in a credit derivative or securitisation instrument to the maximum possible loss.

General Market Risk Capital Requirement

8.4.20 A Reporting Bank must calculate the general market risk capital requirement[797] for each currency portfolio by –

(a) applying either the maturity method or the duration method to calculate the general market risk capital requirement in the foreign currency; and

(b) converting the resultant amount into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates.

The Reporting Bank must sum up the absolute value of the general market risk capital requirements for each currency portfolio, across all its currency portfolios.

Maturity Method[798]

8.4.21 A Reporting Bank applying the maturity method must –

(a) slot each net position (including the net delta-weighted position of options on interest rate-related instruments where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options) into the appropriate maturity band according to the maturity and coupon of the instrument in accordance with Table 8E-2[799];

(b) calculate the weighted long and short positions for each maturity band by multiplying the net positions by the corresponding general risk charge in accordance with Table 8E-2;

(c) match the weighted long and short positions within –

(i) the same maturity band;

(ii) the same zone (using unmatched positions from sub-paragraph (c)(i)); and

[796] For a short position, a Reporting Bank may calculate this limit as a change in value due to the underlying names immediately becoming default risk-free. For a long position, the Reporting Bank may calculate the maximum possible loss as the change in value in the event that all the underlying names were to default with zero recoveries.

[797] The general market risk capital requirement for interest rate risk is intended to capture the risk of loss arising from changes in market interest rates.

[798] An illustration on the calculation of the general market risk capital requirement for interest rate risk under the maturity method is set out in Annex 8F.

[799] A Reporting Bank should allocate fixed rate instruments according to the residual term to maturity and floating rate instruments according to the residual term to the next repricing date.

(iii) different zones (using unmatched positions from sub-paragraph (c)(ii));

(d) calculate the maturity band requirement, by multiplying the total amount matched within each maturity band by the maturity band matching factor in accordance with Table 8E-4;

(e) calculate the zone requirement, by multiplying the total amount matched within each zone by the corresponding zone matching factor in accordance with Table 8E-4;

(f) calculate the adjacent zone requirement, by multiplying the total amount matched between adjacent zones by the adjacent zone matching factor in accordance with Table 8E-4;

(g) calculate the non-adjacent zone requirement, by multiplying the total amount matched between Zones 1 and 3 and the non-adjacent zone matching factor in accordance with Table 8E-4;

(h) calculate the net position requirement as the sum of all unmatched amounts after complying with sub-paragraphs (c) to (g); and

(i) calculate the general market risk capital requirement as the sum of the maturity band requirement, the zone requirement, the adjacent zone requirement, the non-adjacent zone requirement and net position requirement determined in accordance with sub-paragraphs (d) to (h).

8.4.22 A Reporting Bank must use separate slotting tables for each currency, except in respect of those currencies in which the business of the Reporting Bank is insignificant. For currencies in which the business of the Reporting Bank is insignificant, the Reporting Bank may construct a single maturity ladder and slot, within each appropriate maturity band, the net long or short position for each currency. The Reporting Bank must calculate the individual weighted net long and short positions for each maturity band by multiplying the net positions by the corresponding risk charges in accordance with Table 8E-2. The Reporting Bank must sum the weighted net positions within each maturity band, irrespective of whether they are long or short positions, to produce a gross position figure. The Reporting Bank must then apply the treatment specified in paragraph 8.4.21(d) to (i) to calculate the general market risk capital requirement for these currencies.

Duration Method

8.4.23 A Reporting Bank may, having put in place the necessary IT systems and with prior written approval from the Authority, apply the duration method to measure general market risk by calculating the price sensitivity of each position separately. A Reporting Bank which elects to use this method must use this method to measure general market risk unless a change in method is approved by the Authority.

8.4.24 A Reporting Bank applying the duration method must –

(a) calculate the price sensitivity of each position based on either one of the following:

(i) by calculating the modified duration of each position using the following formulae:

$$\text{Modified duration} = \frac{\text{Duration (D)}}{(1+r)}$$

$$D = \frac{\sum_{t=1}^{m} \frac{t\ C_t}{(1+r)^t}}{\sum_{t=1}^{m} \frac{C_t}{(1+r)^t}}$$

where –
r = yield to maturity;
C_t = cash payment in time t; and
m = total maturity;

(ii) by adopting an alternative calculation methodology that has been approved by the Authority in writing;

(b) perform slotting by –

(i) where the Reporting Bank applies sub-paragraph (a)(i), slotting each net position (including the net delta-weighted position of options on interest rate-related instruments where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options) into the appropriate duration band based on the modified duration of the position, in accordance with Table 8E-3; or

(ii) where the Reporting Bank applies sub-paragraph (a)(ii), slotting the sensitivity measures of each net position (including the sensitivity measures of the net delta-weighted position of options on interest rate-related instruments where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options) into the appropriate duration band based on the tenor of the interest rate risk factor applied to calculate the price sensitivity of the position, in accordance with Table 8E-3;

(c) calculate the weighted long and short positions for each duration band by –

(i) where the Reporting Bank applies sub-paragraph (a)(i), multiplying the net positions by the modified duration of the position derived in sub-paragraph (a)(i) and the relevant assumed change in yield in accordance with Table 8E-3; or

(ii) where the Reporting Bank applies sub-paragraph (a)(ii), multiplying the sensitivity measures of the net positions by the relevant assumed change in yield in accordance with Table 8E-3;

(d) match the weighted long and short positions within –

(i) the same duration band;

(ii) the same zone (using unmatched positions from sub-paragraph (d)(i)); and

(iii) different zones (using unmatched positions from sub-paragraph (d)(ii));

(e) calculate the duration band requirement, by multiplying the total amount matched within each duration band by the duration band matching factor in accordance with Table 8E-4;

(f) calculate the zone requirement, by multiplying the total amount matched within each zone by the respective zone matching factor in accordance with Table 8E-4;

(g) calculate the adjacent zone requirement, by multiplying the total amount matched between adjacent zones by the adjacent zone matching factor in accordance with Table 8E-4;

(h) calculate the non-adjacent zone requirement, by multiplying the total amount matched between Zones 1 and 3 and the non-adjacent zone matching factor in accordance with Table 8E-4;

(i) calculate the net position requirement as the sum of all unmatched amounts after complying with sub-paragraphs (d) to (h); and

(j) calculate the general market risk capital requirement as the sum of the duration band requirement, the zone requirement, the adjacent zone requirement, the non-adjacent zone requirement and the net position requirement determined in accordance with sub-paragraphs (e) to (i).

8.4.25 A Reporting Bank must use separate slotting tables for each currency, except in respect of those currencies in which the business of the Reporting Bank is insignificant. For currencies in which the business of the Reporting Bank is insignificant, the Reporting Bank may construct a single maturity ladder and slot, within each appropriate duration band, the net long or short position for each currency. The Reporting Bank must calculate the individual weighted net long and short positions for each duration band by multiplying the net positions by the corresponding assumed change in yield in accordance with Table 8E-3. The Reporting Bank must sum the weighted net positions within each duration band, irrespective of whether they are long or short positions, to produce a gross position figure. The Reporting Bank must then apply the treatment specified in paragraph 8.4.24(e) to (j) to calculate the general market risk capital requirement for these currencies.

Sub-division 3: Equity Risk

8.4.26 A Reporting Bank must calculate its market risk capital requirement for equity risk by –

(a) identifying the positions in its trading book which have equity risk;

(b) allocating the positions into country or jurisdiction portfolios in accordance with paragraph 8.4.27;

(c) for each country or jurisdiction portfolio –

(i) calculating the net position in each equity, equity basket or equity index in accordance with paragraph 8.4.33; and

(ii) including these net positions in the calculation of its specific risk and general market risk capital requirements; and

(d) summing all specific risk and general market risk capital requirements for each country or jurisdiction portfolio.

8.4.27 A Reporting Bank must group equity positions into country or jurisdiction portfolios as follows:

(a) a position in an individual equity belongs to –

(i) the country or jurisdiction of its primary listing; or

(ii) where it is unlisted, the country or jurisdiction of issue; and

(b) a position in an equity basket or equity index is allocated to –

(i) one or more country or jurisdiction portfolios based on the countries or jurisdictions to which the underlying equities belong under sub-paragraph (a); or

(ii) a hypothetical country or jurisdiction.

Scope

8.4.28 In calculating its market risk capital requirement for equity risk, a Reporting Bank must include all its trading book positions[800] within the scope of application set out in Sub-Division 2 of Division 1 of this Part, whether such positions are long or short, in instruments (including derivatives and off-balance sheet instruments) whose market values are affected by changes in equity prices, unless the position is an option or a position hedging an option, which is caught under Sub-division 6 of this Division, except where the Reporting Bank is required under that Sub-division to include the delta-weighted position in this Sub-division.

8.4.29 For the purposes of paragraph 8.4.28, "instruments whose market values are affected by changes in equity prices" include ownership interests, whether voting or non-voting, convertible securities that trade like equity, commitments to buy or sell equities, and derivatives on individual equities and on equity indices.

[800] To avoid doubt, this includes positions in any equity instrument that is sold or lent under an SFT, but excludes any equity that is bought or borrowed under an SFT.

8.4.30 For the purposes of paragraphs 8.4.28 and 8.4.29, a Reporting Bank must treat a convertible security in accordance with paragraph 8.4.6(b) and include the position in calculating its market risk capital requirement for equity risk if the convertible security is treated as equity.

Measurement of Positions with Equity Risk

8.4.31 Except for equity derivatives referred to in paragraph 8.4.32, a Reporting Bank must use the current market value of its positions in equity instruments to calculate its market risk capital requirement for equity risk.

8.4.32 A Reporting Bank must convert its equity derivatives into notional positions in the relevant underlying instruments in accordance with Annex 8G and use the current market value of the underlying instruments to calculate its market risk capital requirement for equity risk.

Allowable Offsetting of Matched Positions

8.4.33 For the purposes of calculating the specific risk and general market risk capital requirements for its equity positions, a Reporting Bank may offset –

(a) a long position and a short position, including notional positions, in an identical equity, equity basket or equity index in the same country or jurisdiction portfolio; and

(b) a matched position in a depository receipt against the corresponding underlying equity or identical equities in different country or jurisdiction portfolios provided that any costs of conversion are fully taken into account. The Reporting Bank must include any foreign exchange risk arising out of these positions in calculating its market risk capital requirements for foreign exchange risk under Sub-division 4 of this Division.

8.4.34 Where a Reporting Bank applies the offsetting in accordance with paragraph 8.4.33, the Reporting Bank must calculate the net position as the difference between the value of the long positions of the Reporting Bank (including notional positions) in a security and the value of its short positions (including notional positions) in the same security.

8.4.35 For the purposes of paragraph 8.4.33, a Reporting Bank must treat 2 equities as identical if they enjoy the same rights in all respects and are fungible.

Specific Risk Capital Requirement

8.4.36 A Reporting Bank must calculate the specific risk capital requirement for each net position in an equity instrument, including the net delta-weighted position of options on that equity instrument where the Reporting Bank is using the delta-plus method or the scenario approach to calculate its market risk capital requirement for options, by –

(a) converting the value of the net position into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates; and

(b) multiplying the resultant amount by the appropriate specific risk charge as follows:

(i) any qualifying equity index (as defined in Annex 8H) – 0%; or

(ii) any other equity, equity basket or equity index – 8%.

General Market Risk Capital Requirement

8.4.37 A Reporting Bank must calculate the general market risk capital requirement for each country or jurisdiction portfolio by –

(a) calculating the net position in each country or jurisdiction portfolio by summing the net positions of equities, equity baskets and equity indices in the same country or jurisdiction portfolio, including the net delta-weighted positions of options on equities and options on equity indices where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options;

(b) converting the net position in each country or jurisdiction portfolio into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates; and

(c) multiplying the resultant amount (ignoring the sign) by a general risk charge of 8%.

Additional Market Risk Capital Requirement for Qualifying Equity Indices

8.4.38 In addition to the general market risk capital requirement, a Reporting Bank must apply an additional risk charge of 2% to the net long or short position in a qualifying equity index (as defined in Annex 8H)[801].

Treatment of Arbitrage Strategies

8.4.39 In the case of the futures-related arbitrage strategies described below, a Reporting Bank must apply an additional 2% risk charge to only one index with the opposite position exempt from the market risk capital requirement. Such futures-related arbitrage strategies are –

(a) where the Reporting Bank takes an opposite position in exactly the same index at different dates or in different market centres; or

[801] This is intended to cover factors such as execution risk.

(b) where the Reporting Bank takes an opposite position in contracts at the same date in a different but similar index, subject to approval by the Authority. The Authority will not normally grant approval for a Reporting Bank to use this treatment unless the Reporting Bank is able to demonstrate that the 2 indices contain sufficient common components to justify offsetting.

8.4.40 Where a Reporting Bank engages in a deliberate arbitrage strategy in which a futures contract on a broadly-based index matches a basket of stocks, the Reporting Bank may exclude both positions for the purposes of calculating its specific risk and general market risk capital requirements, on condition that –

(a) the trades have been deliberately entered into and are separately controlled; and

(b) the composition of the basket of stocks represents at least 90% of the index when broken down into its underlying components.

In such a case, the Reporting Bank must apply a risk charge of 4%, with 2% on the gross value of the positions on each side, to reflect divergence and execution risks, even if all of the stocks comprising the index are held in identical proportions. The Reporting Bank must treat any excess value of the stocks comprising the basket over the value of the futures contract or excess value of the futures contract over the value of the basket as an open long or short position.

Sub-division 4: Foreign Exchange Risk

8.4.41 A Reporting Bank must calculate its market risk capital requirement for foreign exchange risk by –

(a) identifying the positions which have foreign exchange risk;

(b) calculating the net open position in each currency in accordance with paragraphs 8.4.45 to 8.4.48, and the net gold position in accordance with paragraphs 8.4.50 and 8.4.55;

(c) converting the net open position in each currency and the net gold position into the reporting currency of the Reporting Bank at prevailing foreign exchange spot rates;

(d) computing the overall net open position by aggregating –

(i) the absolute value of the sum of the net short currency positions or the sum of the net long currency positions, whichever is greater; and

(ii) the absolute value of the net position (long or short) in gold; and

(e) multiplying the overall net open position by 8%.

8.4.42 Despite paragraph 8.4.41, a Reporting Bank doing negligible business in foreign currency and which does not take foreign exchange positions for its own account may, subject to the prior approval of the Authority, be exempted from market risk capital requirements on these positions provided that –

(a) its foreign currency business, defined as the greater of the sum of its gross long positions and the sum of its gross short positions in all foreign currencies, does not exceed 100% of its Eligible Total Capital; and

(b) its overall net open position as defined in paragraph 8.4.41 does not exceed 2% of its Eligible Total Capital.

Scope

8.4.43 In calculating its market risk capital requirement for foreign exchange risk, a Reporting Bank must include all positions within the scope of application set out in Sub-division 2 of Division 1 of this Part, in gold and in foreign currency-denominated instruments, regardless of whether these are in the trading book or banking book, unless –

(a) the position is hedging a position which is deducted in the calculation of CET1 Capital, AT1 Capital or Tier 2 Capital, and excluded from market risk capital requirements in accordance with paragraph 8.1.6; or

(b) the position is an option or a position hedging an option, which is caught under Sub-division 6 of this Division, except where the Reporting Bank is required under that Sub-division to include the delta-weighted position in this Sub-division.

8.4.44 Despite paragraph 8.4.43(b), a Reporting Bank must calculate a market risk capital requirement for foreign exchange risk for option premiums that are denominated in a foreign currency.

Measurement of Positions with Foreign Exchange Risk

8.4.45 A Reporting Bank must calculate its net open position in each currency by summing –

(a) the net spot position, which is all asset items less all liability items, including accrued interest and accrued expenses, denominated in the currency in question;

(b) the net forward position, which is all amounts to be received less all amounts to be paid under forward foreign exchange transactions, including currency futures and the principal on currency swaps not included in the spot position;

(c) guarantees and other similar instruments denominated in foreign currency which are certain to be called and are likely to be irrecoverable;

(d) future income or expenses included pursuant to paragraph 8.4.47;

(e) depending on particular accounting conventions in different countries or jurisdictions, any other item representing a profit or loss in foreign currencies; and

(f) the net delta-weighted position of foreign currency options where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options. To avoid doubt, the Reporting Bank must separately calculate market risk capital requirements for gamma and vega for foreign currency options in accordance with paragraphs 8.4.69 to 8.4.77.

8.4.46 Despite paragraph 8.4.45, where a Reporting Bank is assessing its foreign exchange risk on a consolidated basis, and the inclusion of certain foreign exchange positions may be impractical[802], the Reporting Bank may use the internal limit in each currency as a proxy for the positions, provided the Reporting Bank monitors ex-post the actual positions against such limits daily. The Reporting Bank must add the absolute values of the limits to the net open position in each currency.

8.4.47 A Reporting Bank may include future income and expenses in the calculation of its net open position if these are certain and have been hedged and the Reporting Bank applies such inclusion consistently. To avoid doubt, the Reporting Bank must not include only the future income and expenses that would reduce its net open position.

8.4.48 A Reporting Bank must allocate its positions in composite currencies to –

(a) one or more currency portfolios based on their component parts on a consistent basis; or

(b) a hypothetical currency.

8.4.49 A Reporting Bank must convert its foreign currency derivatives and derivative positions in gold into notional positions in the relevant foreign currencies and in gold in accordance with Annex 8I.

Sub-division 5: Commodity Risk

8.4.50 A Reporting Bank must calculate its market risk capital requirement for commodity risk by –

(a) identifying the positions (including any notional positions) which have commodity risk;

(b) expressing each commodity position in terms of the standard unit of measurement for that position[803];

[802] An example is marginal operations of a foreign branch or subsidiary.
[803] For example, barrels, kilos or grams.

(c) converting each position into the reporting currency of the Reporting Bank at the prevailing foreign exchange spot rates and the current spot price for the commodity;

(d) calculating the market risk capital requirement for each commodity position in accordance with the simplified approach in paragraph 8.4.59 or the maturity ladder approach in paragraphs 8.4.60 to 8.4.61; and

(e) summing the resulting individual market risk capital requirement for each commodity position.

8.4.51 A Reporting Bank must convert its commodity derivatives into notional positions in the relevant commodities in accordance with Annex 8J.

Scope

8.4.52 In calculating its market risk capital requirement for commodity risk, a Reporting Bank must include all positions[804] within the scope of application set out in Sub-division 2 of Division 1 of this Part, whether such positions are long or short, in instruments (including derivatives[805] and off-balance sheet instruments), whose market values are affected by changes in commodity prices, regardless of whether these positions are in the trading book or banking book unless –

(a) it is a gold position, in which case the Reporting Bank must include the position within the scope of its foreign exchange risk and calculate it in accordance with Sub-division 4 of this Division;

(b) the position is an option or a position hedging an option, which is caught under Sub-division 6 of this Division, except where the Reporting Bank is required under that Sub-division to include the delta-weighted position in this Sub-division; or

(c) the position arises purely from stock financing, which is a transaction where a physical commodity is sold forward and the cost of funding is locked in until the date of the forward sale.

8.4.53 For the purposes of this Sub-division, "commodity" includes a physical product which is or can be traded on a secondary market[806].

8.4.54 To avoid doubt, a Reporting Bank must treat any interest rate risk or foreign exchange risk, arising from stock financing in accordance with Sub-divisions 2 and 4 of this Division, respectively.

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804 This includes positions in any commodity that is sold under a repo or lent under a commodities lending transaction, but excludes positions in any commodity that is bought under a reverse repo or borrowed under a commodities borrowing transaction.

805 For example, commodity futures or commodity swaps.

806 Examples are agricultural products, minerals (including oil) and precious metals.

Allowable Offsetting of Matched Positions

8.4.55 For the purposes of calculating the market risk capital requirement for its commodity positions, a Reporting Bank may offset the long and short positions in an identical commodity.

8.4.56 A Reporting Bank must treat positions in different sub-categories of the same commodity as different commodities unless they –

(a) can be delivered against each other; or

(b) are close substitutes of each other and have price movements which have exhibited a stable correlation coefficient of at least 0.9 over the last 12 months.

8.4.57 A Reporting Bank that relies on the approach in paragraph 8.4.56(b) must monitor the correlation coefficient of the price movements of the commodities to ensure that it is at least 0.9 on a continuing basis. The Reporting Bank must cease to treat positions in different sub-categories of the same commodity as the same commodity pursuant to paragraph 8.4.56(b) if the correlation coefficient of the price movements of the commodities ceases to be at least 0.9 at any time.

8.4.58 A Reporting Bank which intends to rely on the approach in paragraph 8.4.56(b) must obtain the prior approval of the Authority. The Authority will generally grant its approval if it is satisfied that the chosen method is accurate.

Simplified Approach

8.4.59 A Reporting Bank using the simplified approach must calculate the market risk capital requirement for each commodity by summing –

(a) 15% of the net position in the commodity, including the net delta-weighted position of options on that commodity where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options; and

(b) 3% of the gross position (long plus short, ignoring the sign) in the commodity, including the gross delta-weighted position of options on that commodity where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options.

Maturity Ladder Approach[807]

8.4.60 A Reporting Bank using the maturity ladder approach must calculate the market risk capital requirement for each commodity by –

[807] An illustration on the calculation of the market risk capital requirement for commodity risk under the maturity ladder approach is set out in Annex 8K.

(a) offsetting long and short positions, including the net delta-weighted position of options on that commodity where the Reporting Bank is using the delta-plus method to calculate its market risk capital requirement for options, maturing –

(i) on the same day; or

(ii) in the case of positions arising from contracts traded in markets with daily delivery dates, within 10 business days of each other;

(b) allocating the remaining positions to the appropriate maturity time-bands as follows:

(i) up to 1 month;

(ii) more than 1 month but not more than 3 months;

(iii) more than 3 months but not more than 6 months;

(iv) more than 6 months but not more than 12 months;

(v) more than 1 year but not more than 2 years;

(vi) more than 2 years but not more than 3 years;

(vii) more than 3 years;

(c) matching long and short positions within each time-band, and for each time-band, calculating a spread charge equal to the sum of long and short positions matched multiplied by the spread rate of 1.5%;

(d) carrying unmatched positions remaining from a shorter maturity time-band to a longer maturity time-band where they can be matched, then matching them until all matching possibilities are exhausted. In each instance, calculating –

(i) a carry charge equal to the carried position multiplied by the carry rate of 0.6% and the number of time-bands by which the position is carried; and

(ii) a spread charge equal to the sum of long and short positions matched multiplied by the spread rate of 1.5%;

(e) calculating the outright charge on the remaining positions (which will either be all long positions or all short positions) equal to the sum of the remaining positions (ignoring the sign) multiplied by the outright charge of 15%; and

(f) summing the spread rates, carry rates and outright charge determined in sub-paragraphs (c) to (e).

8.4.61 A Reporting Bank must allocate physical commodity positions to the time-band of up to 1 month.

Sub-division 6: Treatment of Options

8.4.62 A Reporting Bank must calculate its market risk capital requirement for options using –

(a) the simplified approach in accordance with paragraphs 8.4.64 to 8.4.68;

(b) the delta-plus method in accordance with paragraphs 8.4.69 to 8.4.77; or

(c) the scenario approach in accordance with paragraphs 8.4.78 to 8.4.85.

8.4.63 For the purposes of paragraph 8.4.62, a Reporting Bank must use the more sophisticated methods under the SSA(MR) i.e. the delta-plus method or the scenario approach, if it engages in significant options trading. The Reporting Bank must also monitor closely other risks associated with options[808]. Despite the above, a Reporting Bank which trades in exotic options[809] must use the scenario approach to calculate its market risk capital requirement for such options, unless it is able to demonstrate, to the satisfaction of the Authority, that the delta-plus method is appropriate.

Simplified Approach[810]

8.4.64 A Reporting Bank may use the simplified approach only if –

(a) it does not write options; or

(b) where it writes options, all its written options are hedged by perfectly matched long positions in exactly the same options, in which case, the Reporting Bank need not calculate market risk capital requirements for these positions.

8.4.65 Under the simplified approach, a Reporting Bank must exclude the positions in the options and the positions hedging the options that are outright positions in the associated underlying instruments, from the requirements in Sub-divisions 2 to 5 of this Division, and must separately calculate the market risk capital requirements for those positions in accordance with paragraph 8.4.66. The Reporting Bank must add the market risk capital requirements for those positions to the market risk capital requirements for the interest rate, equity, foreign exchange and commodity risk categories, as the case may be, calculated in accordance with Sub-divisions 2 to 5 of this Division.

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808 Examples of other risks associated with options are rho (this measures the rate of change of the option value with respect to interest rate) and theta (this measures the rate of change of the option value with respect to time). A Reporting Bank may also incorporate rho within their market risk capital requirement for interest rate risk.

809 Examples are barriers and digitals.

810 An illustration on the calculation of the market risk capital requirement under the simplified approach is set out in Annex 8L.

8.4.66 A Reporting Bank using the simplified approach must calculate its market risk capital requirement for options by –

(a) identifying the options and the outright positions in associated underlying instruments;

(b) calculating the market risk capital requirement for each combination of a long put and a long outright position in the associated underlying instrument, or of a long call and a short outright position in the associated underlying instrument, by –

(i) multiplying the market value of the outright position by the sum of the applicable specific and general risk charges, or single applicable risk charge, as the case may be; and

(ii) subtracting the amount the option is in the money (if any) bounded at zero;

(c) calculating the market risk capital requirement for each long call or long put as –

(i) the market value of the underlying instrument multiplied by the sum of the applicable specific and general risk charges, or single applicable risk charge, as the case may be; or

(ii) the market value of the option,

whichever is lower; and

(d) summing the market risk capital requirements determined in sub-paragraphs (b) and (c).

8.4.67 For the purposes of paragraph 8.4.66(b) and (c) –

(a) a reference to the "underlying instrument" is a reference to the asset which would have been received if the option were to be exercised and physically settled;

(b) where the market value of the underlying instrument of an option is zero[811], the Reporting Bank must use the notional value of the option;

(c) the Reporting Bank must[812] –

(i) determine the specific and general risk charges in respect of options on interest rate-related instruments in accordance with Sub-division 2 of this Division;

[811] For example, if the option is a cap, floor or swaption.

[812] To avoid doubt, options on zero-specific risk securities bear no specific risk.

(ii) determine the specific and general risk charges in respect of options on equities and options on equity indices in accordance with Sub-division 3 of this Division;

(iii) apply a risk charge of 8% in respect of foreign currency options and gold options; and

(iv) apply a risk charge of 15% in respect of options on commodities; and

(d) despite paragraph 8.4.66(c)(ii), where the position in the option does not fall within the trading book[813], a Reporting Bank may use the book value of the option instead.

8.4.68 For the purposes of paragraph 8.4.66(b)(ii), a Reporting Bank must compare the strike price of an option that has a residual maturity of more than 6 months with the forward, and not current, price of the underlying, unless it is unable to do so, in which case it must take the in-the-money amount to be zero.

Delta-plus method[814]

8.4.69 A Reporting Bank using the delta-plus method must calculate its market risk capital requirement for options by –

(a) calculating the delta-weighted position of each option in accordance with paragraph 8.4.70 and adding these delta-weighted positions to the net positions in the relevant risk category in Sub-divisions 2 to 5 of this Division for the purposes of calculating the specific risk and general market risk capital requirements;

(b) calculating the capital requirement for gamma[815] risk of its option positions (including hedge positions) based on the options pricing model of the Reporting Bank, in accordance with paragraphs 8.4.73 to 8.4.76;

(c) calculating the capital requirement for vega[816] risk of its option positions (including hedge positions) based on the options pricing model of the Reporting Bank, in accordance with paragraph 8.4.77; and

(d) summing the capital requirements determined in sub-paragraphs (b) and (c).

8.4.70 A Reporting Bank must calculate its delta-weighted position for each option as follows:

(a) where the underlying is a financial instrument, FX or commodity –

[813] For example, options on certain foreign exchange or commodities positions that do not belong to the trading book.

[814] An illustration on the calculation of the market risk capital requirement under the delta-plus method is set out in Annex 8M.

[815] This measures the rate of change of delta.

[816] This measures the sensitivity of the value of the option with respect to a change in volatility.

Delta-weighted position	=	Market value of the underlying financial instrument, FX or commodity	X	delta

(b) where the underlying is an interest rate –

Delta-weighted position	=	Market value of the derived notional position in the equivalent interest-rate related instrument	X	delta

8.4.71 For the purposes of paragraph 8.4.70(a), in the case of options on a futures contract or forward on a financial instrument, FX or commodity, a Reporting Bank must treat the underlying financial instrument, FX or commodity on which the futures contract or forward is based, as the relevant underlying financial instrument, FX or commodity.[817]

8.4.72 For the purposes of paragraph 8.4.70(b), a Reporting Bank must determine the delta-weighted position for the interest rate option in accordance with Annex 8N.

8.4.73 A Reporting Bank must calculate the "gamma impact" for each individual option according to a Taylor series expansion as follows:

Gamma impact = ½ x Gamma x $(VU)^2$

where VU = variation of the underlying financial instrument, FX or commodity of the option or, where the underlying is an interest rate, variation of the equivalent interest rate-related instrument determined in accordance with Annex 8N.

8.4.74 For the purposes of paragraph 8.4.73, a Reporting Bank must calculate VU as follows:

(a) for any interest rate-related option, the market value of the underlying interest rate-related instruments (including a derived notional position in an equivalent interest rate-related instrument) multiplied by the relevant general risk charge in accordance with Table 8E-2;

(b) for any option on equities and any option on equity indices, the market value of the underlying equities or equity indices multiplied by 8%;

(c) for any foreign currency option or gold option, the market value of the underlying currency or gold instruments multiplied by 8%; and

(d) for any option on commodities, the market value of the underlying commodities multiplied by 15%.

[817] For example, for a bought call option on a June 3-month bill futures contract, the relevant underlying instrument is the 3-month bill.

8.4.75 A Reporting Bank must treat all of the following positions as positions with the same underlying for the purposes of calculating the gamma impact:

(a) for interest rate-related instruments denominated in the same currency, positions (including a derived notional position in an equivalent interest rate-related instrument where the underlying is an interest rate) under each time-band as set out in Table 8E-2 or Table 8E-3, depending on whether the Reporting Bank is using the maturity method or the duration method;

(b) for equities and equity indices, positions in the same country or jurisdiction portfolio;

(c) for foreign currencies, positions in the same currency pair;

(d) for gold, positions in gold;

(e) for commodities, positions in the same individual commodity, or positions treated as the same commodity pursuant to paragraphs 8.4.55 and 8.4.56.

8.4.76 A Reporting Bank must calculate its capital requirement for gamma risk by –

(a) calculating the net gamma impact, which may be positive or negative, in respect of each underlying financial instrument, FX or commodity, where positions are treated as positions with the same underlying in accordance with paragraph 8.4.75, by aggregating the individual gamma impacts for each option position, which may be either positive or negative, in respect of that underlying financial instrument, FX or commodity; and

(b) aggregating the absolute value of the net gamma impacts that are negative.

8.4.77 A Reporting Bank must calculate its capital requirement for vega risk by –

(a) multiplying the sum of the vegas for all option positions in respect of the same underlying financial instrument, FX or commodity, where positions are treated as positions with the same underlying in accordance with paragraph 8.4.75, by a proportional shift in volatility of ±25%; and

(b) aggregating the absolute value of the individual capital requirements which have been calculated for vega risk.

Scenario Approach[818]

8.4.78 A Reporting Bank must obtain the prior approval of the Authority before using the scenario approach to calculate its market risk capital requirement for options.[819]

8.4.79 Under the scenario approach, a Reporting Bank must exclude the positions in the options and the positions hedging the options, from the requirements in Sub-divisions 2 to 5 of this Division for the purposes of calculating its general market risk capital requirements, and must calculate the market risk capital requirements for those positions in accordance with paragraph 8.4.82.

8.4.80 A Reporting Bank applying the scenario approach must analyse its option portfolios using a two-dimensional matrix[820] where –

(a) the first dimension analyses the changes in the value of the option portfolio due to changes in the value of the underlying within a specified range of the current value; and

(b) the second dimension analyses the changes in value of the option portfolio due to changes in the volatility of the value of the underlying within that range,

and the Reporting Bank must set up a separate matrix for each group of positions that are treated as positions with the same underlying in accordance with paragraph 8.4.75.

8.4.81 For the purposes of paragraphs 8.4.80, 8.4.82, 8.4.84 and Annex 8O, "option portfolio" means each group of positions that are treated as positions with the same underlying in accordance with paragraph 8.4.75, and for which a separate matrix has been set up.

8.4.82 A Reporting Bank must calculate its market risk capital requirement for the positions referred to in paragraph 8.4.79 under the scenario approach by –

(a) calculating the delta-weighted position of each position in accordance with paragraph 8.4.70 and adding these delta-weighted positions to the relevant risk category in Sub-divisions 2 to 5 of this Division for the purposes of calculating the specific risk capital requirement;

(b) calculating the general market risk capital requirement by –

(i) specifying, for each option portfolio, a fixed range of changes in the rate or price of the underlying in accordance with paragraph 8.4.83. For all risk categories, the Reporting Bank must use at least 7 observations, including the current observation, to divide the range into equally spaced intervals;

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818 The scenario approach uses simulation techniques to calculate changes in the value of an option portfolio for changes in the level and volatility of the prices of its associated underlying.

819 The Reporting Bank should, among others, take into account standards listed in Division 3 of this Part on IMA, which are relevant given the nature of the business.

820 An example is set out in Annex 8O.

(ii) specifying, for each option portfolio, a shift in the volatility of the rate or price of ±25%;

(iii) revaluing each option portfolio for simultaneous changes in the rate or price of the underlying and in the volatility of that rate or price; and

(iv) aggregating the absolute value of the largest loss computed in each option portfolio matrix; and

(c) summing the capital requirements determined in sub-paragraph (b)(iv).

8.4.83 A Reporting Bank must use the following specified range of changes in the rate or price of the underlying:

(a) for interest rates, the range must be ± the relevant assumed change in yield in Table 8E-2;

(b) for equities, the range must be ±8%;

(c) for foreign exchange and gold, the range must be ±8%; and

(d) for commodities, the range must be ±15%.

8.4.84 Subject to the approval of the Authority, a Reporting Bank which has significant positions in interest rate options may analyse the changes in its interest rate option portfolio using a minimum of 6 sets of time-bands. A Reporting Bank using this approach must not combine more than 3 of the time-bands as defined in Table 8E-2 into any one set. For each set of time-bands, the Reporting Bank must apply the highest of the assumed changes in yield in Table 8E-2 applicable to the group to which the time-bands belong.[821]

8.4.85 Despite the parameters prescribed in paragraph 8.4.82(b)(i) and (ii), the Authority may require a Reporting Bank to use a different change in rate, price, or volatility, or to calculate intermediate points on the matrix.

[821] For example, if the time-bands of 3 to 4 years, 4 to 5 years and 5 to 7 years are combined, the highest assumed change in yield of these 3 time-bands would be 0.75.

Division 5: Regulatory CVA

Sub-division 1: Overview of Calculation of CVA RWA

8.5.1 Subject to paragraph 8.5.10, a Reporting Bank must calculate its CVA RWA as 12.5 times the sum of –

(a) the CVA risk capital requirement calculated using the BA-CVA in accordance with paragraph 8.5.12; and

(b) the CVA risk capital requirement calculated using the SA-CVA in accordance with paragraph 8.5.29.

8.5.2 For the purposes of calculation of CVA RWA –

(a) "covered transactions" comprise –

(i) all OTC derivative transactions, exchange-traded derivative transactions and long settlement transactions, except where such transactions are –

(A) transacted directly with a qualifying CCP; or

(B) transacted indirectly with a qualifying CCP where –

(I) the Reporting Bank is a client of a clearing member or a lower level client in a multi-level client structure; and

(II) the Reporting Bank meets the conditions to apply the treatment in paragraph 7.7.20 or 7.7.23 in respect of such transactions; and

(ii) if the Reporting Bank's CVA losses arising from SFTs are material, SFTs that are fair-valued by the Reporting Bank for accounting purposes, including SFTs for which the Reporting Bank records zero for CVA reserves for accounting purposes; and

(b) the CVA portfolio comprises CVA for the Reporting Bank's entire portfolio of covered transactions as set out in sub-paragraph (a) and eligible CVA hedges.

8.5.3 A Reporting Bank must calculate CVA risk capital requirements for covered transactions in the banking book and covered transactions in the trading book.

8.5.4 For the purposes of paragraph 8.5.2(a)(ii), if a Reporting Bank deems the CVA losses arising from SFTs that are fair-valued by the Reporting Bank for accounting purposes to be immaterial, the Reporting Bank must justify its assessment to the Authority by providing relevant supporting documentation in Schedule 3-4A, and may exclude such SFTs from "covered transactions" unless otherwise specified by the Authority.

8.5.5 A Reporting Bank must treat an external CVA hedge as follows:

(a) the Reporting Bank must include all external CVA hedges, whether or not such external CVA hedges meet the eligibility criteria specified in paragraph 8.5.15 for the BA-CVA or paragraph 8.5.28 for the SA-CVA, whichever is applicable, that are covered transactions in the CVA risk capital calculation of the counterparty providing the CVA hedge;

(b) the Reporting Bank must exclude all external CVA hedges that meet the eligibility criteria specified in paragraph 8.5.15 for the BA-CVA or paragraph 8.5.28 for the SA-CVA, whichever is applicable, from the Reporting Bank's market risk capital requirement calculations under Divisions 2, 3 and 4 of this Part;

(c) the Reporting Bank must treat all external CVA hedges that do not meet the eligibility criteria specified in paragraph 8.5.15 for the BA-CVA or paragraph 8.5.28 for the SA-CVA, whichever is applicable, as trading book instruments and capitalise them under Divisions 2, 3 or 4 of this Part.

8.5.6 A Reporting Bank must treat an internal CVA hedge[822] as follows:

(a) if the Reporting Bank has documented the internal risk transfer with respect to the CVA risk being hedged and all the sources of such CVA risk, and the internal CVA hedge meets the eligibility criteria specified in paragraph 8.5.15 for the BA-CVA or paragraph 8.5.28 for the SA-CVA, whichever is applicable, the Reporting Bank must –

(i) recognise the position of the internal CVA hedge for the CVA portfolio in its CVA risk capital requirement under this Division;

(ii) recognise the opposite position of the internal CVA hedge for the market risk portfolio under the trading book, in its market risk capital requirement under Divisions 2, 3 or 4 of this Part; and

(iii) not recognise the position of the internal CVA hedge for the CVA portfolio in its market risk capital requirement under Divisions 2, 3 and 4 of this Part;

(b) in all other cases, the Reporting Bank must not recognise the internal CVA hedge in its CVA risk capital requirement under this Division, and in its market risk capital requirement under Divisions 2, 3 or 4 of this Part[823].

8.5.7 A Reporting Bank must use the BA-CVA for the calculation of its CVA risk capital requirements, unless the Reporting Bank has received prior approval of the Authority to use the SA-CVA for the calculation of its CVA risk capital requirements in accordance with paragraph 8.5.19.

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[822] An internal CVA hedge involves two perfectly offsetting positions, one for the CVA portfolio, and one for the market risk portfolio under the trading book.

[823] For example, if the internal CVA hedge does not meet the eligibility criteria specified in paragraph 8.5.15 for the BA-CVA or paragraph 8.5.28 for the SA-CVA, whichever is applicable, the positions of the internal CVA hedge for the CVA portfolio, and the market risk portfolio under the trading book, belong to the trading book where they cancel each other, resulting in no impact on both the CVA portfolio and the market risk portfolio under the trading book.

8.5.8 A Reporting Bank that has received prior approval of the Authority to use the SA-CVA for the calculation of its CVA risk capital requirements may exclude any netting set from the calculation of its CVA risk capital requirements using the SA-CVA, provided that the Reporting Bank has informed the Authority, no more than 30 days after the netting set was first excluded from the calculation of its CVA risk capital requirements using the SA-CVA, of the scope of transactions in the netting set excluded and the rationale for such exclusion. The Reporting Bank must calculate CVA risk capital requirements for such netting sets using the BA-CVA.

8.5.9 For the purposes of paragraph 8.5.8, when excluding netting sets from the calculation of its CVA risk capital requirements using the SA-CVA, a Reporting Bank may split a netting set into two synthetic netting sets as follows:

(a) a synthetic netting set that is subject to the BA-CVA and that contains the transactions which are excluded from the calculation of the Reporting Bank's CVA risk capital requirements using the SA-CVA;

(b) a synthetic netting set that is subject to the SA-CVA and that contains transactions which are subject to the calculation of the Reporting Bank's CVA risk capital requirements using the SA-CVA;

only if –

(i) the splitting of the netting set is consistent with the treatment of the netting set used by the Reporting Bank for calculating CVA used for accounting purposes; or

(ii) the approval of the Authority for the Reporting Bank to use the SA-CVA pursuant to paragraph 8.5.19 is limited and does not cover all transactions within a netting set.

8.5.10 If a Reporting Bank's aggregate notional amount of non-centrally cleared derivatives is less than or equal to S$150 billion, the Reporting Bank may choose to set its CVA RWA equal to the sum of its CCR-SA RWA and CCR-IRBA RWA for its entire CVA portfolio, instead of calculating its CVA RWA in accordance with paragraph 8.5.1. A Reporting Bank that calculates CVA RWA in accordance with this paragraph must not recognise CVA hedges.

8.5.11 Despite paragraph 8.5.10, the Authority may require a Reporting Bank to not apply the treatment described in paragraph 8.5.10 and to calculate its CVA RWA in accordance with paragraph 8.5.1.[824]

Sub-division 2: BA-CVA

8.5.12 A Reporting Bank using the BA-CVA must calculate its CVA risk capital requirement under the BA-CVA using either –

[824] For example, the Authority may do so if it determines that CVA risk resulting from a Reporting Bank's derivative positions materially contributes to the Reporting Bank's overall risk.

(a) the full version of the BA-CVA ("full BA-CVA"), which recognises counterparty credit spread hedges, in accordance with paragraph 8.5.16; or

(b) the reduced version of the BA-CVA ("reduced BA-CVA"), which does not recognise hedges, in accordance with paragraph 8.5.13.

Reduced BA-CVA

8.5.13 A Reporting Bank using the reduced BA-CVA must calculate its CVA risk capital requirement as follows:

$$DS_{BA-CVA} \times K_{reduced}$$

where DS_{BA-CVA} is the discount scalar and is equal to 0.65, and $K_{reduced}$ is calculated in accordance with paragraph 8.5.14.

8.5.14 A Reporting Bank using the BA-CVA must calculate $K_{reduced}$ as follows[825]:

$$K_{reduced} = \sqrt{\left(\rho \cdot \sum_c SCVA_c\right)^2 + (1-\rho^2) \cdot \sum_c SCVA_c^2}$$

where –

(a) summations are across all counterparties *c* of the Reporting Bank that are within the scope of the CVA risk capital requirement;

(b) $SCVA_c$ is the CVA risk capital requirement for counterparty c, and is calculated by the following formula –

$$SCVA_c = \frac{1}{\alpha} \cdot RW_c \cdot \sum_{NS} (M_{NS} \cdot EAD_{NS} \cdot DF_{NS})$$

where –

(i) RW_c is the risk weight for counterparty c that reflects the volatility of its credit spread, as set out in Table 8-26, where –

(A) if counterparty c has one or more external credit assessments by recognised ECAIs, the Reporting Bank must assign a risk weight corresponding to the sector to which counterparty c belongs, and the credit quality of counterparty c, where the credit quality is determined by applying paragraph 7.3.30 and is based on the external credit assessments of counterparty *c* by recognised ECAIs; and

[825] The first term, $(\rho \cdot \sum_C SCVA_C)^2$, aggregates the systematic components of CVA risk, and the second term, $(1-\rho^2) \cdot \sum_C SCVA_C^2$, aggregates the idiosyncratic components of CVA risk.

(B) if counterparty c does not have an external credit assessment by a recognised ECAI –

(I) in the case where the Reporting Bank has obtained approval from the Authority to adopt the IRBA pursuant to Division 4 of Part VII, the Reporting Bank may, with the prior written approval of the Authority, internally rate counterparty c, map the internal rating under the IRBA to a credit quality grade set out in Table 7M-1, and assign a risk weight corresponding to the sector to which counterparty c belongs, and the credit quality associated with counterparty c; and

(II) in all other cases, the Reporting Bank must assign a risk weight corresponding to the sector to which counterparty c belongs and a credit quality of "not rated";

(ii) M_{NS} is the effective maturity for the netting set NS, which is calculated as follows:

(A) for a Reporting Bank using the CCR internal models method, the Reporting Bank must calculate M_{NS} in accordance with the formula for M in paragraphs 5.1 to 5.3 of Annex 7E, except that the five year cap on M does not apply;

(B) for a Reporting Bank not using the CCR internal models method, the Reporting Bank must calculate M_{NS} in accordance with the formula for M in Sections 1, 2, 4 and 5 of Annex 7V, except that the five year cap on M does not apply;

(iii) EAD_{NS} is the E or EAD, whichever is applicable, of the netting set NS, and is calculated in the same way as the Reporting Bank calculates its CCR exposures under Division 2 of Part VII;

(iv) DF_{NS} is the discount factor, and is calculated as follows[826]:

(A) for a Reporting Bank using the CCR internal models method,

$$DF_{NS} = 1$$

(B) for a Reporting Bank not using the CCR internal models method,

[826] DF is the discount factor averaged over time between the current reporting date and the netting set's effective maturity date. The interest rate used for discounting is set at 5%, hence 5% in the formula. The product of EAD and effective maturity in the BA-CVA formula is a proxy for the area under the discounted expected exposure profile of the netting set. The definition of effective maturity under the CCR internal models method already includes this discount factor, hence DF is set to 1 for a Reporting Bank using the CCR internal models method. Where the CCR internal models method is not used, the netting set's effective maturity is defined as an average of actual trade maturities, and since this definition lacks discounting, the discount factor is added to compensate for this.

$$DF_{NS} = \frac{1 - e^{-0.05 \cdot M_{NS}}}{0.05 \cdot M_{NS}}$$

where M_{NS} is defined in accordance with sub-paragraph (b)(ii); and

(v) $\alpha = 1.4$;[827] and

(c) $\rho = 50\%$ and is the correlation parameter[828, 829], and its square, $\rho^2 = 25\%$, represents the correlation between credit spreads of any two counterparties.

Table 8-26 – Risk Weights

Sector of counterparty	Credit quality of counterparty	
	Credit quality grade of "3" or better as set out in Table 7M-1	Credit quality grade of "4" or worse as set out in Table 7M-1 or not rated
Sovereigns (comprising central governments, central banks, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism, and the European Financial Stability Facility) and MDBs	0.5%	2.0%
PSEs, education	1.0%	4.0%
Financial institutions	5.0%	12.0%
Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying	3.0%	7.0%
Consumer goods and services, transportation and storage, administration and support service activities	3.0%	8.5%
Technology, telecommunications	2.0%	5.5%
Health care, utilities, professional and technical activities	1.5%	5.0%
Other sector	5.0%	12.0%

827 α is the multiplier used to convert effective EPE to EAD in both the SA-CCR and CCR internal models method. Its role in the calculation, therefore, is to convert the EAD of the netting set (EAD_{NS}) back to effective EPE.

828 The effect of ρ is to recognise the fact that the CVA risk to which a Reporting Bank is exposed is less than the sum of the CVA risk for each counterparty, given that the credit spreads of counterparties are typically not perfectly correlated.

829 One of the basic assumptions underlying the BA-CVA is that systematic credit spread risk is driven by a single factor. Under this assumption, ρ can be interpreted as the correlation between the credit spread of a counterparty and the single credit spread systematic factor.

Full BA-CVA

8.5.15 A Reporting Bank using the full BA-CVA must recognise the effect of counterparty credit spread hedges which meet all of the following conditions:

(a) the hedge is a transaction used for the purposes of mitigating the counterparty credit spread component of CVA risk, and is managed as such;

(b) the hedge is in the form of a single-name credit default swap, a single-name contingent credit default swap or an index credit default swap;

(c) for hedges in the form of a single-name credit default swap or a single-name contingent credit default swap, the hedge must reference one of the following entities:

(i) the counterparty;

(ii) an entity that is either the parent company or subsidiary of the counterparty, or an entity that has the same parent company as the counterparty;

(iii) an entity that belongs to the same sector as set out in Table 8-26, and country or jurisdiction, as the counterparty;

(d) if the hedge is an internal CVA hedge that involves an instrument that is subject to curvature risk, default risk charge or the residual risk add-on, under the SA(MR) under Division 2 of this Part, the Reporting Bank must have entered, through its trading book, into an external hedge with an eligible protection provider that exactly offsets the position of the internal CVA hedge for the market risk portfolio under the trading book with the CVA portfolio.

8.5.16 A Reporting Bank using the full BA-CVA must calculate its CVA risk capital requirement as follows:

$$DS_{BA-CVA} \times K_{full}$$

where DS_{BA-CVA} is the discount scalar and is equal to 0.65, and K_{full} is calculated in accordance with paragraph 8.5.17.

8.5.17 A Reporting Bank using the full BA-CVA must calculate K_{full} as follows:

$$K_{full} = \beta \cdot K_{reduced} + (1 - \beta) \cdot K_{hedged}$$

where –

(a) $\beta = 0.25$ and is the supervisory parameter that is used to limit the extent to which hedging can reduce the CVA risk capital requirements;

(b) $K_{reduced}$ is calculated in accordance with paragraph 8.5.14; and

(c) K_{hedged} is calculated as follows[830]:

$$K_{hedged} = \sqrt{\left(\rho \cdot \sum_c (SCVA_c - SNH_c) - IH\right)^2 + (1-\rho^2) \cdot \sum_c (SCVA_c - SNH_c)^2 + \sum_c HMA_c}$$

where –

(i) summations are across all counterparties *c* of the Reporting Bank that are within scope of the CVA risk capital requirement;

(ii) $SCVA_c$ is calculated in accordance with paragraph 8.5.14(b);

(iii) ρ is calculated in accordance with paragraph 8.5.14(c);

(iv) SNH_c[831] is calculated as follows:

$$SNH_C = \sum_{h \in c} \left(r_{hc} \cdot RW_h \cdot M_h^{SN} \cdot B_h^{SN} \cdot DF_h^{SN}\right)$$

where –

(A) the summation is across all eligible CVA hedges which are single-name hedges *h* that the Reporting Bank has entered into to hedge the CVA risk of counterparty *c*;

(B) r_{hc} is the correlation between the credit spread of the counterparty *c* and the credit spread of an eligible CVA hedge which is a single-name hedge *h* of counterparty *c*. The value of r_{hc} is given in Table 8-27;

(C) RW_h is the risk weight of the eligible CVA hedge which is a single-name hedge *h* that reflects the volatility of the credit spread of the reference name of the hedging instrument. The risk weight is based on the sector and credit quality of the reference name of the hedging instrument and is given in Table 8-26;

(D) M_h^{SN} is the remaining maturity of the eligible CVA hedge which is a single-name hedge *h*;

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[830] The first term $(\rho \cdot \sum_C (SCVA_C - SNH_C) - IH)^2$ aggregates the systematic components of CVA risk arising from the Reporting Bank's counterparties, and the eligible CVA hedges which are single-name hedges or index hedges. The second term $(1-\rho^2) \cdot \sum_C (SCVA_C - SNH_C)^2$ aggregates the idiosyncratic components of CVA risk arising from the Reporting Bank's counterparties and the eligible CVA hedges which are single-name hedges. The third term $\sum_C HMA_C$ aggregates the components of eligible CVA hedges which are indirect hedges (i.e. not aligned with counterparties' credit spreads).

[831] SNH_c is a quantity that gives recognition to the reduction in CVA risk of the counterparty c arising from the Reporting Bank's use of eligible CVA hedges which are single-name hedges of credit spread risk.

(E) B_h^{SN} is the notional of the eligible CVA hedge which is a single-name hedge *h*. For single-name contingent credit default swaps, the notional is determined by the current market value of the reference portfolio or instrument; and

(F) DF_h^{SN} is the discount factor and is calculated as follows:

$$DF_h^{SN} = \frac{1 - e^{-0.05 \cdot M_h^{SN}}}{0.05 \cdot M_h^{SN}}$$

where M_h^{SN} is calculated in accordance with sub-paragraph (c)(iv)(D);

(v) IH[832] is calculated as follows:

$$IH = \sum_i \left(RW_i \cdot M_i^{ind} \cdot B_i^{ind} \cdot DF_i^{ind} \right)$$

where –

(A) the summation is across all eligible CVA hedges which are index hedges *i* that the Reporting Bank has entered into to hedge CVA risk;

(B) RW_i is the risk weight of the eligible CVA hedge which is an index hedge *i*. The risk weight is based on the sector and credit quality of the index constituents and is given in Table 8-26, adjusted as follows:

(1) for an index where all index constituents belong to the same sector in Table 8-26 and have the same credit quality, the Reporting Bank must multiply the relevant value in Table 8-26 by 0.7[833];

(2) for an index with constituents that belong to different sectors in Table 8-26 or that do not have the same credit quality, the Reporting Bank must calculate the weighted average of the risk weights from Table 8-26, based on the weightings of the index constituents, and multiply it by 0.7;

(C) M_i^{ind} is the remaining maturity of the eligible CVA hedge which is an index hedge *i*;

(D) B_i^{ind} is the notional of the eligible CVA hedge which is an index hedge *i*; and

[832] IH is a quantity that gives recognition to the reduction in CVA risk across all counterparties arising from the Reporting Bank's use of eligible CVA hedges which are index hedges.

[833] This is to account for diversification of idiosyncratic risk within the index.

(E) DF_i^{ind} is the discount factor and is calculated as follows:

$$DF_i^{ind} = \frac{1 - e^{-0.05 \cdot M_i^{ind}}}{0.05 \cdot M_i^{ind}}$$

where M_i^{ind} is calculated in accordance with sub-paragraph (c)(v)(C); and

(vi) HMA_c[834] is calculated as follows:

$$HMA_C = \sum_{h \in c} \left(\left(1 - r_{hc}^2\right) \cdot \left(RW_h \cdot M_h^{SN} \cdot B_h^{SN} \cdot DF_h^{SN}\right)^2 \right)$$

where the summation is across all eligible CVA hedges which are single-name hedges *h* that the Reporting Bank has entered into to hedge the CVA risk of counterparty *c* and r_{hc}, RW_h, M_h^{SN}, B_h^{SN} and DF_h^{SN} are calculated in accordance with sub-paragraph (c)(iv).

Table 8-27 – Correlations between credit spread of counterparty and an eligible CVA hedge which is a single-name hedge

An eligible CVA hedge which is a single-name hedge *h* of counterparty *c*, which references –	Value of r_{hc}
counterparty *c*	100%
an entity that is either the parent company or subsidiary of counterparty *c*, or an entity that has the same parent company as counterparty *c*	80%
an entity that belongs to the same sector as set out in Table 8-26, and country or jurisdiction as counterparty *c*	50%

8.5.18 For the purposes of paragraph 8.5.17, a Reporting Bank must treat the credit quality of two index constituents to be the same only in the following cases:

(a) if both index constituents have credit quality grades of "3" or better as set out in Table 7M-1;

(b) if both index constituents have credit quality grades of "4" or worse as set out in Table 7M-1;

(c) if one index constituent has credit quality of "4" or worse as set out in Table 7M-1 and the other index constituent is unrated;

(d) if both index constituents are unrated.

834 HMA_c is a quantity characterising hedging misalignment designed to limit the extent to which indirect hedges can reduce CVA risk capital requirements given that indirect hedges will not be able to fully offset movements in a counterparty's credit spread. This means that with indirect hedges present, K_{hedged} cannot reach zero.

Sub-division 3: SA-CVA

8.5.19 A Reporting Bank must obtain the Authority's prior written approval to use the SA-CVA to calculate its CVA risk capital requirements. The Authority will not grant such approval unless the Reporting Bank meets all the requirements set out in paragraph 8.5.20.

8.5.20 A Reporting Bank using the SA-CVA must meet all the following requirements, at the minimum, before applying for approval from the Authority to adopt the SA-CVA and on an ongoing basis after obtaining the Authority's approval:

(a) the Reporting Bank must be able to model exposure in accordance with paragraphs 8.5.21 to 8.5.27 and calculate, at least on a monthly basis, CVA and sensitivities to the risk factors specified in paragraphs 8.5.35 to 8.5.73;

(b) the Reporting Bank must have –

(i) a CVA desk, which is a group of traders in a business line within the Reporting Bank that is responsible for, or a group of trading accounts in a business line within the Reporting Bank that is used for, the risk management and hedging of CVA; or

(ii) a dedicated function responsible for risk management and hedging of CVA;

(c) the Reporting Bank must have the ability to calculate its CVA risk capital requirements using the SA-CVA at any time and must provide such calculation to the Authority, upon request by the Authority.

Calculation of Regulatory CVA

8.5.21 A Reporting Bank using the SA-CVA must calculate the regulatory CVA for each counterparty with which it has at least one covered transaction, for the purpose of the CVA risk capital requirements, in accordance with the requirements in paragraphs 8.5.22 to 8.5.27.

8.5.22 A Reporting Bank using the SA-CVA must calculate the regulatory CVA for each counterparty in accordance with all of the following, and must demonstrate its compliance with this paragraph to the Authority at the Authority's request:

(a) the Reporting Bank must calculate the regulatory CVA for each counterparty as the expectation of future losses resulting from default of the counterparty under the assumption that the Reporting Bank itself is free from the default risk. In expressing the regulatory CVA, the Reporting Bank must ensure that losses have a positive sign;

(b) the Reporting Bank's calculation of the regulatory CVA for each counterparty must be based on at least the following three sets of inputs:

(i) term structure of market-implied probability of default;

(ii) market-consensus expected loss given default;

(iii) simulated paths of discounted future exposure;

(c) the Reporting Bank must estimate term structure of market-implied probability of default for each counterparty from credit spreads in the markets. For a counterparty whose credit is not actively traded ("illiquid counterparty"), the Reporting Bank must estimate market-implied probability of default from proxy credit spreads estimated for the counterparty in accordance with all of the following:

(i) the Reporting Bank must estimate the credit spread curve of an illiquid counterparty from credit spreads in the markets of the illiquid counterparty's liquid peers via an algorithm that discriminates on at least credit quality[835], industry and geographical region;

(ii) the Reporting Bank may map an illiquid counterparty to a single liquid reference name[836], where the Reporting Bank is able to demonstrate to the satisfaction of the Authority on the justification of such mapping;

(iii) when no credit spreads of any of the illiquid counterparty's peers are available[837], the Reporting Bank may use a fundamental analysis of credit risk to proxy the spread of the illiquid counterparty, provided that where historical probabilities of default are used as part of this fundamental analysis of credit risk, the Reporting Bank must not base the spread of the illiquid counterparty that is proxied using the fundamental analysis of credit risk ("resulting proxied spread") on only historical probabilities of default, and must ensure that the resulting proxied spread takes into consideration relevant data from credit markets;

(d) the Reporting Bank must ensure that the market-consensus expected loss given default value for a counterparty is the same as the one the Reporting Bank uses to calculate the risk-neutral probability of default from credit spreads for the counterparty, unless the Reporting Bank is able to demonstrate to the satisfaction of the Authority that the seniority of the exposure resulting from the covered transactions with the counterparty differs from the seniority of senior unsecured bonds of the counterparty. In determining the seniority of the exposure, the Reporting Bank must ensure that the collateral provided by the counterparty does not result in a change in the seniority of the exposure;

(e) the Reporting Bank must produce the simulated paths of discounted future exposure for a counterparty by pricing all covered transactions with the counterparty along simulated paths of relevant risk factors and discounting the prices to the current reporting date using risk-free interest rates along the path;

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835 For example, credit ratings.

836 An example is mapping a municipality to the central government in which the municipality operates (i.e. setting the municipality credit spread equal to the credit spread of the central government plus a premium).

837 For example, where the illiquid counterparty is a project finance entity or a fund.

(f) the Reporting Bank must ensure that all risk factors material for all the covered transactions with a counterparty are simulated as stochastic processes for an appropriate number of paths defined on an appropriate set of future time points extending to the maturity of the longest covered transaction;

(g) for all covered transactions with a significant level of dependence between the exposure to the counterparty and the counterparty's credit quality, the Reporting Bank must take this dependence into account in the computation of the regulatory CVA for the counterparty;

(h) for a covered transaction with a counterparty where variation margin is exchanged, the Reporting Bank may recognise collateral as a risk mitigant only if all of the following conditions are satisfied:

(i) collateral management requirements set out in paragraphs 8.4 and 8.5 of Annex 7E are satisfied;

(ii) all documentation used in a covered transaction that is collateralised is binding on all parties and legally enforceable in all relevant jurisdictions within the meaning of paragraph 3.1(a) of Annex 7G. The Reporting Bank must ensure that the documentation used in the covered transaction that is collateralised do not cease to be enforceable;

(i) for a covered transaction with a counterparty where variation margin is exchanged –

(i) the Reporting Bank must ensure that the simulated paths of discounted future exposure capture the effects of margining collateral that is recognised as a risk mitigant along each exposure path;

(ii) the Reporting Bank must ensure that all the relevant contractual features including the nature of the margin agreement[838], the frequency of margin calls, the type of collateral, margin thresholds, independent collateral amounts, initial margins and minimum transfer amounts are appropriately captured by the exposure model; and

(iii) to determine collateral available to the Reporting Bank at a given exposure measurement time point, the Reporting Bank must ensure that the exposure model assumes that –

(A) the counterparty will not post or return any collateral within a certain time period immediately prior to that time point; and

(B) the margin period of risk is not less than –

[838] For example, unilateral or bilateral.

(I) for SFTs and client cleared transactions as specified in paragraph 7.7.35, 4 + N business days, where N is re-margining period specified in the margin agreement[839]; and

(II) for all other covered transactions, 9 + N business days, where N is the re-margining period specified in the margin agreement.

8.5.23 A Reporting Bank using the SA-CVA must obtain the simulated paths of discounted future exposure set out in paragraph 8.5.22 via the exposure models used by the Reporting Bank for calculating CVA used by the front office or calculating CVA used for accounting purposes, adjusted to meet the requirements imposed for the calculation of its regulatory CVA in paragraph 8.5.22, and paragraphs 8.5.24 to 8.5.27.

8.5.24 A Reporting Bank using the SA-CVA must ensure that the model calibration process (with the exception of the margin period of risk), market and transaction data used for the calculation of its regulatory CVA are the same as the ones used by the Reporting Bank for calculation of CVA used for accounting purposes.

8.5.25 A Reporting Bank using the SA-CVA must ensure that the generation of risk factor paths underlying all the exposure models meet all of the following requirements, and must demonstrate its compliance with the following requirements to the Authority at the Authority's request:

(a) the Reporting Bank must ensure that the drifts of risk factors are consistent with a risk-neutral probability measure, and that the drifts of risk factors are not calibrated using historical data;

(b) the Reporting Bank must calibrate the volatilities and correlations of risk factors to market data whenever sufficient data exist in a given market. If there is insufficient data in a given market, the Reporting Bank may calibrate the volatilities and correlations of risk factors using historical data;

(c) the Reporting Bank must ensure that the distribution of modelled risk factors accounts for the possible non-normality of the distribution of exposures, including the existence of leptokurtosis where appropriate.

8.5.26 A Reporting Bank using the SA-CVA must use the same netting recognition for the calculation of its regulatory CVA as that used by the Reporting Bank in its calculation of CVA for accounting purposes, for the purposes of determining netting sets under the SA-CVA. The Reporting Bank must model netting uncertainty.

8.5.27 A Reporting Bank using the SA-CVA must meet all of the following requirements, and demonstrate its compliance with the following requirements to the Authority at the Authority's request:

(a) the Reporting Bank must have a CVA risk management framework, which covers the exposure models used for calculating regulatory CVA, and

[839] For example, for margin agreements with daily or intra-daily exchange of margin, the minimum margin period of risk is 5 business days.

which includes the identification, measurement, management, approval and internal reporting of CVA risk;

(b) the Reporting Bank must have a credible track record in using the exposure models for calculating CVA and sensitivities to risk factors;

(c) the Reporting Bank must ensure that its senior management is actively involved in the CVA risk control process, and that sufficient resources are devoted to the CVA risk control function;

(d) the Reporting Bank must have a process in place for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operation of the system used for calculations of CVA for accounting purposes;

(e) the Reporting Bank must have a risk control unit that is responsible for the effective initial and ongoing validation of the exposure models, and this unit must be independent from the business and trading functions (including the CVA desk or a similar dedicated function), must be adequately staffed and must report directly to senior management of the Reporting Bank;

(f) the Reporting Bank must document –

(i) the process for initial and ongoing validation of the exposure models to a level of detail that would enable a third party to –

(A) understand how the models operate, their limitations, and their key assumptions; and

(B) recreate the analysis;

(ii) the minimum frequency with which ongoing validation will be conducted;

(iii) circumstances [840] under which additional validation should be conducted;

(iv) how the validation is conducted with respect to data flows and portfolios;

(v) the analyses that are used; and

(vi) how representative counterparty portfolios are constructed;

(g) the Reporting Bank must test the pricing models used to calculate exposure for a given path of risk factors against appropriate benchmarks for a wide range of market conditions as part of the initial and ongoing model validation process in sub-paragraph (f). The Reporting Bank must

[840] For example, sudden changes in market behaviour.

ensure that the pricing models for options account for the non-linearity of option value with respect to risk factors;

(h) the Reporting Bank must ensure that its IA carry out an independent review of the overall CVA risk management process regularly[841], and this independent review must include both the activities of the CVA desk (or a similar dedicated function) and of the risk control unit referred to in sub-paragraph (e);

(i) the Reporting Bank must define and document in a written policy, criteria on which to assess the exposure models and their inputs, and have in the written policy, a description of the process for assessing the performance of exposure models and remedying performance that is deemed to be unacceptable following the assessment;

(j) the Reporting Bank must ensure that the exposure models capture transaction-specific information in order to aggregate exposures at the level of the netting set. The Reporting Bank must verify that covered transactions are assigned to the appropriate netting set within the exposure model;

(k) the Reporting Bank must ensure that the exposure models reflect transaction terms and specifications, including, but not limited to, transaction notional amounts, maturity, reference assets, margin thresholds, margining agreements and netting agreements, in a timely, complete and conservative manner. The Reporting Bank must ensure that –

(i) the transaction terms and specifications are maintained in a secure database that is subject to formal and periodic audit;

(ii) the transmission of transaction terms and specifications data to the exposure model is subject to internal audit; and

(iii) a formal reconciliation process is in place between the internal model and source data systems to verify on an ongoing basis that transaction terms and specifications are being reflected in the exposure system correctly or conservatively;

(l) the Reporting Bank must ensure that the current and historical market data used for the calculation of regulatory CVA are –

(i) acquired independently of the lines of business;

(ii) compliant with the Accounting Standards;

(iii) fed into the exposure models in a timely and complete manner; and

(iv) maintained in a secure database subject to formal and periodic audit;

[841] A Reporting Bank should review the overall CVA risk management process at least once a year.

(m) the Reporting Bank must have a well-developed process to ensure the integrity of, and handle erroneous or anomalous observations in, the current and historical data used for the calculation of regulatory CVA;

(n) in the case where the Reporting Bank's exposure model relies on proxy market data, the Reporting Bank must set internal policies to identify suitable proxies and verify empirically on an ongoing basis that the proxy provides a conservative representation of the underlying risk under adverse market conditions.

Eligible CVA hedges under the SA-CVA

8.5.28 A Reporting Bank using the SA-CVA must recognise the effect of hedges which meet all of the following conditions:

(a) the hedge is an instrument that hedges the variability of the counterparty credit spread, the variability of the exposure component of CVA risk, or both;

(b) the hedge is a transaction used for the purpose of mitigating CVA risk, and is managed as such;

(c) the hedge is a whole transaction, and is not split into several effective transactions;

(d) the hedge is not one of the following instruments for which the Reporting Bank is not allowed to use the IMA[842]:

(i) securitisation exposures;

(ii) equity investments in funds that cannot be looked through but are assigned to the trading book in accordance with the conditions set out in paragraph 8.1.27(e)(ii);

(e) if the hedge is an internal CVA hedge that involves an instrument that is subject to curvature risk, default risk charge or the residual risk add-on, under the SA(MR) under Division 2 of this Part, the Reporting Bank must have entered through its trading book into an external hedge with an eligible protection provider that exactly offsets the position of the internal CVA hedge for the market risk portfolio under the trading book with the CVA portfolio.

Calculation of CVA risk capital requirement under the SA-CVA

8.5.29 A Reporting Bank using the SA-CVA must calculate its CVA risk capital requirement under the SA-CVA as the sum of the capital requirements for delta risk and vega risk for the CVA portfolio, where –

[842] For example, tranched credit derivatives.

(a) the Reporting Bank must calculate the capital requirements for delta risk as the sum of delta capital requirements calculated for each of the following six risk classes, in accordance with paragraphs 8.5.32 and 8.5.33:

(i) interest rate risk;

(ii) foreign exchange risk;

(iii) counterparty credit spread risk;

(iv) reference credit spread risk;

(v) equity risk;

(vi) commodity risk; and

(b) the Reporting Bank must calculate the capital requirements for vega risk as the sum of vega capital requirements calculated for each of the following five risk classes, in accordance with paragraphs 8.5.32 and 8.5.33:

(i) interest rate risk;

(ii) foreign exchange risk;

(iii) reference credit spread risk;

(iv) equity risk;

(v) commodity risk.

8.5.30 To avoid doubt, a Reporting Bank using the SA-CVA must not calculate vega capital requirements for counterparty credit spread risk.

8.5.31 For the purposes of paragraph 8.5.29, if an instrument is an eligible CVA hedge that hedges the variability for credit spread risk, a Reporting Bank using the SA-CVA must assign it, in its entirety, either to the counterparty credit spread risk class or to the reference credit spread risk class, in accordance with paragraph 8.5.28(c).

8.5.32 Subject to paragraph 8.5.33, a Reporting Bank using the SA-CVA must calculate the capital requirement for delta risk and the capital requirement for vega risk for each risk class using the steps as follows:

(a) step 1: within each risk class, for each risk factor k specified in paragraphs 8.5.35 to 8.5.73, calculate –

(i) the sensitivity of the aggregate regulatory CVA across all counterparties, where the regulatory CVA for each counterparty is calculated in accordance with paragraph 8.5.21, to each risk factor k in the risk class, s_k^{CVA}; and

(ii) the sensitivity of the market value of all eligible CVA hedges in the CVA portfolio to each risk factor k in the risk class, s_k^{Hdg},

in accordance with paragraphs 8.5.35 to 8.5.73;

(b) step 2: calculate the weighted sensitivities for each risk factor k, WS_k^{CVA} and WS_k^{Hdg}, by multiplying the sensitivities s_k^{CVA} and s_k^{Hdg}, respectively, by the corresponding risk weight RW_k as defined in paragraphs 8.5.35 to 8.5.73:

$$WS_k^{CVA} = RW_k s_k^{CVA}$$

$$WS_k^{Hdg} = RW_k s_k^{Hdg}$$

(c) step 3: calculate the net weighted sensitivity of the CVA portfolio to risk factor k, WS_k, by the following formula[843]:

$$WS_k = WS_k^{CVA} - WS_k^{Hdg}$$

(d) step 4 (aggregation within buckets): calculate the capital requirement within each bucket b, K_b, by the following formula:

$$K_b = \sqrt{\left(\sum_{k\in b} WS_k^2 + \sum_{k\in b}\sum_{l\in b, l\neq k} \rho_{kl} WS_k WS_l\right) + R \cdot \sum_{k\in b}\left(\left(WS_k^{Hdg}\right)^2\right)}$$

where –

(i) the buckets and correlation parameters ρ_{kl} applicable to each risk class are specified in paragraphs 8.5.35 to 8.5.73;

(ii) $R = 0.01$ and is the hedging disallowance parameter that prevents the possibility of recognising perfect hedging of CVA risk; and

(iii) WS_k and WS_l are the net weighted sensitivities of the CVA portfolio to risk factors k and l, respectively;

(e) step 5 (aggregation across buckets): calculate the capital requirements, *K* for delta risk and *K* for vega risk for each risk class by aggregating the

[843] Note that the formula in paragraph 8.5.32(c) is set out under the convention that the regulatory CVA is positive as specified in paragraph 8.5.22(a). It intends to recognise the risk reducing effect of hedging. For example, when hedging the counterparty credit risk spread component of CVA risk for a specific counterparty by buying credit protection on the counterparty: if the counterparty's credit spread widens, the regulatory CVA (expressed as a positive value) increases resulting in the positive sensitivity to the counterparty credit spread. At the same time, as the value of the hedge from the Reporting Bank's perspective increases as well (as protection becomes more valuable), the sensitivity of the hedge is also positive. The positive weighted sensitivities of the regulatory CVA and its hedge offset each other using the formula in paragraph 8.5.32(c), where there is a minus sign before the term WS_k^{Hdg}. If CVA loss had been expressed as a negative value, the minus sign in the formula in paragraph 8.5.32(c) would have been replaced by a plus sign.

capital requirements for all buckets within each risk class using the following formula:

$$K = m_{CVA} \cdot \sqrt{\sum_b K_b^2 + \sum_b \sum_{b \neq c} \gamma_{bc} S_b S_c}$$

where –

(i) $m_{CVA} = 1$. The Authority may require a Reporting Bank to use a higher value of m_{CVA} if the Authority determines that the Reporting Bank's CVA model risk warrants it[844];

(ii) the cross-bucket correlation parameters γ_{bc} applicable to each risk class are specified in paragraphs 8.5.35 to 8.5.73; and

(iii) S_b and S_c are the sum of the net weighted sensitivities WS_k for all risk factors k within buckets b and c, respectively, floored by $-K_b$ and $-K_c$, respectively, and capped by K_b and K_c, respectively, and are given by the following formulae:

$$S_b = \max\left\{-K_b; \min\left(\sum_{k \in b} WS_k; K_b\right)\right\}$$

$$S_c = \max\left\{-K_c; \min\left(\sum_{k \in c} WS_k; K_c\right)\right\}$$

8.5.33 For the purposes of paragraph 8.5.32 –

(a) when calculating sensitivities of its regulatory CVA to counterparty credit spreads and risk factors referred to in paragraph 8.5.32(a) driving the values of covered transactions under the SA-CVA, a Reporting Bank must calculate these sensitivities in accordance with the prudent valuation standards set out in Annex 6C;

(b) a Reporting Bank may use smaller values of risk factor changes as compared to those set out in paragraphs 8.5.35 to 8.5.73 for calculating sensitivities, if doing so is consistent with the Reporting Bank's internal risk management calculations;

(c) a Reporting Bank may use adjoint algorithmic differentiation and similar algorithmic computational techniques to calculate sensitivities under the SA-CVA if doing so is consistent with the Reporting Bank's internal risk management calculations and complies with the relevant validation standards specified in paragraph 8.5.27;

[844] For example, if the level of model risk for the calculation of sensitivities is too high, or if the dependence between the Reporting Bank's exposure to a counterparty and the counterparty's credit quality is not appropriately taken into account in its CVA calculations.

(d) a Reporting Bank must calculate sensitivities for vega risk regardless of whether or not the CVA portfolio includes options. When calculating sensitivities for vega risks, the Reporting Bank must apply the volatility change to the following two types of volatilities in exposure models:

(i) volatilities used for generating risk factor paths;

(ii) volatilities used for pricing options;

(e) for a covered transaction or an eligible CVA hedge, whose underlying is an index, a Reporting Bank must calculate the sensitivity of the covered transaction or the eligible CVA hedge, to all risk factors upon which the value of the index depends, by –

(i) applying the change for each risk factor to all index constituents that depend on the risk factor; and

(ii) recalculating the changed value of the index[845]; and

(f) despite sub-paragraph (e), for the counterparty credit spread risk class, reference credit spread risk class and equity risk class, a Reporting Bank may choose to specify, for a covered transaction or an eligible CVA hedge, whose underlying is a qualified index, risk factors that directly correspond to a qualified index. If a Reporting Bank chooses this option, instead of calculating the sensitivities to all risk factors upon which the value of the index depends as specified in sub-paragraph (e), the Reporting Bank must calculate sensitivities for the covered transaction and the eligible CVA hedge to the risk factors that directly correspond to the qualified index[846].

8.5.34 For the purposes of this Division, a qualified index means –

(a) for counterparty credit spread delta risk, reference credit spread delta risk and equity delta risk, a credit index or equity index, that is widely-recognised, and that satisfies all of the following conditions:

(i) the index is listed on an approved exchange or overseas exchange;

(ii) the Reporting Bank is able to look through the credit index or equity index, such that the constituents of the credit index or equity index and their respective weightings are known to the Reporting Bank;

(iii) the credit index or equity index contains at least 20 constituents;

(iv) no single constituent within the credit index or equity index has a weighting of more than 25% of the index;

[845] For example, to calculate delta sensitivity of S&P500 to large financial companies, the Reporting Bank must apply the relevant change to equity prices of all large financial companies that are constituents of S&P500 and recalculate the index.

[846] For example, for a portfolio consisting only of equity derivatives referencing only qualified equity indices, no calculation of sensitivities to non-index equity risk factors is necessary.

(v) the sum of the weightings of the largest 10% of the index constituents, based on the weightings of the index constituents, is less than 60% of the credit index or equity index;

(vi) the market capitalisation of all the constituents of the credit index or equity index is greater than or equal to USD 40 billion; and

(b) for reference credit spread vega risk and equity vega risk, any credit index or equity index.

Buckets, risk factors, sensitivities, risk weights and correlations for interest rate risk

8.5.35 For interest rate delta and vega risks, a Reporting Bank using the SA-CVA must treat each currency as a separate bucket.

8.5.36 For the reporting currency of a Reporting Bank and for the following currencies USD, EUR, GBP, AUD, CAD, SEK and JPY, a Reporting Bank using the SA-CVA must –

(a) specify the following interest rate delta risk factors for each currency:

(i) a simultaneous change, by an absolute value, of the risk-free yields for all risk-free yield curves in each currency for each of the following five tenors: 1 year, 2 years, 5 years, 10 years and 30 years;

(ii) the change, by an absolute value, of the inflation rate;

(b) calculate the sensitivities as follows:

(i) for each currency and each tenor point, calculate the sensitivity of the aggregate regulatory CVA to the risk-free yields for a tenor (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the risk-free yields for the tenor for all risk-free yield curves in each currency by 1 basis point; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.0001;

(ii) for each currency and each tenor point, calculate the sensitivity of the market value of all eligible CVA hedges to the risk-free yields for a tenor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the risk-free yields for the tenor for all risk-free yield curves in each currency by 1 basis point; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.0001;

(iii) for each currency, calculate the sensitivity of aggregate regulatory CVA to the inflation rate (s_k^{CVA}) by –

(A) changing, in an upwards direction, the inflation rate by 1 basis point; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.0001;

(iv) for each currency, calculate the sensitivity of market value of all eligible CVA hedges to the inflation rate (s_k^{Hdg}) by –

(A) changing, in an upwards direction, the inflation rate by 1 basis point; and

(B) dividing the result change in the market value of all eligible CVA hedges by 0.0001;

(c) apply the risk weights (RW_k) in Table 8-28; and

Table 8-28 – Risk weights for interest rate risk class for a Reporting Bank's reporting currency and USD, EUR, GBP, AUD, CAD, SEK and JPY

Risk factor	1 year	2 years	5 years	10 years	30 years	Inflation
Risk weight RW_k	1.11%	0.93%	0.74%	0.74%	0.74%	1.11%

(d) apply the correlations between pairs of risk factors (ρ_{kl}) in Table 8-29.

Table 8-29 – Correlations for interest rate risk factors for a Reporting Bank's reporting currency and USD, EUR, GBP, AUD, CAD, SEK and JPY

Risk factor	**1 year**	**2 years**	**5 years**	**10 years**	**30 years**	**Inflation**
1 year		91%	72%	55%	31%	40%
2 years			87%	72%	45%	40%
5 years				91%	68%	40%
10 years					83%	40%
30 years						40%
Inflation						

8.5.37 For other currencies not specified in paragraph 8.5.36, a Reporting Bank using the SA-CVA must –

(a) specify the following interest rate delta risk factors for each currency:

(i) a simultaneous parallel shift of the entire risk-free yield curve for all risk-free yield curves in each currency;

(ii) the change, by an absolute value, of the inflation rate;

(b) calculate the sensitivities as follows:

(i) for each currency, calculate the sensitivity of the aggregate regulatory CVA to the risk-free yield curves (s_k^{CVA}) by –

(A) applying a simultaneous parallel shift, in an upwards direction, to the entire risk-free yield curve for all risk-free yield curves in each currency by 1 basis point; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.0001;

(ii) for each currency, calculate the sensitivity of the market value of all eligible CVA hedges to the risk-free yield curves (s_k^{Hdg}) by –

(A) applying a simultaneous parallel shift, in an upwards direction, to the entire risk-free yield curve for all risk-free yield curves in each currency by 1 basis point; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.0001;

(iii) for each currency, calculate the sensitivity of aggregate regulatory CVA to the inflation rate (s_k^{CVA}) by –

(A) changing, in an upwards direction, the inflation rate by 1 basis point; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.0001;

(iv) for each currency, calculate the sensitivity of market value of all eligible CVA hedges to the inflation rate (s_k^{Hdg}) by –

(A) changing, in an upwards direction, the inflation rate by 1 basis point; and

(B) dividing the result change in the market value of all eligible CVA hedges by 0.0001;

(c) apply a risk weight (RW_k) of 1.58% for both the risk-free yield curve and the inflation rate; and

(d) apply a correlation of 40% between the risk-free yield curve and the inflation rate (ρ_{kl}).

8.5.38 For all currencies, a Reporting Bank using the SA-CVA must –

(a) specify the following interest rate vega risk factors for each currency:

(i) a simultaneous change, relative to their current values, of the volatilities of the risk-free yield for all risk-free yield curves in each currency;

(ii) a simultaneous change, relative to their current values, of the volatilities for the inflation rate;

(b) calculate the sensitivities as follows:

(i) for each currency, calculate the sensitivity of the aggregate regulatory CVA to the volatilities of the risk-free yield (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the volatilities of the risk-free yield for all risk-free yield curves in each currency by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each currency, calculate the sensitivity of the market value of all eligible CVA hedges to the volatilities of the risk-free yield (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the volatilities of the risk-free yield for all risk-free yield curves in each currency by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01;

(iii) for each currency, calculate the sensitivity of aggregate regulatory CVA to the volatilities of the inflation rate (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the volatilities of the inflation rate by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(iv) for each currency, calculate the sensitivity of market value of all eligible CVA hedges to the volatilities of the inflation rate (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the volatilities of the inflation rate by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01;

(c) apply a risk weight (RW_k) of 100% for both the volatilities of the risk-free yield and the volatilities of the inflation rate; and

(d) apply a correlation of 40% between the volatilities of the risk-free yield and the volatilities of the inflation rate (ρ_{kl}).

8.5.39 For interest rate delta and vega risks, a Reporting Bank using the SA-CVA must apply a cross-bucket correlation parameter γ_{bc} of 0.5 for all currency pairs.

Buckets, risk factors, sensitivities, risk weights and correlations for foreign exchange risk

8.5.40 For foreign exchange delta and vega risks, a Reporting Bank using the SA-CVA must treat each currency, except for the Reporting Bank's reporting currency, as a separate bucket.

8.5.41 For all currencies, except for the Reporting Bank's reporting currency, a Reporting Bank using the SA-CVA must –

(a) specify the foreign exchange delta risk factor for each currency as the change, relative to their current values, of the foreign exchange spot rate between each currency and the Reporting Bank's reporting currency, where the foreign exchange spot rate is the current market price of one unit of that currency expressed in the units of the Reporting Bank's reporting currency;

(b) calculate the sensitivities as follows:

(i) for each currency, calculate the sensitivity of the aggregate regulatory CVA to the foreign exchange delta risk factor (s_k^{CVA}) by –

(A) changing, in an upwards direction, the exchange rate between the Reporting Bank's reporting currency and that currency (i.e. the value of one unit of that currency in units of the Reporting Bank's reporting currency) by 1% relative to its current value; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each currency, calculate the sensitivity of the market value of all eligible CVA hedges to the foreign exchange delta risk factor (s_k^{Hdg}) by –

(A) changing, in an upwards direction, the exchange rate between the Reporting Bank's reporting currency and that currency (i.e. the value of one unit of that currency in units of the Reporting Bank's reporting currency) by 1% relative to its current value; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01; and

(c) apply a risk weight (RW_k) of 11% for all exchange rates between the Reporting Bank's reporting currency and other currencies.

8.5.42 For the purposes of calculating sensitivities under paragraph 8.5.41(b), for covered transactions that reference an exchange rate between a pair of currencies which are both not a Reporting Bank's reporting currency, the Reporting Bank must calculate the sensitivities to the foreign exchange spot rates between the Reporting Bank's reporting currency and each of the referenced currencies which are not the Reporting Bank's reporting currency[847].

8.5.43 For all currencies, except for a Reporting Bank's reporting currency, a Reporting Bank using the SA-CVA –

(a) specify the foreign exchange vega risk factors for each currency as a simultaneous change, relative to their current values, of the volatilities of an exchange rate between the Reporting Bank's reporting currency and each currency;

(b) calculate the sensitivities as follows:

(i) for each currency, calculate the sensitivity of the aggregate regulatory CVA to the foreign exchange vega risk factor (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the volatilities of the exchange rate between the Reporting Bank's reporting currency and that currency by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each currency, calculate the sensitivity of the market value of all eligible CVA hedges to the foreign exchange vega risk factor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the volatilities of the exchange rate between the Reporting Bank's reporting currency and that currency by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01; and

(c) apply a risk weight (RW_k) of 100% for foreign exchange volatilities.

8.5.44 For the purposes of calculating sensitivities under paragraph 8.5.43(b), for covered transactions that reference an exchange rate between a pair of currencies which are both not a Reporting Bank's reporting currency, the Reporting Bank must calculate the

[847] For example, if a Reporting Bank with EUR as its reporting currency holds an instrument that references the USD-GBP exchange rate, the Reporting Bank must measure sensitivity of the instrument both to the EUR-GBP exchange rate and to the EUR-USD exchange rate.

volatilities of the foreign exchange spot rates between the Reporting Bank's reporting currency and each of the referenced currencies which are not the Reporting Bank's reporting currency.

8.5.45 For foreign exchange delta and vega risks, a Reporting Bank using the SA-CVA must apply a cross-bucket correlation parameter γ_{bc} of 0.6 for all currency pairs.

Buckets, risk factors, sensitivities, risk weights and correlations for counterparty credit spread risk

8.5.46 A Reporting Bank using the SA-CVA must assign risk positions with counterparty credit spread delta risks –

(a) for a covered transaction, to a bucket set out in Table 8-30 corresponding to the sector to which the counterparty belongs; and

(b) for an eligible CVA hedge which is a counterparty credit spread hedge referencing an individual reference name, to a bucket set out in Table 8-30 corresponding to the sector to which the reference name belongs.

8.5.47 For an eligible CVA hedge which is a counterparty credit spread hedge and which references either of the following indices, a Reporting Bank using the SA-CVA must look through the index to its index constituents:

(a) a qualified index, if the Reporting Bank did not choose to calculate a single sensitivity to the underlying index in accordance with paragraph 8.5.33(f);

(b) a non-qualified index.

8.5.48 A Reporting Bank using the SA-CVA must assign a risk position in each index constituent referred to in paragraph 8.5.47 to a bucket set out in Table 8-30 corresponding to the sector to which the index constituent belongs.

8.5.49 For an eligible CVA hedge which is a counterparty credit spread hedge and which references a qualified index, if a Reporting Bank using the SA-CVA chooses to calculate sensitivities to the risk factors that directly correspond to a qualified index in accordance with paragraph 8.5.33(f) –

(a) if more than 75% of constituents of the qualified index, based on the weightings of the constituents of the qualified index, are mapped to the same sector, the Reporting Bank must assign the risk position in the qualified index, to a bucket set out in Table 8-30 corresponding to the specific sector; and

(b) in all other cases, the Reporting Bank must assign the risk position in the qualified index to bucket 8 of Table 8-30.

Table 8-30 – Buckets for counterparty credit spread delta risk

Bucket	Sector
1	a) Sovereigns (comprising central governments, central banks, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism, and the European Financial Stability Facility) and MDBs
	b) PSEs, education
2	Financial institutions
3	Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
4	Consumer goods and services, transportation and storage, administrative and support service activities
5	Technology, telecommunications
6	Health care, utilities, professional and technical activities
7	Other sector
8	Qualified indices

8.5.50 For all buckets set out in Table 8-30, a Reporting Bank using the SA-CVA must –

(a) specify the counterparty credit spread delta risk factors as changes of credit spreads, by an absolute value, of –

(i) counterparties;

(ii) reference names for eligible CVA hedges which are counterparty credit spread hedges;

(iii) index constituents referred to in paragraph 8.5.47; and

(iv) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

for the following tenors: 0.5 years, 1 year, 3 years, 5 years and 10 years;

(b) calculate the sensitivities as follows:

(i) for each counterparty and each tenor point, calculate the sensitivity of the aggregate regulatory CVA to the counterparty credit spread delta risk factor (s_k^{CVA}) by –

(A) changing, in an upwards direction, the relevant credit spread by 1 basis point; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.0001;

(ii) for each reference name, index constituent referred to in paragraph 8.5.47 or qualified index for eligible CVA hedges which are counterparty credit spread hedges and each tenor point, calculate

the sensitivity of the market value of all eligible CVA hedges to the counterparty credit spread delta risk factor (s_k^{Hdg}) by –

(A) changing, in an upwards direction, the relevant credit spread by 1 basis point; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.0001;

(c) apply the risk weights (RW_k) in Table 8-31 as follows:

(i) if –

(A) the counterparty;

(B) the reference name for eligible CVA hedges which are counterparty credit spread hedges; or

(C) the index constituent referred to in paragraph 8.5.47,

has one or more external credit assessments by recognised ECAIs, the Reporting Bank must assign a risk weight corresponding to –

(I) the bucket assigned under paragraph 8.5.46 to the counterparty or the reference name for eligible hedges which are counterparty credit spread hedges, or the bucket assigned under paragraph 8.5.48 to the index constituent, as the case may be; and

(II) the credit quality of the counterparty, the reference name for eligible CVA hedges which are counterparty spread hedges, or the index constituent referred to in paragraph 8.5.47, as the case may be, where the credit quality is determined by applying paragraph 7.3.30 and is based on the external credit assessments by recognised ECAIs;

(ii) if –

(A) the counterparty;

(B) the reference name for eligible CVA hedges which are counterparty credit spread hedges; or

(C) the index constituent referred to in paragraph 8.5.47,

does not have an external credit assessment by a recognised ECAI –

(I) in the case where the Reporting Bank has obtained approval from the Authority to adopt the IRBA pursuant to Division 4 of Part VII, the Reporting Bank may, with the prior written approval of the Authority, internally rate the counterparty, the

reference name for eligible CVA hedges which are counterparty credit spread hedges, or the index constituent referred to in paragraph 8.5.47, as the case may be, map the internal rating under the IRBA to a credit quality grade set out in Table 7M-1, and assign a risk weight corresponding to –

(a) the bucket assigned under paragraph 8.5.46 to the counterparty or the reference name for eligible CVA hedges which are counterparty credit spread hedges, or the bucket assigned under paragraph 8.5.48 to the index constituent, as the case may be; and

(b) the credit quality of the counterparty, the reference name for eligible CVA hedges which are counterparty spread hedges, or the index constituent referred to in paragraph 8.5.47, as the case may be; and

(II) in all other cases, the Reporting Bank must assign a risk weight corresponding to –

(a) the bucket assigned under paragraph 8.5.46 to the counterparty or the reference name for eligible CVA hedges which are counterparty spread hedges, or the bucket assigned under paragraph 8.5.48 to the index constituent, as the case may be; and

(b) a credit quality of "not rated";

(iii) where the Reporting Bank calculates sensitivities to the risk factors that directly correspond to a qualified index in accordance with paragraph 8.5.33(f) –

(A) if 75% or more of the constituents of a qualified index, based on the weightings of the constituents of the qualified index, each has one or more external credit assessments by recognised ECAIs which correspond to credit quality grades of "3" or better as set out in Table 7M-1, the Reporting Bank must assign a risk weight to the risk position in the qualified index corresponding to the bucket assigned under paragraph 8.5.49 and a credit quality grade of "3" or better as set out in Table 7M-1. The Reporting Bank must determine the credit quality of each constituent in accordance with paragraph 7.3.30; and

(B) in all other cases, the Reporting Bank must assign a risk weight to the risk position in the qualified index corresponding to the bucket assigned under paragraph 8.5.49, and a credit quality of "not rated"; and

Table 8-31 – Risk weights for counterparty credit spread delta risk

Bucket	Credit quality of the counterparty, the reference name for eligible CVA hedges which are counterparty credit spread hedges, the index constituent referred to in paragraph 8.5.47, or the qualified index	
	Credit quality grade of "3" or better as set out in Table 7M-1	Credit quality grade of "4" or worse as set out in Table 7M-1 or not rated
1 a)	0.5%	2.0%
1 b)	1.0%	4.0%
2	5.0%	12.0%
3	3.0%	7.0%
4	3.0%	8.5%
5	2.0%	5.5%
6	1.5%	5.0%
7	5.0%	12.0%
8	1.5%	5.0%

(d) apply correlation (ρ_{kl}) between two weighted sensitivities WS_k and WS_l as follows:

(i) for buckets 1 to 7 of Table 8-30,

$$\rho_{kl} = \rho_{tenor} \cdot \rho_{name} \cdot \rho_{quality}$$

where –

(A) ρ_{tenor} is –

(I) 100% if the tenors of the two risk positions are the same; and

(II) 90% if the tenors of the two risk positions are not the same;

(B) ρ_{name} is –

(I) 100% if the entities underlying the two risk positions are the same;

(II) 90% if the entities underlying the two risk positions are not the same, but they are either a parent company and its subsidiary, or two subsidiaries of a common parent company; and

(III) 50% if neither sub-paragraph (d)(i)(B)(I) nor (d)(i)(B)(II) applies; and

(C) $\rho_{quality}$ is –

(I) 100% if the credit quality of the entities underlying the two risk positions is the same; and

(II) 80% if the credit quality of the entities underlying the two risk positions is not the same;

(ii) for bucket 8 of Table 8-30,

$$\rho_{kl} = \rho_{tenor} \cdot \rho_{name} \cdot \rho_{quality}$$

where –

(A) ρ_{tenor} is –

(I) 100% if the tenors of the two risk positions are the same; and

(II) 90% if the tenors of the two risk positions are not the same;

(B) ρ_{name} is –

(I) 100% if the two indices are the same and of the same series;

(II) 90% if the two indices are the same, but of distinct series; and

(III) 80% if neither sub-paragraph (d)(ii)(B)(I) nor (d)(ii)(B)(II) applies; and

(C) $\rho_{quality}$ is –

(I) 100% if the credit quality of the two indices is the same; and

(II) 80% if the credit quality of the two indices is not the same.

8.5.51 For the purposes of paragraph 8.5.50, a Reporting Bank must treat the credit quality of two entities or indices, as the case may be, to be the same only in the following cases:

(a) if both entities or indices, as the case may be, have been assigned a credit quality grade of "3" or better as set out in Table 7M-1;

(b) if both entities or indices, as the case may be, have been assigned to a credit quality grade of "4" or worse as set out in Table 7M-1;

(c) if one entity or index, as the case may be, has been assigned to a credit quality grade of "4" or worse as set out in Table 7M-1 and the other entity or index, as the case may be, is unrated;

(d) if both entities or indices, as the case may be, are unrated.

8.5.52 For counterparty credit spread delta risk, a Reporting Bank using the SA-CVA must apply the cross-bucket correlation parameter γ_{bc} in Table 8-32.

Table 8-32 – Cross-bucket correlation parameter γ_{bc} for counterparty credit spread delta risk

Bucket	1	2	3	4	5	6	7	8
1		10%	20%	25%	20%	15%	0%	45%
2			5%	15%	20%	5%	0%	45%
3				20%	25%	5%	0%	45%
4					25%	5%	0%	45%
5						5%	0%	45%
6							0%	45%
7								0%
8								

Buckets, risk factors, sensitivities, risk weights and correlations for reference credit spread risk

8.5.53 A Reporting Bank using the SA-CVA must assign risk positions with reference credit spread delta or vega risks –

(a) for a covered transaction referencing an individual reference entity, to a specific sector set out in Table 8-33 to which the reference entity underlying the covered transaction belongs; and

(b) for an eligible CVA hedge referencing an individual reference entity, to a specific sector set out in Table 8-33 to which the reference entity underlying the eligible CVA hedge belongs.

8.5.54 For a covered transaction, or an eligible CVA hedge, with reference credit spread delta or vega risks and which references either of the following indices, a Reporting Bank using the SA-CVA must look through the index to its index constituents:

(a) a qualified index, if the Reporting Bank did not choose to calculate a single sensitivity to the underlying index in accordance with paragraph 8.5.33(f);

(b) a non-qualified index.

8.5.55 A Reporting Bank using the SA-CVA must assign a risk position in each index constituent referred to in paragraph 8.5.54 to a specific sector set out in Table 8-33 to which the index constituent belongs.

8.5.56 For a covered transaction, or an eligible CVA hedge, with reference credit spread delta or vega risks and which references a qualified index, if a Reporting Bank using the SA-CVA chooses to calculate sensitivities to the risk factors that directly correspond to a qualified index in accordance with paragraph 8.5.33(f) –

(a) if more than 75% of constituents of the qualified index, based on the weightings of the constituents of the qualified index, are mapped to the

same sector, the Reporting Bank must assign the risk position in the qualified index, to the specific sector set out in Table 8-33; and

(b) in all other cases, the Reporting Bank must assign the risk position in the qualified index to the sector corresponding to buckets 16 or 17 of Table 8-33.

8.5.57 Except for risk positions with reference credit spread delta or vega risks assigned to bucket 15 of Table 8-33 pursuant to paragraphs 8.5.53, 8.5.55, or 8.5.56(a), a Reporting Bank using the SA-CVA must assign risk positions with reference credit spread delta or vega risks to buckets set out in Table 8-33 as follows:

(a) if a reference entity underlying the risk position or an index constituent referred to in paragraph 8.5.54, has one or more external credit assessments by recognised ECAIs, the Reporting Bank must assign a bucket corresponding to –

(i) the sector assigned to the reference entity in paragraph 8.5.53 or the sector assigned to the index constituent in paragraph 8.5.55, as the case may be; and

(ii) the credit quality of the reference entity or the index constituent, as the case may be, where the credit quality is determined in accordance with paragraph 7.3.30 and is based on the external credit assessment of the reference entity or the index constituent, as the case may be, by recognised ECAIs;

(b) if a reference entity underlying the risk position or an index constituent referred to in paragraph 8.5.54, does not have an external credit assessment by a recognised ECAI –

(i) in the case where the Reporting Bank has obtained approval from the Authority to adopt the IRBA pursuant to Division 4 of Part VII, the Reporting Bank may, with the prior written approval of the Authority, internally rate the reference entity or the index constituent, as the case may be, map the internal rating under the IRBA, of the reference entity or the index constituent, as the case may be, to a credit quality grade set out in Table 7M-1, and assign a bucket corresponding to –

(A) the sector assigned to the reference entity in paragraph 8.5.53 or the sector assigned to the index constituent in paragraph 8.5.55, as the case may be; and

(B) the credit quality associated with the reference entity or the index constituent, as the case may be; and

(ii) in all other cases, the Reporting Bank must assign a bucket corresponding to –

(A) the sector assigned to the reference entity in paragraph 8.5.53 or the sector assigned to the index constituent in paragraph 8.5.55, as the case may be; and

(B) a credit quality of "not rated";

(c) where the Reporting Bank calculates sensitivities to the risk factors that directly correspond to a qualified index in accordance with paragraph 8.5.33(f) –

(i) if 75% or more of the constituents of a qualified index, based on the weightings of the constituents of the qualified index, each has one or more external credit assessments by recognised ECAIs which correspond to credit quality grades of "3" or better as set out in Table 7M-1, the Reporting Bank must assign the risk position in the qualified index to a bucket corresponding to the sector assigned under paragraph 8.5.56 and a credit quality grade of "3" or better as set out in Table 7M-1. The Reporting Bank must determine the credit quality of each constituent in accordance with paragraph 7.3.30; and

(ii) in all other cases, the Reporting Bank must assign the risk position in the qualified index to a bucket corresponding to the sector assigned under paragraph 8.5.56, and a credit quality of "not rated".

Table 8-33 – Buckets for reference credit spread risk

Bucket	Credit quality	Sector
1	Credit quality grade of "3" or better as set out in Table 7M-1	Sovereigns (comprising central governments, central banks, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism, and the European Financial Stability Facility) and MDBs
2		PSEs, education
3		Financial institutions
4		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
5		Consumer goods and services, transportation and storage, administrative and support service activities
6		Technology, telecommunications
7		Health care, utilities, professional and technical activities
8	Credit quality grade of "4" or worse as set out in Table 7M-1 or not rated	Sovereigns (comprising central governments, central banks, the Bank for International Settlements, the International Monetary Fund, the European Central Bank, the European Union, the European Stability Mechanism, and the European Financial Stability Facility), and MDBs
9		PSEs, education
10		Financial institutions
11		Basic materials, energy, industrials, agriculture, manufacturing, mining and quarrying
12		Consumer goods and services, transportation and storage, administrative and support service activities
13		Technology, telecommunications
14		Health care, utilities, professional and technical activities
15	(Not applicable)	Other sector
16	Credit quality grade of "3" or better as set out in Table 7M-1	Qualified indices
17	Credit quality grade of "4" or worse as set out in Table 7M-1	Qualified indices

8.5.58 For all buckets set out in Table 8-33, a Reporting Bank using the SA-CVA must –

(a) specify the reference credit spread delta risk factor for each bucket as a simultaneous change, by an absolute value, of the credit spreads of all tenors for all –

(i) reference names;

(ii) index constituents referred to in paragraph 8.5.54; and

(iii) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket;

(b) calculate the sensitivities as follows:

(i) for each bucket, calculate the sensitivity of the aggregate regulatory CVA to the reference credit spread delta risk factor (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the credit spreads of all tenors for all –

(I) reference names;

(II) index constituents referred to in paragraph 8.5.54; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1 basis point; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.0001;

(ii) for each bucket, calculate the sensitivity of the market value of all eligible CVA hedges to the reference credit spread delta risk factor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the credit spreads of all tenors for all –

(I) reference names;

(II) index constituents referred to in paragraph 8.5.53; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1 basis point; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.0001; and

(c) apply the risk weights (RW_k) in Table 8-34 corresponding to the bucket of the reference name, index constituent referred to in paragraph 8.5.54 or qualified index, assigned under paragraphs 8.5.53, 8.5.55, 8.5.56(a), or 8.5.57, as the case may be.

Table 8-34 – Risk weights for reference credit spread delta risk

Bucket	Risk weight RW_k
1	0.5%
2	1.0%
3	5.0%
4	3.0%
5	3.0%
6	2.0%
7	1.5%
8	2.0%
9	4.0%
10	12.0%
11	7.0%
12	8.5%
13	5.5%
14	5.0%
15	12.0%
16	1.5%
17	5.0%

8.5.59 For all buckets set out in Table 8-33, a Reporting Bank using the SA-CVA must –

(a) specify the reference credit spread vega risk factor for each bucket as a simultaneous change, relative to their current values, of the volatilities of credit spreads of all tenors for all –

(i) reference names;

(ii) index constituents referred to in paragraph 8.5.54; and

(iii) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket;

(b) calculate the sensitivities as follows:

(i) for each bucket, calculate the sensitivity of the aggregate regulatory CVA to the reference credit spread vega risk factor (s_k^{CVA}) by simultaneously –

(A) changing, in an upwards direction, the volatilities of credit spreads of all tenors for all –

(I) reference names;

(II) index constituents referred to in paragraph 8.5.54; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each bucket, calculate the sensitivity of the market value of all eligible CVA hedges to the reference credit spread vega risk factor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the volatilities of credit spreads of all tenors for all –

(I) reference names;

(II) index constituents referred to in paragraph 8.5.54; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01; and

(c) apply a risk weight of 100% for reference credit spread volatilities (RW_k).

8.5.60 For reference credit spread delta and vega risks, a Reporting Bank using the SA-CVA must apply the cross-bucket correlation parameter γ_{bc} as follows:

(a) for a pair of buckets with different credit qualities, where both buckets are any of the buckets 1 to 14 of Table 8-33, apply the cross-bucket correlation parameter γ_{bc} as the cross-bucket correlation parameter determined in Table 8-35 divided by 2;

(b) in all other cases, apply the cross-bucket correlation parameter γ_{bc} determined in Table 8-35.

Table 8-35 – Cross-bucket correlation parameter for reference credit spread risk

Bucket	1 or 8	2 or 9	3 or 10	4 or 11	5 or 12	6 or 13	7 or 14	15	16	17
1 or 8	100%	75%	10%	20%	25%	20%	15%	0%	45%	45%
2 or 9		100%	5%	15%	20%	15%	10%	0%	45%	45%
3 or 10			100%	5%	15%	20%	5%	0%	45%	45%
4 or 11				100%	20%	25%	5%	0%	45%	45%
5 or 12					100%	25%	5%	0%	45%	45%
6 or 13						100%	5%	0%	45%	45%
7 or 14							100%	0%	45%	45%
15									0%	0%
16										75%
17										

8.5.61 For the purposes of paragraph 8.5.60, a Reporting Bank must treat the credit quality of two buckets to be the same only in the following cases:

(a) if both buckets have been assigned to a credit quality grade of "3" or better as set out in Table 7M-1;

(b) if both buckets have been assigned to a credit quality grade of "4" or worse as set out in Table 7M-1;

(c) if one bucket has been assigned to a credit quality grade of "4" or worse as set out in Table 7M-1 and the other bucket is unrated;

(d) if both buckets are unrated.

Buckets, risk factors, sensitivities, risk weights and correlations for equity risk

8.5.62 A Reporting Bank using the SA-CVA must assign risk positions with equity delta or vega risks –

(a) for a covered transaction referencing an individual equity, to a bucket set out in Table 8-36 that corresponds to the market capitalisation of the equity underlying the risk position, and the economy and sector to which the issuer of the equity underlying the risk position belongs; and

(b) for an eligible CVA hedge referencing an individual equity, to a bucket set out in Table 8-36 that corresponds to the market capitalisation of the equity underlying the risk position, and the economy and sector to which the issuer of the equity underlying the risk position belongs.

8.5.63 For a covered transaction, or an eligible CVA hedge, with equity delta or vega risks and which references either of the following indices, a Reporting Bank using the SA-CVA must look through the index to its index constituents:

(a) a qualified index, if the Reporting Bank did not choose to calculate a single sensitivity to the underlying index in accordance with paragraph 8.5.33(f);

(b) a non-qualified index.

8.5.64 A Reporting Bank using the SA-CVA must assign a risk position in each index constituent referred to in paragraph 8.5.63 to a bucket set out in Table 8-36 that corresponds to –

(a) the market capitalisation of the index constituent; and

(b) the economy and sector to which the issuer of the index constituent belongs.

8.5.65 For a covered transaction or an eligible CVA hedge, with equity delta or vega risks and which references a qualified index, where a Reporting Bank using the SA-CVA calculates sensitivities to the risk factors that directly correspond to a qualified index in accordance with paragraph 8.5.33(f), the Reporting Bank must –

(a) if more than 75% of constituents of the qualified index, based on the weightings of the constituents of the qualified index, are mapped to the same sector, assign the risk position in the qualified index, to the sector set out in Table 8-36 corresponding to buckets 1 to 11 of Table 8-36. In all other cases, the Reporting Bank must assign the risk position in the qualified index, to bucket 12 or 13 of Table 8-36;

(b) for the risk position in the qualified index which must be assigned to a specific sector set out in Table 8-36 corresponding to buckets 1 to 10 of Table 8-36 in accordance with sub-paragraph (a) –

(i) assign the risk position in the qualified index, to a bucket that corresponds to large market capitalisation if 75% or more of the constituents of the qualified index, based on the weightings of the constituents of the qualified index, have a large market capitalisation. In all other cases, the Reporting Bank must assign the risk position in the qualified index to a bucket that corresponds to small market capitalisation; and

(ii) assign the risk position in the qualified index, to a bucket that corresponds to advanced economy if 75% or more of the constituents of the qualified index, based on the weightings of the constituents of the qualified index, are from an advanced economy. In all other cases, the Reporting Bank must assign the risk position in the qualified index to a bucket that corresponds to emerging market economy; and

(c) for the risk position in the qualified index which must be assigned to bucket 12 or 13 of Table 8-36 in accordance with sub-paragraph (a), assign the risk position in the qualified index, to bucket 12 if 75% or more of the constituents of the qualified index, based on the weightings of the constituents of the qualified index, have a large market capitalisation and are from an advanced economy. In all other cases, the Reporting Bank must assign the risk position in the qualified index to bucket 13 of Table 8-36.

8.5.66 For the purposes of paragraphs 8.5.62, 8.5.64 and 8.5.65 –

(a) a large market capitalisation is a market capitalisation equal to or larger than USD 2 billion, and a small market capitalisation is a market capitalisation less than USD 2 billion, where –

(i) the Reporting Bank must calculate the market capitalisation of an equity or index constituent, as the sum of the market capitalisations, based on the market value of total outstanding shares issued by –

(A) the issuer of the equity or index constituent; and

(B) where applicable, all the issuer's subsidiaries,

that are listed on an approved exchange or an overseas exchange; and

(ii) to avoid doubt, the Reporting Bank must not, under any circumstances, include in the market capitalisation of an equity or index constituent, calculated pursuant to sub-paragraph (a)(i), the market capitalisations of related corporations of the issuer of the equity or index constituent, where such related corporations are not subsidiaries[848] of the issuer;

(b) an advanced economy is the economy of Canada, the United States, Mexico, the euro area, the United Kingdom, Norway, Sweden, Denmark, Switzerland, Japan, Australia, New Zealand, Singapore or Hong Kong SAR;

(c) an emerging market economy is an economy that is not an advanced economy; and

(d) to assign a risk position to a sector –

(i) the Reporting Bank must rely on a classification that is commonly used in the market for assigning issuers to industry sectors;

(ii) the Reporting Bank must assign each issuer to a sector in Table 8-36, and must assign all issuers from the same industry to the same sector;

(iii) the Reporting Bank must assign risk positions from any issuer that cannot be assigned to a specific sector to bucket 11 (Other sector); and

(iv) for multinational multi-sector issuers, the Reporting Bank must allocate the issuer to a bucket according to the geographical region and sector in which the issuer conducts most of its business.

[848] Examples of related corporations of an entity which are not subsidiaries of the entity are the parent company of the entity, and the other subsidiaries of the parent company of the entity.

Table 8-36 – Buckets for equity risk

Bucket	Market capitalisation	Economy	Sector
1	Large	Emerging market economy	Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities
2			Telecommunications, industrials
3			Basic materials, energy, agriculture, manufacturing, mining and quarrying
4			Financial institutions, real estate activities, technology
5		Advanced economy	Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities
6			Telecommunications, industrials
7			Basic materials, energy, agriculture, manufacturing, mining and quarrying
8			Financial institutions, real estate activities, technology
9	Small	Emerging market economy	All sectors described in buckets 1, 2, 3 and 4
10		Advanced economy	All sectors described in buckets 5, 6, 7 and 8
11	(Not applicable)		Other sector
12	Large Market Capitalisation and Advanced Economy		Qualified indices
13	Other than Large Market Capitalisation and Advanced Economy		Qualified indices

8.5.67 For all buckets set out in Table 8-36, a Reporting Bank using the SA-CVA must –

(a) specify the equity delta risk factor for each bucket as a simultaneous change, relative to their current values, of equity spot prices for all –

(i) issuers;

(ii) index constituents referred to in paragraph 8.5.63; and

(iii) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket;

(b) calculate the sensitivities as follows:

(i) for each bucket, calculate the sensitivity of the aggregate regulatory CVA to the equity delta risk factor (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the equity spot prices for all –

(I) issuers;

(II) index constituents referred to in paragraph 8.5.63; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each bucket, calculate the sensitivity of the market value of all eligible CVA hedges to the equity delta risk factor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the equity spot prices for all –

(I) issuers;

(II) index constituents referred to in paragraph 8.5.63; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01; and

(c) apply the risk weights (RW_k) in accordance with Table 8-37 corresponding to the bucket of the –

(i) issuer;

(ii) index constituent referred to in paragraph 8.5.63; or

(iii) qualified index (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

assigned under paragraphs 8.5.62, 8.5.63 or 8.5.64, as the case may be.

Table 8-37 – Risk weights for equity delta risk

Bucket	Risk weight RW_k
1	55%
2	60%
3	45%
4	55%
5	30%
6	35%
7	40%
8	50%
9	70%
10	50%
11	70%
12	15%
13	25%

8.5.68 For all buckets set out in Table 8-36, a Reporting Bank using the SA-CVA must –

(a) specify the equity vega risk factor for each bucket as a simultaneous change, relative to their current values, of the volatilities for all –

(i) issuers;

(ii) index constituents referred to in paragraph 8.5.63; and

(iii) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket;

(b) calculate the sensitivities as follows:

(i) for each bucket, calculate the sensitivity of the aggregate regulatory CVA to the equity vega risk factor (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the volatilities for all –

(I) issuers;

(II) index constituents referred to in paragraph 8.5.63; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each bucket, calculate the sensitivity of the market value of all eligible CVA hedges to the equity vega risk factor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the volatilities for all –

(I) issuers;

(II) index constituents referred to in paragraph 8.5.63; and

(III) qualified indices (if the optional treatment as set out in paragraph 8.5.33(f) is chosen),

in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01; and

(c) apply a risk weight (RW_k) of 78% for a bucket that corresponds to large market capitalisation in Table 8-36, and 100% in all other cases.

8.5.69 For equity delta and vega risks, a Reporting Bank using the SA-CVA must apply the following cross-bucket correlation parameters γ_{bc}:

(a) 15% for a pair of buckets, where both buckets are any of buckets 1 to 10 of Table 8-36;

(b) 75% for a pair of buckets, where each bucket is either bucket 12 or 13 of Table 8-36;

(c) 45% for a pair of buckets, where one bucket is bucket 12 or 13 of Table 8-36, and the other bucket is any of the buckets 1 to 10 of Table 8-36;

(d) 0% for a pair of buckets, where one of the buckets is bucket 11 of Table 8-36.

Buckets, risk factors, sensitivities, risk weights and correlations for commodity risk

8.5.70 A Reporting Bank using the SA-CVA must assign risk positions with commodity delta or vega risks to buckets set out in Table 8-38 corresponding to the commodity group to which the risk position belongs.

Table 8-38 – Buckets for commodity risk

Bucket	Commodity group	Examples
1	Energy – Solid combustibles	Coal; charcoal; wood pellets; nuclear fuel (including uranium)
2	Energy – Liquid combustibles	Crude oil (including light-sweet, heavy, West Texas Intermediate and Brent); biofuels (including bioethanol and biodiesel); petrochemicals (including propane, ethane, gasoline, methanol and butane); refined fuels (including jet fuel, kerosene, gasoil, fuel oil, naphtha, heating oil and diesel)
3	Energy – Electricity and carbon trading	Electricity (including spot, day-ahead, peak and off-peak); carbon emissions trading (including certified emissions reductions, in-delivery month EU allowance, Regional Greenhouse Gas Initiative CO2 allowance and renewable energy certificate)
4	Freight	Dry-bulk route (including Capesize, Panamax, Handysize and Supramax); liquid-bulk or gas shipping route (including Suezmax, Aframax and very large crude carriers)
5	Metals – non-precious	Base metal (including aluminium, copper, lead, nickel, tin and zinc); steel raw materials (including steel billet, steel wire, steel coil, steel scrap and steel rebar); minor metals (including cobalt, manganese, molybdenum)
6	Gaseous combustibles	Natural gas; liquefied natural gas
7	Precious metals (including gold)	Gold; silver; platinum; palladium
8	Grains and oilseed	Corn; wheat; soybean (including soybean seed, soybean oil and soybean meal); oats; palm oil; canola; barley; rapeseed (including rapeseed seed, rapeseed oil and rapeseed meal); red bean; sorghum; coconut oil; olive oil; peanut oil; sunflower oil; rice
9	Livestock and dairy	Cattle (including live and feeder); hog; poultry; lamb; fish; shrimp; dairy (including milk, whey, eggs, butter and cheese)
10	Soft commodity and other agricultural commodity	Cocoa; coffee (including arabica and robusta); tea; citrus and orange juice; potatoes; sugar; cotton; wool; lumber and pulp; rubber
11	Other commodity	Industrial minerals (including potash, fertiliser and phosphate rocks); rare earths; terephthalic acid; flat glass

8.5.71 For all buckets set out in Table 8-38, a Reporting Bank using the SA-CVA must –

(a) specify the commodity delta risk factor for each bucket as a simultaneous change, relative to their current values, of commodity spot prices for all commodities in the bucket;

(b) calculate the sensitivities as follows:

(i) for each bucket, calculate the sensitivity of the aggregate regulatory CVA to the commodity delta risk factor (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the spot prices of all commodities in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each bucket, calculate the sensitivity of the market value of all eligible CVA hedges to the commodity delta risk factor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the spot prices of all commodities in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01; and

(c) apply risk weights (RW_k) in accordance with Table 8-39 corresponding to the commodity bucket assigned under paragraph 8.5.70.

Table 8-39 – Risk weights for commodity delta risk

Bucket	Risk weight RW_k
1	30%
2	35%
3	60%
4	80%
5	40%
6	45%
7	20%
8	35%
9	25%
10	35%
11	50%

8.5.72 For all buckets set out in Table 8-38, a Reporting Bank using the SA-CVA must –

(a) specify the commodity vega risk factor for each bucket as a simultaneous change, relative to their current values, of the volatilities for all commodities in the bucket;

(b) calculate the sensitivities as follows:

(i) for each bucket, calculate the sensitivity of the aggregate regulatory CVA to the commodity vega risk factor (s_k^{CVA}) by –

(A) simultaneously changing, in an upwards direction, the volatilities for all commodities in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the aggregate regulatory CVA by 0.01;

(ii) for each bucket, calculate the sensitivity of the market value of all eligible CVA hedges to the commodity vega risk factor (s_k^{Hdg}) by –

(A) simultaneously changing, in an upwards direction, the volatilities for all commodities in the bucket by 1% relative to their current values; and

(B) dividing the resulting change in the market value of all eligible CVA hedges by 0.01; and

(c) apply a risk weight of 100% for commodity volatilities (RW_k).

8.5.73 For commodity delta and vega risks, a Reporting Bank using the SA-CVA must apply the following cross-bucket correlation parameters γ_{bc}:

(a) 20% for a pair of buckets, where both buckets are any of buckets 1 to 10 of Table 8-38;

(b) 0% for a pair of buckets, where one of the buckets is bucket 11 of Table 8-38.

Annex 8A

ILLUSTRATIVE EXAMPLES OF THE COMPONENTS USED TO CALCULATE THE GROSS JTD POSITION

1.1 Table 8A-1 provides illustrative examples of the notional amounts and market values which are to be used to calculate the gross JTD positions.

Table 8A-1: Example of the components used to calculate the gross JTD positions

Instrument	Notional (A)	Market value (B)[849]	P&L (B – A)
Long Bond	Face value of bond	Market value of bond	Market value – Face value
Short CDS	Notional amount of the CDS	Notional of CDS + Marked-to-market value of the CDS	Marked-to-market value of the CDS
Short put option on a bond	Notional amount of the option	Strike amount[850] - |Marked-to-market value of option|	(Strike - |Marked-to-market value of option|) – Notional
Long call option on a bond	0[851]	Marked-to-market value of option	Marked-to-market value of option

[849] The instrument's market value is an intermediate step in determining the P&L for the instrument.

[850] The strike amount of the option on a bond is expressed in terms of the bond price, and not the yield to maturity of the bond.

[851] For a long call option on a bond, the notional amount is zero, since the call option will not be exercised in the event of a default of the bond issuer. In this case, a JTD would extinguish the call option's value and this loss would be captured through the P&L term in the gross JTD position calculation.

Annex 8B

APPLICATIONS OF THE REQUIREMENTS TO DETERMINE RISK FACTOR MODELLABILITY

1.1 Under paragraph 8.3.127, a Reporting Bank is required to demonstrate to the Authority that the Reporting Bank is applying the requirements set out in paragraphs 8.3.128 to 8.3.137 and in this Annex to determine whether a risk factor that has passed the risk factor eligibility test can be modelled using the ES model. A Reporting Bank must maintain, at a minimum, the following evidence for the purposes of such a demonstration:

(a) regression diagnostics for a multi-factor beta model used by the Reporting Bank, demonstrating that –

(i) the risk factors, estimated coefficients, indices and any other regressors included in the multi-factor beta model, are –

(A) adequate to capture both general market risk and idiosyncratic risk; and

(B) appropriate for the region and asset class of the instrument and is able to explain the general market risk of the instrument, as evidenced by goodness-of-fit statistics[852] and other diagnostics on the coefficients;

(ii) where the residuals from the multi-factor model are treated as uncorrelated with each other, the residuals from the multi-factor model are indeed uncorrelated; and

(iii) where coefficients that are determined based on the Reporting Bank's judgement are used[853] –

(A) the Reporting Bank's choice of coefficients is appropriate, with reasons why these coefficients cannot be estimated; and

(B) the Reporting Bank's use of the coefficients does not underestimate risk;

(b) evidence demonstrating that the Reporting Bank periodically checks and documents whether the risk factors used in the Reporting Bank's risk model can be fed into front office pricing models to recover the prices of the assets concerned[854];

(c) evidence demonstrating that the Reporting Bank periodically reconciles its risk pricing with internal prices from both front office and back office. For

852 For example, an adjusted-R^2 coefficient.

853 In general, a risk factor is not considered modellable in cases where parameters are determined based on the Reporting Bank's judgement.

854 Where the recovered prices of a risk factor substantially deviate from the actual prices, this may be indicative of a problem with the prices used to derive the risk factor, and thus call into question the validity of data inputs used to model the risk factor. In such a case, the Authority may determine that the risk factor is non-modellable.

the purposes of this sub-paragraph, the Reporting Bank must ensure that the results of such reconciliations include statistics on the differences of the risk price from front office and back office prices[855];

(d) evidence demonstrating that the Reporting Bank periodically conducts risk factor backtesting for modelled risk factors by comparing the forecasted risk factor returns generated by the Reporting Bank's risk model with the actual risk factor returns produced by front office prices, to confirm that the modelled risk factors accurately reflect the volatility and correlations of the instruments covered by the risk model. The Reporting Bank may conduct such risk factor backtesting on the Reporting Bank's actual portfolio, or on hypothetical portfolios[856];

(e) where one or more risk factors used in the Reporting Bank's risk model are generated from parameterised models[857], evidence demonstrating that –

(i) the Reporting Bank periodically updates and recalibrates these risk factors as trades occur and new data becomes available; and

(ii) where one or more such risk factors are used as a proxy for a single-name option surface points, the Reporting Bank has defined an additional NMRF to account for any potential deviations between the proxy and the actual surface point.

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855 Where a Reporting Bank uses price data from external sources, the Reporting Bank should periodically reconcile such external prices with internal prices from both front office and back office, to ensure they do not deviate substantially and that they are not consistently biased in any fashion. Where such external prices deviate substantially from internal prices from either front office or back office, the Authority may determine that the risk factor is non-modellable.

856 Risk factor backtesting using hypothetical portfolios that are dependent on key risk factors (or combinations thereof) can be useful to identify whether these key risk factors adequately reflect volatility and correlations of specific instruments.

857 Where a Reporting Bank models risk factors that options are exposed to, the Reporting Bank may –
(a) construct implied volatility surfaces using a parameterised model which may be based on single-name underlyings, real price observations of option indices, and/or market quotes of option indices; and
(b) use the moneyness, tenor and option expiry points of liquid options, to calibrate level, volatility, drift and correlation risk factor parameters for a volatility surface of a single-name or benchmark.

Annex 8C

DERIVATION OF NOTIONAL POSITIONS FOR INTEREST RATE-RELATED DERIVATIVES

Futures Contracts or Forwards on Debt Security

1.1 A Reporting Bank must treat a purchased (sold) futures contract or forward on a single debt security as –

(a) a notional long (short) position in the underlying debt security (or the cheapest to deliver, taking into account the conversion factor, where the contract can be satisfied by delivery of one from a range of securities); and

(b) a notional short (long) position in a zero coupon zero-specific risk security with a maturity equal to the expiry date of the futures contract or forward.

Futures Contracts or Forwards on a Basket or Index of Debt Securities

1.2 A Reporting Bank must convert a futures contract or forward on a basket or index of debt securities, into forwards on single debt securities as follows:

(a) in the case of a single currency basket or index of debt securities –

(i) a series of forwards, one for each of the constituent debt securities in the basket or index, of an amount which is a proportionate part of the total current market value of the underlying securities of the contract according to the weighting of the relevant debt security in the basket or index; or

(ii) a single forward on a hypothetical debt security; or

(b) in the case of multiple currency baskets or indices of debt securities –

(i) a series of forwards (using the method described in sub-paragraph (a)(i)); or

(ii) a series of forwards, each one on a hypothetical debt security to represent one of the currencies in the basket or index, of an amount which is a proportionate part of the total current market value of the underlying securities of the contract according to the weighting of debt securities in the relevant currency in the basket or index,

and treat the resulting positions according to paragraph 1.1 of this Annex.

1.3 A Reporting Bank must assign the hypothetical debt security in paragraph 1.2(a)(ii) of this Annex a specific risk charge and a general market risk charge equal to the highest that would apply to the debt securities in the basket or index, even if they

relate to different debt securities and regardless of the proportion of those debt securities in the basket or index.

Interest Rate Futures and FRAs

1.4 A Reporting Bank must treat a short (long) interest rate futures contract or a long (short) FRA as –

(a) a notional short (long) position in a zero coupon zero-specific risk security with a maturity equal to the sum of the period to expiry of the futures contract or settlement date of the FRA and the maturity of the borrowing or deposit; and

(b) a notional long (short) position in a zero coupon zero-specific risk security with maturity equal to the period to expiry of the futures contract or settlement date of the FRA.

Interest Rate Swaps or Foreign Exchange Swaps

1.5 A Reporting Bank must treat interest rate swaps or foreign exchange swaps as 2 notional positions as follows –

	Notional position 1	Notional position 2
Reporting Bank receives fixed and pays floating	A short position in a zero-specific risk security with a coupon equal to the floating rate and a maturity equal to the reset date.	A long position in a zero-specific risk security with a coupon equal to the fixed rate of the swap and a maturity equal to the maturity of the swap.
Reporting Bank receives floating and pays fixed	A short position in a zero-specific risk security with a coupon equal to the fixed rate of the swap and a maturity equal to the maturity of the swap.	A long position in a zero-specific risk security with a coupon equal to the floating rate and a maturity equal to the reset date.
Reporting Bank receives and pays floating	A short position in a zero-specific risk security with a coupon equal to the floating rate and a maturity equal to the reset date.	A long position in a zero-specific risk security with a coupon equal to the floating rate and a maturity equal to the reset date.

1.6 In the case of a foreign exchange swap or foreign exchange forward, a Reporting Bank must treat the 2 legs of the instrument as positions in 2 notional zero-specific risk securities, which are denominated in different currencies, in the calculation for each currency for market risk capital requirements for interest rate risk and foreign exchange risk, in accordance with the requirements in Sub-divisions 2 and 4 of Division 4 of Part VIII, respectively.

Annex 8D

TREATMENT OF CREDIT DERIVATIVES IN THE TRADING BOOK

Credit Default Swaps

1.1 A Reporting Bank that is a protection seller (buyer) must treat its position in a credit default swap as –

(a) for the purposes of calculating the general market risk capital requirement where any periodic premiums or interest payments are due under the swap, a notional long (short) position in a zero-specific risk security with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the swap or the date on which the interest rate will be reset, respectively; and

(b) for the purposes of calculating the specific risk capital requirement, a notional long (short) position in the reference obligation, or where the swap is a qualifying debt security[858], a long (short) position in the swap, with a maturity equal to the expiry date of the swap.

Total Return Swaps

1.2 A Reporting Bank that is a protection seller (buyer) must treat its position in a total return swap as –

(a) for the purposes of calculating the general market risk capital requirement –

(i) a notional long (short) position in the reference obligation with a maturity equal to the expiry date of the swap, subject to paragraph 1.3 of this Annex; and

(ii) where any periodic premiums or interest payments are due under the swap, a notional short (long) position in a zero-specific risk security with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the swap or the date on which the interest rate will be reset, respectively; and

(b) for the purposes of calculating the specific risk capital requirement, a notional long (short) position in the reference obligation with a maturity equal to the expiry date of the swap.

1.3 Where a long cash position is hedged by a total return swap (or vice versa) and there is an exact match between the reference obligation and the cash position, a Reporting Bank that is a protection buyer (seller) may, for the purposes of calculating the general market risk capital requirement, treat its position in the total return swap as a notional short (long) position in the reference obligation with a maturity equal to the maturity date of the reference obligation.

[858] This refers to a security that falls under the "qualifying" category in paragraph 1.1(b) of Annex 8E.

Credit Linked Notes

1.4 A Reporting Bank that is a protection seller must treat its position in a credit linked note as –

(a) for the purposes of calculating the general market risk capital requirement, a long position in the note issuer with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the note or the date on which the interest rate will be reset, respectively; and

(b) for the purposes of calculating the specific risk capital requirement –

(i) in the case where the credit linked note is a qualifying debt security[859], a long position in the note issuer with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the note or the date on which the interest rate will be reset, respectively; and

(ii) in the case where the credit linked note is not a qualifying debt security, a long position in the note issuer with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the note or the date on which the interest rate will be reset, respectively, and either –

(A) for a single name credit linked note, a notional long position in the reference obligation with a maturity equal to the expiry date of the note; or

(B) for a multiple name credit linked note providing proportional protection, a notional long position in each of the reference obligations according to their respective proportions specified in the note.

1.5 A Reporting Bank that is a protection buyer must treat its position in a credit linked note as –

(a) for the purposes of calculating the general market risk capital requirement, a short position in the note issuer with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the note or the date on which the interest rate will be reset, respectively; and

(b) for the purposes of calculating the specific risk capital requirement –

(i) in the case where the credit linked note is a qualifying debt security[860], a short position in the note issuer with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the

[859] This refers to a security that falls under the "qualifying" category in paragraph 1.1(b) of Annex 8E.
[860] This refers to a security that falls under the "qualifying" category in paragraph 1.1(b) of Annex 8E.

expiry date of the note or the date on which the interest rate will be reset, respectively; and

(ii) in the case where the credit linked note is not a qualifying debt security, either –

(A) for a single name credit linked note, a notional short position in the reference obligation with a maturity equal to the expiry date of the note; or

(B) for a multiple name credit linked note providing proportional protection, a notional short position in each of the reference obligations according to their respective proportions specified in the note.

First-to-default Credit Derivatives

1.6 A Reporting Bank that is a protection seller (buyer) must treat its position in a first-to-default credit derivative as –

(a) for the purposes of calculating the general market risk capital requirement where any periodic premiums or interest payments are due under the credit derivative, a notional long (short) position in a zero-specific risk security with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the credit derivative or the date on which the interest rate will be reset, respectively;

(b) for the purposes of calculating the specific risk capital requirement –

(i) in the case where the credit derivative is rated by a recognised ECAI, a long (short) position in the credit derivative. For such positions, the Reporting Bank must use the external credit assessment of the credit derivative and calculate the specific risk capital requirement in accordance with the specific risk capital requirements for securitisation exposures in paragraph 8.4.18(a); and

(ii) in all other cases, a long (short) position in each of the reference obligations in the contract, with the specific risk capital requirement for the contract capped at the maximum payout possible under the contract.

1.7 Where a Reporting Bank has a position in one of the reference obligations underlying a first-to-default credit derivative, and this credit derivative hedges the position, the Reporting Bank may reduce with respect to the hedged amount both the specific risk capital requirement for the reference obligation and that part of the specific risk capital requirement for the credit derivative that relates to this particular reference obligation.

1.8 Where a Reporting Bank holds multiple positions in reference obligations underlying a first-to-default credit derivative, the Reporting Bank may only offset the specific risk capital requirement for the underlying reference obligation with the lowest

specific risk capital requirement and that part of the specific risk capital requirement for the credit derivative that relates to this particular reference obligation.

N-th-to-default Credit Derivatives (with N greater than 1)

1.9 A Reporting Bank that is a protection seller (buyer) must treat its position in an n-th-to-default credit derivative with n greater than 1 as –

(a) for the purposes of calculating the general market risk capital requirement where any periodic premiums or interest payments are due under the credit derivative, a notional long (short) position in a zero-specific risk security with a coupon equal to the appropriate fixed or floating rate and a maturity equal to the expiry date of the credit derivative or the date on which the interest rate will be reset, respectively;

(b) for the purposes of calculating the specific risk capital requirement –

(i) in the case where the credit derivative is rated by a recognised ECAI, a long (short) position in the credit derivative. For such positions, the Reporting Bank must use the external credit assessment of the credit derivative and calculate the specific risk capital requirement in accordance with the specific risk capital requirements for securitisation exposures in paragraph 8.4.18(a); and

(ii) in all other cases, a long (short) position in each of the reference obligations in the contract but disregarding the (n-1) obligations with the lowest specific risk capital requirements, with the specific risk capital requirement capped at the maximum payout possible under the contract.

1.10 For n-th-to-default credit derivatives with n greater than 1, a Reporting Bank must not offset the specific risk capital requirements against that of any underlying reference obligation.

1.11 Where a Reporting Bank has a position in an n-th-to-m-th-to-default credit derivative with n and m both greater than 1 and m greater than n, the Reporting Bank must decompose the position into equivalent positions in individual n-th-to-default credit derivatives[861], and treat these equivalent positions in accordance with paragraphs 1.9 and 1.10 of this Annex.

1.12 A Reporting Bank must apply the capital requirements against each net n-th-to-default credit derivative position (including first-to-default credit derivative positions) irrespective of whether the Reporting Bank provides or obtains protection.

1.13 For the purposes of paragraphs 1.6(b)(i) and 1.9(b)(i) of this Annex, where a security has more than one external credit assessment and these map into different credit quality grades, a Reporting Bank must apply paragraph 7.3.30.

[861] For example, for a 5th-to-8th default product, a Reporting Bank must decompose it into a 5th-to-default product, 6th-to-default product, 7th-to-default product and 8th-to-default product.

Summary of Treatment of Credit Derivatives in the Trading Book

		Protection seller	Protection buyer
Credit default swap	General market risk	Long position in a zero-specific risk security if there are any payments that are due	Short position in a zero-specific risk security if there are any premiums or interest payments to be paid
	Specific risk	Long position in the reference obligation, or long position in the swap if it is a qualifying debt security	Short position in the reference obligation, or short position in the swap if it is a qualifying debt security
Total return swap	General market risk	Long position in the reference obligation, and short position in a zero-specific risk security if there are any payments that are due	Short position in the reference obligation, and long position in a zero-specific risk security if there are any premiums or interest payments to be paid
	Specific risk	Long position in the reference obligation	Short position in the reference obligation
Credit linked notes	General market risk	Long position in the note issuer	Short position in the note issuer
	Specific risk	Long position in the note issuer and long position in the reference obligations, or long position in the note issuer if it is a qualifying debt security	Short position in the reference obligations, or short position in the note issuer if it is a qualifying debt security
First-to-default	General market risk	Long position in a zero-specific risk security if there are any payments that are due	Short position in a zero-specific risk security if there are any premiums or interest payments to be paid
	Specific risk	Long position in each of the reference obligations with the specific risk capital requirement capped at the maximum payout possible, or long position in the credit derivative if it is rated by a recognised ECAI. Offsets for capital charges from exposures to underlying reference obligations allowed under certain conditions.	Short position in each of the reference obligations with the specific risk capital requirement capped at the maximum payout possible. Offsets for capital charges from exposures to underlying reference obligations allowed under certain conditions.
N-th-to-default	General market risk	Long position in a zero-specific risk security if there are any payments that are due	Short position in a zero-specific risk security if there are any premiums or interest payments to be paid

		Protection seller	Protection buyer
	Specific risk	Long position in each of the reference obligations with the specific risk capital requirement capped at the maximum payout possible, or long position in the credit derivative if it is rated by a recognised ECAI. Offsets for capital charges from exposures to any underlying reference credit instrument not allowed.	Short position in each of the reference obligations with the specific risk capital requirement capped at the maximum payout possible. Offsets for capital charges from exposures to any underlying reference credit instrument not allowed.

ANNEX 8E

APPLICABLE RISK CHARGES OR MATCHING FACTORS FOR CALCULATION OF SPECIFIC RISK AND GENERAL MARKET RISK CAPITAL REQUIREMENTS FOR INTEREST RATE RISK UNDER THE SSA(MR)

Table 8E-1 – Specific Risk Capital Requirement - Specific Risk Charges for Positions other than Securitisation Exposures

Category	Credit Quality Grade as set out in Table 7M-1	Residual term to final maturity	Specific risk charge
Government	1	N.A.	0.00%
	2 or 3	6 months or less	0.25%
		more than 6 and up to and including 24 months	1.00%
		more than 24 months	1.60%
	4 or 5	N.A.	8.00%
	6	N.A.	12.00%
	Unrated	N.A.	8.00%
Qualifying		6 months or less	0.25%
		more than 6 and up to and including 24 months	1.00%
		more than 24 months	1.60%
Others	4	N.A.	8.00%
	5 or 6	N.A.	12.00%
	Unrated	N.A.	8.00%

1.1 For the purposes of Table 8E-1 –

(a) the "government" category comprises –

(i) all forms of securities, including bonds, treasury bills and other short-term securities, issued by a central government or central bank; and

(ii) any security issued by a PSE which is risk-weighted at 0% under the SA(CR), pursuant to paragraph 7.3.48 and Table 7-3;

(b) the "qualifying" category comprises –

(i) any security that is issued by an MDB;

(ii) any security issued by a PSE which has a credit quality grade of "3" or better as set out in Table 7M-1 by a recognised ECAI other than any security issued by a PSE which falls under the "government" category in sub-paragraph (a)(ii);

(iii) any unrated security issued by a PSE outside Singapore, for which the bank regulatory agency of the jurisdiction where the PSE is established has exercised the national discretion to treat the exposure to the PSE as an exposure to the central government and the central government of the jurisdiction of that PSE has a credit quality grade of "2" as set out in Table 7M-1 by a recognised ECAI; and

(iv) any security which has a credit quality of grade "3" or better as set out in Table 7M-1, from external credit assessments by at least 2 recognised ECAIs; and

(c) the "others" category comprises any security that attracts specific interest rate risk and does not fall into either the "government" or "qualifying" category.

1.2 For the purposes of paragraphs 1.1(b)(ii) and (iii) and 1.4(b) of this Annex, where a security has more than one external credit assessment and these map into different quality grades, a Reporting Bank must apply paragraph 7.3.30.

1.3 A Reporting Bank adopting the IRBA may include an unrated security in the "qualifying" category if –

(a) the security is internally rated under the IRBA and associated with a PD equivalent to a credit quality grade of "3" or better as set out in Table 7M-1; and

(b) the issuer of the security has any securities listed on any approved exchange or overseas exchange.

1.4 Despite Table 8E-1, and subject to paragraph 1.5 of this Annex, a Reporting Bank must assign a 0% specific risk charge to an exposure to any security issued by –

(a) the Singapore Government or the Authority, which is denominated in Singapore dollars and funded by the Reporting Bank in Singapore dollars;

(b) other central governments with a credit quality grade of "3" or better as set out in Table 7M-1 by a recognised ECAI, which is denominated in the domestic currency and funded by the Reporting Bank in the same currency; or

(c) a PSE which is risk-weighted at 0% under the SA(CR) pursuant to paragraph 7.3.48 and Table 7-3.

1.5 The Authority may, at its discretion, direct a Reporting Bank to assign a higher specific risk charge other than the specific risk charges mentioned in paragraph 1.4 of this Annex and Table 8E-1 to securities issued by certain governments or PSEs.[862]

1.6 For securities in the "others" category which have a high yield to redemption relative to government debt securities issued in the same country or jurisdiction, the Authority may do either or both of the following:

(a) apply a higher specific risk charge to such securities;

(b) disallow offsetting for the purposes of defining the extent of general market risk between such securities and any other debt securities.

[862] This may apply especially in cases where the securities are denominated in a currency other than that of the issuing government, or that of the government of the issuing PSE, respectively.

Table 8E-2 – General Market Risk Capital Requirement - Maturity Bands, General Risk Charges and Assumed Changes in Yield for the Maturity Method

Maturity Band	Coupon 3% or more	Coupon less than 3%	General Risk Charge	Assumed change in yield
	Zone 1			
1	Up to 1 month	Up to 1 month	0.00%	1.00
2	More than 1 month but not more than 3 months	More than 1 month but not more than 3 months	0.20%	1.00
3	More than 3 months but not more than 6 months	More than 3 months but not more than 6 months	0.40%	1.00
4	More than 6 months but not more than 12 months	More than 6 months but not more than 12 months	0.70%	1.00
	Zone 2			
5	More than 1 year but not more than 2 years	More than 1.0 year but not more than 1.9 years	1.25%	0.90
6	More than 2 years but not more than 3 years	More than 1.9 years but not more than 2.8 years	1.75%	0.80
7	More than 3 years but not more than 4 years	More than 2.8 years but not more than 3.6 years	2.25%	0.75
	Zone 3			
8	More than 4 years but not more than 5 years	More than 3.6 years but not more than 4.3 years	2.75%	0.75
9	More than 5 years but not more than 7 years	More than 4.3 years but not more than 5.7 years	3.25%	0.70
10	More than 7 years but not more than 10 years	More than 5.7 years but not more than 7.3 years	3.75%	0.65
11	More than 10 years but not more than 15 years	More than 7.3 years but not more than 9.3 years	4.50%	0.60
12	More than 15 years but not more than 20 years	More than 9.3 years but not more than 10.6 years	5.25%	0.60
13	More than 20 years	More than 10.6 years but not more than 12 years	6.00%	0.60
14		More than 12 years but not more than 20 years	8.00%	0.60
15		More than 20 years	12.50%	0.60

Table 8E-3 – General Market Risk Capital Requirement - Duration Bands and Assumed Changes in Yield for the Duration Method

Duration Band		Assumed change in yield
	Zone 1	
1	Up to 1 month	1.00
2	More than 1 month but not more than 3 months	1.00
3	More than 3 months but not more than 6 months	1.00
4	More than 6 months but not more than 12 months	1.00
	Zone 2	
5	More than 1.0 year but not more than 1.9 years	0.90
6	More than 1.9 years but not more than 2.8 years	0.80
7	More than 2.8 years but not more than to 3.6 years	0.75
	Zone 3	
8	More than 3.6 years but not more than 4.3 years	0.75
9	More than 4.3 years but not more than 5.7 years	0.70
10	More than 5.7 years but not more than 7.3 years	0.65
11	More than 7.3 years but not more than 9.3 years	0.60
12	More than 9.3 years but not more than 10.6 years	0.60
13	More than 10.6 years but not more than 12 years	0.60
14	More than 12 years but not more than 20 years	0.60
15	More than 20 years	0.60

Table 8E-4 – General Market Risk Capital Requirement - Matching Factors for the Maturity and Duration Methods

Maturity Band Matching Factor	Duration Band Matching Factor
10%	5%

Zone	Zone Matching Factor	Adjacent Zone Matching Factor	Non-adjacent Zone Matching Factor
1	40%	40%	100%
2	30%		
3	30%		

Annex 8F

ILLUSTRATION ON THE CALCULATION OF THE GENERAL MARKET RISK CAPITAL REQUIREMENT FOR INTEREST RATE RISK UNDER THE MATURITY METHOD

1.1 A Reporting Bank may have all of the following positions:

(a) a qualifying bond[863], $13.33 million market value, remaining maturity 8 years, coupon 8%;

(b) a government bond, $75 million market value, remaining maturity 2 months, coupon 7%;

(c) an interest rate swap, $150 million, in respect of which the Reporting Bank receives floating rate interest and pays fixed, next interest fixing after 9 months, remaining life of swap is 8 years (assume the current interest rate is identical to the one on which the swap is based);

(d) a long position in an interest rate future, $50 million, delivery date after 6 months, life of underlying government security is 3.5 years (assume the current interest rate is identical to the one on which the interest rate future is based).

1.2 Assuming that all the coupons or interest rates are more than 3%, a Reporting Bank must record these positions as positions in a maturity slotting table and apply risk charges to them in accordance with Table 8E-2.

1.3 A Reporting Bank must calculate the maturity band requirement by multiplying the total amount matched within each maturity band by the maturity band matching factor of 10%. In this example, there are partially offsetting long and short positions in the 10th maturity band, the matched amount of which is equal to $500,000. This results in a vertical disallowance of $50,000.

1.4 A Reporting Bank must then calculate its horizontal disallowances comprising –

(a) the zone requirement, by multiplying the total amount matched within each zone by the corresponding zone matching factor in Table 8E-4. In this example, a zone requirement would be calculated for Zone 1 amounting to 40% of the total matched amount of $200,000. This results in a horizontal disallowance within the zones of $80,000. There is no zone requirement if offsetting does not occur within a zone;

(b) the adjacent zone requirement, by multiplying the total amount matched between adjacent zones by the adjacent zone factor in Table 8E-4. In this example, the following positions remain unmatched after sub-paragraph (a): Zone 1 +$1,000,000, Zone 2 +$1,125,000, Zone 3 -$5,125,000. The adjacent zone matching factor of 40% would apply to the matched amount of $1,125,000 between Zones 2 and 3. This results in a horizontal disallowance between adjacent zones of $450,000; and

[863] This refers to a security that falls under the "qualifying" category in paragraph 1.1(b) of Annex 8E.

(c) the non-adjacent zone requirement, by multiplying the total amount matched between Zones 1 and 3. In this example, the following positions remain unmatched after sub-paragraph (b): Zone 1 +$1,000,000, Zone 3 -$4,000,000. The non-adjacent zone factor of 100% would apply to the matched amount of $1,000,000 resulting in a horizontal disallowance between Zones 1 and 3 of $1,000,000.

1.5 Finally, the Reporting Bank must calculate a net position requirement for the residual unmatched amount. In this example this amounts to $3,000,000.

1.6 The general market risk capital requirement is the sum of the maturity band requirement, the zone requirement, the adjacent zone requirement, the non-adjacent zone requirement and the net position requirement. In this example, the general market risk capital requirement would be $50,000 + $80,000 + $450,000 + $1,000,000 + $3,000,000 = $4,580,000.

Tabular Illustration ($million)

	Zone 1 (months)				Zone 2 (years)			Zone 3 (years)					
Maturity Band	0-1	1-3	3-6	6-12	1-2	2-3	3-4	4-5	5-7	7-10	10-15	15-20	> 20
Position		+75 Gov.	-50 Fut.	+150 Swap			+50 Fut.			-150 Swap +13.33 Qual.			
General risk charge (%)	0.00	0.20	0.40	0.70	1.25	1.75	2.25	2.75	3.25	3.75	4.50	5.25	6.00
Risk-charged position		+0.15	-0.2	+1.05			+1.125			-5.625 +0.5			
Vertical (Para 1.3)										0.5 x 10% = 0.05			
Horizontal (Para 1.4(a))	0.2 x 40% = 0.08												
Horizontal (Para 1.4(b))					1.125 x 40% = 0.45								
Horizontal (Para 1.4(c))	1.0 x 100%												

Annex 8G

DERIVATION OF NOTIONAL POSITIONS FOR EQUITY DERIVATIVES

Depository Receipts

1.1 A Reporting Bank must treat a depository receipt as a notional position in the underlying equity.

Convertibles

1.2 Where a Reporting Bank includes a convertible financial instrument in the equity risk calculation, it must –

(a) treat the convertible financial instrument as a notional position in the equity into which it converts; and

(b) adjust its equity position by making –

(i) an addition equal to the current value of any loss which the Reporting Bank would make if it did convert to equity; or

(ii) a reduction equal to the current value of any profit which the Reporting Bank would make if it did convert to equity, subject to a maximum reduction equal to the equity position on the notional position underlying the convertible financial instrument.

Futures Contracts, Forwards and Contract for Differences ("CFD") on a Single Equity

1.3 A Reporting Bank must treat a futures contract, forward or CFD on a single equity as a notional position in that equity.

Futures Contracts, Forwards and CFDs on Equity Indices or Baskets

1.4 A Reporting Bank must treat a futures contract, forward or CFD on an equity index or basket as either –

(a) a notional position in each of the underlying equities with a value reflecting that equity's contribution to the total market value of the equities in the index or basket; or

(b) if there is –

(i) one country or jurisdiction in the index or basket, a notional position in the index or basket with a value equal to the total market value of the equities in the index or basket; or

(ii) more than one country or jurisdiction in the index or basket –

(A) several notional basket positions, one for each country or jurisdiction basket with a value reflecting that country's or jurisdiction's contribution to the total market value of the equities in the index or basket; or

(B) one notional basket position in a separate, hypothetical country or jurisdiction with a value equal to the total market value of the equities in the index or basket.

1.5 In the case of a futures contract, forward or CFD on a single equity, equity index or equity basket, a Reporting Bank must treat any interest rate risk or foreign exchange risk arising from the non-equity leg of the futures contract, forward or CFD in accordance with the requirements set out in Sub-divisions 2 and 4 of Division 4 of Part VIII, respectively.

Equity Swaps

1.6 A Reporting Bank must treat an equity swap where the Reporting Bank is receiving an amount based on the change in value of a single equity or equity index and paying an amount based on the change in value of another equity or equity index as a notional long position in the former and a notional short position in the latter.

1.7 Where one of the legs of an equity swap involves receiving or paying, a fixed or floating interest rate, a Reporting Bank must slot that exposure into the appropriate re-pricing time-band for interest rate risk as set out in Sub-division 2 of Division 4 of Part VIII.

Annex 8H

QUALIFYING EQUITY INDICES

1.1 A "qualifying equity index" means an index listed in the table below:

	Qualifying equity indices
Australia	S&P/ASX 200 Index
Canada	S&P/TSX Composite Index
Europe	STOXX Europe 50 Index Euro STOXX 50 Index
France	CAC 40 Index
Germany	DAX Index
Hong Kong	Hang Seng China Enterprises Index Hang Seng Index
Italy	FTSE MIB Index
Japan	Nikkei 225
Malaysia	FTSE Bursa Malaysia KLCI Index
Netherlands	AEX Index
Singapore	MSCI Singapore Free Index FTSE Straits Times Index
South Korea	KOSPI 200 Index
Sweden	OMX Stockholm 30 Index
Taiwan	MSCI Taiwan Index
United Kingdom	FTSE 100 Index
United States of America	S&P 500 Index Dow Jones Industrial Average

and any index that is approved by the Authority on an exceptional basis.

Annex 8I

DERIVATION OF NOTIONAL POSITIONS FOR FOREIGN CURRENCY AND GOLD DERIVATIVES

Foreign Exchange Forwards, Futures Contracts, Contract for Differences ("CFD"s)

1.1 A Reporting Bank must treat a foreign exchange forward, futures contract or CFD as 2 notional currency positions:

(a) a long notional position in the currency which the Reporting Bank has contracted to buy; and

(b) a short notional position in the currency which the Reporting Bank has contracted to sell,

where each notional position has a value equal to the present value[864] of the amount of each currency to be exchanged in the case of a forward or futures contract.

Foreign Exchange Swaps

1.2 A Reporting Bank must treat a foreign exchange swap as –

(a) a long notional position in the currency which the Reporting Bank has contracted to receive interest and principal; and

(b) a short notional position in the currency which the Reporting Bank has contracted to pay interest and principal,

where each notional position has a value equal to the present value amount of all cash flows in the relevant currency.

Gold Forwards, Futures Contract and CFDs

1.3 A Reporting Bank must treat a forward, futures contract or CFD on gold as a notional position in gold with a value equal to the amount of gold underlying the contract multiplied by the current spot price for gold, except in the case of a forward where the Reporting Bank, in accordance with industry norms, may use the net present value of each position, discounted using prevailing interest rates and valued at prevailing spot rates.

1.4 In the case of a futures contract, forward or CFD on gold, a Reporting Bank must treat any interest rate risk or foreign exchange risk arising from the non-gold leg of the futures contract, forward or CFD in accordance with the requirements set out in Sub-divisions 2 and 4 of Division 4 of Part VIII, respectively.

[864] This is normally equal to the amount underlying the contract multiplied by the current spot price, except in the case of a forward where the Reporting Bank, in accordance with industry norms, may use the net present value of each position, discounted using prevailing interest rates and valued at prevailing spot rates.

Annex 8J

DERIVATION OF NOTIONAL POSITIONS FOR COMMODITY DERIVATIVES

Futures Contract, Forwards and Contract for Differences ("CFD"s) on a Single Commodity

1.1 A Reporting Bank must treat a forward, futures contract or CFD on a single commodity which settles according to the difference between the price set on trade date and that prevailing at the maturity date of the contract as a notional position equal to the total quantity of the commodity underlying the contract that has a maturity equal to the expiry date of the contract.

Commitment to Buy or Sell a Single Commodity at an Average of Spot Prices Prevailing in the Future

1.2 A Reporting Bank must treat a commitment to buy (sell) at the average spot price of a single commodity prevailing over some period between trade date and maturity date as a combination of –

(a) a long (short) position equal to the total quantity of the commodity underlying the contract with a maturity equal to the maturity date of the contract; and

(b) a series of short (long) notional positions, one for each of the reference dates where the contract price remains unfixed, each of which is a fractional share of the total quantity of the commodity underlying the contract and has a maturity equal to the relevant reference date.

Futures Contract and CFDs on a Commodity Index

1.3 A Reporting Bank must treat a futures contract or CFD on a commodity index which settles according to the difference between the price set on trade date and that prevailing at the maturity date of the contract as either –

(a) a single notional commodity position (separate from all other commodities) equal to the total quantity of the commodities underlying the contract that has a maturity equal to the maturity date of the contract; or

(b) a series of notional positions, one for each of the constituent commodities in the index, each of which is a proportionate part of the total quantity of the commodities underlying the contract according to the weighting of the relevant commodity in the index and has a maturity equal to the maturity date of the contract.

1.4 In the case of a futures contract, forward or CFD on a single commodity or commodity index, a Reporting Bank must treat any interest rate risk or foreign exchange risk from the non-commodity leg of the futures contract, forward or CFD in accordance with the requirements set out in Sub-divisions 2 and 4 of Division 4 of Part VIII, respectively.

Commodity Swaps

1.5 A Reporting Bank must treat a commodity swap as a series of notional positions, one for each payment under the swap, each of which equals the total quantity of the commodity underlying the contract, has a maturity corresponding to each payment and is long or short as follows:

	Receiving amounts unrelated to any commodity's price	Receiving the price of commodity 'b'
Paying amounts unrelated to any commodity's price	N.A.	Long positions in commodity 'b'
Paying the price of commodity 'a'	Short positions in commodity 'a'	Short positions in commodity 'a' and long positions in commodity 'b'

1.6 Where one of the legs of a commodity swap involves receiving or paying, a fixed or floating interest rate, a Reporting Bank must slot that exposure into the appropriate re-pricing time-band for interest rate risk as set out in Sub-division 2 of Division 4 of Part VIII.

Annex 8K

ILLUSTRATION ON THE CALCULATION OF THE MARKET RISK CAPITAL REQUIREMENT FOR COMMODITY RISK UNDER THE MATURITY LADDER APPROACH

Assuming that a Reporting Bank has the following positions in the same commodity which are converted at current spot rates into Singapore dollar, the Reporting Bank must calculate its total market risk capital requirement as follows:

Time-band	Position	Spread	Capital calculation
Up to 1 month		1.5%	
More than 1 month but not more than 3 months		1.5%	
More than 3 months but not more than 6 months	Long $800 Short $1000	1.5%	(1) 800 long + 800 short (matched) Spread charge = $1,600*1.5% = $24 (2) 200 short carried forward to 1-2 years Carry charge = $200*0.6%*2 = $2.40
More than 6 months but not more than 12 months		1.5%	
More than 1 year but not more than 2 years	Long $600	1.5%	(2) 200 long + 200 short (matched) Spread charge = $400*1.5% = $6 (3) 400 long carried forward to over 3 years Carry charge = $400*0.6%*2 = $4.80
More than 2 years but not more than 3 years		1.5%	
More than 3 years	Short $600	1.5%	(3) 400 long + 400 short (matched) Spread charge = $800*1.5% = $12 (4) Net position = 200 Outright charge = $200*15% = $30
			(5) Total market risk capital requirement = $79.20

Annex 8L

ILLUSTRATION ON THE CALCULATION OF THE MARKET RISK CAPITAL REQUIREMENT FOR OPTIONS UNDER THE SIMPLIFIED APPROACH

1.1 Assuming a Reporting Bank holds 100 shares currently valued at $10 each and an equivalent put option with a strike price of $11, the Reporting Bank must calculate its market risk capital requirement as follows: $1,000 x 16% (i.e. 8% specific risk + 8% general market risk) = $160, less the amount the option is in the money ($11 - $10) x 100 = $100. In this example, the market risk capital requirement of the Reporting Bank would be $60.

1.2 A Reporting Bank must apply a similar methodology as that mentioned in paragraph 1.1 of this Annex for options whose underlying is a foreign currency, an interest rate-related instrument or a commodity.

Annex 8M

ILLUSTRATION ON THE CALCULATION OF THE MARKET RISK CAPITAL REQUIREMENT FOR OPTIONS UNDER THE DELTA-PLUS METHOD

1.1 Assume a Reporting Bank has a European short call option on a commodity with an exercise price of 490 and a market value of the underlying commodity 12 months from the expiration of the option at 500, a risk-free interest rate at 8% per annum, and the volatility at 20%. The current delta for this position is according to the Black-Scholes formula -0.721 (i.e. the price of the option changes by -0.721 if the price of the underlying commodity moves by one). The gamma is -0.0034 (i.e. the delta changes by -0.0034 (from -0.721 to -0.7244) if the price of the underlying commodity moves by one). The current value of the option is 65.48.

1.2 The following example shows how the market risk capital requirement will be calculated according to the delta-plus method:

(a) the Reporting Bank must calculate the delta-weighted position by multiplying the current market value of the commodity by the absolute value of the delta.

$$500 \times 0.721 = 360.5$$

(b) the Reporting Bank must incorporate the delta-weighted position into the measure described in Sub-division 5 of Division 4 of Part VIII on Commodity Risk. If the Reporting Bank uses the maturity ladder approach and no other positions exist, the Reporting Bank must multiply the delta-weighted position by the outright charge of 15% to calculate the capital requirement for delta.

$$360.5 \times 0.15 = 54.075$$

(c) the Reporting Bank must calculate the capital requirement for gamma in accordance with paragraphs 8.4.73 to 8.4.76.

$$1/2 \times 0.0034 \times (500 \times 0.15)^2 = 9.5625$$

(d) the Reporting Bank must calculate the capital requirement for vega risk. Assuming that the current (implied) volatility is 20%, as only an increase in volatility carries a risk of loss for a short call option, the volatility has to be increased by a relative shift of 25%. This means that the Reporting Bank must calculate the vega risk capital requirement on the basis of a change in volatility of 5% from 20% to 25% in this example. According to the Black-Scholes formula used, the vega risk equals 1.68. Thus, a 1% or 0.01 increase in volatility increases the value of the option by 1.68. Accordingly, a change in volatility of 5% increases the value by –

$$5 \times 1.68 = 8.4$$

which is the capital requirement for vega risk.

(e) the Reporting Bank must calculate the market risk capital requirement in this example as follows: 54.075 + 9.5625 + 8.4 = 72.0375.

Annex 8N

ILLUSTRATIONS ON DETERMINING DELTA-WEIGHTED POSITIONS FOR INTEREST RATE OPTIONS

1.1 In the case of a bought call option on a June 3-month interest rate future, a Reporting Bank must in April treat the option as a long position with a maturity of 5 months and a short position with a maturity of 2 months. The Reporting Bank must delta-weight both positions.

1.2 In the case of a written option on a June 3-month interest rate future, a Reporting Bank must in April treat the option as a long position with a maturity of 2 months and a short position with a maturity of 5 months. The Reporting Bank must delta-weight both positions.

1.3 A Reporting Bank must in April treat a 2-month call option on a 10-year bond future where delivery of the bond takes place in September as a long bond position with a maturity of 10 years 5 months and a short 5 months deposit position. The Reporting Bank must delta-weight both positions.

1.4 A Reporting Bank must treat caps and floors as a series of European options. For example, a Reporting Bank that buys a 2-year cap with semi-annual resets and a cap rate of 15% must treat the cap as a series of bought call options on a FRA with a reference rate of 15%, each with a negative sign at the maturity date of the underlying FRA and a positive sign at the settlement date of the underlying FRA.

1.5 A Reporting Bank must treat floating rate instruments with caps or floors as a combination of floating rate securities and a series of European options. For example, a Reporting Bank that buys a 3-year floating rate bond indexed to 6-month LIBOR with a cap of 15% must treat the position as a debt security that reprices in 6 months and a series of 5 written call options on an FRA with a reference rate of 15%, each with a positive sign at the maturity date of the underlying FRA and a negative sign at the settlement date of the underlying FRA.

Annex 8O

EXAMPLE OF MATRICES FOR ANALYSING OPTION PORTFOLIOS UNDER THE SCENARIO APPROACH

Where a Reporting Bank has purchased and sold options on interest rates, and options to purchase Japanese Yen and sell USD, the Reporting Bank may use the scenario approach to calculate the general market risk of these option portfolios by calculating the following matrices:

(a) Options on interest rate-related instruments maturing up to 3 months

Yield / Volatility	- 100 basis points	- 66 basis points	- 33 basis points	Current yield	+ 33 basis points	+ 66 basis points	+ 100 basis points
+25%	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss
Current % volatility	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss
-25%	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss

Repeat the interest rate matrix above for each of the maturity bands.

(b) Options on Japanese Yen/USD exchange rate

Exchange rate / Volatility	- 8%	- 5.33%	- 2.67%	Current exchange rate	+ 2.67%	+ 5.33%	+ 8%
+25%	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss
Current % volatility	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss
-25%	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss	gain/loss

PART IX: OPERATIONAL RISK

Division 1: SA(OR)

Sub-division 1: Calculation of Operational Risk Capital Requirement

9.1.1 A Reporting Bank must calculate its operational RWA as –

(a) at the Group level, 12.5 times the operational risk requirement calculated in paragraph 9.1.2, based on consolidated figures of the banking group for the calculation of the BI in paragraph 9.1.3 and the ILM in paragraph 9.1.2(b); and

(b) at the Solo level, 12.5 times the operational risk requirement calculated in paragraph 9.1.2, based on standalone figures of the Reporting Bank for the calculation of the BI in paragraph 9.1.3 and the ILM in paragraph 9.1.2(b).

9.1.2 A Reporting Bank must calculate the operational risk capital requirement (K_{ORC}) based on the SA(OR) as follows:

$$K_{ORC} = BIC \times ILM$$

where –

(a) BIC is the Business Indicator Component and is calculated as the sum of[901] –

(i) 12% of the Reporting Bank's BI;

(ii) if the Reporting Bank's BI exceeds S$1.5 billion, 3% of the amount by which the BI exceeds S$1.5 billion; and

(iii) if the Reporting Bank's BI exceeds S$45 billion, 3% of the amount by which the BI exceeds S$45 billion; and

(b) subject to paragraphs 9.1.8(a), 9.1.10 and 9.1.15, ILM is the Internal Loss Multiplier and is calculated as follows:

$$ILM = \ln\left(\exp(1) - 1 + \left(\frac{LC}{BIC}\right)^{0.8}\right)$$

where –

(i) LC is the loss component and is equal to 15 times the Reporting Bank's average annual net losses incurred over the past 10 consecutive financial years or the observation period of the internal

[901] For example, given a BI of S$50 billion, BIC = (S$50 billion x 12%) + [(S$50 billion – S$1.5 billion) x 3%] + [(S$50 billion – S$45 billion) x 3%] = S$7.605 billion.

loss data as set out in paragraph 9.1.14 or 9.1.15, whichever is applicable; and

(ii) BIC is defined in accordance with sub-paragraph (a).

9.1.3 For the purposes of paragraph 9.1.2(a), BI is calculated using the following formula:

$$BI = ILDC + SC + FC$$

where –

(a) ILDC is the interest, leases and dividend component and is calculated using the following formula:

$$ILDC = \min\left(\overline{\text{abs}(\text{interest income} - \text{interest expenses})}, 2.25\% \times \overline{\text{interest earning assets}}\right) + \overline{\text{dividend income}};$$

(b) SC is the services component and is calculated using the following formula:

$$SC = \max\left(\overline{\text{fee and commission income}}, \overline{\text{fee and commission expenses}}\right) + \max\left(\overline{\text{other operating income}}, \overline{\text{other operating expenses}}\right); \text{ and}$$

(c) FC is the financial component and is calculated using the following formula:

$$FC = \overline{\text{abs}(\text{Net P\&L on the trading book})} + \overline{\text{abs}(\text{Net P\&L on the banking book})}$$

and where –

(i) a bar above a term means that it is calculated as the average over the past 3 consecutive financial years;

(ii) abs() is the absolute value of the terms within the brackets;

(iii) the absolute value of net items[902] must be calculated first for each financial year, and the average of the past 3 consecutive financial years must be calculated based on the absolute value of net items for each financial year;

(iv) the definitions of each of the components of the BI are set out in Annex 9A; and

(v) the calculations of the components of the BI must be based on the past 3 consecutive financial years of the Reporting Bank's audited year-end financial statements. Where the audited year-end financial statements for

[902] For example, interest income less any interest expenses.

the most recent financial year are not available, the Reporting Bank may use the unaudited year-end financial statements for the most recent financial year, provided that the Reporting Bank reconciles the components of the BI calculated based on its unaudited year-end financial statements for the most recent financial year with those calculated based on its audited year-end financial statements for the most recent financial year, once available. If the reconciliation indicates that there are material differences between the components of the BI calculated based on unaudited year-end financial statements for the most recent financial year which have been submitted to the Authority under the reporting schedules in Part XII, and those calculated based on audited year-end financial statements for the most recent financial year, the Reporting Bank must resubmit to the Authority all relevant reporting schedules in Part XII with the components of the BI calculated based on audited year-end financial statements for the most recent financial year, and other calculations based on the BI updated accordingly, as soon as practicable after the audited year-end financial statements become available. In all other cases, where a Reporting Bank does not have audited year-end financial statements for the past 3 consecutive financial years, it must obtain the Authority's written approval to use an alternative calculation methodology.

[MAS Notice 637 (Amendment) 2024]

9.1.4 For the purposes of the calculation of the LC or the BI under the SA(OR), a past number ("X") of consecutive financial years[903] refers to[904] –

(a) in the case where the LC or the BI, whichever is applicable, is being calculated as of the last day of a financial year ("A"), the period of X consecutive financial years ending on the last day of financial year A; and

(b) in any other case, the period of X consecutive financial years immediately preceding the date as of which the LC or the BI, whichever is applicable, is being calculated.

9.1.5 For the purposes of the calculation of the ILDC in paragraph 9.1.3(a), a Reporting Bank must include all outstanding credit obligations on non-accrued status[905].

9.1.6 For the purposes of the calculation of the BI in paragraph 9.1.3, a Reporting Bank must not include any of the following profit or loss items in any of the components of the BI:

[903] For example, in each of paragraph 9.1.3(i), 9.1.3(iii) and 9.1.3(v), X is 3.

[904] As an example, for the purposes of calculating the BI under the SA(OR) for a Reporting Bank whose financial year ends on 31 December 2023 –
(a) for its submission in respect of the BI as of 31 December 2023, the "past 3 consecutive financial years" would refer to 1 January 2021 to 31 December 2023; and
(b) for its submissions in respect of the BI as of 31 March 2024, 30 June 2024 or 30 September 2024 (as the case may be), the "past 3 consecutive financial years" would also refer to 1 January 2021 to 31 December 2023.

[905] For example, non-performing loans.

(a) income or expenses from insurance businesses except where the Reporting Bank does not assume any risk or undertake any liability as part of the insurance business[906];

(b) premiums paid for or reimbursements or payments received from insurance or reinsurance policies purchased;

(c) administrative expenses, including staff expenses, outsourcing fees paid for the supply of non-financial services[907], and other administrative expenses[908];

(d) recovery of administrative expenses including recovery of payments on behalf of customers[909];

(e) expenses of premises or fixed assets (except when these expenses result from operational loss events);

(f) depreciation or amortisation of tangible or intangible assets (except depreciation related to operating lease assets, which must be included in financial and operating lease expenses);

(g) provisions or reversal of provisions[910] except for provisions related to operational loss events;

(h) expenses due to share capital repayable on demand;

(i) impairment or reversal of impairment[911];

(j) changes in goodwill recognised in profit or loss;

(k) corporate income tax, including current tax and deferred tax.

9.1.7 For the purposes of the calculation of the BI in paragraph 9.1.3, a Reporting Bank –

(a) may exclude items arising from divested businesses from the calculation of the BI with immediate effect upon obtaining the written approval of the Authority. The Reporting Bank must report the operational RWA taking into account such exclusion in the next quarterly submission of reporting schedules under Part XII, after obtaining the written approval of the Authority for the exclusion; and

(b) must include every business acquired by the Reporting Bank and every entity merged with the Reporting Bank, in the calculation of the BI, with immediate effect after each respective acquisition or merger. The

906 For example, as an insurance agent or insurance broker.
907 For example, logistical, human resources or IT services.
908 For example, expenses related to IT, utilities, telephone, travel, office supplies or postage.
909 For example, taxes debited to customers.
910 For example, provisions on pensions, commitments and guarantees given.
911 For example, impairment on financial assets, non-financial assets, investments in subsidiaries, joint ventures and associates.

Reporting Bank must incorporate, in its calculation of its BI, audited financial information (from before the acquisition or merger, as the case may be) of a business that is acquired or an entity that is merged, for the period relevant to the BI calculation. The Reporting Bank must report the operational RWA taking into account such inclusion in the next quarterly submission of reporting schedules under Part XII. Where a Reporting Bank does not have audited financial information (from before the acquisition or merger, as the case may be) of any business that is acquired or any entity that is merged, it must obtain the Authority's written approval to use an alternative calculation methodology.

9.1.8 For the purposes of the calculation of K_{ORC} in paragraph 9.1.2 –

(a) a Reporting Bank with a BI less than or equal to S$1.5 billion must set the ILM equal to one in the calculation of K_{ORC} in paragraph 9.1.2 (that is, calculate K_{ORC} based solely on the BIC), unless the Reporting Bank has obtained the Authority's written approval to calculate the ILM in accordance with paragraph 9.1.2(b) for the calculation of K_{ORC}. The Authority will not grant such approval unless the Reporting Bank meets all the criteria set out in paragraphs 9.1.16 to 9.1.41; and

(b) a Reporting Bank with a BI more than S$1.5 billion must calculate the ILM in accordance with paragraph 9.1.2(b) in the calculation of K_{ORC}.

Sub-division 2: Criteria on Internal Loss Data Identification, Collection and Treatment

9.1.9 When either of the following applies, a Reporting Bank must ensure that it meets all the criteria set out in paragraphs 9.1.16 to 9.1.41 and must be able to demonstrate to the satisfaction of the Authority that it has met all the criteria set out in paragraphs 9.1.16 to 9.1.41:

(a) the Reporting Bank has a BI less than or equal to S$1.5 billion and has obtained the Authority's written approval to calculate the ILM in accordance with paragraph 9.1.2(b) for the calculation of K_{ORC};

(b) the Reporting Bank has a BI more than S$1.5 billion.

A Reporting Bank referred to in paragraph 9.1.9(a) or paragraph 9.1.9(b) is referred to in this Sub-division and Annex 9B as a "Relevant Reporting Bank".

9.1.10 Where a Relevant Reporting Bank fails to meet any of the criteria set out in paragraphs 9.1.16 to 9.1.41 as required by paragraph 9.1.9, the Relevant Reporting Bank must set the ILM equal to one, or greater than one if required by the Authority, in the calculation of K_{ORC} in paragraph 9.1.2. The Relevant Reporting Bank must continue to set the ILM equal to one, or greater than one if required by the Authority, until the Relevant

Reporting Bank has been notified by the Authority that the Relevant Reporting Bank may calculate the ILM in accordance with paragraph 9.1.2(b) for the calculation of K_{ORC}.[912]

9.1.11 Nothing in paragraph 9.1.10 prejudices or affects any right of the Authority to take any action, including any regulatory action, for any breach by a Relevant Reporting Bank of paragraph 9.1.9.

9.1.12 To avoid doubt, each of the following is treated as a separate breach of this Notice:

(a) a failure by a Relevant Reporting Bank to comply with paragraph 9.1.9;

(b) a failure by a Relevant Reporting Bank to comply with paragraph 9.1.10.

9.1.13 Subject to paragraphs 9.1.14 and 9.1.15, a Relevant Reporting Bank must ensure that its internal loss data used for the calculation of the LC is based on an observation period of the past 10 consecutive financial years, and the Relevant Reporting Bank must meet the criteria set out in paragraphs 9.1.16 to 9.1.41 in relation to the internal loss data.

9.1.14 Despite paragraph 9.1.13, where a Relevant Reporting Bank does not have internal loss data for the past 10 consecutive financial years in relation to which the Relevant Reporting Bank meets the criteria set out in paragraphs 9.1.16 to 9.1.41, the Relevant Reporting Bank may, subject to the Authority's written approval, use a minimum observation period of the past 5 consecutive financial years of internal loss data for the calculation of the LC, provided that the Relevant Reporting Bank meets the criteria set out in paragraphs 9.1.16 to 9.1.41 in relation to the internal loss data. Where such approval is granted by the Authority, the Relevant Reporting Bank must include all past consecutive financial years of internal loss data available for the calculation of the LC, including internal loss data that is available beyond the past 5 consecutive financial years, provided that the Relevant Reporting Bank meets the criteria set out in paragraphs 9.1.16 to 9.1.41 in relation to the internal loss data.

9.1.15 Despite paragraph 9.1.13, where a Relevant Reporting Bank referred to in paragraph 9.1.9(b) does not have internal loss data for at least the past 5 consecutive financial years in relation to which the Relevant Reporting Bank meets the criteria set out in paragraphs 9.1.16 to 9.1.41, the Authority may require the Relevant Reporting Bank to use less than 5 consecutive financial years of internal loss data for the calculation of the LC, if –

(a) the Relevant Reporting Bank meets the criteria set out in paragraphs 9.1.16 to 9.1.41 in relation to the internal loss data;

(b) the Relevant Reporting Bank's ILM is greater than one; and

(c) the Authority believes the losses are representative of the Relevant Reporting Bank's operational risk exposure.

[912] The Authority will consider whether the Relevant Reporting Bank has remedied the deficiencies and demonstrated to the satisfaction of the Authority that it is able to meet all the criteria set out in paragraphs 9.1.16 to 9.1.41.

Otherwise, the Relevant Reporting Bank must set the ILM equal to one in the calculation of K_{ORC} in paragraph 9.1.2 (that is, calculate K_{ORC} based solely on the BIC).

General Criteria

9.1.16 A Relevant Reporting Bank must have documented procedures and processes for the identification, collection and treatment of internal loss data, and must subject such procedures and processes to –

(a) validation before the Relevant Reporting Bank's use of the internal loss data for the calculation of K_{ORC}; and

(b) regular reviews by IA or an external third party independent of the Relevant Reporting Bank.

9.1.17 A Relevant Reporting Bank must ensure that its internal loss data captures all activities and exposures from all geographic locations and systems.

9.1.18 A Relevant Reporting Bank must have processes to independently review the comprehensiveness and accuracy of its internal loss data.

9.1.19 A Relevant Reporting Bank must map its internal loss data into the relevant Level 1 operational loss event type categories as defined in Table 9B-1 and must document the criteria for allocating operational risk losses to the specified Level 1 operational loss event type categories. The Relevant Reporting Bank must provide the mapping of its internal loss data, and the criteria for allocating operational risk losses, to the relevant Level 1 operational loss event type category as set out in Table 9B-1 to the Authority upon request.

9.1.20 A Relevant Reporting Bank must include an operational loss event in its internal loss data set if the net loss of that operational loss event, calculated in accordance with paragraph 9.1.22, is equal to or above S$30,000.

9.1.21 For the purposes of the calculation of the LC in paragraph 9.1.2(b)(i) –

(a) a Relevant Reporting Bank referred to in paragraph 9.1.9(a) must include an operational loss event if the net loss of that operational loss event, calculated in accordance with paragraph 9.1.22, is equal to or above S$30,000; and

(b) a Relevant Reporting Bank referred to in paragraph 9.1.9(b) must include an operational loss event if the net loss of that operational loss event, calculated in accordance with paragraph 9.1.22, is equal to or above S$150,000.

9.1.22 For the purposes of calculating the LC, a Relevant Reporting Bank must calculate the net loss of an operational loss event by summing all of the operational loss event's gross losses inside the calculation window of past 10 consecutive financial years or the observation period of the internal loss data as set out in paragraph 9.1.14 or 9.1.15, whichever is applicable, and subtracting all recoveries inside the calculation window of

past 10 consecutive financial years or the observation period of the internal loss data as set out in paragraph 9.1.14 or 9.1.15, whichever is applicable. A Relevant Reporting Bank must use the date of accounting of the gross losses and recoveries to determine whether they are inside the calculation window of past 10 consecutive financial years or the observation period of the internal loss data as set out in paragraph 9.1.14 or 9.1.15, whichever is applicable. For a legal event, the Relevant Reporting Bank must use the date when a reserve is recognised for the potential loss impact, as the date of accounting. A Relevant Reporting Bank must ensure that tax effects[913] are not included as recoveries.

9.1.23 To avoid doubt, for the purposes of paragraphs 9.1.20 and 9.1.21, a Relevant Reporting Bank must include an operational loss event in its internal loss data set and in the calculation of the LC in paragraph 9.1.2(b)(i), if the cumulative net loss impact of the operational loss event in the calculation window of past 10 consecutive financial years or the observation period of the internal loss data as set out in paragraph 9.1.14 or 9.1.15, whichever is applicable, is equal to or above the relevant thresholds stated in paragraphs 9.1.20 and 9.1.21, even if the operational loss event does not result in a net loss equal to or above the relevant threshold stated in paragraphs 9.1.20 and 9.1.21 in any individual financial year.[914]

9.1.24 Subject to paragraphs 9.1.20 and 9.1.21, for operational loss events arising from a Relevant Reporting Bank's activities that are outsourced to service providers external to the Relevant Reporting Bank, the Relevant Reporting Bank must include financial impacts of operational loss events that are payable by the Relevant Reporting Bank and exclude financial impacts of operational loss events that are payable by the service provider (rather than by the Relevant Reporting Bank) in its internal loss data set.

9.1.25 A Relevant Reporting Bank must convert its operational risk losses denominated in a foreign currency into Singapore dollars using the same exchange rate that the Relevant Reporting Bank uses to convert these operational risk losses in the Relevant Reporting Bank's financial statements of the period the operational risk losses were accounted for.

9.1.26 A Relevant Reporting Bank must collect all of the following information for each operational loss event:

(a) the gross loss amounts;

(b) reference dates of the operational loss event, including –

(i) the date when the operational loss event happened or first began ("date of occurrence"), where available;

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913 For example, reductions in corporate income tax liability due to operational risk losses.

914 For example, a Relevant Reporting Bank referred to in paragraph 9.1.9(a) must, when determining its K_{ORC} using a calculation window of financial years 2012 to 2021 –

(a) include in its internal loss data set and in its calculation of the LC, an operational loss event that results in a net loss impact of S$24,000 in 2012 and S$10,500 in 2012, because the net loss of the operational loss event inside the calculation window is S$34,500; and

(b) exclude from its internal loss data set and in its calculation of the LC, an operational loss event that results in a net loss impact of S$1.5 million in 2010 (outside of the calculation window), a net loss impact of S$450,000 in 2013 (inside the calculation window), and a recovery of S$750,000 in 2015 (inside the calculation window), because the net loss of the operational loss event inside the calculation window is negative.

(ii) the date on which the Relevant Reporting Bank became aware of the operational loss event ("date of discovery"); and

(iii) the date (or dates) when the operational loss event resulted in a loss, or when a reserve or provision was recognised against the potential loss impact, in the Relevant Reporting Bank's accounts ("date of accounting"). To avoid doubt, for a loss referred to in paragraph 9.1.31(d), the date of accounting refers to the date (or dates) when the loss was temporarily booked in transitory or suspense accounts;

(c) the recoveries of gross loss amounts;

(d) descriptive information about the drivers or causes of the operational loss event, where the level of detail of any descriptive information must be commensurate with the size of the gross loss amounts.

9.1.27 Subject to paragraphs 9.1.20 and 9.1.21, a Relevant Reporting Bank must include operational loss events related to credit risk that are not accounted for in credit RWA in the internal loss data set. A Relevant Reporting Bank must not include any operational loss event related to credit risk that is accounted for in credit RWA in the internal loss data set.

9.1.28 Subject to paragraph 9.1.20 and 9.1.21, a Relevant Reporting Bank must include operational loss events related to market risk in the internal loss data set.

Specific criteria

9.1.29 A Relevant Reporting Bank must develop policies and procedures to identify gross loss amounts and the reference dates mentioned in paragraph 9.1.26(b), and to group losses that relate to a single operational loss event.

9.1.30 A Relevant Reporting Bank must be able to identify the gross loss amounts, non-insurance recoveries, and insurance recoveries for all operational loss events. For the purposes of calculating the net loss of an operational loss event pursuant to paragraph 9.1.22, a Relevant Reporting Bank must use recoveries to reduce losses only after the Relevant Reporting Bank receives payment. A Relevant Reporting Bank must provide evidence of its receipt of such payments to the Authority upon request.

9.1.31 A Relevant Reporting Bank must include all of the following items in the computation of gross losses of an operational loss event:

(a) direct charges, including impairments and settlements, to the Relevant Reporting Bank's P&L accounts and write-downs due to the operational loss event;

(b) costs incurred as a consequence of the operational loss event including external expenses with a direct link to the operational loss event[915] and

[915] For example, legal expenses directly related to the operational loss event and fees paid to advisors, attorneys or suppliers.

costs of repair or replacement, incurred to restore the position that was prevailing before the operational loss event[916];

(c) reserves or provisions recognised in the Relevant Reporting Bank's accounts against the potential loss impact arising from the operational loss event;

(d) losses stemming from the operational loss event with a definitive financial impact, which are temporarily booked in transitory or suspense accounts and are not yet reflected in the P&L ("pending losses")[917]. A Relevant Reporting Bank must include pending losses in the internal loss data set within a time period commensurate with the size and age of the pending item;

(e) negative economic impacts booked in a financial year, due to the operational loss event impacting the cash flows or financial statements of previous financial years ("timing losses")[918]. A Relevant Reporting Bank must include timing losses in the internal loss data set when they are due to an operational loss event that spans more than one financial year.

9.1.32 When a Relevant Reporting Bank makes a provision against a potential loss impact arising from an operational loss event, the Relevant Reporting Bank must include the provision amount as a gross loss in its internal loss data. When the Relevant Reporting Bank subsequently recognises a charge-off[919], the Relevant Reporting Bank must add the difference between the initial provision and the charge-off (if any) to the gross loss calculation.[920]

9.1.33 When a Relevant Reporting Bank refunds a customer that was overbilled due to an operational failure –

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916 For example, in the case where an asset of a Reporting Bank is damaged or destroyed, the costs incurred in relation to the reduction in the carrying amount of the asset and the costs of repair or replacement of the asset, without prejudice of additional indirect losses, are as follows:
(a) where the asset is not replaced or repaired by the Reporting Bank, the reduction in the carrying amount of the asset, and any residual clean-up or disposal costs;
(b) where the asset is replaced or fully repaired by the Reporting Bank, the cost of replacing or repairing the asset, and any residual clean-up or disposal costs;
(c) where the asset is partially repaired by the Reporting Bank (i.e. the carrying amount of the asset is lower than prior to the operational loss event), the sum of the cost of repairing the asset, the reduction in the carrying amount of the asset after the repair, relative to the carrying amount of the asset prior to the operational loss event, and any residual clean-up or disposal costs.

917 For instance, the impact of some operational loss events (e.g. legal events, damage to physical assets) may be known and clearly identifiable before these operational loss events are first recognised as a reserve in the Relevant Reporting Bank's accounts. Moreover, the way in which banks determine when to first recognise a reserve can vary across banks.

918 Timing impacts typically relate to the occurrence of operational risk loss that result in the temporary distortion of a Relevant Reporting Bank's financial accounts (e.g. revenue overstatement, accounting errors and mark-to-market errors). While these operational loss events do not represent a true financial impact on the Relevant Reporting Bank (net impact over time is zero), if the error continues across more than one financial year, it may represent a material misrepresentation of the Relevant Reporting Bank's financial statements.

919 For example, a settlement.

920 For example, if a Relevant Reporting Bank makes a S$1 million provision for a legal event in 2018 and then settles the legal event for S$1.2 million in 2019, the Relevant Reporting Bank's gross loss is S$1 million in 2018 and S$0.2 million in 2019 (that is, the S$1.2 million settlement in 2019 minus the S$1 million provision in 2018).

(a) if the refund is provided in the same financial year as the overbilling and no misrepresentation of the Relevant Reporting Bank's financial statements occurs, the Relevant Reporting Bank must recognise no operational risk loss for the overbilling; and

(b) if the refund is provided in a subsequent financial year to the overbilling, the Relevant Reporting Bank must include the timing loss as a gross loss in the financial year that the refund is provided, and must not recognise the overbilling as a recovery.

9.1.34 A Relevant Reporting Bank must exclude all of the following items from the computation of gross losses of an operational loss event:

(a) costs of general maintenance contracts on property, plant or equipment;

(b) expenditures to enhance the business after the operational risk losses[921];

(c) insurance premiums.

9.1.35 For the purposes of paragraph 9.1.22, a Relevant Reporting Bank must allocate gross losses and recoveries arising from an operational loss event, including an operational loss event identified pursuant to paragraph 9.1.36, but posted to the accounts over several financial years, to the corresponding financial year in which the losses are recognised, in line with their accounting treatment.

9.1.36 A Relevant Reporting Bank must group all gross losses and recoveries caused by a common underlying trigger or root cause into one operational loss event in its internal loss data set.[922]

9.1.37 A Relevant Reporting Bank must have a clear, well-documented policy for determining the criteria for grouping multiple operational risk losses into an operational loss event ("loss event group policy") and must have processes in place to ensure all of the following:

(a) there is a bank-wide understanding of the loss event group policy;

(b) there is appropriate sharing of internal loss data across businesses to implement the loss event group policy effectively;

(c) there are adequate controls, including the implementation of independent reviews, to assess ongoing compliance with the loss event group policy.

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921 For example, upgrades, improvements, risk assessment initiatives and enhancements.

922 For example, a Relevant Reporting Bank must regard each of the following as one operational loss event in its internal loss data set:
(a) a natural disaster which causes operational risk losses in multiple locations or across an extended time period or both;
(b) a breach of a Relevant Reporting Bank's information security which results in the disclosure of confidential customer information, and as a result, fraud-related losses incurred by multiple customers that the Relevant Reporting Bank must reimburse, and remediation expenses such as credit card re-issuances or credit history monitoring services.

Exclusion of losses from and inclusion of losses in the internal loss data set

9.1.38 A Relevant Reporting Bank may exclude operational loss events that are no longer relevant to the Relevant Reporting Bank's risk profile from its internal loss data set, with immediate effect upon obtaining the written approval of the Authority, and subject to any conditions or restrictions that the Authority may impose. The Authority may consider granting such approval, if –

(a) the Relevant Reporting Bank rarely requests for the exclusion of operational loss events and the Relevant Reporting Bank's request is supported by strong justification;

(b) the Relevant Reporting Bank demonstrates that it is unlikely for the cause of the operational loss event to occur in other areas of the Relevant Reporting Bank's operations[923];

(c) the Relevant Reporting Bank provides evidence, to the Authority's satisfaction, that for the purposes of calculating the LC, the net loss arising from the operational loss event to be excluded is greater than 15% of the Relevant Reporting Bank's average annual net losses over the past 10 consecutive financial years or the observation period of the internal loss data as set out in paragraph 9.1.14 or 9.1.15, whichever is applicable, or such other higher percentage that the Authority may specify; and

(d) the Relevant Reporting Bank provides evidence, to the Authority's satisfaction, that the operational loss event (except for losses related to divested businesses) to be excluded has been included in the Relevant Reporting Bank's internal loss data set for a minimum period of one financial year, or such other longer minimum period that the Authority may specify.

9.1.39 Upon obtaining the Authority's written approval in paragraph 9.1.38, a Relevant Reporting Bank must report the operational RWA taking into account such exclusion in the next quarterly submission of reporting schedules under Part XII.

9.1.40 Operational loss events relating to the reform of benchmark reference rates[924] do not fulfil the criteria for exclusion from a Relevant Reporting Bank's loss data set pursuant to paragraph 9.1.38. To avoid doubt, not all costs related to the implementation of the reform of benchmark reference rates represent operational risk losses.[925]

9.1.41 A Relevant Reporting Bank must include every business acquired by the Relevant Reporting Bank and every entity merged with the Relevant Reporting Bank in its

[923] For example, for settled legal exposures and divested businesses, the Relevant Reporting Bank must demonstrate that there are no similar or residual legal exposures and that the excluded operational loss event has no relevance to other activities or products, that the Relevant Reporting Bank continues to deal in.

[924] For example, operational risk losses incurred over an extended period of time if a Relevant Reporting Bank fails to identify and remediate relevant legacy contracts prior to the discontinuation of a benchmark rate.

[925] For example, legal fees incurred to amend contracts to prepare for the new reference rates in accordance with relevant legal rules, or costs related to adjustments to IT systems, would not represent operational risk losses.

internal loss data set, with immediate effect after each respective acquisition or merger. The Relevant Reporting Bank must incorporate, in its internal loss data set, audited financial information (from before the acquisition or merger, as the case may be) of a business that is acquired or an entity that is merged, for the period relevant to the LC calculation. The Relevant Reporting Bank must report the operational RWA taking into account such inclusion in the next quarterly submission of reporting schedules under Part XII. Where a Relevant Reporting Bank does not have audited financial information (from before the acquisition or merger, as the case may be), of any business that is acquired or any entity that is merged, it must obtain the Authority's written approval to use an alternative calculation methodology.

Annex 9A

DEFINITIONS OF BI COMPONENTS

Table 9A-1 – Definitions of BI components

BI component	P&L or balance sheet items	Description	Examples of sub-items
ILDC	Interest income (P&L item)	Interest income from all financial assets and other interest income	• Interest income from loans and advances, assets available for sale, assets held to maturity, trading assets, financial leases and operating leases • Interest income from hedge accounting derivatives • Other interest income • Profits from leased assets
	Interest expenses (P&L item)	Interest expenses from all financial liabilities and other interest expenses	• Interest expenses from deposits, debt securities issued, financial leases, and operating leases • Interest expenses from hedge accounting derivatives • Other interest expenses • Losses from operating leased assets • Depreciation and impairment of operating leased assets
	Interest earning assets (balance sheet item)	Total gross outstanding loans, advances, interest bearing securities (including government bonds), interest rate derivative assets that affect a Reporting Bank's interest income based on the Accounting Standards and lease assets measured at the end of each financial year. A Reporting Bank must measure interest rate derivative assets based on the fair value of the asset as at the end of each financial year, and include interest rate derivative assets with positive fair values as part of interest earning assets (balance sheet item), but exclude those with negative fair values. [MAS Notice 637 (Amendment) 2024]	

BI component	P&L or balance sheet items	Description	Examples of sub-items
	Dividend income (P&L item)	Dividend income from investments in stocks and funds not consolidated in the Reporting Bank's financial statements, including dividend income from non-consolidated subsidiaries and associates, of the Reporting Bank, and joint ventures entered into by the Reporting Bank	
SC	Fee and commission income (P&L item)	Income received from providing advice and services. Includes outsourcing fees received by the Reporting Bank for the supply of financial services.	Fee and commission income from the provision of services related to – • Securities (including issuance, origination, reception, transmission, execution of orders on behalf of customers); • Clearing and settlement; • Asset management; • Custody; • Fiduciary transactions; • Payment; • Structured finance; • Securitisations; • Loan commitments and guarantees; and • Foreign currency transactions
	Fee and commission expenses (P&L item)	Expenses paid for receiving advice and services. Includes outsourcing fees paid by the Reporting Bank for the supply of financial services, but not outsourcing fees paid for the supply of non-financial services such as logistical, IT and human resources services	Fee and commission expenses from the receipt of services relating to – • Securities (including issuance, origination, reception, transmission, execution of orders on behalf of customers); • Clearing and settlement; • Asset management; • Custody; • Fiduciary transactions; • Payment; • Structured finance; • Securitisations; • Loan commitments and guarantees; and • Foreign currency transactions
	Other operating	Income from ordinary operations	• Rental income from investment properties

BI component	P&L or balance sheet items	Description	Examples of sub-items
	income (P&L item)	of the Reporting Bank not included in other BI items A Reporting Bank must include income from operating leases in ILDC and exclude the same from SC.	• Gains from non-current assets and disposal groups (as defined in FRS 105) classified as held for sale but that do not qualify as discontinued operations (as defined in FRS 105) (paragraph 37 of FRS 105)
	Other operating expenses (P&L item)	Expenses and losses from ordinary operations of the Reporting Bank not included in other BI items A Reporting Bank must include expenses from operating leases in ILDC and exclude the same from SC.	• Losses from non-current assets and disposal groups classified as held for sale but that do not qualify as discontinued operations (paragraph 37 of FRS 105) • Losses incurred as a consequence of operational loss events such as fines, penalties, settlements, replacement cost of damaged assets, where reserves or provisions have not been recognised in the Reporting Bank's accounts in previous financial years • Expenses related to the recognition of reserves or provisions in the Reporting Bank's accounts for operational loss events
FC	Net P&L on the trading book (P&L item)	• Net profit / loss on trading assets and trading liabilities such as derivatives, debt securities, equity securities, loans and advances, short positions, other assets and liabilities • Net profit / loss from hedge accounting • Net profit / loss from differences in exchange rates	

BI component	P&L or balance sheet items	Description	Examples of sub-items
	Net P&L on the banking book (P&L item)	• Net profit / loss on financial assets and liabilities measured at fair value through profit and loss • Realised gains / losses on financial assets and liabilities not measured at fair value through profit and loss (such as loans and advances, assets available for sale, assets held to maturity, and financial liabilities measured at amortised cost) • Net profit / loss from hedge accounting • Net profit / loss from differences in exchange rates	

Annex 9B

OPERATIONAL LOSS EVENT TYPE CLASSIFICATION

Table 9B-1 – Operational loss event type classification

Operational loss event type category (Level 1)	Definition	Operational loss event type sub-category (Level 2)	Activity examples (Level 3)
Internal fraud	Losses due to acts of a type intended to defraud, misappropriate property or circumvent regulations, the law or company policy, excluding diversity and discrimination events[926], which involves at least one internal party[927]	Unauthorised activity	• Transactions intentionally not reported • Unauthorised transactions, with monetary loss incurred • Intentional mismarking of position
		Theft and fraud	• Fraud / credit fraud / worthless deposits • Theft / extortion / embezzlement / robbery • Misappropriation of assets • Malicious destruction of assets • Forgery • Check kiting • Smuggling • Account takeover / impersonation etc. • Wilful non-compliance / evasion of tax obligations • Bribes / kickbacks • Insider trading (not on the Relevant Reporting Bank's account)
External fraud	Losses due to acts of a type intended to defraud, misappropriate property or circumvent the law, by a third party	Theft and fraud	• Theft / robbery • Forgery • Check kiting
		Systems security	• Damage caused by hacking of IT systems • Theft of information (with monetary loss)

926 Diversity and discrimination events are included in the Level 1 operational loss event type category of "Employment practices and workplace safety".

927 An internal party of a Relevant Reporting Bank would include an employee, director or shareholder of the Relevant Reporting Bank.

Operational loss event type category (Level 1)	Definition	Operational loss event type sub-category (Level 2)	Activity examples (Level 3)
Employment practices and workplace safety	Losses arising from acts inconsistent with employment, health or safety laws or agreements, from payment of personal injury claims, or from diversity / discrimination events	Employee relations	• Compensation, benefit, termination issues • Organised labour activity
		Safe environment	• Personal injury claims (e.g. slip and fall etc.) • Contraventions of rules and regulations related to employee health and safety • Compensation to workers (e.g. for workplace injury)
		Diversity and discrimination	• All issues relating to discrimination
Customers, products and business practices	Losses arising from – (i) an unintentional or negligent failure to meet a professional obligation to specific customers (including fiduciary and suitability requirements); (ii) improper business practices; or (iii) the nature or design of a product.	Suitability, disclosure and fiduciary	• Fiduciary breaches / guideline[928] violations • Suitability / disclosure issues (e.g. Know Your Customer (KYC), etc.) • Customer information disclosure violations • Breach of rules and regulations relating to the privacy of customers • Aggressive sales • Misuse of confidential information • Lender liability
		Improper business or market practices	• Antitrust practices • Improper trade / market practices • Market manipulation • Insider trading (on the Relevant Reporting Bank's account) • Unlicensed activity • Money laundering • Account churning
		Product flaws	• Product defects • Model errors

[928] Guidelines include those that are issued by a Relevant Reporting Bank or guidelines issued by other entities that a Relevant Reporting Bank should adhere to.

Operational loss event type category (Level 1)	Definition	Operational loss event type sub-category (Level 2)	Activity examples (Level 3)
		Selection, sponsorship and exposure	• Failure to investigate customer per guidelines • Exceeding internal or regulatory limits on customer exposure
		Advisory activities	• Disputes over performance of advisory activities
Damage to physical assets	Losses arising from loss or damage to physical assets from natural disaster or other external events	Disasters and other events	• Losses as a result of natural disasters • Losses as a result of other events from external sources not related to natural disasters (e.g. terrorism, vandalism)
Business disruption and system failures	Losses arising from disruption of business or system failures	Systems	• Hardware issue • Software issue • Telecommunications issue • Utility outage / disruptions
Execution, delivery and process management	Losses from failed transaction processing or process management occurring in the course of relationships with trade counterparties and vendors	Transaction capture, execution and maintenance	• Miscommunication • Data entry, maintenance or loading error • Missed deadline or responsibility • Model / system misoperation • Accounting error / entity attribution error • Other task misperformance • Delivery failure • Collateral management failure • Reference data maintenance issues
		Monitoring and reporting	• Failure to comply with mandatory reporting obligation(s) • Loss incurred due to inaccurate report, whether or not issued by the Relevant Reporting Bank

Operational loss event type category (Level 1)	Definition	Operational loss event type sub-category (Level 2)	Activity examples (Level 3)
		Customer intake and documentation	• Customer permissions / disclaimers missing • Legal documents missing / incomplete
		Customer account management	• Unapproved access given to accounts of a customer • Loss incurred due to incorrect customer records • Loss or damage of customer assets caused by the negligence of an employee of the Relevant Reporting Bank
		Trade counterparties	• Counterparties failing to perform its contractual obligations • Miscellaneous counterparty disputes
		Vendors and suppliers	• Outsourcing issues • Vendor disputes

PART X: SUPERVISORY REVIEW PROCESS

Division 1: Introduction

10.1.1 Part X sets out the key principles of the supervisory review process, risk management guidance, and supervisory transparency and accountability with respect to banking risks. It seeks to encourage a Reporting Bank to develop and use better risk management techniques in monitoring and managing its risks, and to ensure that a Reporting Bank has in place a rigorous process for determining the adequacy of its capital to support all risks to which it is exposed. This process is known as the ICAAP. A thorough and comprehensive ICAAP is a vital component of a strong risk management programme. A Reporting Bank must develop its own ICAAP and maintain capital levels that are commensurate with its risk profile and control environment.

10.1.2 The Authority will review a Reporting Bank's ICAAP to evaluate how well the Reporting Bank is assessing its capital needs relative to its risks. The Authority may impose higher regulatory capital requirements on a Reporting Bank to buffer the Reporting Bank against the higher risk of unexpected losses resulting from inadequate controls or risk management process weaknesses. Despite any higher regulatory capital requirements, a Reporting Bank must address weaknesses in internal controls or risk management processes.[929] Aside from requiring additional capital, the Authority may also apply other supervisory measures to address the heightened risk or risk management deficiencies of a Reporting Bank. The Authority may intervene at an early stage to prevent capital levels of a Reporting Bank from falling below the appropriate levels required to support the risk characteristics of the Reporting Bank, and to require swift remedial action from the Reporting Bank if the appropriate level of capital is not maintained or restored by the Reporting Bank.

10.1.3 A Reporting Bank must maintain an appropriate level of capital above minimum Pillar 1 requirements so that all risks of the Reporting Bank – both on- and off-balance sheet – are adequately covered, particularly those related to complex capital market activities[930].

[929] Higher regulatory capital requirements serve as an interim measure until permanent measures are implemented by a Reporting Bank to address such weaknesses.

[930] This will help ensure that a Reporting Bank maintains sufficient capital for risks not adequately addressed through Pillar 1 and that it will be able to operate effectively throughout a severe and prolonged period of financial market stress or an adverse credit cycle.

Division 2: ICAAP

Sub-division 1: General Requirements

10.2.1 A Reporting Bank is responsible for developing an ICAAP. A Reporting Bank must be able to demonstrate to the Authority that its ICAAP is comprehensive and that its chosen internal capital targets are well founded and consistent with its overall risk profile and operating environment, and that its capital levels are adequate in view of its overall risk profile and operating environment.

10.2.2 A Reporting Bank must ensure that the outcome of the ICAAP is not a static capital target. A Reporting Bank must ensure the following:

(a) the ICAAP takes into account the current stage of the business cycle of the Reporting Bank and is a forward-looking process capable of timely response to changes in the risk profile and business strategies of a Reporting Bank, as well as its external environment;

(b) the ICAAP addresses both short- and long-term needs and considers the prudence of building excess capital over benign periods of the credit cycle and also to withstand a severe and prolonged market downturn;

(c) the ICAAP incorporates rigorous stress testing and scenario analysis that identify possible events or changes in market conditions that could adversely impact the Reporting Bank;

(d) the results of these stress tests and analyses are incorporated, where applicable, into the capital adequacy assessment of the Reporting Bank.

10.2.3 A Reporting Bank must implement its ICAAP in a methodical manner and ensure that the ICAAP is comprehensively documented in the policies, processes and procedures of a Reporting Bank. A Reporting Bank may vary the sophistication of its ICAAP according to the size, complexity, and business strategy of the Reporting Bank. At a minimum, a Reporting Bank must have the following features in its ICAAP:

(a) Board and senior management oversight;

(b) comprehensive assessment of risks;

(c) sound capital assessment;

(d) monitoring and reporting;

(e) independent review.

10.2.4 A Reporting Bank must take into account the details set out in Annex 10A when assessing the comprehensiveness and rigour of its ICAAP.

Sub-division 2: Board and Senior Management Oversight

10.2.5 A Reporting Bank must ensure that the Board and its senior management understand the nature and level of risks being taken by the Reporting Bank, and put in place appropriate risk management processes to mitigate the risks[931]. A Reporting Bank must maintain adequate capital beyond the regulatory minimum to support such risks and to take into account the following considerations:

(a) level of creditworthiness of the Reporting Bank to be achieved in markets, that is higher than that indicated by the minimum regulatory capital requirements;

(b) fluctuations in capital adequacy ratios, as a result of changes in type and volume of activities and risk exposures in the normal course of business;

(c) cost of capital raising, especially in situations where capital injections need to be done quickly or at a time when market conditions are unfavourable;

(d) potential breach of the minimum regulatory capital requirements and regulatory actions in such an event;

(e) risks arising from the features of the countries or jurisdictions and markets in which the Reporting Bank operates.

10.2.6 A Reporting Bank must ensure that the Board and its senior management bear ultimate responsibility for ensuring a sound risk management framework, strong internal controls and a robust ICAAP, setting capital targets that are commensurate with the Reporting Bank's risk profile and control environment, and ensuring that the Reporting Bank has adequate capital to support its risks beyond the regulatory requirements. In this regard, the Reporting Bank must ensure that the Board defines the Reporting Bank's risk appetite, establishes an acceptable level of risks that the Reporting Bank may take, establishes the capital strategy of the Reporting Bank, and regularly verifies whether the Reporting Bank's system of internal controls is adequate. A Reporting Bank must also ensure that its senior management –

(a) performs an analysis of the current and future capital requirements of the Reporting Bank in relation to its strategic objectives;

(b) establishes a strategic plan which clearly outlines the Reporting Bank's capital needs, anticipated capital expenditures, desired capital levels, and external capital sources;

(c) establishes frameworks for assessing the categories of risks facing the Reporting Bank and develops systems for relating these risks to the capital level of the Reporting Bank;

(d) ensures that the Reporting Bank's risk management framework includes detailed policies that set specific prudential limits which apply across the

[931] A sound risk management framework is essential for the effective assessment of the adequacy of the capital position of a Reporting Bank.

banking group on the Reporting Bank's activities, which are consistent with its risk taking appetite and capacity;

(e) establishes a method for monitoring compliance with internal policies on risk assessment and the processes for relating risks to capital levels;

(f) institutes a strong internal control culture throughout the Reporting Bank, including the adoption of written policies and procedures; and

(g) communicates the internal controls and written policies and procedures throughout the Reporting Bank.

10.2.7 A Reporting Bank must ensure that the Board reviews and approves the target level and composition of capital, and the process for setting and monitoring such targets at least annually, to ensure congruence between the risk profile and capital adequacy of the Reporting Bank.

10.2.8 A Reporting Bank must ensure that its senior management is responsible for developing a risk management framework and ensuring that the detail and sophistication of the risk management processes are appropriate in light of its risk profile, size, complexity and business strategy, and integrating the ICAAP with the capital planning and management processes of the Reporting Bank.

10.2.9 In this regard, a Reporting Bank must ensure that its senior management, at a minimum –

(a) establishes robust policies and procedures to identify, measure and report all material risks;

(b) evaluates the level and trend of material risks and their effect on capital levels;

(c) evaluates the sensitivity and reasonableness of key assumptions used in the capital assessment and measurement system;

(d) determines if the Reporting Bank holds sufficient capital against the risks facing the Reporting Bank;

(e) assesses future capital needs based on the risk profile of the Reporting Bank and make necessary adjustments to its strategic plan; and

(f) subjects the ICAAP to annual independent review for robustness and integrity.

10.2.10 A Reporting Bank must ensure that every subsidiary (including subsidiaries that are excluded from consolidation) of a Reporting Bank that is a financial institution regulated by the Authority or a financial services regulatory authority outside Singapore complies with the regulatory capital requirements imposed on that subsidiary by the Authority or the financial services regulatory authority of that subsidiary, and such subsidiary is adequately capitalised at all times.

Sub-division 3: Comprehensive Risk Assessment

10.2.11 A Reporting Bank must ensure that its ICAAP identifies and assesses all material risks. In this respect, a Reporting Bank must ensure that the ICAAP addresses –

(a) credit risk, market risk and operational risk, captured under Pillar 1;

(b) risks not fully captured under Pillar 1[932];

(c) risks that are not taken into account by Pillar 1[933]; and

(d) external factors outside the direct control of the Reporting Bank, including changes in regulations, accounting rules and the economic environment[934].

10.2.12 A Reporting Bank must ensure that its senior management puts in place risk management systems and processes that are robust and comprehensive, and be capable of capturing the nature and magnitude of all material risks faced by the Reporting Bank, not limited to credit, market, liquidity, operational, reputational, legal and strategic risks. A Reporting Bank must consider risks that do not appear to be significant in isolation, but when combined with other risks could lead to material losses. A Reporting Bank must identify the risks inherent in its business and determine how these risks should be incorporated into its ICAAP.

10.2.13 A Reporting Bank must fully document the risk assessment process and must be able to demonstrate to the Authority that all material aspects of risks have been considered and accounted for in its ICAAP.

10.2.14 A Reporting Bank must perform regular reviews of its ICAAP to ensure that all the risks identified continue to be relevant and accounted for, and that new risks are incorporated into the ICAAP on a timely basis. A Reporting Bank must also make adjustments to its ICAAP in light of changes in its operating profile or operating environment.

10.2.15 For each material risk identified in its ICAAP, a Reporting Bank must incorporate the following into its risk assessment and management process:

(a) a Reporting Bank must conduct detailed analyses to determine the effectiveness and appropriateness of risk management techniques in controlling the risks identified;

(b) a Reporting Bank must ensure that the risk assessments are consistent and objective;

(c) a Reporting Bank must incorporate changes in its risk profile[935] into its risk assessments on a timely basis;

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932 For example, credit concentration risk.

933 For example, IRRBB, liquidity risk, business risk, reputational risk, strategic risk or concentration risk.

934 For example, business cycle effects.

935 These changes may result from the introduction of new products or activities, changes in business volumes, or changes in the operating environment.

(d) a Reporting Bank must send to the Board and its senior management regular reports on the Reporting Bank's risk profile and capital needs;

(e) a Reporting Bank must not rely solely on quantitative methods to assess the risk, and must also use qualitative methods[936] to assess and manage the risk;

(f) a Reporting Bank must ensure the integrity of data used in its risk measurement process and such data is verifiable.

Sub-division 4: Sound Capital Assessment

10.2.16 A Reporting Bank must state its objectives in deciding how much capital to hold. The Reporting Bank must ensure that the capital objectives go beyond meeting the regulatory capital requirements set out in Part IV[937]. In particular, the Reporting Bank must explicitly state its expected future capital requirements and how it plans to meet those requirements (including under stressed situations). A Reporting Bank must ensure that the capital management process makes allowances for divergences and unexpected events.

10.2.17 A Reporting Bank must assess whether its long-run capital objectives differ significantly from its short-run capital objectives. As it may take time for a Reporting Bank to raise new capital, the Reporting Bank must make allowances for unexpected events, including putting in place contingency plans for raising additional capital.

10.2.18 A Reporting Bank must hold capital for uncertainties in the precision of risk measures and volatility of exposures.

10.2.19 A Reporting Bank must be able to demonstrate to the satisfaction of the Authority that its approach of relating its capital to the risks it is exposed to is conceptually sound, and that the output and results of the ICAAP are reasonable, taking into account the Reporting Bank's strategic focus and business plans.

Sub-division 5: Independent Review

10.2.20 A Reporting Bank must ensure that the systems for assessing the risks to which it is exposed and for relating those risks to the capital level of the Reporting Bank are reviewed independently by persons other than those responsible for the design or implementation of the ICAAP. A Reporting Bank must also ensure that its risk management processes and internal controls are frequently monitored and tested independently, to ensure that the information on which decisions are based is accurate so that processes fully reflect management policies and that regular reporting, including the reporting of limit breaches and other exception-based reporting, is undertaken effectively[938]. A

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936 For example, qualitative methods are relevant for some material risks such as reputational risk and strategic risk, which cannot be easily quantified.

937 The capital objectives may include the desired level of risk coverage, credit rating or degree of creditworthiness (hence funding access) of the Reporting Bank.

938 A Reporting Bank should refer to the BCBS' paper "Framework for Internal Control Systems in Banking Organisations" published in September 1998.

Reporting Bank must conduct a high level review[939] at least annually. Arising from this high level review, the Reporting Bank must identify risks that must be reviewed for the current year and risks that can be deferred for review to the next 2 to 3 years. The Reporting Bank must document the outcome of each high level review, including full justifications for its priority of review.

10.2.21 A Reporting Bank must ensure the following:

(a) the team responsible for the independent review is not in a position of conflict and does not stand to gain from particular review outcomes;

(b) policies and processes are established to ensure that the independent review team is insulated from influence and pressure from others who stand to gain from particular review outcomes;

(c) the independent review team possesses the necessary technical capabilities to perform the independent review in order to provide an effective challenge to persons responsible for the design and implementation of the ICAAP;

(d) the results of the independent review are reported to the Board and senior management of the Reporting Bank.

10.2.22 A Reporting Bank must ensure that the independent review covers the appropriateness of the capital assessment process, identification of large exposures and risk concentrations, the accuracy and completeness of data inputs, the reasonableness and validity of scenarios used, and stress testing and analysis of assumptions and inputs of the Reporting Bank.

[939] A Reporting Bank should complete a full cycle for the independent review within a period of 3 years.

Division 3: Supervisory Review

10.3.1 The Authority will review and assess the following as part of its risk-based approach to supervision:

(a) the ICAAP of a Reporting Bank;

(b) compliance by a Reporting Bank with the requirements set out in this Notice;

(c) the adequacy of capital maintained by a Reporting Bank.

10.3.2 The supervisory review of a Reporting Bank by the Authority includes the following areas:

(a) reviewing and evaluating a Reporting Bank's ICAAP and strategies, as well as a Reporting Bank's ability to monitor and ensure compliance with regulatory capital adequacy ratios;

(b) assessing whether a Reporting Bank complies with the minimum standards, qualifying criteria and requirements, including risk management standards and disclosure requirements, set out in this Notice for the use of internal methodologies, CRM techniques and securitisations to be recognised for regulatory capital purposes, on an ongoing basis;

(c) assessing whether a Reporting Bank complies with requirements and conditions set out in this Notice for the use of standardised approaches, and whether the use of various instruments that can reduce Pillar 1 capital requirements are utilised and understood as part of a sound, tested and properly documented risk management process;

(d) assessing a Reporting Bank's application of definition of default set out in Annex 7L and its impact on the adequacy of capital maintained by a Reporting Bank, focussing on the impact of deviations from the definition of default arising from the use of external data or internal data in accordance with paragraph 5.2(f), (g) and (h) of Annex 7X.

10.3.3 The Authority may place more reliance on the ICAAP results of a Reporting Bank if it has assessed the ICAAP to be robust and comprehensive. If the Authority is not satisfied with the outcomes from its review, the Authority may, among other things –

(a) require the Reporting Bank to take action to improve its risk management processes or lower the risks which it assumes;

(b) require the Reporting Bank to maintain additional capital;

(c) restrict the payment of dividends by the Reporting Bank;

(d) require the Reporting Bank to implement a satisfactory capital adequacy restoration plan, including plans to correct capital shortfalls in subsidiaries that are financial institutions regulated by the Authority or financial services regulatory authorities outside Singapore; and

(e) apply other supervisory measures to address the heightened risk or risk management deficiencies of the Reporting Bank[940].

10.3.4 The assessment process[941] of the Authority generally involves a review of the documentation of the Reporting Bank on the ICAAP, discussions between the Authority and the key management personnel of the Reporting Bank, on-site examinations and other methods the Authority may identify as appropriate for evaluating the robustness of the ICAAP of a Reporting Bank[942].

10.3.5 A Reporting Bank must furnish to the Authority such other information relating to the capital adequacy ratios and capitalisation level of the Reporting Bank, as may be requested by the Authority.

[940] For example, intensifying supervisory monitoring of the Reporting Bank or requiring the Reporting Bank to apply internal limits, strengthen the level of its provisions and reserves, or improve its internal controls.

[941] Following the assessment, a Reporting Bank should notify and engage the Authority in discussions if it plans to make material changes to its ICAAP.

[942] This is intended to foster dialogue between the Reporting Bank and the Authority, so that when deficiencies are identified, prompt and decisive action may be taken by the Authority to reduce risk or restore capital.

Annex 10A

SPECIFIC ISSUES IN ICAAP FOR MAIN RISK CATEGORIES AND TOPICS

Section 1: Introduction

1.1 This Annex sets out additional details on the expectations of the Authority with regard to the ICAAP of a Reporting Bank. While this document is intended to help a Reporting Bank in assessing the comprehensiveness and rigour of its ICAAP, a Reporting Bank must not construe this document as an exhaustive compliance checklist[943]. The following material risk categories and topics are covered in this Annex:

(a) Section 3 – Credit Risk, Concentration Risk, Counterparty Credit Risk and Securitisation Risk;

(b) Section 4 – Market Risk and Valuation Practices;

(c) Section 5 – Interest Rate Risk in the Banking Book;

(d) Section 6 – Operational Risk;

(e) Section 7 – Liquidity Risk;

(f) Section 8 – Reputational Risk;

(g) Section 9 – Other Risk Categories;

(h) Section 10 – Stress Testing Practices.

Section 2: General

2.1 In addition to the specific issues covered in the respective sections, a Reporting Bank must observe the following:

(a) a Reporting Bank must have a comprehensive risk management framework for each main risk category that the Reporting Bank identifies in its ICAAP. A Reporting Bank must ensure that its risk management framework for each risk category sets out clearly the policies and procedures of the Reporting Bank for the identification, assessment, monitoring and control or mitigation of each material risk, and be adequately documented. A Reporting Bank must set specific prudential limits that apply across the banking group on material risks relevant to the Reporting Bank's activities, which are consistent with its risk taking

[943] A Reporting Bank should refer to "A Sound Capital Planning Process: Fundamental Elements" and "Overview of Pillar 2 supervisory review practices and approaches" issued by the BCBS in January 2014 and June 2019, respectively. A Reporting Bank should also refer to other relevant risk management publications issued by the BCBS and the Authority. For example, the "Guidelines on Risk Management Practices" issued by the Authority, "Range of Practices and Issues in Economic Capital Frameworks" issued by the BCBS in March 2009, and "Supervisory guidance for managing risks associated with the settlement of foreign exchange transactions" issued by the BCBS in February 2013.

appetite and capacity. The Reporting Bank must define the limits in relation to its capital, total assets, earnings or, where adequate measures exist, its overall risk level[944]. The Reporting Bank must implement a process to review and update such policies, procedures and limits as appropriate;

(b) with respect to new or complex products and activities, a Reporting Bank must ensure that senior management understands the underlying assumptions regarding business models, valuation and risk management practices and evaluate the potential risk exposure if those assumptions fail;

(c) before a Reporting Bank launches any new product or undertakes any new activity, the Reporting Bank must ensure that the Board and senior management identify and review the changes in risks across the banking group arising from the new product or activity and ensure that the infrastructure and internal controls necessary to manage the related risks are in place. In the review, the Reporting Bank must ensure that the Board and senior management must also consider the possible difficulty in valuing the new product and how it might perform in a stressed economic environment;

(d) a Reporting Bank must ensure that the Board and senior management have a sufficient understanding of each risk category and risk exposures across the banking group, and that senior management possesses in-depth knowledge of these risk categories and is responsible for the effective implementation of the risk management framework, including its approval and regular review. A Reporting Bank must also ensure that the Board and senior management have the necessary expertise to understand the capital markets activities in which the Reporting Bank is involved in, including securitisation and off-balance sheet activities, and the associated risks;

(e) a Reporting Bank must set out the responsibilities of senior management, business line managers and functional units managing the material risk, including clearly defined risk limits and reporting thresholds, in each risk management framework. A Reporting Bank must clearly delineate the accountability and lines of authority. A Reporting Bank must ensure that its risk function and its chief risk officer or equivalent position is independent of the individual business lines and reports directly to the chief executive officer and the Board;

(f) a Reporting Bank must ensure regular monitoring of risk exposures and regular reporting of significant risk concerns to the Board. A Reporting Bank must have in place procedures for reporting deviations from established policies to the Board or senior management, as appropriate;

(g) a Reporting Bank must subject each risk management framework to regular independent reviews.

[944] The Reporting Bank should also take into consideration its role in the financial system in defining the limits.

2.2 A Reporting Bank must ensure that appropriate members of senior management bring together the perspectives of the key business and control functions to achieve an understanding of risk exposures and develop an integrated perspective on risk across the banking group. A Reporting Bank must ensure that senior management overcome organisational silos between business lines and share information on market developments, risks and risk mitigation techniques.

2.3 To enable proactive management of risk, a Reporting Bank must have appropriate management information systems at the business level and across the banking group. A Reporting Bank must ensure that the Board and senior management are responsible for implementing management information systems that are capable of providing regular, accurate and timely information on the Reporting Bank's aggregate risk profile, as well as the main assumptions used for risk aggregation. The Reporting Bank must ensure that the management information systems are adaptable and responsive to changes in the Reporting Bank's underlying risk assumptions and incorporate multiple perspectives of risk exposure to account for uncertainties in risk measurement. A Reporting Bank must ensure that senior management understands the assumptions behind and limitations inherent in each risk measure. The Reporting Bank must ensure that the relevant information concerning the Reporting Bank's risk profile includes all risk exposures (including those that are off-balance sheet). The Reporting Bank must subject third-party inputs or other tools used within the management information systems, including credit ratings, risk measures and models, to initial and ongoing validation. The Reporting Bank must ensure that the management information systems are sufficiently flexible to –

(a) allow for aggregation of exposures and risk measures across business lines;

(b) support customised identification of concentrations and emerging risks;

(c) support forward-looking scenario analyses across the banking group that capture management's interpretation of evolving market conditions and stressed conditions; and

(d) capture limit breaches[945].

2.4 A Reporting Bank must ensure that the Board and senior management are responsible for mitigating the risks arising from remuneration policies in order to ensure effective risk management across the banking group. For a broad and deep risk management culture to develop and be maintained over time, the Reporting Bank must ensure that compensation practices and policies are not unduly linked to short-term accounting profit generation. The Reporting Bank must ensure that compensation policies are linked to longer-term capital preservation and the financial strength of the Reporting Bank and must consider risk-adjusted performance measures[946].

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945 For example, a Reporting Bank should aggregate similar exposures across business platforms (including both the banking book and the trading book) to determine whether there is a concentration or a breach of an internal position limit.

946 For further guidance, a Reporting Bank should refer to relevant publications issued by the BCBS and the Authority, for example, "Principles for Sound Compensation Practices" published by the Financial Stability Board in April 2009, "The Compensation Principles and Standards Assessment Methodology" published by the BCBS in January 2010, and "Corporate Governance Principles for Banks" published by the BCBS in 2015.

Section 3: Credit Risk, Concentration Risk, Counterparty Credit Risk and Securitisation Risk

Introduction

3.1 A Reporting Bank must, at a minimum, cover the following areas in its credit risk assessment for the purposes of capital adequacy:

(a) risk rating systems;

(b) portfolio analysis and aggregation;

(c) large exposures and risk concentrations;

(d) country or jurisdiction risk, and transfer risk;

(e) securitisation and complex credit derivatives.

3.2 A Reporting Bank must have internal credit risk rating systems capable of assessing credit risk exposures both on an individual obligor basis, as well as systems in place to analyse credit risk on a portfolio level. A Reporting Bank must ensure that internal risk ratings are able to identify and measure risk from all credit exposures, and are integrated into the overall analysis of credit risk and capital adequacy of the Reporting Bank. A Reporting Bank must ensure that the credit review process is comprehensive and, at a minimum, has the ability to –

(a) generate detailed ratings for all credit exposures;

(b) determine an adequate level of loan loss reserves;

(c) identify credit weaknesses at the portfolio level, especially large exposures and credit risk concentrations; and

(d) consider the risks involved in securitisation and complex credit derivative transactions.

3.3 A Reporting Bank using the SA(CR) must assess exposures, regardless of whether they are rated or unrated, and determine whether the risk weights applied to such exposures under the SA(CR) are appropriate for their inherent risk. In those instances where it determines that the inherent risk of such an exposure, particularly if it is unrated, is significantly higher than that implied by the risk weight to which it is assigned, the Reporting Bank must consider the higher degree of credit risk in the evaluation of its overall capital adequacy.

Concentration Risk (including credit concentration risk)[947]

3.4 A risk concentration[948] is a single exposure or group of 2 or more exposures of similar risk characteristics[949] with the potential to produce –

(a) losses large enough (relative to a Reporting Bank's earnings, capital, total assets or overall risk level) to threaten a Reporting Bank's creditworthiness or ability to maintain its core operations; or

(b) a material change in a Reporting Bank's risk profile.

3.5 A Reporting Bank must aggregate direct and indirect exposures with common or correlated[950] risks, across its different business lines, regardless of where the exposures have been booked.[951] A Reporting Bank must analyse risk concentrations at both the Solo and Group levels, and at the level of each banking group entity.[952,953]

3.6 While concentration risk often arises due to direct exposures to obligors, a Reporting Bank must identify and manage risk concentrations to a particular asset type indirectly through investments backed by specific asset types[954] or exposures to protection providers guaranteeing the performance of specific asset types[955].

3.7 Through its risk management processes and management information systems, a Reporting Bank must identify and aggregate exposures with common or correlated risks across the banking group[956], including across legal entities, asset types[957], and risk areas[958], and for the following:

(a) significant credit exposures to a single counterparty or a group of 2 or more related counterparties;

(b) credit exposures to counterparties in the same economic sector, industry, or geographic region;

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947 A Reporting Bank should ensure that it complies with the "Principles for the Management of Credit Risk" issued by the BCBS in September 2000. A Reporting Bank should also refer to any other relevant publications issued by the BCBS and the Authority in this area.

948 Risk concentrations can arise from the assets, liabilities or off-balance sheet items of a Reporting Bank, through the execution or processing of transactions (either product or service), or through a combination of exposures across these broad categories.

949 Examples of exposures with similar characteristics are exposures to the same counterparty (including protection providers), geographic area, industry or other risk factors.

950 For example, correlations between market, credit and liquidity risks.

951 Risk concentrations, by their nature, are dependent on common or correlated vulnerabilities, which if realised, can have an adverse impact on individual exposures making up the concentration.

952 A risk concentration may appear immaterial at the Group level, but can nonetheless threaten the viability of a banking group entity.

953 A Reporting Bank should employ a number of techniques, as appropriate, to measure these concentrations. The techniques include shocks to various risk factors, use of scenarios at the business level and across the banking group, use of integrated stress testing and economic capital models.

954 For example, collateralised debt obligations.

955 For example, monoline insurers.

956 A Reporting Bank should be cognisant that the growth of market-based intermediation has increased the possibility that different areas of a Reporting Bank are exposed to a common set of products, risk factors or counterparties.

957 For example, loans, derivatives, structured products or off-balance sheet exposures.

958 For example, exposures in the banking book and trading book.

(c) credit exposures to counterparties whose financial performance is dependent on the same activity or commodity or other common risks;

(d) indirect credit exposures arising from investment and CRM activities of a Reporting Bank[959].

3.8 For its concentration risk management programme, a Reporting Bank must, amongst other things –

(a) ensure that the senior management of a Reporting Bank is responsible for developing policies and procedures for identifying, measuring, monitoring and controlling concentration risk in a timely manner. The Reporting Bank must ensure that such policies and procedures are implemented at both the Solo and Group levels, and are commensurate with the overall risk appetite and strategic initiatives of the Reporting Bank. The Reporting Bank must clearly assign responsibilities for the measurement and monitoring of risks and risk concentrations to a person or unit that is independent of any person or unit originating such risk exposures. The Reporting Bank must ensure that the risk management framework for concentration risk is clearly documented;

(b) ensure that the Board reviews and approves the risk management framework for concentration risk proposed by the management of the Reporting Bank. The Reporting Bank must regularly apprise the Board of the risk exposure and vulnerability of the Reporting Bank to risk concentrations, and ensure that adequate resources are devoted to effectively manage risk concentrations;

(c) clearly define risk concentrations relevant to the Reporting Bank, along with how these concentrations and their corresponding limits are to be measured. A Reporting Bank must also have in place comprehensive management information and reporting systems to facilitate the identification and monitoring of risk concentrations across portfolios;

(d) have credible risk mitigation strategies in place that have senior management approval.[960] A Reporting Bank must have in place adequate and systematic procedures for identifying high correlation between the creditworthiness of a protection provider and the obligors of the underlying exposures due to their performance being dependent on common factors beyond systematic risk;

(e) establish internal limits that are reasonable in relation to its capital, total assets or, where adequate measures exist, its overall risk level. A Reporting Bank must not set its internal limits based solely on regulatory capital requirements without regard for its own risk appetite;

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959 For example, exposures to similar asset or collateral types or to credit protection provided by a single counterparty of a group of related counterparties.

960 For example, altering business strategies, reducing limits or increasing capital buffers in line with the Reporting Bank's desired risk profile. While a Reporting Bank implements risk mitigation strategies, it should be aware of possible concentrations that might arise as a result of employing risk mitigation techniques.

(f) give attention to qualitative factors in the assessment of risk concentrations. This includes analysing how political, legal, regulatory, societal and market conditions might impact the obligors of a Reporting Bank and the industries and countries in which the Reporting Bank operates;

(g) perform periodic scenario analysis and stress testing of material risk concentrations and analyse the results, to identify potential changes in key factors that could affect the Reporting Bank's risk concentrations, including economic cycles, interest rate movements, liquidity and market conditions, and to assess its ability to withstand such changes.[961] In addition, the Reporting Bank must ensure that scenarios consider possible concentrations arising from contractual and non-contractual contingent claims; and

(h) put in place adequate internal controls in the concentration risk management framework, including an independent review, to ensure the integrity of the information used by the Board and senior management.

3.9 A Reporting Bank must consider the extent of its risk concentrations in its assessment of capital adequacy and, where appropriate, set aside additional capital to address such risk[962].

Residual Credit Risk Arising From CRM[963]

3.10 A Reporting Bank must have in place an effective framework to manage residual risks from the use of CRM, including appropriate written CRM policies and procedures to manage and control residual risks.[964] A Reporting Bank must submit these policies and procedures to the Authority, where required by the Authority, and must regularly review the appropriateness, effectiveness and operation of the policies and procedures. A Reporting Bank must, amongst other things, do the following to ensure that the framework is effective:

(a) a Reporting Bank must ensure that the Board and senior management are aware of and understand the CRM used by the Reporting Bank. A Reporting Bank must clearly assign the responsibility for the management and monitoring of CRM to a person, unit or department within the

961 Stress testing can also help to identify concentrations in the portfolios or different exposures of a Reporting Bank as seemingly uncorrelated exposures during normal market conditions may become correlated under stressed conditions. Examples of stress scenarios that may have an impact on the performance and exposure of a Reporting Bank include a recession, a pandemic, an oil price hike or a natural disaster.

962 Although risk concentrations are mitigated to some extent by the imposition of internal limits or supervisory limits, such risk is not explicitly taken into account under the Pillar 1 regulatory capital requirements.

963 For further guidance, a Reporting Bank should refer to Newsletter No. 16 on "High Cost Credit Protection" issued by the BCBS in December 2011, and any other relevant publications issued by the BCBS and the Authority in this area.

964 CRM, such as collateral, guarantees and credit derivatives, can reduce Pillar 1 regulatory capital requirements for Reporting Banks. However, such techniques can give rise to other risks including legal, documentation, operational, liquidity and market risks (collectively known as "residual risk") that may reduce the effectiveness of CRM. Examples of such residual risk include the inability to realise in a timely manner the collateral pledged, the refusal or delay by a guarantor to pay and the legal enforceability of contracts. While a Reporting Bank may meet the regulatory capital requirements under Pillar 1, such residual risks could result in the Reporting Bank having a greater than expected credit risk exposure to an underlying counterparty.

Reporting Bank. A Reporting Bank must ensure that procedures and controls to implement such policies are approved by senior management, who possess adequate product knowledge for proper management of all material risks[965] associated with credit derivatives;

(b) a Reporting Bank must have sound written policies and procedures covering strategy, consideration of the underlying credit, valuation, systems and management of concentration risk arising from the use of CRM and its interaction with the overall credit risk profile of the Reporting Bank. A Reporting Bank must ensure that such policies and procedures clearly specify the acceptable types of CRM, the purposes for which such transactions are to be undertaken, as well as lending policies[966];

(c) a Reporting Bank must ensure that sound policies and procedures are accompanied by effective internal controls for the management of CRM activities. A Reporting Bank must conduct sufficient legal review, including obtaining a written independent legal opinion[967], to satisfy itself that the documentation used in CRM for an exposure are binding on all parties and legally enforceable in all relevant countries or jurisdictions. A Reporting Bank must regularly monitor CRM activities and report significant concerns to the Board and senior management;

(d) when calculating capital requirements, a Reporting Bank must consider whether it is appropriate to recognise the full value of the credit risk mitigant as permitted under Pillar 1. A Reporting Bank must ensure that its CRM management policies and procedures are appropriate to the level of capital benefit it recognises;

(e) a Reporting Bank must implement regular independent reviews of its risk management process for CRM in accordance with paragraph 10.2.20. This helps to ensure that policies and procedures are adhered to as well as facilitate the timely identification of internal control weaknesses or system deficiencies. This also helps to ensure compliance with the minimum operational requirements for CRM set out in Part VII.

3.11 A Reporting Bank must evaluate its capital adequacy taking into account the residual risks arising from CRM and, where appropriate, set aside additional capital to address such risk.

Counterparty Credit Risk ("CCR")

3.12 A Reporting Bank must employ sound practices in managing all aspects of its CCR exposures, regardless of the methods used to compute its regulatory capital requirements under Pillar 1. As CCR represents a form of credit risk, a Reporting Bank

965 Examples of material risks are credit, market, counterparty, legal and liquidty risks.

966 An example of such lending policies is advance rates.

967 While a Reporting Bank may use either an in-house or external legal counsel for the purposes of obtaining a written independent legal opinion, it should consider whether or not an in-house counsel opinion is appropriate. In the case of an in-house legal opinion, a Reporting Bank should ensure that the in-house legal counsel providing the legal opinion should be independent of the parties involved in the origination of the exposure or the use of CRM for the exposure.

must observe, in relation to its CCR exposures, the requirements on stress testing, credit concentrations and residual risks associated with CRM set out in this Notice.

3.13 A Reporting Bank must have in place CCR management policies, processes and systems that are conceptually sound and implemented with integrity relative to the sophistication and complexity of its CCR exposures. In order to have sound CCR policies, processes and systems, a Reporting Bank must, amongst other things –

(a) ensure that the Board and senior management are actively involved in the CCR control processes of the Reporting Bank and that sufficient resources are devoted to the CCR control function. Where the Reporting Bank is using an internal model for CCR, a Reporting Bank must ensure that senior management is aware of the limitations and assumptions of the model used and the impact these can have on the reliability of the output, and also considers the uncertainties of the market environment [968] and operational issues [969] and how these are reflected in the model. A Reporting Bank must ensure that daily reports prepared on the CCR exposures are reviewed by a level of management with sufficient seniority and authority to enforce both reductions of positions taken by individual credit managers or traders and reductions in the overall CCR exposure of the Reporting Bank;

(b) establish sound and well-documented CCR management policies and procedures for identifying, measuring, approving, managing, monitoring and internal reporting of CCR exposures[970];

(c) ensure that its CCR management policies take account of the market, liquidity, legal and operational risks that can be associated with CCR and, to the extent practicable, inter-relationships among those risks. Before undertaking business with a counterparty, a Reporting Bank must assess the creditworthiness of the counterparty and take due account of both settlement and pre-settlement credit risk. A Reporting Bank must aggregate all credit exposures to each counterparty and manage these at both the Solo and Group levels;

(d) ensure that the CCR management system of a Reporting Bank is used in conjunction with internal credit and trading limits. A Reporting Bank must relate credit and trading limits to the risk measurement model of the Reporting Bank, in a manner consistent over time and that is well understood by credit managers, traders and senior management;

(e) ensure that the measurement of CCR includes the monitoring of daily and intra-day usage of credit lines. A Reporting Bank must measure current exposure gross and net of collateral held. A Reporting Bank must include the measurement and monitoring of peak exposure or potential future exposure at a confidence level chosen by the Reporting Bank at both the portfolio and counterparty levels in its limit monitoring system. A

[968] For example, timing of realisation of collateral.

[969] For example, pricing feed irregularities.

[970] For example, a Reporting Bank must ensure that the CCR management manual of the Reporting Bank sets out the basic principles of the risk management system as well as provides an explanation of the empirical techniques used to measure CCR.

Reporting Bank must take into account large or concentrated positions, including concentrations by groups of related counterparties, industry, market and customer investment strategies;

(f) monitor the appropriate risks and have processes to adjust its estimation of EPE when those risks become significant, in the case where a Reporting Bank has received approval from the Authority to use an internal model to estimate its exposure amount or EAD for CCR exposures. This includes the following:

(i) a Reporting Bank must identify and manage its exposures to specific wrong-way risk;

(ii) for exposures with a rising risk profile after one year, a Reporting Bank must compare on a regular basis the estimate of EPE over one year with the EPE over the life of the exposure;

(iii) for exposures with maturities below one year, a Reporting Bank must compare on a regular basis the replacement cost (current exposure) and the realised exposure profile, or store such data that would allow comparisons;

(g) have in place a routine and rigorous programme of stress testing as a supplement to the CCR analysis based on the day-to-day output of the risk measurement model of the Reporting Bank. A Reporting Bank must ensure that stress-testing results are reviewed periodically by senior management and taken into account when setting the CCR policies and limits. Where stress tests reveal particular vulnerability to a given set of circumstances, a Reporting Bank must explicitly consider appropriate risk management strategies[971];

(h) have procedures in place for ensuring compliance with a documented set of internal policies, procedures and controls concerning the operation of the CCR management system; and

(i) conduct an independent review through its internal auditing process in accordance with Sub-division 5 of Part X of its CCR management system and process at regular intervals.[972] A Reporting Bank must include both the activities of the business credit and trading units and of the independent CCR control unit in the independent review. A Reporting Bank must ensure that, at a minimum, the review specifically addresses –

(i) the adequacy of the documentation of the CCR management system and process;

(ii) the organisation of the CCR control unit;

(iii) the integration of CCR measures into daily risk management;

[971] For example, hedging against that outcome or reducing the size of the exposures.

[972] The review should ideally be conducted not less than once a year.

(iv) the approval process for risk pricing models and valuation systems used by front and back-office personnel;

(v) the validation of any significant change in the CCR measurement process;

(vi) the scope of CCR captured by the risk measurement model;

(vii) the integrity of the management information system;

(viii) the accuracy and completeness of CCR data;

(ix) the verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources;

(x) the accuracy and appropriateness of volatility and correlation assumptions;

(xi) the accuracy of valuation and risk transformation calculations;

(xii) the verification of the accuracy of the model through frequent backtesting;

(xiii) the organisation of the collateral management unit; and

(xiv) the accurate reflection of legal terms in collateral and netting agreements into exposure measurements.

3.14 A Reporting Bank must consider the extent of its CCR in its assessment of capital adequacy and, where appropriate, set aside additional capital to address such risk.

Securitisation

3.15 A Reporting Bank must implement an effective framework to manage risks from securitisation which includes the following elements:

(a) a Reporting Bank must assign clearly responsibility for the management and monitoring of securitisations. A Reporting Bank must ensure that the Board and senior management are aware of and understands the effect of securitisation on its risk profile as well as the legal, accounting, risk-based capital and potential reputational impact of this activity. A Reporting Bank must ensure that senior management is responsible for the participation of the Reporting Bank in securitisations and provides direction on the strategy of the Reporting Bank for securitisation as well as its development of policies and procedures for managing, monitoring and controlling risks arising from securitisation activities;

(b) a Reporting Bank must understand the credit quality and risk characteristics of the underlying exposures and have securitisation policies and procedures in place to ensure that prudent standards of credit assessment and approval relevant to its role in a securitisation are

adhered to. A Reporting Bank must conduct analyses of the underlying risks when investing in securitisations and must not solely rely on the external credit ratings assigned to securitisation exposures by credit rating agencies. A Reporting Bank must conduct credit analysis of a securitisation exposure at acquisition and on an ongoing basis[973]. A Reporting Bank must review the maturity of the exposures underlying the securitisation against the maturity of the securities issued pursuant to the securitisation in order to assess potential maturity mismatches. A Reporting Bank providing credit enhancement must assess the risk thereof on an arm's length basis in accordance with its normal credit assessment and approval processes;

(c) a Reporting Bank with securitisation exposures must take into account the credit risk arising from the underlying exposures in determining its overall exposures to any particular obligor, industry or geographic area for the purpose of managing concentration risks. A Reporting Bank must track credit risk in securitisation exposures at the transaction level, and aggregate credit risk exposures across securitisation exposures within each business line and across business lines. A Reporting Bank must also track concentrations in its securitisation exposures, including name, product and sector concentrations, across the banking group in its management information systems;

(d) a Reporting Bank undertaking a role in a securitisation must satisfy itself that it is not subject to reputational risk, and where appropriate, disclose its obligations in order to mitigate that risk;

(e) a Reporting Bank must have in place appropriate internal systems and controls to identify, monitor and manage the risks that arise from its involvement in securitisations. These risks include credit, market, liquidity and reputational risks of each exposure, potential delinquencies and losses on the underlying securitised exposures, exposures from credit lines or liquidity facilities to special purpose entities, and exposures from guarantees provided by monolines and other third parties. A Reporting Bank must ensure that its securitisation exposures are monitored on an ongoing basis and that significant concerns are reported to the Board and senior management on a timely basis. A Reporting Bank must include its securitisation exposures in its management information system to ensure that senior management understands the implications of such exposures for the Reporting Bank's liquidity, earnings, risk concentration and capital. A Reporting Bank must have the necessary processes in place to capture, in a timely manner, updated information on its securitisation transactions, including market data, if available, and updated performance data from the servicer of the securitisation and trustee representing investors of a securitisation;

(f) a Reporting Bank must assess the adequacy of the regulatory capital requirements stated in Part VII and all relevant and prevailing legislation and Notices as may be in force from time to time, for its securitisation

[973] A Reporting Bank should have in place the necessary quantitative tools, valuation models and stress tests of sufficient sophistication to reliably assess all relevant risks, including any risk concentrations and correlation between underlying exposures.

exposures, whether retained or repurchased, taking into account the economic substance of those securitisation exposures;

(g) a Reporting Bank that employs risk mitigation techniques for a securitisation must understand the risks to be mitigated, the potential effects of that risk mitigation and whether or not the risk mitigation is effective[974]. The Reporting Bank must take account of the appropriateness of credit protection recognised against first loss credit enhancements or purchased on first loss retained securitisation positions in determining its economic capital;

(h) a Reporting Bank must understand the structure of the securitisation and must identify the various types of triggers[975], credit events and other legal provisions that may affect the performance of its on- and off-balance sheet exposures. A Reporting Bank must integrate these triggers and provisions into its funding, liquidity, credit and balance sheet management and consider the impact on its liquidity and capital positions. A Reporting Bank must consider the effects that changes in portfolio management or business strategies may have on the levels of excess spread and on the likelihood of an early amortisation event[976];

(i) a Reporting Bank must have in place reasonable methods for allocating economic capital against the economic substance of the credit risk arising from revolving securitisations and use techniques[977] to understand pool performance. The Reporting Bank must have in place capital and liquidity contingency plans to evaluate the probability of an early amortisation occurring and to address the implications of scheduled and early amortisations of revolving securitisations as well as adverse and unanticipated changes and market disruptions. The Reporting Bank must ensure that the sophistication of its system in monitoring the probability and risks of an early amortisation event is commensurate with the size and complexity of its securitisation activities that involve early amortisation provisions. The Reporting Bank must also develop contingency plans to address how the Reporting Bank would respond to funding, capital and other pressures that arise when its access to securitisation markets is reduced and address valuation challenges for potentially illiquid positions held for sale or for trading;

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974 This is to ensure that the Reporting Bank does not understate the true risk of securitisation exposures.

975 For example, a Reporting Bank should consider the following factors affecting excess spread levels:
(a) interest payments made by obligors on the underlying receivable balances;
(b) other fees and charges to be paid by the underlying obligors (e.g. late-payment fees, cash advance fees, over-limit fees);
(c) gross write-offs;
(d) principal payments;
(e) recoveries on loans written off;
(f) interchange fees;
(g) interest paid on securitisation exposures held by investors;
(h) macroeconomic factors such as bankruptcy rates, interest rate movements and unemployment rates.

976 For example, marketing strategies or underwriting changes that result in lower finance charges or higher charge-offs, may lower excess spread levels and increase the likelihood of an early amortisation event.

977 For example, static pool cash collections analyses and stress tests.

(j) a Reporting Bank must not make use of clauses within the documentation of the securitisation that entitle the Reporting Bank to call the securitisation transaction or terminate the coverage of credit protection prematurely where the Reporting Bank's exposure to losses or deterioration in the credit quality of the underlying exposures would be increased[978]. Where a Reporting Bank sets a date for the exercise of a call on the securitisation transaction, the Reporting Bank must set the date to be no earlier than the duration or the weighted average life of the underlying securitisation exposures from the commencement of the securitisation transaction;

(k) a Reporting Bank must conduct a proper review, taking into consideration the rationale for the decision of the Reporting Bank to exercise a call and the impact of the call on the CET1 CAR, Tier 1 CAR and Total CAR of the Reporting Bank, prior to exercising a call;

(l) a Reporting Bank must subject the risk management process of the Reporting Bank for securitisation to regular independent review.

3.16 Where the Authority is not satisfied that the credit risk transfer arising from a securitisation is sufficient or existent, or that the risks arising from the securitisation are adequately addressed in the minimum capital requirement, or that the Reporting Bank's contingency plans referred to in paragraph 3.15(i) of this Annex are adequate, action taken by the Authority may include requiring a Reporting Bank to maintain capital additional to that required under Pillar 1[979], disallowing the Reporting Bank from gaining capital relief on securitised assets, or directing a Reporting Bank to obtain a dedicated liquidity facility.

3.17 Where a Reporting Bank provides implicit support[980] to a securitisation, it must comply with the requirements as set out in paragraph 7.6.105[981]. If a Reporting Bank is found to have provided implicit support on more than one occasion, action taken by the Authority may include –

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978 A Reporting Bank should only execute clean-up calls for economic business purposes, such as when the cost of servicing the outstanding credit exposures exceeds the benefits of servicing the underlying credit exposures.

979 The Authority may increase the capital requirement for particular exposures or even increase the overall level of capital the Reporting Bank is required to hold in cases of a non-significant risk transfer. For example, this may be the case where both low quality unrated assets and most of the credit risk embedded in the exposures underlying the securitised transaction are likely to remain with the Reporting Bank as the originator.

980 Support to a transaction, whether contractual (i.e. credit enhancements provided at the inception of a securitised transaction) or non-contractual (implicit support) can take numerous forms. For example, contractual support can include over collateralisation, credit derivatives, spread accounts, contractual recourse obligations, subordinated notes, credit risk mitigants provided to a specific tranche, the subordination of fee or interest income or the deferral of margin income, and clean-up calls that exceed 10 percent of the initial issuance. Implicit support to a securitisation includes purchase of deteriorating credit risk exposures from the underlying pool, the sale of discounted credit risk exposures into the pool of securitised credit risk exposures, the purchase of underlying exposures at above market price or an increase in the first loss position according to the deterioration of the underlying exposures. The provision of implicit support by a Reporting Bank to a securitisation signals to the market that the risk is still with the Reporting Bank and has not in effect been transferred. For traditional securitisation structures, the provision of implicit support undermines the clean sale criteria, which when satisfied would allow Reporting Banks to exclude the securitised assets from regulatory capital calculations. For synthetic securitisation structures, it negates the significance of risk transference.

981 The aim is to require a Reporting Bank to hold capital against exposures for which the Reporting Bank assumes the credit risk, and to discourage the Reporting Bank from providing implicit support.

(a) requiring a Reporting Bank to hold capital against all securitised assets of a Reporting Bank[982], or requiring the Reporting Bank to treat all securitised assets of the Reporting Bank as if the underlying exposures were on the balance sheet of the Reporting Bank;

(b) requiring a Reporting Bank to maintain additional capital above the capital adequacy ratio requirements set out in Part IV; or

(c) disallowing a Reporting Bank from gaining capital relief on securitised assets for a period of time to be determined by the Authority.

The Authority may disallow a Reporting Bank from gaining capital relief for planned securitisation transactions pending investigations by the Authority to determine implicit support provided by a Reporting Bank to a securitisation[983].

3.18 A Reporting Bank must evaluate its capital adequacy taking into account the risks arising from securitisation, including new features of securitisation as they arise, and, where appropriate, set aside additional capital to address such risk.

Section 4: Market Risk and Valuation Practices

General Principles for the Management of Market Risk

4.1 A Reporting Bank must use methodologies that enable it to assess and actively manage all material market risks, wherever they arise – at position, desk, business line and group-wide level. The Reporting Bank must conduct stress testing appropriate to its market risk positions.[984]

4.2 For a Reporting Bank with significant market risks, the Reporting Bank must, in its assessment of the adequacy of the capital it maintains for market risk, base its assessment, at a minimum, on VaR modelling and stress testing. A Reporting Bank must also assess the market concentration risk that its positions in instruments might pose and the impact of market illiquidity of such instruments under stressful market scenarios. The Reporting Bank must supplement its VaR[985] model with stress tests and other appropriate risk management techniques.

4.3 For the purposes of VaR modelling referred to in paragraph 4.2 of this Annex, a Reporting Bank must ensure that the VaR model identifies and measures risks arising from all its market risk positions and is integrated into the overall internal capital assessment of the Reporting Bank and subjected to rigorous ongoing validation. A

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982 For example, by applying a CCF to the securitised assets as if the Reporting Bank has created a commitment to them.

983 The aim of the supervisory response in such cases would be to change the Reporting Bank's behaviour with regards to the provision of implicit support, and to correct market perception as to the willingness of the Reporting Bank to provide future recourse beyond contractual obligations.

984 For further guidance, the Reporting Bank should refer to relevant publications on the management of market risk issued by the BCBS and the Authority.

985 While VaR is an important tool in monitoring aggregate market risk exposures and provides a common metric for comparing the risk being run by different desks and business lines, it has its limitations.

Reporting Bank must also ensure that estimates of its VaR model are sensitive to changes in the Reporting Bank's market risk profile.

4.4 In the internal capital assessment of a Reporting Bank, a Reporting Bank must demonstrate that it has enough capital to not only meet the regulatory capital requirements under Pillar 1, but also to withstand a range of severe but plausible market shocks. In particular, the Reporting Bank must conduct stress tests[986] and factor in, where appropriate –

(a) market illiquidity and pricing gaps;

(b) concentrated positions (in relation to market turnover);

(c) one-way markets;

(d) non-linear products or deep out-of-the money positions;

(e) events and jumps-to-defaults;

(f) significant shifts in correlations; and

(g) other risks that may not be captured appropriately in VaR[987].

4.5 A Reporting Bank must reconcile the stress tests that it applies and, in particular, the calibration of those tests[988] back to a clear statement setting out the premise upon which the internal capital assessment of the Reporting Bank is based[989].

4.6 A Reporting Bank must ensure that the market shocks applied in the stress tests reflect the nature of its market risk portfolios and the time it would take to hedge out or manage risks under severe market conditions. In particular, a Reporting Bank must pro-actively manage and assess concentration risk. A Reporting Bank must ensure that its concentrated positions are regularly reported to senior management.

4.7 A Reporting Bank must design its market risk management process and system, including the VaR methodology and stress tests, to properly measure the material risks in the instruments it trades as well as the trading strategy it pursues. As products and trading strategy change, the Reporting Bank must ensure that the VaR methodology and stress tests also evolve to accommodate the changes.

4.8 A Reporting Bank must be able to demonstrate how it combines its risk measurement approaches to arrive at the overall internal capital for market risk.

4.9 A Reporting Bank must maintain sufficient capital to meet the regulatory capital requirements under Pillar 1 and to cover the results of its market risk stress tests. The Authority will consider whether the Reporting Bank has sufficient capital for these

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986 For example, factor shocks or integrated scenarios, whether historical or hypothetical.

987 For example, recovery rate uncertainty, implied correlations or skew risk.

988 For example, the parameters of the shocks or types of events considered.

989 For example, ensuring there is adequate capital to manage the market risk portfolios within stated limits through what may be a prolonged period of market stress and illiquidity, or that there is adequate capital to ensure that, over a given time horizon to a specified confidence level, all positions can be liquidated or the risk hedged in an orderly fashion.

purposes, where required, taking into account the nature and scale of the Reporting Bank's market risk positions, and any other relevant factors including valuation adjustments made by the Reporting Bank. To the extent that a Reporting Bank does not have sufficient capital to meet the regulatory capital requirements under Pillar 1 and to cover the results of its market risk stress tests, or if the Authority is not satisfied with the premise upon which the Reporting Bank's internal capital assessment for market risk is based, the Authority will take appropriate action, which may include instructing the Reporting Bank to reduce its risk exposures or maintain additional capital, so that it meets the regulatory capital requirements under Pillar 1 and covers the results of a stress test acceptable to the Authority.

Policies and Procedures for Trading Book Eligibility

4.10 In order to ensure consistency and integrity in the computation of regulatory capital for the trading book of a Reporting Bank, the Reporting Bank must establish clear policies and procedures to determine those exposures that may be included in, and those that must be excluded from, the trading book. In addition, the Reporting Bank must ensure that transfers of positions between banking and trading books occur only in a very limited set of circumstances.

4.11 A Reporting Bank must demonstrate to the Authority that its policies and procedures clearly delineate the boundaries of its trading book, and is consistent with its risk management capabilities and practices.

4.12 A Reporting Bank must have a trading book policy statement which covers, at a minimum, the policies and procedures, including the methodologies, by which the Reporting Bank –

(a) defines its trading book and identifies positions to be included in its trading book;

(b) allocates positions between the banking book and the trading book;

(c) actively manages and values its positions in the trading book;

(d) measures its trading book risks; and

(e) controls the transfer of positions between the banking book and the trading book.

4.13 A Reporting Bank must obtain the approval of the Board on its trading book policy statement. The Reporting Bank must review and where necessary update its trading book policy statement, at least annually. The Reporting Bank must obtain the approval of the Board for all significant changes made to its trading book policy statement.

4.14 A Reporting Bank must document how it complies with the policies and procedures specified in its trading book policy statement.

4.15 A Reporting Bank must, at a minimum, ensure that the policies and procedures in its trading book policy statement address the following:

(a) the activities the Reporting Bank considers to be trading or hedging of positions in the trading book;

(b) a documented trading strategy[990] for every position or portfolio in the trading book;

(c) standards regarding the extent to which a position in the trading book must be marked-to-market daily by reference to a liquid two-way market;

(d) for positions in the trading book which are marked-to-model, the standards for –

(i) identifying the material risks of a position;

(ii) hedging the material risks of the position and the extent to which the hedging instruments would have a liquid two-way market; and

(iii) deriving estimates for the key assumptions and parameters used in the model;

(e) the extent to which the Reporting Bank is required to generate valuations for positions in the trading book, which can be validated by its auditors or the Authority in a consistent manner;

(f) the extent to which legal restrictions or other operational requirements would impede the Reporting Bank's ability to effect an immediate liquidation of a position in the trading book;

(g) the processes constituting active management of positions in the trading book, which must include –

(i) the setting of limits and ongoing monitoring for appropriateness;

(ii) each trading desk having –

(A) a documented trading strategy ("trading desk trading strategy"); and

(B) a process for monitoring the positions in the trading desk against the trading strategy referred to in sub-paragraph (b) and the trading desk trading strategy, including that –

(I) for any trading desk, the Reporting Bank must ensure that senior management is responsible for ensuring that every position or portfolio in the trading desk is held for one or more of the purposes listed in paragraph 8.1.24 and managed in accordance with the trading desk trading strategy; and

[990] For example, setting out the expected holding horizon for a position or portfolio, and possible actions if the expected holding horizon is breached.

(II) the monitoring process includes evaluation of turnover and stale positions in order to determine compliance with specified holding periods;

(iii) the degree of autonomy a trader has to enter into or manage positions within agreed limits and according to the trading desk trading strategy and the trading strategy referred to in sub-paragraph (b);

(iv) the production of reports on activities in the trading book and process for providing them to senior management; and

(v) the active monitoring of positions in the trading book, with reference to market information sources, including –

(A) assessment of market liquidity, the ability to hedge positions, and risk profile of positions and portfolios;

(B) analysis of changes in the market values of positions and sensitivities due to changes in risk factors; and

(C) evaluation of the quality and availability of market inputs to the valuation process, the level of market turnover, and the sizes of trades in the market for instruments which the Reporting Bank has positions in;

(h) where there are any subsidiaries or offshore branches of the Reporting Bank undertaking transactions included in the trading book, a list of such subsidiaries or offshore branches, along with a description of the trading activities carried out by such entities;

(i) the treatment of transactions between trading desks;

(j) the identification and management of its structural foreign exchange positions.

4.16 For the purposes of paragraph 4.15 of this Annex, a liquid two-way market means a market where there are independent bona fide offers to buy and sell so that a price reasonably related to the last sales price or current bona fide competitive bid and offer quotations can be determined within one day and trades settled at such price within a relatively short time conforming to trade custom.

Policies and Procedures for internal risk transfers from the banking book to the trading book

4.17 A Reporting Bank must –

(a) document all internal risk transfers from the banking book to the trading book, with respect to the banking book risk being hedged and the amount of such risk;

(b) document the details of any external third party matching hedge;

(c) submit a list of the procedures and strategies to manage the risks that the internal risk transfer desk undertake, which is approved by the Reporting Bank's senior management at both of the following instances:

(i) when seeking the Authority's approval for a dedicated internal risk transfer trading desk for internal risk transfers from the banking book to the trading book pursuant to paragraph 8.1.51(b);

(ii) at the request of the Authority;

(d) ensure regular and consistent reporting of its internal risk transfer activities for risk management and control purposes; and

(e) provide information on its internal risk transfer activities which are used for risk management and control purposes to the Authority on a regular basis.

4.18 A Reporting Bank must ensure that its trading desks that undertake internal risk transfers document all transactions that have been implemented.

4.19 A Reporting Bank must have a consistent methodology for identifying and quantifying the banking book risk to be hedged through internal risk transfers. The Reporting Bank must ensure that such methodology is integrated in the Reporting Bank's risk management framework and includes all the qualitative and quantitative regulatory requirements pertaining to trading desks in this Notice. The Reporting Bank may only implement material changes to the methodology after it has obtained approval from a committee with senior management of the Reporting Bank[991] responsible for such matters and the Authority.

4.20 A Reporting Bank must implement risk management methods and internal controls, to ensure and control the effectiveness of risk mitigation for its internal risk transfer transactions. The Reporting Bank must ensure that these methods and controls are appropriate for the amount, types, and risks of the Reporting Bank's internal risk transfer activities. The Reporting Bank must ensure that its risk management and risk control functions regularly review these methods and controls.

Valuation[992]

4.21 A Reporting Bank must have adequate governance structures and control processes, that explicitly cover the role of the Board and senior management, for the fair valuation of exposures for risk management and financial reporting purposes. The Reporting Bank must ensure that the valuation governance structures and processes are consistent for both risk management and reporting purposes. A Reporting Bank must also

991 For example, the asset and liability management committee of the Reporting Bank.

992 Prudent valuation policies and procedures are the foundation on which a robust assessment of market risk capital adequacy should be built. A Reporting Bank should establish sound valuation policies and procedures adopting international best practices wherever possible. For further guidance, a Reporting Bank should refer to "Supervisory Guidance for Assessing Banks' Financial Instrument Fair Value Practices" issued by the BCBS in April 2009, "Fair Value Measurement and Modelling: An Assessment of Challenges and Lessons Learned from the Market Stress" issued by the BCBS in May 2008, and any other relevant publications issued by the BCBS and the Authority in this area.

have clear and robust governance structures for the production, assignment and verification of instrument valuations. A Reporting Bank must ensure that the Board receives reports from senior management on the valuation oversight and valuation model performance issues that are brought to senior management for resolution, and all significant changes to valuation policies. A Reporting Bank must ensure that the approvals of all valuation methodologies are well documented. In addition, a Reporting Bank must set forth the range of acceptable practices for initial pricing, marking-to-market, valuation adjustments and periodic independent revaluation in its policies and procedures. A Reporting Bank must also include all internal stakeholders relevant to risk measurement, risk control, and the assignment and verification of valuations of instruments as part of the new product approval process.

4.22 A Reporting Bank must apply control processes for measuring and reporting valuations consistently across the banking group and integrate these control processes with risk measurement and management processes. In particular, the Reporting Bank must ensure that valuation controls are applied consistently across similar instruments and risks, and across business lines. The Reporting Bank must subject these controls to internal audit. Regardless of the booking location of a new product, a Reporting Bank must ensure that reviews and approval of valuation methodologies are guided by a minimum set of considerations. Furthermore, the Reporting Bank must ensure that the approval process is supported by a transparent, well-documented inventory of acceptable valuation methodologies that are specific to products and businesses.

4.23 A Reporting Bank must demonstrate to the Authority that it has maintained sufficient capital to close out or hedge its positions within the liquidity horizons set out in Table 8-24 in an orderly fashion even in adverse market conditions.

4.24 A Reporting Bank must consider whether additional capital should be maintained for portfolios exhibiting any of the following characteristics:

(a) less well diversified portfolios;

(b) portfolios containing less liquid instruments;

(c) portfolios with concentrations in relation to market turnover;

(d) portfolios which contain large numbers of positions that are marked-to-model.

4.25 A Reporting Bank must ensure that it maintains sufficient capital for portfolios with limited liquidity or price transparency.

4.26 Where the Authority considers that there is a capital shortfall or that the effectiveness of a Reporting Bank's internal models to capture risk is undermined, the Authority will take appropriate measures which may include requiring the Reporting Bank to reduce its risk, hold additional capital, or exclude positions from the Reporting Bank's calculation of market risk capital requirements using its internal models and using the SA(MR) for such positions instead.

4.27 A Reporting Bank must have adequate capacity, including during periods of stress, to establish and verify valuations for instruments and transactions in which it engages. The Reporting Bank must ensure that this capacity is commensurate with the

importance, riskiness and size of the exposures in the context of the business profile of the Reporting Bank. In addition, for those exposures that represent material risk, the Reporting Bank must have the capacity to produce valuations using alternative methods in the event that primary inputs and approaches become unreliable, unavailable or not relevant due to market discontinuities or illiquidity. A Reporting Bank must test and review the performance of its models under stress conditions so that it understands the limitations of the models under stress conditions.

4.28 A Reporting Bank must apply the Accounting Standards to determine the relevant market information and other factors likely to have a material effect on an instrument's fair value when selecting the appropriate inputs to use in the valuation process.[993] In assessing whether a source is reliable and relevant, a Reporting Bank must consider, among other things –

(a) the frequency and availability of the prices and quotes;

(b) whether those prices represent actual regularly occurring transactions on an arm's length basis;

(c) the breadth of the distribution of the data and whether it is generally available to the relevant participants in the market;

(d) the timeliness of the information relative to the frequency of valuations;

(e) the number of independent sources that produce the prices and quotes;

(f) whether the prices and quotes are supported by actual transactions;

(g) the maturity of the market; and

(h) the similarity between the instrument sold in a transaction and the instrument held by the Reporting Bank.

4.29 A Reporting Bank must ensure that public disclosures around valuation uncertainty are meaningful[994]. A Reporting Bank must regularly review its disclosure policies to ensure that the information disclosed continues to be relevant to its business model and products, and to current market conditions.

Section 5: Interest Rate Risk in the Banking Book

5.1 IRRBB is the risk to a Reporting Bank's capital and earnings arising from adverse movements in interest rates that affect the Reporting Bank's banking book positions.

[993] The relevance and reliability of valuations is directly related to the quality and reliability of the inputs.

[994] For example, the Reporting Bank may describe the modelling techniques and the instruments to which they are applied, the sensitivity of fair values to modelling inputs and assumptions, and the impact of stress scenarios on valuations.

5.2 A Reporting Bank must identify its sources of IRRBB[995] and take appropriate steps to measure, monitor and control IRRBB[996].

5.3 A Reporting Bank must –

(a) identify any IRRBB inherent in the products held or offered by it, and the activities carried out by it; and

(b) ensure that there are adequate procedures and controls to measure, monitor and control the IRRBB inherent in such products and activities.

5.4 A Reporting Bank must –

(a) ensure that its internal policies require the approval of significant hedging or risk management strategies to be obtained before being implemented;

(b) ensure that the approval of its significant hedging or risk management strategies is obtained in accordance with its internal policies;

(c) conduct a pre-acquisition review of all products and activities that are new to it to ensure that it understands the IRRBB associated with such products and activities;

(d) subject such products and activities to a predetermined test phase before fully rolling out the product or commencing the activity;

(e) put in place adequate operational procedures and risk control systems to measure, monitor and control IRRBB prior to introducing a new product, hedging or risk-taking strategy; and

(f) ensure that the management of IRRBB is integrated within its broader risk management framework and aligned with its business planning and budgeting activities.

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995 There are 3 main types of IRRBB that may potentially change the value or earnings of interest rate-sensitive assets, liabilities and off-balance sheet items in a way, or at a time, that can adversely affect a Reporting Bank's financial condition –

(a) gap risk, which describes the risk arising from the term structure of banking book instruments, and the timing of interest rate changes;

(b) basis risk, which describes the risk arising from relative changes in interest rates for banking book instruments that have similar tenors but are priced using different interest rate indices; and

(c) option risk, which describes the risk arising from option derivative positions or from optionalities embedded in the Reporting Bank's assets, liabilities and off-balance sheet items in the banking book, where the Reporting Bank or its counterparty can alter the level and timing of their cash flows. Option risk can be further characterised into automatic option risk and behavioural option risk.

996 A Reporting Bank should also monitor and assess CSRBB in its interest rate risk management framework. CSRBB refers to any kind of asset or liability spread risk of instruments with credit risk that is not explained by IRRBB or by the expected credit or jump to default risk.

IRRBB Management Framework and Risk Appetite

5.5 A Reporting Bank must –

(a) have in place an adequate IRRBB management framework to effectively manage IRRBB; and

(b) ensure that the framework is reviewed and evaluated for its effectiveness by an independent party on a regular basis.

5.6 Despite paragraph 5.7 of this Annex, a Reporting Bank must ensure that the Board is responsible for oversight of –

(a) the IRRBB management framework referred to in paragraph 5.5 of this Annex; and

(b) the Reporting Bank's risk appetite for IRRBB[997].

5.7 The Board may delegate the task of developing IRRBB policies and practices to the senior management of the Reporting Bank or an asset and liability management committee ("ALCO") (collectively referred to in this Section as "delegates").

5.8 Where the Board has made a delegation under paragraph 5.7 of this Annex, the Reporting Bank must do the following:

(a) where the task for developing IRRBB policies and practices is delegated to an ALCO, ensure that the ALCO meets regularly and includes representatives from each major department connected to IRRBB[998];

(b) ensure that the Board clearly identifies the delegates for managing IRRBB and oversees the adequate separation of responsibilities in key elements of the risk management process to avoid potential conflicts of interest;

(c) ensure that the delegates have clear lines of authority over the units responsible for establishing and managing IRRBB positions and that there is a clear communication channel to convey the delegates' directives to these units;

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997 A Reporting Bank should have clearly defined risk appetite statements (i.e. a written articulation of the aggregated level and types of IRRBB exposures that the Reporting Bank will accept, or avoid, in order to achieve its business objectives) that are approved by the Board and implemented through comprehensive risk appetite frameworks (i.e. policies and procedures for limiting and controlling IRRBB). A Reporting Bank should articulate its risk appetite for IRRBB in terms of the risk to both economic value and earnings. A Reporting Bank should ensure that its risk appetite frameworks –
(a) delineate delegated powers, lines of responsibility and accountability over IRRBB management decisions; and
(b) clearly define authorised instruments, hedging strategies and risk-taking opportunities.

998 For example, this includes a department which is –
(a) responsible for the risk identification, measurement, monitoring or control of IRRBB; or
(b) responsible for risk-taking functions that contribute to the Reporting Bank's IRRBB.

(d) ensure that the Board puts in place an organisational structure that enables the delegates to carry out their responsibilities effectively and facilitates effective decision-making and good governance[999].

5.9 For the purposes of paragraph 5.6 of this Annex, a Reporting Bank must do the following:

(a) ensure that the Board –

(i) understands the nature and the level of the Reporting Bank's IRRBB exposure;

(ii) approves broad business strategies and overall policies with respect to IRRBB; and

(iii) provides clear guidance regarding the acceptable level of IRRBB, given the Reporting Bank's business strategies;

(b) ensure that the Board is responsible for ensuring that senior management has the capability and skills to understand IRRBB, and that adequate resources are devoted to IRRBB management;

(c) ensure that the Board oversees the steps taken to identify, measure, monitor and control IRRBB and ensure that they are consistent with the approved strategies and policies of the Reporting Bank;

(d) ensure that the Board or, where the Board has made a delegation under paragraph 5.7 of this Annex, the delegates, establishes the following:

(i) appropriate limits on IRRBB, including the definition of specific procedures and approvals necessary for exceptions, and ensuring compliance with those limits;

(ii) adequate systems and standards for measuring IRRBB;

(iii) standards for measuring IRRBB, valuing positions and assessing performance, including procedures for updating interest rate shock and stress scenarios and key underlying assumptions driving the Reporting Bank's IRRBB analysis;

(iv) a comprehensive IRRBB reporting and review process;

(v) effective internal controls and management information system;

(e) ensure that the Board or, where the Board has made a delegation under paragraph 5.7 of this Annex, the delegates, oversees the approval, implementation and review of IRRBB management policies, procedures and limits;

[999] The Board should encourage discussions between its members and the delegates, as well as between the delegates and personnel in units responsible for establishing and managing IRRBB positions in the Reporting Bank, regarding the IRRBB management process.

(f) where the Board has made a delegation under paragraph 5.7 of this Annex, ensure that the Board regularly reviews timely information that is sufficiently detailed to allow it to understand and assess the performance of the delegates in monitoring and controlling IRRBB in compliance with policies approved by the Board. The Reporting Bank must carry out such reviews more frequently when the Reporting Bank runs significant IRRBB exposures or has positions in complex IRRBB instruments;

(g) ensure that the Board understands the implications of the Reporting Bank's IRRBB strategies, including the potential linkages with, and impact on, market, liquidity, credit and operational risks;

(h) ensure that more than one member of the Board has sufficient technical knowledge to be able to question and challenge any report concerning IRRBB that is presented to the Board;

(i) have IRRBB identification, measurement, monitoring and control functions with clearly defined responsibilities that are sufficiently independent from risk-taking functions of the Reporting Bank and that report IRRBB exposures directly to the Board or its delegates[1000];

(j) ensure that its risk management and strategic planning areas communicate regularly to facilitate evaluations of risk arising from future business.

5.10 For the purposes of paragraph 5.5 of this Annex, a Reporting Bank must do the following as part of its IRRBB management process:

(a) implement adequate internal controls that promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations and internal policies of the Reporting Bank;

(b) with regard to IRRBB control policies and procedures, implement appropriate approval processes, exposure limits, reviews and other mechanisms designed to provide a reasonable assurance that risk management objectives are being achieved;

(c) ensure that evaluations and reviews of the Reporting Bank's internal control system and risk management processes, including that personnel comply with established policies and procedures, are conducted on a regular basis by individuals who, or units which, are independent of the functions that they are assigned to evaluate and review;

(d) ensure that the evaluations and reviews done pursuant to sub-paragraph (c) address any significant change, including any change in market conditions, personnel, technology and structures of compliance with exposure limits, which may affect the effectiveness of controls and that there are appropriate escalation procedures for any exceeded limits;

[1000] The Reporting Bank should inform the Board regularly (at least semi-annually) on the level and trend of the Reporting Bank's IRRBB exposures.

(e) where revisions or enhancements to internal controls are warranted, ensure that an internal review mechanism is in place to ensure that such revisions or enhancements to internal controls are implemented in a timely manner;

(f) ensure that its IRRBB identification, measurement, monitoring and control processes are reviewed by an independent auditing function[1001] on a regular basis;

(g) where a written report has been produced in respect of a review under sub-paragraph (f), by the internal or external auditors or other equivalent external parties[1002] which conducted the review, make the written report available to the Authority.

5.11 A Reporting Bank must ensure that all IRRBB policies are periodically reviewed[1003].

5.12 A Reporting Bank must implement policy limits set by the Board that target maintaining IRRBB exposures that are consistent with the Reporting Bank's risk appetite.

5.13 For the purposes of paragraph 5.12 of this Annex, a Reporting Bank must do the following:

(a) before implementing the policy limits set by the Board, ensure that such limits are consistent with the Reporting Bank's overall approach for measuring IRRBB;

(b) apply aggregate risk limits, clearly articulating the amount of IRRBB acceptable to the Board, on a consolidated basis and, as appropriate, at the level of individual banking group entities[1004]. The Reporting Bank must ensure that the interest rate movements used in developing these limits represent meaningful shock and stress situations, taking into account historical interest rate volatility and the time required by management to mitigate those risk exposures;

(c) ensure that policy limits to be implemented are appropriate to the nature, size, complexity and capital adequacy of the Reporting Bank, as well as its ability to measure and manage its risks[1005]. The Reporting Bank must ensure that the level of detail of risk limits reflects the characteristics of the Reporting Bank's holdings, including the various sources of the Reporting Bank's IRRBB exposures[1006];

1001 For example, an internal or external auditor.

1002 For example, consultants.

1003 A Reporting Bank should review its IRRBB policies at least annually, and revise its IRRBB policies as needed.

1004 A Reporting Bank may associate limits with specific scenarios of changes in interest rates or term structures, such as an increase or decrease in interest rates of a particular magnitude or a change in shape of the term structure.

1005 Depending on the nature of the Reporting Bank's activities and business model, the Reporting Bank may also identify sub-limits for individual business units, portfolios, instrument types or specific instruments.

1006 Where the Reporting Bank has significant exposures to gap risk, basis risk or positions with explicit or embedded options, the Reporting Bank should establish risk tolerances appropriate for these risks.

(d) ensure that the Board or its delegates, as the case may be, approve major hedging or risk-taking initiatives in advance of implementation[1007]. The Reporting Bank must ensure that positions related to internal risk transfers between its banking book and trading book are properly documented;

(e) put in place systems to ensure that positions that exceed, or are likely to exceed, limits defined by the Board or its delegates are escalated to the Board or the delegates without delay and receive prompt management attention. The Reporting Bank must ensure that there is a clear policy on who will be informed, how the communication will take place and the actions which will be taken in response to an exception[1008].

IRRBB Measurement

5.14 Except where paragraph 5.15 of this Annex applies, a Reporting Bank must –

(a) have in place its own IMS to measure its IRRBB;

(b) adopt the SA(IR) wholly as its IMS; or

(c) adopt the SA(IR) in part as its IMS, and have in place its own IMS to measure its IRRBB in the parts where the SA(IR) is not adopted.

5.15 The Authority may, as it considers necessary, require a Reporting Bank to adopt the SA(IR), wholly or in part, as its IMS. Where the Authority requires a Reporting Bank to adopt the SA(IR) in part as its IMS, the Reporting Bank must have in place its own IMS to measure its IRRBB in the parts where the SA(IR) is not adopted.

5.16 A Reporting Bank must capture all material sources of IRRBB and assess the effect of market changes on the scope of its activities through its IMS.

5.17 A Reporting Bank must measure its IRRBB by assessing the potential impact of interest rate shock and stress scenarios on its economic value and earnings[1009].

[1007] The Reporting Bank should develop a dedicated set of risk limits to monitor the evolution of hedging strategies that rely on instruments such as derivatives, and to control mark-to-market risks in instruments that are accounted for at market value. The Reporting Bank should assess proposals to use new instrument types or new strategies (including hedging) to ensure that the resources required to establish sound and effective IRRBB management of the product or activity have been identified, that the proposed activities are in line with the Reporting Bank's overall risk appetite, and procedures to identify, measure, monitor and control the risks of the proposed product or activity have been established.

[1008] The Reporting Bank may set limits that are absolute in the sense that they should never be exceeded or in a manner where, under specific circumstances, breaches of such limits are tolerated for a predetermined short period of time.

[1009] While economic value and earnings-based measures share certain commonalities, it is important to manage IRRBB through both measures. If a Reporting Bank solely minimises its economic value risk by matching the repricing of its assets with liabilities beyond the short term, it could run the risk of earnings volatility. A Reporting Bank should ensure that its IRRBB policy takes into account the impact of an interest rate shock on its economic value, as well as its ability to generate stable earnings sufficient to maintain its normal business operations. A Reporting Bank should pay attention to the complementary nature of economic value and earnings-based measures in its risk and internal capital assessments, in particular in terms of –

(a) outcomes, where economic value measures compute a change in the net present value of the Reporting Bank's assets, liabilities and off-balance sheet items subject to specific interest rate shock and stress

5.18 For the purposes of paragraph 5.17 of this Annex, a Reporting Bank must ensure that its IMS is able to calculate the impact on its economic value and earnings based on the following scenarios:

(a) interest rate shock scenarios selected by the Reporting Bank addressing the Reporting Bank's risk profile, according to its ICAAP[1010];

(b) historical and hypothetical interest rate stress scenarios, which tend to be more severe than shock scenarios;

(c) the 6 standardised interest rate shock scenarios set out in Annex 10C;

(d) any additional interest rate shock scenarios required by the Authority.

5.19 For the purposes of paragraph 5.17 of this Annex, the Reporting Bank must –

(a) measure its vulnerability to loss under stressful market conditions[1011], and consider those results when establishing and reviewing its policies and limits for IRRBB;

(b) develop and implement an effective stress testing framework for IRRBB as part of its broader risk management and governance processes which must feed into the decision-making process at the appropriate management level, including strategic decisions[1012] of the Board or its delegates;

(c) ensure that IRRBB stress testing is considered in its ICAAP, and is rigorous, forward-looking and identifies events of severe changes in market conditions which could adversely impact the Reporting Bank's capital or earnings, including through changes in the behaviour of its customer base;

(d) develop a stress testing framework for IRRBB that includes clearly defined objectives, scenarios tailored to the Reporting Bank's businesses and risks, well-documented assumptions and sound methodologies, and is

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scenarios, while earnings-based measures focus on changes to future profitability within a given time horizon eventually affecting future levels of the Reporting Bank's own equity capital;

(b) assessment horizons, where economic value measures reflect changes in value over the remaining life of the Reporting Bank's assets, liabilities and off-balance sheet items, that is, until all positions have run off, while earnings-based measures cover only the short to medium term, and therefore do not fully capture risks that will continue to impact profit and loss accounts beyond the period of estimation; and

(c) future business or production, where economic value measures consider the net present value of repricing cash flows of instruments on the Reporting Bank's balance sheet or accounted for as an off-balance sheet item (i.e. a run-off view). In addition to a run-off view, earnings measures may assume rollover of maturing items (i.e. a constant balance sheet view), or assess the scenario-consistent impact on the Reporting Bank's future earnings inclusive of future business (i.e. a dynamic view), or both. A dynamic view can be useful for business planning and budgeting purposes. However, dynamic approaches are dependent on key variables and assumptions that are extremely difficult to project with accuracy over an extended period and can potentially hide certain key underlying risk exposures.

[1010] A Reporting Bank should observe the guidelines in Section 1 of Annex 10D in the selection process for its internal interest rate shock and stress scenarios.

[1011] These should include conditions under which key business assumptions and parameters break down.

[1012] For example, business and capital planning decisions.

commensurate with the Reporting Bank's nature, size and complexity as well as business activities and overall risk profile;

(e) use the framework to assess the potential impact of the scenarios on the Reporting Bank's financial condition, enable ongoing and effective review processes for stress tests and recommend actions based on the stress test results; and

(f) ensure that IRRBB stress tests are used in the communication of risks, within the Reporting Bank, with the Authority, and with the market through appropriate disclosures.

5.20 In measuring IRRBB, a Reporting Bank must ensure that its key behavioural and modelling assumptions are fully understood, conceptually sound and reasonable, consistent with historical experience, and documented[1013].

5.21 A Reporting Bank must –

(a) when assessing its IRRBB exposure, make judgments and assumptions about how an instrument's actual maturity or repricing behaviour may vary from the instrument's respective contractual terms because of behavioural optionalities, for the following products:

(i) fixed rate loans subject to prepayment risk[1014];

(ii) fixed rate loan commitments[1015];

(iii) term deposits subject to early redemption risk[1016];

[1013] A Reporting Bank should ensure that all behavioural and modelling assumptions in measuring IRRBB are rigorously tested and aligned with the Reporting Bank's business strategies. A Reporting Bank should also note that both economic value and earnings-based measures of IRRBB can be significantly impacted by the following assumptions made by the Reporting Bank for the purposes of risk quantification:
(a) expectations for the exercise of interest rate options (explicit and embedded) by both the Reporting Bank and its customers under specific interest rate shock and stress scenarios;
(b) treatment of balances and interest flows arising from non-maturity deposits;
(c) treatment of own equity in economic value measures;
(d) the implications of accounting practices for IRRBB.

[1014] For fixed rate loans subject to prepayment risk, a Reporting Bank should –
(a) understand the nature of prepayment risk for its portfolios and make reasonable and prudent estimates of the expected prepayments; and
(b) document the assumptions underlying the estimates, including assumptions of how prepayment penalties or other contractual features affect the embedded optionality effect.

[1015] For fixed rate loan commitments, a Reporting Bank may sell options to retail customers (for example, prospective mortgage buyers or renewers) whereby, for a limited period, the customers can choose to draw down a loan at a committed rate. Unlike loan commitments to corporates, where drawdowns strongly reflect characteristics of automatic interest rate options, mortgage commitments (that is, pipelines) to retail customers are impacted by other drivers.

[1016] An example of a term deposit subject to early redemption risk is one where a Reporting Bank attracts deposits with a contractual maturity term or with step-up clauses that enable the depositor at different time periods to modify the speed of redemption. For term deposits subject to early redemption risk, a Reporting Bank should document whether a term deposit is deemed to be subject to redemption penalties or other contractual features that preserve the cash flow profile of the instrument.

(iv) NMDs[1017];

(v) any other product that the Reporting Bank considers relevant;

(b) assess exposures in each currency since yield curves vary from currency to currency and a Reporting Bank with positions denominated in different currencies may be exposed to IRRBB in each of those currencies. Where a Reporting Bank uses its own IMS pursuant to paragraph 5.14(a) or (c) of this Annex, a Reporting Bank with the necessary skills and sophistication, and with material multicurrency exposures, may choose to include, in its own IMS, methods to aggregate its IRRBB in different currencies using assumptions about the correlation between interest rates in different currencies;

(c) consider the materiality of the impact of behavioural optionalities within floating rate loans[1018];

(d) where a Reporting Bank uses its own IMS pursuant to paragraph 5.14(a) or (c) of this Annex, test the appropriateness of key behavioural assumptions[1019], and document all changes to the assumptions of key parameters[1020]; and

(e) ensure that the most significant assumptions underlying the system are documented and clearly understood by the Board or its delegates[1021].

5.22 A Reporting Bank must assess the expected average prepayment speed of a product that is a fixed rate loan subject to prepayment risk under each interest rate shock and stress scenario.

5.23 A Reporting Bank must carefully consider how the exercise of embedded behavioural options will vary under interest rate shock and stress scenarios and any other applicable dimension[1022], in respect of the following products:

1017 Behavioural assumptions for deposits that have no specific repricing date can be a major determinant of IRRBB exposures under the economic value and earnings-based measures. A Reporting Bank should document, monitor and regularly update key assumptions for NMD balances and behaviour used in its IMS. To determine the appropriate assumptions for its NMDs, the Reporting Bank should analyse its depositor base in order to identify the proportion of core deposits (i.e. NMDs which are unlikely to reprice even under significant changes in interest rate environment). A Reporting Bank should vary assumptions according to depositor characteristics (e.g. retail or wholesale) and account characteristics (e.g. transactional or non-transactional).

1018 For example, the Reporting Bank should consider the potential impact of the behavior of prepayments arising from embedded interest rate caps and floors on the Reporting Bank's EVE.

1019 For example, by comparing the economic value of equity measured under its own IMS, with the economic value of equity measured under the SA(IR) set out in Annex 10B.

1020 The Reporting Bank should periodically perform sensitivity analyses with reference to both economic value and earnings-based measures for key assumptions to monitor their impact on measured IRRBB.

1021 The Reporting Bank should ensure that such documentation includes descriptions on how those assumptions could potentially affect the Reporting Bank's hedging strategies. The Reporting Bank should review significant measurement assumptions at least annually and more frequently during rapidly changing market conditions, as market conditions, competitive environments and strategies change over time. For example, if the competitive market has changed such that consumers now have lower transaction costs available to them for refinancing their residential mortgages, the Reporting Bank should consider that prepayments may become more sensitive to smaller reductions in interest rates.

1022 The other applicable dimensions in respect of the products set out in paragraph 5.23(a) to (e) of this Annex may include the dimensions set out in column (B) of Table 10D-1.

(a) fixed rate loans subject to prepayment risk;

(b) fixed rate loan commitments;

(c) term deposits subject to early redemption risk;

(d) NMDs; and

(e) any other product with embedded behavioural options.

5.24 A Reporting Bank must ensure that any measurement system and model used for the calculation of IRRBB[1023] –

(a) is based on accurate data; and

(b) is subject to appropriate documentation, testing and controls to give assurance on the accuracy of the calculation.

5.25 A Reporting Bank must ensure that its IMS –

(a) is able to calculate economic value and earnings-based measures of IRRBB, as well as other measures of IRRBB prescribed by the Authority, based on the interest rate shock and stress scenarios set out in paragraph 5.18 of this Annex; and

(b) is sufficiently flexible to incorporate any constraints imposed by the Authority on the Reporting Bank's internal risk parameter estimates.

5.26 A Reporting Bank must ensure that its models used to measure IRRBB are comprehensive and covered by governance processes for model risk management, including a validation function that is independent of the development process[1024].

5.27 A Reporting Bank must ensure that the measurement outcomes of IRRBB and hedging strategies are reported to the Board or its delegates on a regular basis, at relevant levels of aggregation, by consolidation level and currency[1025].

Internal Assessment of Capital Adequacy for IRRBB

5.28 A Reporting Bank must –

(a) evaluate its capital adequacy for IRRBB[1026], which must be in line with its risk appetite, as part of its ICAAP approved by the Board;

(b) ensure that it has adequate capital and earnings that are commensurate with its level of short-term and long-term IRRBB exposures; and

[1023] A Reporting Bank should also observe the guidelines set out in paragraph 2.2 of Annex 10D.
[1024] A Reporting Bank should also observe the guidelines set out in paragraph 2.3 of Annex 10D.
[1025] A Reporting Bank should also observe the guidelines set out in paragraph 2.4 of Annex 10D.
[1026] A Reporting Bank should also observe the guidelines set out in paragraphs 3.1 and 3.2 of Annex 10D.

(c) consider the potential risk that such exposures mentioned in sub-paragraph (b) may pose to its future financial performance.

5.29 A Reporting Bank must inform the Authority whenever there is any significant change to the Reporting Bank's IMS or any policy change to its IRRBB management under its ICAAP.

5.30 A Reporting Bank must include in its ICAAP report the outputs of its IMS, including the Reporting Bank's IRRBB exposures for EVE and NII using the interest rate shock scenarios set out in paragraph 5.18 of this Annex.

Supervisory Review

5.31 For the purposes of the Authority's supervisory review[1027], the Authority may require that a Reporting Bank provide any or all of the following information relating to the Reporting Bank's IRRBB and the Reporting Bank must provide that information:

(a) the modelling of NMDs under the Reporting Bank's IMS and the sensitivity of the Reporting Bank's economic value and earnings to changes in NMD assumptions;

(b) the impact of assumptions used regarding products with behavioural options;

(c) the treatment of own equity in internal calculations and the extent to which this impacts the ΔEVE number disclosed under Part XI;

(d) repricing gaps of cash flows associated with its interest rate-sensitive assets, liabilities and off-balance sheet items (by significant currencies);

(e) exposures to automatic interest rate options;

(f) the types of yield curve used for IMS purposes;

(g) the level of ΔEVE if calculated using the SA(IR) set out in Annex 10B;

(h) economic value and earnings-based measures for interest rate shock and stress scenarios in addition to those prescribed in Annex 10C (including results based on the Reporting Bank's internally developed or other interest rate shock or stress scenarios).

5.32 A Reporting Bank that has been identified as an outlier Reporting Bank by the Authority in accordance with paragraph 5.33 of this Annex will be subject to further review by the Authority on the Reporting Bank's management of IRRBB and adequacy of capital relative to the Reporting Bank's IRRBB exposures.

5.33 For the purposes of paragraph 5.32 of this Annex, an outlier Reporting Bank is a Reporting Bank whose maximum ΔEVE across the 6 interest rate shock scenarios set out

[1027] In its supervisory review, the Authority would consider the matters listed under paragraphs 31.74 to 31.79 of the "SRP 31 – Interest rate risk in the banking book" issued by the BCBS in December 2019.

in Annex 10C, calculated in accordance with paragraph 5.34 of this Annex, is more than 15% of the Reporting Bank's Tier 1 capital.

5.34 For the purposes of paragraph 5.33 of this Annex, disclosure in Table 11-49 and reporting in Schedule 5-1A, a Reporting Bank must calculate its ΔEVE under each of the 6 interest rate shock scenarios set out in Annex 10C on the following bases:

(a) exclude its own equity;

(b) include all cash flows arising from all interest rate-sensitive assets (i.e. assets which are not deducted from CET 1 Capital, and which exclude fixed assets[1028] and equity exposures in its banking book), liabilities and off-balance sheet items in its banking book, calculated in accordance with paragraph 5.35 of this Annex;

(c) subject to paragraph 5.36 of this Annex, discount cash flows using –

(i) a risk-free rate; or

(ii) where the Reporting Bank has included commercial margins and other spread components in its cash flows, a risk-free rate including such commercial margins and other spread components;

(d) assume a run-off balance sheet (i.e. where existing banking book positions amortise and are not replaced by any new business).

5.35 For the purposes of calculating cash flows pursuant to paragraph 5.34(b) of this Annex –

(a) in the case of instruments that reference market interest rates and have embedded automatic interest rate caps or embedded automatic interest rate floors, a Reporting Bank that does not adopt the methodology set out in paragraph 2.13 of Annex 10B as part of its IMS must –

(i) apply the automatic interest rate caps or automatic interest rate floors in line with the contractual terms of each instrument; and

(ii) ensure that each interest rate applied pursuant to sub-paragraph (a)(i) is subject to the interest rate floor specified in paragraph 8 of Annex 10C;

(b) in the case of instruments that reference interest rates that are administered or managed by a Reporting Bank, the Reporting Bank –

(i) may apply interest rate caps, interest rate floors, and assumptions on how such interest rates might change in response to interest rate shocks, provided that these interest rate caps, interest rate floors and assumptions are approved by the Board or its delegates, and are clearly documented;

[1028] For example, real estate or intangible assets.

(ii) where the Reporting Bank adopts the approach set out in sub-paragraph (b)(i), the Reporting Bank must ensure that each interest rate applied pursuant to sub-paragraph (b)(i) is subject to the interest rate floor specified in paragraph 8 of Annex 10C; and

(iii) where the Reporting Bank does not adopt the approach in sub-paragraph (b)(i), the Reporting Bank must apply the interest rate floor specified in paragraph 8 of Annex 10C; and

(c) in the case of all other instruments, a Reporting Bank must apply the interest rate floor specified in paragraph 8 of Annex 10C. To avoid doubt, the Reporting Bank must not apply any other interest rate cap or interest rate floor on the post-shock interest rates used to calculate cash flows.

5.36 For the purposes of discounting cash flows pursuant to paragraph 5.34(c) of this Annex, the Reporting Bank must –

(a) ensure that the risk-free rate used for discounting purposes is representative of a risk-free zero coupon rate[1029]; and

(b) apply the interest rate floor specified in paragraph 8 of Annex 10C. To avoid doubt, the Reporting Bank must not apply any other cap or floor to the post-shock interest rates that are used to discount cash flows.

5.37 For the purposes of disclosure in Table 11-49 and reporting in Schedule 5-1A, a Reporting Bank must calculate its ΔNII under the interest rate shock scenarios set out in paragraph 2(a) and (b) of Annex 10C on the following bases:

(a) include cash flows (including commercial margins and other spread components) arising from all interest rate-sensitive assets (i.e. assets which are not deducted from CET1 Capital and which exclude fixed assets[1030] and equity exposures in its banking book), liabilities and off-balance sheet items in its banking book, calculated in accordance with paragraph 5.38 of this Annex;

(b) assume a constant balance sheet (i.e. where maturing or repricing cash flows are replaced by new cash flows with identical features with regard to the amount, repricing period and spread components);

(c) subtract NII over the next 12-month period under the interest rate shock scenarios set out in paragraph 2(a) and (b) of Annex 10C from NII over the next 12-month period under the current interest rates.

5.38 For the purposes of calculating cash flows pursuant to paragraph 5.37(a) of this Annex –

(a) in the case of instruments that reference market interest rates and have embedded automatic interest rate caps or embedded automatic interest rate floors, a Reporting Bank must –

[1029] An example of an acceptable yield curve is a secured interest rate swap curve.

[1030] For example, real estate or intangible assets.

(i) apply the automatic interest rate caps or automatic interest rate floors in line with the contractual terms of each instrument; and

(ii) ensure that each interest rate applied pursuant to sub-paragraph (a)(i) is subject to the interest rate floor specified in paragraph 8 of Annex 10C;

(b) in the case of instruments that reference interest rates that are administered or managed by a Reporting Bank, the Reporting Bank –

(i) may apply interest rate caps, interest rate floors, and assumptions on how such interest rates might change in response to interest rate shocks, provided that these interest rate caps, interest rate floors and assumptions are approved by the Board or its delegates, and are clearly documented;

(ii) where the Reporting Bank adopts the approach set out in sub-paragraph (b)(i), the Reporting Bank must ensure that each interest rate applied pursuant to sub-paragraph (b)(i) is subject to the interest rate floor specified in paragraph 8 of Annex 10C; and

(iii) where the Reporting Bank does not adopt the approach in sub-paragraph (b)(i), the Reporting Bank must apply the interest rate floor specified in paragraph 8 of Annex 10C; and

(c) in the case of all other instruments, a Reporting Bank must apply the interest rate floor specified in paragraph 8 of Annex 10C. To avoid doubt, the Reporting Bank must not apply any other interest rate cap or interest rate floor on the post-shock interest rates used to calculate cash flows.

5.39 Where the Authority is of the view that a Reporting Bank's management of IRRBB is inadequate or that the Reporting Bank has excessive IRRBB[1031] relative to its capital or earnings, or its general risk profile, the Authority may require the Reporting Bank to take one or more of the following actions, within a specified time frame[1032]:

(a) reduce its IRRBB exposures[1033];

(b) raise additional capital;

(c) set constraints on the internal risk parameters related to IRRBB used by the Reporting Bank;

(d) improve its IRRBB management framework.

[1031] In making this determination, the Authority may consider other factors than the outlier threshold set out in paragraph 5.33 of this Annex. This could include the case where a Reporting Bank's shocked ΔNII is such that the Reporting Bank may not have sufficient income to maintain its normal business conditions.

[1032] In imposing this time frame, the Authority may consider factors such as the prevailing financial and economic conditions, as well as the causes that led to a Reporting Bank's IRRBB exceeding the supervisory threshold.

[1033] For example, by hedging.

5.40 Where the Authority determines that a Reporting Bank's IMS is deficient in its measurement of IRRBB, the Authority may require the Reporting Bank to improve its IMS or use the SA(IR) set out in Annex 10B to compute its ΔEVE.

Section 6: Operational Risk

6.1 In assessing its capital adequacy for operational risk, the Reporting Bank must consider factors that may not have been adequately assessed under the Pillar 1 process[1034].

Operational Risk Management

6.2 A Reporting Bank must have a comprehensive operational risk management framework which applies across its banking group and forms an integral part of its overall risk management process. The Reporting Bank must ensure that its operational risk management framework –

(a) sets out the appetite and tolerance for operational risk of the Reporting Bank, which is specified in the Reporting Bank's policies for managing operational risk; and

(b) includes the extent and manner in which operational risk of the Reporting Bank is impacted by activities including outsourcing.[1035]

6.3 A Reporting Bank must set out clearly the policies and procedures of the Reporting Bank for the identification, assessment, monitoring, and control and mitigation of operational risk inherent in all material products, activities, processes and systems, in its operational risk management framework[1036].

6.4 A Reporting Bank must ensure that senior management consistently implements the operational risk management framework throughout the organisation and allocates adequate resources to the risk management function. A Reporting Bank must continually monitor operational risk exposures and report significant operational risk concerns to the Board. A Reporting Bank must conduct regular independent reviews of its operational risk management framework and risk assessment processes.

6.5 A Reporting Bank must have in place appropriate reporting mechanisms to keep the Authority apprised of developments affecting the operational risk profile of the Reporting Bank.

[1034] For further guidance, a Reporting Bank should refer to "Review of the Principles for the Sound Management of Operational Risk" issued by the BCBS in October 2014, "Revisions to the Principles for the Sound Management of Operational Risk" issued by the BCBS in March 2021, and any other relevant publications issued by the BCBS and the Authority in this area.

[MAS Notice 637 (Amendment) 2024]

[1035] A Reporting Bank should ensure that the Board and senior management is familiar with the major aspects of the operational risk of the Reporting Bank, and is responsible for the effective implementation of the operational risk management framework, including the approval and regular review of the risk management framework.

[1036] A Reporting Bank should report any deviation from the established policies to senior management or the Board, as appropriate.

Operational Risk Measurement

6.6 A Reporting Bank must review the capital computed and assess if the amount of capital computed is consistent with its operational risk exposure.[1037]

Section 7: Liquidity Risk[1038]

7.1 A Reporting Bank must adopt sound liquidity risk management practices that are commensurate with its size and sophistication, and with the risk and complexity of its activities.[1039] A Reporting Bank must manage its liquidity risk and maintain sufficient liquidity to withstand a range of stress events and to weather prolonged periods of financial market stress and illiquidity. A Reporting Bank must consider the relationship between liquidity and capital since liquidity risk can impact capital adequacy which, in turn, can aggravate a Reporting Bank's liquidity profile.[1040] A Reporting Bank must evaluate its capital adequacy taking into account its liquidity profile and the liquidity of the markets in which it operates. For any size or scope of operation, the liquidity risk management framework of a Reporting Bank must cover, at a minimum, the following elements:

(a) a Reporting Bank must have in place a liquidity strategy which sets out specific liquidity management policies, including the composition of assets and liabilities, the approach to managing liquidity across currencies and locations, the use of specific financial instruments and the liquidity and marketability of assets. A Reporting Bank must ensure that its policies and processes for managing liquidity include the consideration of how other risks[1041] impact the Reporting Banks' overall liquidity strategy;

(b) a Reporting Bank must ensure that the Board approves the strategy and significant policies related to the management of liquidity risk. A Reporting Bank must also ensure that the Board determines the risk appetite of the Reporting Bank for liquidity risk that is communicated throughout the Reporting Bank and is reflected in the strategy and policies that are set to manage liquidity risk. A Reporting Bank must ensure that senior management takes the necessary steps to monitor and control liquidity risk, including putting in place appropriate policies and procedures, and setting and reviewing limits on the size of liquidity positions over particular time horizons. A Reporting Bank must inform the Board regularly of the liquidity situation of the Reporting Bank. A Reporting Bank must also inform the Board immediately of any material changes in the current or prospective liquidity position of the Reporting Bank;

1037 When assessing the measurement of operational risk in the ICAAP of a Reporting Bank, the Authority may require a Reporting Bank to apply additional margins of conservatism if the Authority is of the view that the data series of the Reporting Bank is insufficient, or that the credibility of the operational risk capital requirement is lacking in relation to the Reporting Bank's peers.

1038 For further guidance, a Reporting Bank should refer to "SRP 50 – Liquidity monitoring metrics" issued by the BCBS in December 2019, "Principles for Sound Liquidity Risk Management and Supervision" issued by the BCBS in September 2008, and any other relevant publications issued by the BCBS and the Authority in this area.

1039 Liquidity is crucial to the ongoing viability of any banking organisation.

1040 A Reporting Bank's capital position can have an effect on its ability to obtain liquidity, especially in a crisis.

1041 For example, credit, market, operational and reputation risk.

(c) a Reporting Bank must have adequate information systems for measuring, monitoring, controlling and reporting liquidity risk, including liquidity risks from complex products and contingent commitments. A Reporting Bank must provide reports on a timely basis to the Board, senior management and other appropriate personnel. A Reporting Bank must utilise early warning indicators to identify the emergence of increased risk or vulnerabilities in its liquidity position or funding needs. A Reporting Bank must be able to control liquidity risk exposure and funding needs, within and across legal entities, business lines and currencies, taking into account any legal, regulatory and operational limitations to transferability of liquidity. A Reporting Bank's management of intraday liquidity risk must be considered as a crucial part of liquidity risk management. A Reporting Bank must also be able to calculate and manage its collateral positions. A Reporting Bank must also appropriately price the costs, benefits and risks of liquidity into the internal pricing, performance measurement and new product approval process of all significant business activities;

(d) a Reporting Bank must conduct analyses of net funding requirements under alternative scenarios. A Reporting Bank must review the assumptions utilised in managing liquidity frequently to determine whether they continue to be valid;

(e) a Reporting Bank must ensure a diversification of both the tenor and sources of funding to manage its liquidity risk. In this respect, a Reporting Bank must examine the level of reliance on particular sources, nature of the provider of funds and geographic market, and periodically review its efforts to establish and maintain relationships with liability holders to maintain the diversification of liabilities as well as ensure that it is able to sell its assets;

(f) a Reporting Bank must have contingency plans that address the strategy for handling liquidity crises and include procedures for making up cash flow shortfalls in emergency situations;

(g) a Reporting Bank must measure, monitor and control its liquidity positions in the major currencies in which it is active. In addition to assessing its aggregate foreign currency liquidity needs and the acceptable mismatch in combination with its domestic currency commitments, a Reporting Bank must also undertake separate analysis of its strategy for each currency individually. Where appropriate, a Reporting Bank must set and regularly review limits on the size of its cash flow mismatches over particular time horizons for foreign currencies in aggregate and for each significant individual currency in which it operates;

(h) a Reporting Bank must perform stress tests or scenario analyses on a regular basis in order to identify and quantify its exposures to possible future liquidity stresses, analysing possible impacts on the Reporting Bank's cash flows, currency mismatches, liquidity positions, profitability, and solvency. A Reporting Bank must include a variety of short-term and protracted bank-specific and market-wide liquidity stress scenarios (individually and in combination). A Reporting must use conservative assumptions in its stress test scenarios and regularly review the

assumptions. The Reporting Bank must ensure that senior management discusses the results of these stress tests, and take remedial or mitigating actions to limit the Reporting Bank's exposures, build up a liquidity cushion, and adjust its liquidity profile to fit its risk tolerance. The Reporting Bank must use the results of these stress tests to shape the Reporting Bank's contingency funding plans;

(i) a Reporting Bank must have adequate internal controls that involve regular independent reviews and evaluation of the effectiveness of its liquidity risk management process to ensure its integrity and that appropriate revisions or enhancements to internal controls are made where necessary.

7.2 A Reporting Bank must consider the extent of its liquidity risk in its assessment of capital adequacy and, where appropriate, set aside additional capital to address such risk.

Section 8: Reputational Risk

8.1 Reputational risk is the risk arising from negative perception on the part of customers, counterparties, shareholders, investors, debt-holders, market analysts, other relevant parties or regulators that can adversely affect a Reporting Bank's ability to maintain existing, or establish new, business relationships and continued access to sources of funding[1042]. Furthermore, it exists throughout a Reporting Bank and exposure to reputational risk is essentially a function of the adequacy of the Reporting Bank's internal risk management processes, as well as the manner and efficiency with which the Reporting Bank's management responds to external influences on bank-related transactions.

8.2 A Reporting Bank must identify potential sources of reputational risk to which it is exposed. These include the Reporting Bank's business lines, liabilities, off-balance sheet vehicles, the operations of its affiliates, and the markets in which the banking group operates. A Reporting Bank must also have appropriate policies in place to identify sources of reputational risk, and to consider such risks in the approval processes for entering new markets, products, lines of activities or strategic initiatives. A Reporting Bank must incorporate risks that arise from reputational risk into its risk management processes and appropriately address these risks in its ICAAP and liquidity contingency plans.[1043] In the

[1042] For example, through the interbank or securitisation markets.

[1043] Reputational risk may in turn give rise to credit, liquidity, market and legal risks, all of which can have a negative impact on a Reporting Bank's earnings, liquidity and capital position. For example –

(a) reputational risk may arise from a Reporting Bank's involvement in asset management. In the event that the financial instruments issued, managed or distributed by the Reporting Bank are not correctly priced or the main risk drivers not adequately disclosed, the Reporting Bank may feel some responsibility to its customers, or be economically compelled, to cover any losses or to support the value of shares or units held by investors even though it is not contractually required to provide the support;

(b) reputational risk may lead to the provision of implicit support of securitisations, which arises when a Reporting Bank provides post-sale support to a securitisation transaction in excess of any contractual obligation. Such non-contractual support exposes the Reporting Bank to the risk of loss, such as loss arising from deterioration in the credit quality of the underlying assets of the securitisation; or

(c) reputational risk may affect a Reporting Bank's liabilities, since market confidence and the Reporting Bank's ability to fund its business are closely related to its reputation. A Reporting Bank may call its liabilities, in particular, liabilities that are components of regulatory capital, even though this might

case of securitisation or off-balance sheet vehicles that could give rise to reputational risk, a Reporting Bank must assess whether the requirements under the securitisation framework have been met and the potential adverse impact of providing implicit support.

8.3 Where appropriate, a Reporting Bank must also identify potential exposures arising from reputational concerns and evaluate the amount of support it might have to provide (including implicit support for securitisations) or losses it might experience in adverse market conditions. In particular, in order to evaluate the potential impact of actions taken to avoid reputational damage and to maintain market confidence, a Reporting Bank must develop methodologies to measure, to the extent possible, the effect of reputational risk in terms of other risk types[1044] to which it may be exposed.[1045]

Section 9: Other Risk Categories

9.1 The risk categories set out in this Annex are not exhaustive. A Reporting Bank must have in place a rigorous process for determining the adequacy of its capital to support all risks to which it is exposed, and must manage all risks to which it is exposed, including those that are not easily quantifiable.

Section 10: Stress Testing Practices[1046]

10.1 A Reporting Bank must incorporate rigorous, forward-looking stress testing[1047] that identifies a range of possible events or changes in market conditions that could adversely impact the Reporting Bank in its capital planning process. A Reporting Bank must ensure that the sophistication of techniques and stress tests used are commensurate with the Reporting Bank's activities. A Reporting Bank, under its ICAAP, must perform a careful analysis of its capital instruments and their potential performance during times of stress, including their ability to absorb losses and support ongoing business operations. A Reporting Bank must also examine its future capital resources and capital requirements under adverse scenarios. In particular, a Reporting Bank must consider the results of forward-looking stress testing when evaluating the adequacy of the Reporting Bank's

negatively affect its liquidity profile, to avoid damaging its reputation. In such cases, the Reporting Bank's capital position is likely to suffer.

1044 For example, credit, liquidity, market or operational risk.

1045 A Reporting Bank should include reputational risk scenarios in regular stress tests, for example, by including non-contractual off-balance sheet exposures in the stress tests to determine the effect on a Reporting Bank's credit, market and liquidity risk profiles. A Reporting Bank may adopt methodologies, such as comparing the actual amount of exposure carried on the balance sheet versus the maximum amount of exposure held off-balance sheet, that is, the potential amount to which the Reporting Bank could be exposed. A Reporting Bank should also pay particular attention to the effects of reputational risk on its overall liquidity position, taking into account both possible increases in the asset side of the balance sheet and possible restrictions on funding, should the loss of reputation result in various counterparties' loss of confidence.

1046 For further guidance, a Reporting Bank should refer to "Stress testing principles" issued by the BCBS in October 2018, and any other relevant publications issued by the BCBS and the Authority in this area.

1047 Stress testing is an important tool that can be used as part of a Reporting Bank's internal risk management that alerts its senior management to adverse unexpected outcomes related to a broad variety of risks, and provides an indication of how much capital might be needed to absorb losses should large shocks occur. Moreover, stress testing provides a complementary risk perspective and supplements other risk management approaches and measures so that the senior management of the Reporting Bank may have a more complete understanding of the Reporting Bank's risks and the interaction of those risks under stressed conditions.

capital buffer. A Reporting Bank must also consider scenarios to assess risks associated with securitisation, where appropriate[1048].

10.2 A Reporting Bank must ensure that it has sufficient capital to meet the regulatory capital requirements under Pillar 1 and to cover the results of its credit stress tests performed under the requirement in paragraphs 6.1 and 6.2 of Annex 7X[1049]. To the extent that this is not met, the Authority will take appropriate action, which may include instructing the Reporting Bank to take action to lower the risks which it assumes or maintain additional capital or provisions, or both, so that existing capital resources can cover the Pillar 1 capital requirements plus the results of a recalculated stress test.

[1048] A Reporting Bank should consider pipeline and warehoused exposures in its risk management processes and in its stress tests, regardless of the probability of securitising the exposures. It should consider scenarios that may prevent it from securitising the exposures, and the potential effect on its liquidity, earnings and capital adequacy. A Reporting Bank should also consider whether it would provide support to securitisation structures in stressed scenarios, due to its reliance on securitisation as a funding tool.

[1049] The Authority may review how the stress test was carried out. The results of the stress test contribute directly to the expectation that a Reporting Bank will operate above the Pillar 1 regulatory capital ratios.

Annex 10B

STANDARDISED APPROACH FOR INTEREST RATE RISK IN THE BANKING BOOK (SA(IR))

Section 1: Overview

1.1 A Reporting Bank must carry out the following steps to measure its IRRBB under SA(IR), based solely on the EVE:

(a) Step 1: Allocate interest rate-sensitive positions in the banking book set out in paragraph 2.2 of this Annex to one of the following 3 categories:

(i) amenable to standardisation;

(ii) less amenable to standardisation; or

(iii) not amenable to standardisation;

(b) Step 2: Slot cash flows arising from interest rate-sensitive positions in the banking book set out in paragraph 2.2 of this Annex that are amenable to standardisation based on their repricing maturities using the approach set out in paragraphs 2.8 to 2.12 of this Annex. The Reporting Bank must exclude cash flows arising from positions less amenable to standardisation from this step. The Reporting Bank must ignore the optionality of positions with embedded automatic interest rate options for the purposes of slotting of notional repricing cash flows (i.e. the Reporting Bank must ensure that a position in an embedded automatic interest rate option is stripped out from the process of slotting notional repricing cash flows set out in this sub-paragraph, and is treated together with other automatic interest rate options as set out in sub-paragraph (c)). The Reporting Bank must slot cash flows arising from positions that are not amenable to standardisation using the approaches set out in paragraphs 3.1 to 3.10 of this Annex for NMDs and paragraphs 4.1 to 4.11 of this Annex for behavioural options respectively;

(c) Step 3: Determine the ΔEVE for the relevant interest rate scenarios for each currency, where ΔEVE is measured per currency for all 6 interest rate scenarios in accordance with paragraphs 6.1 and 6.2 of this Annex. In doing so, the Reporting Bank must include the add-ons for changes in the value of automatic interest rate options (whether explicit or embedded), calculated using the approach in paragraphs 5.1 to 5.5 of this Annex, under each interest rate scenario on a per currency basis;

(d) Step 4: Calculate the ΔEVE under SA(IR) as the maximum of the worst aggregated reductions to EVE across the 6 supervisory interest rate shocks as set out in paragraph 6.3 of this Annex.

Section 2: Components of SA(IR)

Cash Flow Bucketing

2.1 A Reporting Bank must project all future notional repricing cash flows arising from the interest rate-sensitive positions in the banking book onto –

(a) the time buckets as set out in Table 10B-1 according to their repricing dates; or

(b) the time bucket midpoints as set out in Table 10B-1, by splitting the notional repricing cash flows between 2 adjacent time bucket midpoints while retaining the notional repricing cash flows' weighted average maturity (weighted by the magnitude of the cash flows in each time bucket midpoint)[1050].

2.2 For the purposes of paragraph 2.1 of this Annex, interest rate-sensitive positions in the banking book are –

(a) assets, excluding assets which are deducted from CET1 Capital, fixed assets[1051], and equity exposures in the banking book;

(b) liabilities, including all non-remunerated deposits; and

(c) off-balance sheet items.

To avoid doubt, a Reporting Bank must exclude CET1 Capital from interest rate-sensitive positions.

2.3 For the purposes of this Annex –

(a) "time bucket" means any one of the time buckets set out in Table 10B-1;

(b) "time bucket midpoint" means any one of the time bucket midpoints set out in Table 10B-1;

(c) "notional repricing cash flow" means –

(i) repayment of principal or part of it, at any time;

(ii) any repricing of principal where repricing is said to occur at the earliest date at which the Reporting Bank or its counterparty is entitled to unilaterally change the interest rate, or at which the rate on a floating rate instrument changes automatically in response to a change in an external benchmark; or

[1050] For example, for a notional repricing cash flow of $100 with a maturity of 3Y, a Reporting Bank must split the cash flow into the adjacent time bucket midpoints of 2.5Y and 3.5Y. An amount of $50 is to be allocated to the time bucket midpoint of 2.5Y and the remaining $50 to the time bucket midpoint of 3.5Y, to retain the weighted average maturity of 3Y.

[1051] For example, real estate or intangible assets.

(iii) any interest payment on a tranche of principal that has not yet been repaid or repriced; and

(d) "repricing date" means the date of each repayment, repricing or interest payment.

2.4 A Reporting Bank may choose whether to deduct commercial margins and other spread components from the notional repricing cash flows, using a prudent and transparent methodology.

2.5 Where a Reporting Bank has chosen not to deduct commercial margins and other spread components of interest payments from the notional repricing cash flows, the Reporting Bank must slot the commercial margins and other spread components of interest payments on a tranche of principal that has not yet been repaid and which do not reprice until their contractual maturity, irrespective of whether the non-amortised principal has been repriced or not.

Table 10B-1 – Maturity schedule with 19 time buckets for notional repricing cash flows repricing at t^{CF}

Short-term rates			Medium-term rates			Long-term rates		
k	**Time bucket (M: months, Y: years)**	**Time bucket midpoint (years)**	**k**	**Time bucket (M: months, Y: years)**	**Time bucket midpoint (years)**	**k**	**Time bucket (M: months, Y: years)**	**Time bucket midpoint (years)**
1	Overnight	0.0028	9	$2Y < t^{CF} \leq 3Y$	2.5	14	$7Y < t^{CF} \leq 8Y$	7.5
2	$Overnight < t^{CF} \leq 1M$	0.0417	10	$3Y < t^{CF} \leq 4Y$	3.5	15	$8Y < t^{CF} \leq 9Y$	8.5
3	$1M < t^{CF} \leq 3M$	0.1667	11	$4Y < t^{CF} \leq 5Y$	4.5	16	$9Y < t^{CF} \leq 10Y$	9.5
4	$3M < t^{CF} \leq 6M$	0.375	12	$5Y < t^{CF} \leq 6Y$	5.5	17	$10Y < t^{CF} \leq 15Y$	12.5
5	$6M < t^{CF} \leq 9M$	0.625	13	$6Y < t^{CF} \leq 7Y$	6.5	18	$15Y < t^{CF} \leq 20Y$	17.5
6	$9M < t^{CF} \leq 1Y$	0.875				19	$t^{CF} > 20Y$	25
7	$1Y < t^{CF} \leq 1.5Y$	1.25						
8	$1.5Y < t^{CF} \leq 2Y$	1.75						

Process for Slotting and Decomposing Banking Book Instruments

2.6 Paragraphs 2.8 to 2.14 of this Annex set out the process for slotting and decomposing banking book instruments for –

(a) fixed rate positions or floating rate positions that are amenable to standardisation, including positions with embedded automatic interest rate options;

(b) positions that are less amenable to standardisation; and

(c) positions that are not amenable to standardisation.

2.7 For the purposes of this Annex –

(a) "fixed rate positions" mean positions which generate cash flows that are certain till the point of contractual maturity[1052]; and

(b) "floating rate positions" mean positions which generate cash flows that are not predictable past the next repricing date other than that the present value would be reset to par.

Process for Positions that are Amenable to Standardisation

2.8 The Reporting Bank must –

(a) in respect of fixed rate positions, allocate repricing cash flows either to time buckets or time bucket midpoints based on contractual maturity of such cash flows; and

(b) in respect of floating rate positions, treat such positions as a series of coupon payments until the next repricing and a par notional cash flow at the time bucket or time bucket midpoints closest to the next reset date, with no additional slotting of notional repricing cash flows to later time buckets or time bucket midpoints (other than the spread component which is not repriced).

2.9 Where a Reporting Bank allocates repricing cash flows based on time bucket midpoints for fixed rate positions, the Reporting Bank must allocate, all coupon cash flows and periodic or final principal repayments to the 2 adjacent time bucket midpoints closest to the contractual maturity.

2.10 Where a Reporting Bank allocates repricing cash flows based on time buckets midpoints for floating rate positions, the Reporting Bank must allocate all coupon and notional repricing cash flows to the 2 adjacent time bucket midpoints closest to the next reset date.

2.11 A Reporting Bank must ignore the optionality (whether sold or bought) arising from positions with embedded automatic interest rate options for the purposes of slotting notional repricing cash flows[1053] under paragraph 2.8 of this Annex, and must treat the stripped-out embedded automatic interest rate options as if they are explicit automatic interest rate options.

2.12 A Reporting Bank may, with the Authority's approval, categorise other positions as being amenable to standardisation and ignore any optionality associated with such positions if the Reporting Bank can demonstrate that such optionality is of immaterial consequence.

[1052] For example, fixed rate loans without embedded prepayment options, term deposits without redemption risk or other amortising products such as mortgage loans.

[1053] For example, a Reporting Bank must treat a floating rate mortgage loan or debt security with embedded interest rate caps and/or floors as if there were no interest rate cap and/or floor (i.e. as if it was a fixed rate loan until the next repricing date, where it would be fully repriced), and slot its full outstanding balance into the corresponding time band. Similarly, a Reporting Bank must treat a callable bond issued by a Reporting Bank at a fixed yield as if it matured at its longest contractual term, ignoring the call option.

Process for Positions that are Less Amenable to Standardisation[1054]

2.13 A Reporting Bank must use the methodology provided in paragraphs 5.1 to 5.5 of this Annex to treat explicit automatic interest rate options and embedded automatic interest rate options that are separated or stripped out from the Reporting Bank's assets or liabilities.

Process for Positions that are Not Amenable to Standardisation

2.14 A Reporting Bank must use the methodology provided in paragraphs 3.1 to 4.11 of this Annex for positions not amenable to standardisation. Positions not amenable to standardisation include –

(a) NMDs;

(b) fixed rate loans subject to prepayment risk; and

(c) term deposits subject to early redemption risk.

Section 3: Treatment of NMDs

3.1 A Reporting Bank must carry out the following steps in the order set out below for the treatment of NMDs:

(a) segment its NMDs according to the nature of the deposit and depositor in accordance with paragraphs 3.2 and 3.3 of this Annex;

(b) identify, for each NMD category, the core and non-core deposits in accordance with paragraphs 3.6 and 3.7 of this Annex, up to the caps on proportion of core deposits specified in Table 10B-2;

(c) determine an appropriate cash flow slotting for each NMD category in accordance with paragraphs 3.8 to 3.10 of this Annex and the average maturity limits specified in Table 10B-2.

NMD Categories

3.2 A Reporting Bank must –

(a) segment NMDs into –

(i) retail (transactional) NMDs;

(ii) retail (non-transactional) NMDs; and

(iii) wholesale NMDs;

[1054] For positions that are less amenable to standardisation, a common feature is optionality that makes the timing of notional repricing cash flows uncertain. Such optionality introduces a non-linearity, which suggests that delta-equivalent approximations are imprecise for large interest rate shock scenarios.

(b) treat deposits placed with it by an individual as retail deposits, and subject to sub-paragraph (c), deposits from legal entities, sole proprietorships or partnerships as wholesale deposits;

(c) treat deposits made by small business customers as retail deposits;

(d) where regular transactions are carried out of the account of an individual or small business customer, classify such retail deposits as being held in a transactional account[1055]; and

(e) classify all other retail deposits as being held in a non-transactional account.

3.3 A Reporting Bank may further segment its retail (transactional) NMDs referred to in paragraph 3.2(a)(i) of this Annex into retail (transactional, remunerated) NMDs and retail (transactional, non-remunerated) NMDs, subject to the Authority's approval.

3.4 For the purposes of paragraph 3.2(c) and (d) of this Annex and subject to paragraph 3.5 of this Annex, "small business customer" means any customer or group of customers –

(a) that is a small business;

(b) that the Reporting Bank does not have any exposure to, or that the Reporting Bank has exposures of not more than S$2 million;

(c) where the funding provided by the customer or group of customers is not more than S$2 million; and

(d) where the exposures to the customer or group of customers are managed by the Reporting Bank as retail exposures, or where the Reporting Bank does not have any exposure to the customer or group of customers, the funding provided by the customer or group of customers is managed by the Reporting Bank as retail deposits.

3.5 For the purposes of the definition of "small business customer" in paragraph 3.4 of this Annex –

(a) in determining the total exposures to, or total funding provided by, a group of customers, the Reporting Bank must ensure that the basis of aggregation of a group of customers follows the basis of aggregation set out in paragraph 7.3.16;

(b) an exposure is managed by the Reporting Bank as a retail exposure if the exposure is originated in the same manner as other retail exposures, and is managed by the Reporting Bank as part of a pool of similar exposures in its internal risk management systems consistently over time and in the same manner as other retail exposures; and

[1055] Examples of transactional retail deposits are ones where salaries are automatically credited or where the deposit is non-interest bearing.

(c) a funding is managed by the Reporting Bank as retail deposits if the funding is originated in the same manner as other retail deposits, and is managed by the Reporting Bank as part of a pool of similar deposits in its internal risk management systems consistently over time and in the same manner as other retail deposits.

Separation of NMDs

3.6 A Reporting Bank must distinguish between the stable and non-stable parts of each NMD category using observed volume changes over the past 10 years. The stable NMD portion refers to the portion that is found to remain undrawn with a high degree of likelihood.

3.7 A Reporting Bank must estimate its level of core deposits based on the proportion of stable NMDs which are unlikely to reprice even under significant changes in the interest rate environment and subject to the cap as shown in Table 10B-2 for each NMD category. The Reporting Bank must estimate its level of non-core deposits as the remainder of NMDs not treated as core deposits.

Cash Flow Slotting

3.8 A Reporting Bank must slot NMDs into the appropriate time bucket or time bucket midpoint.

3.9 A Reporting Bank must treat the non-core deposits mentioned in paragraph 3.7 of this Annex as overnight deposits and accordingly slot such non-core deposits into the overnight time bucket or overnight time bucket midpoint.

3.10 A Reporting Bank must determine the appropriate cash flow slotting procedure for each category of core deposits, up to the maximum average maturity for each category as specified in Table 10B-2.

Table 10B-2: Caps on Core Deposits and Average Maturity by Category

NMD category	Cap on proportion of core deposits (%)	Cap on average maturity of core deposits (years)
Retail & Transactional	90	5
Retail & Non-transactional	70	4.5
Wholesale	50	4

Section 4: Treatment of Positions with Behavioural Options other than NMDs

4.1 The treatment set out in paragraphs 4.2 to 4.11 of this Annex applies only to behavioural options related to retail customers. In the case where a wholesale customer has a behavioural option that may change the pattern of notional repricing cash flows, a Reporting Bank must use the methodology provided in paragraph 5.5 of this Annex.

Positions with Behavioural Options other than NMDs

4.2 A Reporting Bank must calculate the optionality of positions with behavioural options other than NMDs[1056], by using the formula A x B, where –

(a) A is the baseline estimate of loan prepayments and early withdrawal of fixed-term deposits given the prevailing term structure of interest rates; and

(b) B is the scenario-dependent scalar that reflects the likely behavioural changes in the exercise of the options.

4.3 A Reporting Bank must –

(a) determine the value of A referred to in paragraph 4.2(a) of this Annex; and

(b) where the Reporting Bank adopts the SA(IR) under paragraph 5.14(b) of Annex 10A, obtain the Authority's prior approval of the value of A.

Fixed Rate Loans Subject to Prepayment Risk

4.4 For any loan product where the economic cost of prepayments is never charged, or charged only for prepayments above a certain threshold, a Reporting Bank must use the steps set out in paragraphs 4.5 to 4.7 of this Annex to assign notional repricing cash flows.

4.5 A Reporting Bank must compute the CPR for each portfolio *p* of homogeneous prepayment-exposed loans denominated in currency *c* under an interest rate shock scenario *i* as set out in Table 10B-3 as either –

(a) $CPR_{i,c}^{p} = \min(1, \gamma_i \cdot CPR_{0,c}^{p})$;

(b) $CPR(k)_{i,c}^{p} = \min(1, \gamma_i \cdot CPR(k)_{0,c}^{p})$; or

(c) $CPR(t_k)_{i,c}^{p} = \min(1, \gamma_i \cdot CPR(t_k)_{0,c}^{p})$,

where –

(i) $CPR_{i,c}^{p}$ is a constant CPR, while $CPR(k)_{i,c}^{p}$ and $CPR(t_k)_{i,c}^{p}$ refer to the CPR for time bucket k and time bucket midpoint t_k, respectively where the CPR varies over the life of each loan in the portfolio;

[1056] In the case of fixed rate loans subject to prepayments and term deposits subject to early redemption risk, the customer has the option to repay the fixed rate loan early or to withdraw the term deposits before maturity, which, if exercised, will alter the timing of a Reporting Bank's cash flows. The customer's exercise of the option is, among other factors, influenced by changes in interest rates.

(ii) $CPR^{p}_{0,c}$ is a constant baseline CPR, while $CPR(k)^{p}_{0,c}$ and $CPR(t_k)^{p}_{i,c}$ refer to the CPR for time bucket k and time bucket midpoint t_k, respectively under the prevailing term structure of interest rates; and

(iii) γ_i is a multiplier applied for scenario i as given in Table 10B-3.

Table 10B-3: CPRs under the Shock Scenarios

Scenario number (i)	Interest rate shock scenarios	γ_i (scenario multiplier)
1	Parallel up	0.8
2	Parallel down	1.2
3	Steepener	0.8
4	Flattener	1.2
5	Short rate up	0.8
6	Short rate down	1.2

4.6 A Reporting Bank must reflect the prepayments on its fixed rate loans in its relevant cash flows (i.e. scheduled payments on the loans, prepayments and interest payments), by separating such payments into scheduled payments adjusted for prepayment and uncompensated prepayments as follows:

(a) where time buckets are used –

(i) $CF^{p}_{i,c}(k) = CF^{S}_{i,c}(k) + CPR^{p}_{i,c} \cdot N^{p}_{i,c}(k-1)$; or

(ii) $CF^{p}_{i,c}(k) = CF^{S}_{i,c}(k) + CPR(k)^{p}_{i,c} \cdot N^{p}_{i,c}(k-1)$;

(b) where time bucket midpoints are used –

(i) $CF^{p}_{i,c}(t_k) = CF^{S}_{i,c}(t_k) + CPR^{p}_{i,c} \cdot N^{p}_{i,c}(t_{k-1})$; or

(ii) $CF^{p}_{i,c}(t_k) = CF^{S}_{i,c}(t_k) + CPR(t_k)^{p}_{i,c} \cdot N^{p}_{i,c}(t_{k-1})$,

where –

(i) $CF^{p}_{i,c}(k)$ and $CF^{p}_{i,c}(t_k)$ refer to the notional repricing cashflows arising from a portfolio p of homogeneous prepayment-exposed loans denominated in currency c under an interest rate shock scenario i as set out in Table 10B-3;

(ii) $CF^{S}_{i,c}(k)$ and $CF^{S}_{i,c}(t_k)$ refer to the scheduled interest and principal repayment for each interest rate shock scenario i and currency c, adjusted to take into account prepayments;

(iii) k and tk refer to the time bucket and time bucket midpoint respectively, that the scheduled interest and principal repayment are slotted into;

(iv) $N_{i,c}^{p}(k-1)$ and $N_{i,c}^{p}(t_{k-1})$ denote the notional outstanding of portfolio p at time bucket k-1 and time bucket midpoint tk-1 respectively, for each interest rate scenario i and currency c; and

(v) the base cash flows (that is given the current interest rate yield curve and base CPR) are given by i=0.

4.7 Where a Reporting Bank has in place annual limits on uncompensated prepayments, it must apply these annual limits in the relevant cash flows referred to in paragraph 4.6 of this Annex.

Term Deposits Subject to Early Redemption Risk

4.8 A Reporting Bank must treat term deposits as being subject to early redemption risk, subject to paragraph 4.9 of this Annex.

4.9 A Reporting Bank may treat term deposits as fixed rate liabilities and slot the notional repricing cash flows of such deposits into the time buckets or time bucket midpoints up to their corresponding contractual maturity dates if the Reporting Bank can show to the satisfaction of the Authority that –

(a) the depositor has no legal right to withdraw the deposit; or

(b) an early withdrawal results in a significant penalty that at least compensates for the loss of interest between the date of withdrawal and the contractual maturity date and the economic cost of breaking the contract[1057].

4.10 A Reporting Bank must compute the TDRR for each portfolio as –

$$TDRR_{i,c}^{p} = \min\left(1, u_i \cdot TDRR_{0,c}^{p}\right)$$

where –

(a) $TDRR_{i,c}^{p}$ is the TDRR that is applicable to each homogeneous portfolio p of term deposits in currency c for each interest rate shock scenario i set out in Table 10B-4;

(b) $TDRR_{0,c}^{p}$ is the baseline TDRR under the current interest rate yield curve that is applicable to each homogeneous portfolio p of term deposits in currency c and is to be determined by the Reporting Bank; and

(c) u_i is the scalar multiplier applied for interest rate shock scenario i as given in Table 10B-4.

[1057] However, penalties often do not reflect such an economic calculation but are instead based on a simpler formula such as a percentage of accrued interest. In such cases, there is potential for changes to profit or loss arising from differences between the penalty charged and the actual economic cost of early withdrawal.

Table 10B-4: TDRR Scalars under the Shock Scenarios

Scenario number (i)	Interest rate shock scenarios	u_i (Scalar multiplier)
1	Parallel up	1.2
2	Parallel down	0.8
3	Steepener	0.8
4	Flattener	1.2
5	Short rate up	1.2
6	Short rate down	0.8

4.11 A Reporting Bank must calculate the notional repricing cash flows for term deposits which are expected to be redeemed early under any interest rate shock scenario *i* in accordance with the formula below, and slot such cash flows into the overnight time bucket (k=1) or time bucket midpoint (t_1) as follows –

(a) where time buckets are used –

$$CF_{i,c}^{p}(1) = TD_{0,c}^{p} \cdot TDRR_{i,c}^{p}; \text{ or}$$

(b) where time bucket midpoints are used –

$$CF_{i,c}^{p}(t_1) = TD_{0,c}^{p} \cdot TDRR_{i,c}^{p}$$

where –

(i) $CF_{i,c}^{p}(1)$ refers to the notional repricing cashflows arising from each homogeneous portfolio p of term deposits in currency c for each interest rate shock scenario i set out in Table 10B-4, which are expected to be redeemed early and slotted into the overnight time bucket;

(ii) $CF_{i,c}^{p}(t_1)$ refers to the notional repricing cashflows arising from each homogeneous portfolio p of term deposits in currency c for each interest rate shock scenario i set out in Table 10B-4, which are expected to be redeemed early and slotted into the overnight time bucket midpoint; and

(iii) $TD_{0,c}^{p}$ refers to the outstanding amount of term deposits for portfolio p and currency c.

Section 5: Automatic Interest Rate Options

5.1 A Reporting Bank must calculate an add-on for sold automatic interest rate options, whether explicit or embedded[1058]. A Reporting Bank may calculate an add-on for all bought automatic interest rate options or only for bought automatic interest rate options used for hedging sold automatic interest rate options.

[1058] The most important interest rate options that are likely to occur in the banking book are caps and floors, which are often embedded in banking products. Swaptions, such as prepayment options on non-retail products, may also be treated as automatic interest rate options as, in cases where such options are held by sophisticated financial market counterparties, the option holder will almost certainly exercise the option if it is in the holder's financial interest to do so.

5.2 For the purposes of paragraph 5.1 of this Annex, a Reporting Bank must calculate the add-on based on the following –

(a) for each sold automatic option *o* in currency *c*, the value change denoted $\Delta FVAO_{i,c}^{o}$ is calculated for each interest rate shock scenario *i*. The value change is given by –

(i) an estimate of the value of the option to the option holder, given –

(A) a yield curve in currency *c* under the interest rate shock scenario *i*; and

(B) a relative increase in the implicit volatility of 25%,

minus

(ii) the value of the sold option to the option holder, given the yield curve in currency c at the valuation date;

(b) for each bought automatic interest rate option q in currency c, the Reporting Bank must determine the change in value of the option, $\Delta FVAO_{i,c}^{q}$, between interest rate shock scenario i and the current interest rate term structure combined with a relative increase in the implicit volatility of 25%;

(c) the Reporting Bank's total measure for automatic interest rate option risk, $KAO_{i,c}$, under interest rate shock scenario *i* in currency *c* is calculated as –

$$KAO_{i,c} = \sum_{o=1}^{n_c} \Delta FVAO_{i,c}^{o} - \sum_{q=1}^{m_c} \Delta FVAO_{i,c}^{q}$$

where n_c is the number of sold options in currency *c*, and m_c is the number of bought options in currency *c.*

5.3 For the purposes of paragraph 5.2(a) and (b) of this Annex, the Reporting Bank must –

(a) calculate the value of the option to the option holder based on an internally-selected methodology; and

(b) where the Reporting Bank adopts the SA(IR) under paragraph 5.14(b) of Annex 10A, obtain the Authority's prior approval of the methodology.

5.4 Where a Reporting Bank calculates an add-on only for bought automatic interest rate options that are used for hedging sold automatic interest rate options, the Reporting Bank must, in respect of remaining bought interest rate options, add any change in market value that is reflected in regulatory capital to the total automatic interest rate option risk measure $KAO_{i,c}$.

5.5 For the purposes of paragraphs 5.2 to 5.4 of this Annex, the Reporting Bank must treat any behavioural option positions with wholesale customers that may change the pattern of notional repricing cash flows as embedded automatic interest rate options[1059]. A Reporting Bank may treat wholesale term deposits as fixed rate liabilities and slot their notional repricing cashflows into the time buckets or time bucket midpoints up to their corresponding contractual maturity dates if the Reporting Bank can demonstrate to the satisfaction of the Authority that –

(a) the depositor has no legal right to withdraw the deposit; or

(b) an early withdrawal results in a significant penalty that at least compensates for the loss of interest between the date of withdrawal and the contractual maturity date and the economic cost of breaking the contract[1060].

Section 6: Calculation of the Standardised EVE Measure

6.1 A Reporting Bank must calculate the loss in economic value of equity, $\Delta EVE_{i,c}$ under scenario *i* and currency *c* for each currency with material exposures, that is, currencies that account for more than 5% of its banking book assets or liabilities, as follows:

(a) slot all notional repricing cash flows into their respective time buckets $k \in \{1,2,\dots,K\}$ or time bucket midpoints $t_k, k \in \{1,2,\dots,K\}$ for each scenario i. Within a given time bucket k or time bucket midpoint t_k, the Reporting Bank must net[1061] all positive and negative notional repricing cash flows to form a single long or short position, with the netted parts removed from the calculation. This process applied across all time buckets or time bucket midpoints leads to a set of notional repricing cash flows $CF_{i,c}(k)$ or $CF_{i,c}(t_k), k \in \{1,2,\dots,K\}$[1062];

(b) weigh the net notional repricing cash flows in each time bucket k or time bucket midpoints t_k calculated in sub-paragraph (a) by $DF_{i,c}(t_k)$ a continuously compounded discount factor –

$$DF_{i,c}(t_k) = \exp\left(-R_{i,c}(t_k) \cdot t_k\right)$$

where –

[1059] An example of such an option would be a puttable fixed coupon bond issued by the Reporting Bank in the wholesale market, for which the owner has the right to sell the bond back to the Reporting Bank at a fixed price at any time.

[1060] However, penalties often do not reflect such an economic calculation but are instead based on a simpler formula such as a percentage of accrued interest. In such cases, there is potential for changes to profit or loss arising from differences between the penalty charged and the actual economic cost of early withdrawal.

[1061] Intra-bucket mismatch risk arises as notional repricing cash flows with different maturity dates, but falling within the same time bucket or time bucket midpoint, are assumed to match perfectly. This is mitigated by the high number of time buckets available.

[1062] Depending on the approach the Reporting Bank takes for NMDs, prepayments and products with other embedded behavioural options, the notional repricing cash flows may vary by scenario i (scenario-dependent cash flow products).

(i) $R_{i,c}(t_k)$ is the post-shock risk-free rate or risk-free rate including commercial margins and other spreads (only if the Reporting Bank has included commercial margins and other spread components in its cash flows) in currency c under interest rate shock scenario i as set out in Annex 10C; and

(ii) t_k is the midpoint of time bucket *k*;

(c) sum the risk-weighted net positions computed in sub-paragraph (b) to determine $EVE_{i,c}^{nao}$, the EVE in currency *c* under scenario *i* (excluding automatic interest rate positions) –

(i) where time buckets are used –

$$EVE_{i,c}^{nao} = \sum_{k=1}^{K} \mathrm{CF}_{i,c}(k) \cdot DF_{i,c}(t_k);$$ or

(ii) where time bucket midpoints are used –

$$EVE_{i,c}^{nao} = \sum_{k=1}^{K} \mathrm{CF}_{i,c}(t_k) \cdot DF_{i,c}(t_k);$$

(d) obtain the ΔEVE in currency c associated with scenario i by subtracting $EVE_{i,c}^{nao}$ from the EVE under the current interest rate term structure $EVE_{0,c}^{nao}$ and by adding the total measure for automatic interest rate risk $KAO_{i,c}$, as follows:

(i) where time buckets are used –

$$\Delta EVE_{i,c} = \sum_{k=1}^{K} \mathrm{CF}_{0,c}(k) \cdot DF_{0,c}(t_k) - \sum_{k=1}^{K} \mathrm{CF}_{i,c}(k) \cdot DF_{i,c}(t_k) + KAO_{i,c};$$ or

(ii) where time bucket midpoints are used –

$$\Delta EVE_{i,c} = \sum_{k=1}^{K} \mathrm{CF}_{0,c}(t_k) \cdot DF_{0,c}(t_k) - \sum_{k=1}^{K} \mathrm{CF}_{i,c}(t_k) \cdot DF_{i,c}(t_k) + KAO_{i,c}.$$

6.2 A Reporting Bank must ensure that the risk-free rate used for discounting purposes is representative of a risk-free zero coupon rate[1063].

6.3 A Reporting Bank must compute the standardised EVE risk measure by aggregating the EVE losses $\Delta EVE_{i,c} > 0$ under a given interest rate scenario *i*, and taking the maximum loss across all interest rate shock scenarios –

$$\text{Standardised EVE risk measure} = \max_{i \in \{1,2,\ldots,6\}} \left\{ \max\left(0; \sum_{c:\Delta\mathrm{EVE}_{i,c}>0} \underbrace{\Delta\mathrm{EVE}_{i,c}}_{loss\ in\ currency\ c} \right) \right\}$$

[1063] An example of an acceptable yield curve is a secured interest rate swap curve.

Annex 10C

STANDARDISED INTEREST RATE SHOCK SCENARIOS

1 A Reporting Bank must apply the interest rate shock scenarios –

(a) as set out in paragraph 2(a) to (f) of this Annex to calculate parallel and non-parallel gap risks for EVE; and

(b) as set out in paragraph 2(a) and (b) of this Annex for the calculation of NII,

in respect of each currency for which the Reporting Bank has material positions (i.e. currencies that account for more than 5% of the Reporting Bank's banking book assets or liabilities).

2 The interest rate shock scenarios referred to in paragraph 1 of this Annex are –

(a) parallel shock up;

(b) parallel shock down;

(c) steepener shock (short rates down and long rates up);

(d) flattener shock (short rates up and long rates down);

(e) short rates shock up; and

(f) short rates shock down.

3 The instantaneous interest rate shocks, $\overline{S}_{shocktype,c}$ to the risk-free rate for each shock type (parallel, short and long) and for each currency *c,* are provided in Table 10C-1 and given in basis points.

[MAS Notice 637 (Amendment) 2025]

Table 10C-1: Specified Size of Interest Rate Shocks $\overline{S}_{shocktype,c}$

	Argentina Peso (ARS)	Australian Dollar (AUD)	Brazilian Real (BRL)	Canadian Dollar (CAD)	Swiss Franc (CHF)	Chinese Yuan (CNY)	Euro (EUR)
Parallel	400	350	400	200	175	225	225
Short	500	425	500	275	250	300	350
Long	300	300	300	175	200	150	200

	British Pound (GBP)	Hong Kong Dollar (HKD)	Indonesian Rupiah (IDR)	Indian Rupee (INR)	Japanese Yen (JPY)	Korean Won (KRW)	Mexican Peso (MXN)
Parallel	275	225	400	325	100	225	400
Short	425	375	500	475	100	350	500
Long	250	200	300	225	100	225	200

	Russian Ruble (RUB)	Saudi Riyal (SAR)	Swedish Krona (SEK)	Singapore Dollar (SGD)	Turkish Lira (TRY)	United States Dollar (USD)	South African Rand (ZAR)
Parallel	400	275	275	175	400	200	325
Short	500	375	425	250	500	300	500
Long	300	250	200	225	300	225	300

[MAS Notice 637 (Amendment) 2025]

4 For currencies not specified in Table 10C-1, a Reporting Bank must use the following steps to derive their instantaneous interest rate shocks:

(a) Step 1: generate a time series of daily interest rates for the currencies not available in Table 10C-1 from the year 2000 (3 January 2000) to the year 2023 (29 December 2023), or based on such other historical period that is approved by the Authority, for time buckets 3M, 6M, 1Y, 2Y, 5Y, 7Y, 10Y, 15Y and 20Y;

(b) Step 2: generate a time series of interest rate changes for each time bucket k and for each currency c, $\Delta R_{k,c}(t)$, using the time series of daily interest rates derived in sub-paragraph (a) and a moving time window of 6 months as follows:

$$\Delta R_{k,c}(t) = R_{k,c}(t) - R_{k,c}(t-h)$$

where –

(i) c refers to a currency that is not available in Table 10C-1;

(ii) k refers to a time bucket (3M, 6M, 1Y, 2Y, 5Y, 7Y, 10Y, 15Y or 20Y); and

(iii) h refers to the moving time window of 6 months;

(c) Step 3: derive the time series of average interest rate changes, $\Delta R_{i,c}(t)$, by averaging across the time buckets specified in Table 10C-2 for each shock type (parallel, short and long) and for each currency c as follows:

$$\Delta R_{i,c}(t) = \frac{1}{N_i}\sum_{k} \Delta R_{k,c}(t)$$

where –

(i) c refers to a currency that is not available in Table 10C-1;

(ii) k refers to a time bucket (3M, 6M, 1Y, 2Y, 5Y, 7Y, 10Y, 15Y or 20Y);

(iii) i refers to the shock type (parallel, short and long); and

(iv) N_i refers to the number of time buckets corresponding to each shock type;

Table 10C-2: Average interest rate change by time bucket

Shock type	Time series of Average interest rate changes	Time buckets
Parallel	$\Delta R_{parallel,c}(t)$	3M, 6M, 1Y, 2Y, 5Y, 7Y, 10Y, 15Y, 20Y
Short	$\Delta R_{short,c}(t)$	3M, 6M, 1Y
Long	$\Delta R_{long,c}(t)$	10Y, 15Y, 20Y

(d) Step 4: derive the interest rate shock for each shock type (parallel, short and long) and for each currency c, $S_{i,c}$, by taking the 99.9th percentile value of the absolute values of $\Delta R_{i,c}(t)$ over the time period specified in sub-paragraph (a) as follows:

$$S_{i,c} = P_{99.9}\left(\left|\Delta R_{i,c}(t)\right|\right)$$

where –

(i) c refers to a currency that is not available in Table 10C-1; and

(ii) i refers to the shock type (parallel, short, long);

(e) Step 5: apply the following caps and floors to the interest rate shocks derived in sub-paragraph (d) to obtain the instantaneous interest rate shocks for each shock type (parallel, short and long) and for each currency c:

(i) parallel – floor of 100bps, cap of 400bps;

(ii) short – floor of 100bps, cap of 500bps;

(iii) long – floor of 100bps, cap of 300bps;

(f) Step 6: derive the final set of instantaneous interest rate shocks, $\overline{S}_{shocktype,c}$ for each shock type (parallel, short and long) and for each currency c by rounding the instantaneous interest rate shocks derived in sub-paragraph (e) to the nearest multiple of 25bps.

[MAS Notice 637 (Amendment) 2025]

5 Any approval granted under paragraph 4(a) of Annex 10C of MAS Notice 637 in force immediately before 1 July 2024 is treated as an approval under paragraph 4(a) of this Annex.

6 A Reporting Bank must maintain relevant documents and proper audit trails for the derivation of instantaneous shock rates for currencies not specified in Table 10C-1 to facilitate reviews by the Authority.

7 Subject to paragraph 8 of this Annex, a Reporting Bank must calculate the interest rate shocks and apply such shocks to each of the 6 interest rate shock scenarios referred to in paragraph 2 of this Annex as follows:

(a) parallel shock for currency c, $\Delta S_{parallel,c}(t_k)$, that refers to a constant parallel shock up or down across all time buckets –

$$\Delta S_{parallel,c}(t_k) = \pm \bar{S}_{parallel,c}$$

where –

(i) $\overline{S}_{parallel,c}$ refers to the instantaneous interest rate shock for currency c and the parallel shock type specified in paragraph 3 of this Annex or, in the case of currencies not specified in Table 10C-1, paragraph 4 of this Annex; and

(ii) t_k refers to the midpoint (in time) of the kth bucket;

(b) short rate shock for currency c, $\Delta S_{short,c}(t_k)$, that refers to a shock up or down that is greatest at the shortest tenor midpoint –

$$\Delta S_{short,c}(t_k) = \pm \bar{S}_{short,c} \cdot \alpha_{short}(t_k) = \pm \bar{S}_{short,c} \cdot e^{\frac{-t_k}{x}}$$

where –

(i) $\overline{S}_{short,c}$ refers to the instantaneous interest rate shock for currency c and the short shock type computed in paragraph 3 of this Annex or, in the case of currencies not specified in Table 10C-1, paragraph 4 of this Annex; and

(ii) $\alpha_{short}(t_k)$ refers to the shaping scalar and is defined as $(e^{\frac{-t_k}{x}})$, where x = 4, and e refers to the exponential function. The shaping scalar

diminishes towards zero at the tenor of the longest point in the term structure[1064,1065];

(c) long rate shock for currency c[1066], $\Delta S_{long,c}(t_k)$, that refers to a shock up or down that is greatest at the longest tenor midpoint –

$$\Delta S_{long,c}(t_k) = \pm \bar{S}_{long,c} \cdot \alpha_{long}(t_k) = \pm \bar{S}_{long,c} \cdot (1 - e^{\frac{-t_k}{x}})$$

where –

(i) $\bar{S}_{long,c}$ refers to the instantaneous interest rate shock for currency c and the long shock type computed in paragraph 3 of this Annex or, in the case of currencies not specified in Table 10C-1, paragraph 4 of this Annex; and

(ii) $\alpha_{long}(t_k)$ is related to the shaping scalar referred to in sub-paragraph (b)(ii) via the following relationship: $\alpha_{long}(t_k) = 1 - \alpha_{short}(t_k)$;

(d) steepener shock, $\Delta S_{steepener,c}(t_k)$, and flattener shock, $\Delta S_{flattener,c}(t_k)$, for currency c that involves rotations to the term structure of the interest rates where both the long and short rates are shocked to derive the steepener and flattener interest rate scenarios respectively. A Reporting Bank must obtain the shift in interest rates at each tenor midpoint by applying the following formulas to those shocks –

$$\Delta S_{steepener,c}(t_k) = -0.65 \cdot \left|\Delta S_{short,c}(t_k)\right| + 0.9 \cdot \left|\Delta S_{long,c}(t_k)\right|$$

$$\Delta S_{flattener,c}(t_k) = +0.8 \cdot \left|\Delta S_{short,c}(t_k)\right| - 0.6 \cdot \left|\Delta S_{long,c}(t_k)\right|$$

where –

(i) $\Delta S_{short,c}(t_k)$ refers to the short rate shock for currency c computed in sub-paragraph (b); and

(ii) $\Delta S_{long,c}(t_k)$ refers to the long rate shock for currency c computed in sub-paragraph (c).

[MAS Notice 637 (Amendment) 2025]

8 A Reporting Bank must, subsequent to the application of the 6 interest rate shock scenarios set out in paragraph 2 of this Annex, floor all post-shock interest rates (excluding commercial margins and other spread components) at -100bps.

1064 The value of x in the denominator of the function $e^{\frac{-t_k}{x}}$ controls the rate of decay of the shock.

1065 t_k is the midpoint (in time) of the k[th] bucket. There are 19 buckets in the standardised framework, but the analysis may be generalised to any number of buckets.

1066 The long rate shock is only used for computing the steepener and flattener shocks set out in paragraph 7(d) of this Annex.

GUIDELINES ON IRRBB

Section 1: Selection Process for a Reporting Bank's Internal Interest Rate Shock and Stress Scenarios

1.1 A Reporting Bank should have in place a selection process for its internal interest rate shock and stress scenarios by doing the following:

(a) have in place a stress testing framework for IRRBB which ensures that the opinions of the various experts on IRRBB in the Reporting Bank are taken into account. The identification of relevant shock and stress scenarios for IRRBB, the application of sound modelling approaches and the appropriate use of the stress testing results require the collaboration of different experts (e.g. traders, the treasury department, the finance department, the ALCO, the risk management and risk control departments and the Reporting Bank's economists) within the Reporting Bank;

(b) determine, by currency, a range of potential interest rate movements against which the Reporting Bank will measure its IRRBB exposures, and ensure that risk is measured under a reasonable range of potential interest rate scenarios, including some containing severe stress elements. In developing the scenarios, the Reporting Bank should consider a variety of factors, such as the shape and level of the current term structure of interest rates and the historical and implied volatility of interest rates. In low interest rate environments, the Reporting Bank should also consider negative interest rate scenarios and the possibility of asymmetrical effects of negative interest rates on its assets and liabilities;

(c) consider the nature and sources of its IRRBB exposures, the time it would need to take action to reduce or unwind unfavourable IRRBB exposures, and its capability and willingness to withstand accounting losses in order to reposition its risk profile. The Reporting Bank should select scenarios that provide meaningful estimates of risk and include a range of shocks that is sufficiently wide to allow the Board or its delegates, as the case may be, to understand the risks inherent in the Reporting Bank's products and activities. When developing interest rate shock and stress scenarios for IRRBB, the Reporting Bank should –

(i) have scenarios which are sufficiently wide-ranging to identify parallel and non-parallel gap risk, basis risk and option risk. In many cases, static interest rate shocks may be insufficient to assess IRRBB exposure adequately. The Reporting Bank should ensure that the scenarios are both severe and plausible, in light of the existing level of interest rates and the interest rate cycle;

(ii) give special consideration to instruments or markets where concentrations exist, because those positions may be more difficult to liquidate or offset in a stressful market environment;

(iii) assess the possible interaction of IRRBB with its related risks, as well as other risks (for example, credit risk and liquidity risk);

(iv) assess the effect of adverse changes in the spreads of new assets and liabilities which are replacing those assets and liabilities maturing over the horizon of the forecast on its NII;

(v) where the Reporting Bank has significant option risk, include scenarios that capture the exercise of such options. For example, a Reporting Bank that has products with sold caps or floors should include scenarios that assess how the risk positions would change should those caps or floors move into the money. Given that the market value of options fluctuates with changes in the volatility of interest rates, the Reporting Bank should develop interest rate assumptions to measure its IRRBB exposures to changes in interest rate volatilities; and

(vi) specify the assumptions used in building its interest rate shock and stress scenarios such as the term structure of interest rates that will be incorporated and the basis relationship between yield curves and between rate indices. The Reporting Bank should also estimate how interest rates that are administered or managed (for example, prime rates or retail deposit rates, as opposed to those that are purely market-driven) might change, and should document how these assumptions are derived;

(d) incorporate into forward-looking scenarios –

(i) changes in portfolio composition due to factors under the control of the Reporting Bank (for example, its acquisition and production plans), as well as external factors (for example, changing competitive, legal or tax environments);

(ii) the introduction of new products where only limited historical data are available; and

(iii) new market information and new emerging risks that are not necessarily covered by historical stress episodes;

(e) perform qualitative and quantitative reverse stress tests[1067] in order to –

(i) identify interest rate scenarios that could severely threaten the Reporting Bank's capital and earnings; and

(ii) reveal vulnerabilities arising from its hedging strategies and the potential behavioural reactions of its customers.

[1067] Refer to "Principles of sound stress testing practices and supervision" issued by the BCBS in October 2018.

Section 2: IRRBB Measurement System and Models

2.1 For the purposes of paragraph 5.23 of Annex 10A, Column (B) of Table 10D-1 sets out dimensions that may influence the exercise of embedded behavioural options, in respect of the products set out in column (A) of Table 10D-1.

Table 10D-1 – Dimensions influencing the exercise of embedded behavioural options

(A) Product	(B) Dimensions influencing the exercise of the embedded behavioural options
Fixed rate loans subject to prepayment risk	Loan size, loan-to-value (LTV) ratio, obligor characteristics, contractual interest rates, seasoning, geographical location, original and remaining maturity, other historical factors, and other macroeconomic variables such as stock indices, unemployment rates, GDP, inflation and housing price indices.
Fixed rate loan commitments	Obligor characteristics, geographical location (including competitive environment and local premium conventions), customer relationship with the Reporting Bank as evidenced by cross-products, remaining maturity of the commitment, seasoning and remaining term of the mortgage.
Term deposits subject to early redemption risk	Deposit size, depositor characteristics, funding channel (for example, direct or brokered deposit), contractual interest rates, seasonal factors, geographical location and competitive environment, remaining maturity, other historical factors and other macroeconomic variables such as stock indices, unemployment rates, GDP, inflation and housing price indices.
Non-maturity deposits (NMDs)	Responsiveness of product rates to changes in market interest rates, current level of interest rates, spread between the Reporting Bank's offer rate and market rate, competition from other firms, the Reporting Bank's geographical location and demographic and other relevant characteristics of its customer base.

2.2 For the purposes of paragraph 5.24 of Annex 10A, a Reporting Bank should –

(a) for accurate and timely measurement of IRRBB for effective risk management and control, ensure that its risk measurement system is able to identify and quantify the major sources of IRRBB exposure. The Reporting Bank should select the most appropriate form of measurement system by considering the mix of its business lines and the risk characteristics of its activities;

(b) rely on more than one measure of risk, given that risk management systems tend to vary in how they capture the components of IRRBB. The Reporting Bank should use a variety of methodologies to quantify its IRRBB exposures under both the economic value and earnings-based measures, ranging from simple calculations based on static simulations

using current holdings to more sophisticated dynamic modelling techniques that reflect potential future business activities;

(c) ensure that its management information system allows it to retrieve accurate IRRBB information in a timely manner and captures interest rate risk data on all its material IRRBB exposures. The Reporting Bank should also ensure that there is sufficient documentation of the major data sources used in the Reporting Bank's risk measurement process;

(d) use data inputs that are automated as much as possible to reduce administrative errors. The Reporting Bank should periodically review and test the data mapping against an approved model version, and should monitor the type of data extracts and set appropriate controls; and

(e) ensure that, where cash flows are slotted into different time buckets (for example, for gap analyses) or assigned to different vertex points to reflect the different tenors of the interest rate curve, the slotting criteria is stable over time to allow for a meaningful comparison of risk figures over different periods.

2.3 For the purposes of paragraph 5.26 of Annex 10A, a Reporting Bank should –

(a) ensure that the validation of IRRBB measurement methods and assessment of corresponding model risk is included in a formal policy process that is reviewed and approved by the Board or its delegates. The Reporting Bank should specify the management roles and designate the parties responsible for the development, implementation and use of models in the policy. In addition, the Reporting Bank should specify and integrate, within the governance processes for model risk management, the model oversight responsibilities and policies including the development of initial and ongoing validation procedures, evaluation of results, approval, version control, exception, escalation, modification and decommission processes;

(b) have in place an effective IRRBB validation framework, which should include 3 core elements, namely –

(i) evaluation of conceptual and methodological soundness, including developmental evidence;

(ii) ongoing model monitoring, including process verification and benchmarking; and

(iii) outcomes analysis, including backtesting of key internal parameters (for example, stability of deposits, prepayments, early redemptions, pricing of instruments);

(c) address the expected initial and ongoing model validation activities, establish in the policy set out in sub-paragraph (a) a hierarchical process for determining model risk soundness based on both quantitative and qualitative dimensions such as size, impact, past performance and familiarity with the modelling technique employed;

(d) ensure that model risk management for IRRBB measures follows a holistic approach that begins with motivation, development and implementation by model owners and users. The Reporting Bank should ensure that the process for determining model inputs, assumptions, modelling methodologies and outputs is reviewed and validated independently of the development of IRRBB models, prior to the model receiving authorisation for usage. The Reporting Bank should present the review and validation results and any recommendations on model usage to the Board or its delegates for approval, and upon approval, subject the model to ongoing review, process verification and validation at a frequency that is consistent with the level of model risk determined and approved by the Reporting Bank;

(e) ensure that the ongoing validation process establishes a set of exception trigger events that obligate the model reviewers to notify the Board or its delegates in a timely fashion, in order to determine any corrective actions or restrictions on model usage. The Reporting Bank should designate clear version control authorisations, where appropriate, to model owners. With the passage of time and due to observations and new information gained over time, the Reporting Bank may modify or decommission an approved model. The Reporting Bank should have in place policies for model transition, including change and version control authorisations and documentation;

(f) include in the validation process model inputs or assumptions which may be sourced from IRRBB models developed by third-party vendors, related modelling processes or sub-models (both in-house and vendor-sourced). The Reporting Bank should document and explain model specification choices as part of the validation process;

(g) where the Reporting Bank purchases IRRBB models, ensure adequate documentation of its use of those models, including any specific customisation. If vendors provide input for market data, behavioural assumptions or model settings, the Reporting Bank should have a process in place to determine if those inputs are reasonable for its business and the risk characteristics of its activities; and

(h) ensure that its IA review the model risk management process as part of its annual risk assessment and audit plans, where such audit activity should not duplicate model risk management processes, but should review the integrity and effectiveness of the risk management system and the model risk management process.

2.4 For the purposes of paragraph 5.27 of Annex 10A, a Reporting Bank should –

(a) report risk measures to the Board or its delegates regularly, and compare current exposure with policy limits. In particular, the Reporting Bank should report the results of the periodic model reviews and audits as well as comparisons of past forecasts or risk estimates with actual results to inform the Board or its delegates of potential modelling shortcomings on a regular basis. The Reporting Bank should clearly identify portfolios that

may be subject to significant mark-to-market movements within the Reporting Bank's management information system and subject such portfolios to oversight in line with any other portfolios exposed to market risk;

(b) ensure that the reports prepared for the Board or its delegates, as the case may be, include the following:

(i) summaries of the Reporting Bank's aggregate IRRBB exposures, and explanatory text that highlights the assets, liabilities, cash flows, and strategies that are driving the level and direction of IRRBB;

(ii) reports demonstrating the Reporting Bank's compliance with policies and limits;

(iii) key modelling assumptions such as NMD characteristics, prepayments on fixed rate loans and currency aggregation;

(iv) results of stress tests, including assessment of sensitivity to key assumptions and parameters;

(v) summaries of the reviews of IRRBB policies, procedures and adequacy of the measurement systems, including any findings of internal and external auditors, or other equivalent external parties (such as consultants); and

(c) ensure that reports detailing its IRRBB exposures are provided to the Board or its delegates, as the case may be, on a timely basis and reviewed regularly. The Reporting Bank should ensure that such IRRBB reports provide aggregate information as well as sufficient supporting detail to enable the Board or its delegates, as the case may be, to assess the sensitivity of the Reporting Bank to changes in market conditions, with particular reference to portfolios that may potentially be subject to significant mark-to-market movements. The Board or its delegates, as the case may be, should review the Reporting Bank's IRRBB management policies and procedures in light of the reports, to ensure that they remain appropriate and sound. The Board or its delegates, as the case may be, should also ensure that analysis and risk management activities related to IRRBB are conducted by competent staff with technical knowledge and experience, consistent with the nature and scope of the Reporting Bank's activities.

Section 3: Internal Assessment of Capital Adequacy for IRRBB

3.1 For the purposes of evaluating its capital adequacy for IRRBB, a Reporting Bank should take the following into account:

(a) the size and tenor of internal limits on IRRBB exposures, and whether these limits are reached at the point of capital calculation;

(b) the effectiveness and expected cost of hedging open positions that are intended to take advantage of internal expectations of the future level of interest rates;

(c) the sensitivity of the internal measures of IRRBB to key modelling assumptions, including key assumptions on ΔEVE such as the inclusion or exclusion of commercial margins, the Reporting Bank's actual equity allocation profile, the stability of NMDs and prepayment optionality;

(d) the impact of interest rate shock and stress scenarios set out in paragraph 5.18 of Annex 10A on positions priced off different interest rate indices;

(e) the impact on economic value and NII of mismatched positions in different currencies;

(f) the impact of embedded losses;

(g) the distribution of capital relative to risks across different entities in the banking group, in addition to overall Group level capital adequacy;

(h) the drivers of the underlying risk;

(i) the circumstances under which the risk might crystallise.

3.2 A Reporting Bank should –

(a) ensure that the contribution of IRRBB to its overall internal capital assessment is based on the Reporting Bank's IMS outputs, taking account of key assumptions and risk limits. The Reporting Bank should also ensure that the overall level of capital is commensurate with its actual measured level of risk (including for IRRBB) and its risk appetite, and is duly documented in its ICAAP report;

(b) develop its own methodologies for capital allocation, based on its risk appetite. In determining the appropriate level of capital, the Reporting Bank should consider both the amount and the quality of capital needed;

(c) consider its capital adequacy for IRRBB in relation to the risks to economic value, given that such risks are embedded in the Reporting Bank's assets, liabilities and off-balance sheet items. For risks to future earnings, given the possibility that future earnings may be lower than expected, the Reporting Bank should consider capital buffers. The Reporting Bank should consider –

(i) the ΔEVE under a variety of interest rate shock and stress scenarios. Where the Reporting Bank's EVE is significantly sensitive to interest rate shock and stress scenarios, the Reporting Bank should assess the impact on its capital adequacy arising from financial instruments held at market value, and the potential impact in the case where banking book positions held at historical cost become subject to market valuation; and

(ii) the strength and stability of the earnings stream and the level of income needed to generate and maintain normal business operations. Where the Reporting Bank has a high level of IRRBB exposures, that could under a plausible range of market scenarios, result in the Reporting Bank reporting losses or curtailing normal dividend distribution and business operations, the Reporting Bank should ensure that it has sufficient capital to withstand the adverse impact of such events until it can implement mitigating actions such as reducing IRRBB exposures or increasing capital; and

(d) ensure that its evaluation of its capital adequacy for IRRBB as part of its ICAAP flows through to assessments of capital associated with business lines.

Section 4: Further Guidance

4.1 For further guidance, a Reporting Bank should refer to "SRP 98 – Application guidance on interest rate risk in the banking book", issued by the BCBS in December 2019, and any other relevant publications issued by the BCBS and the Authority in this area.

PART XI: PUBLIC DISCLOSURE REQUIREMENTS

Division 1: Introduction

11.1.1 The public disclosure requirements set out in this Part complement the minimum capital requirements under Pillar 1 and the supervisory review process set out in Part X. The purpose of the requirements in this Part is to promote market discipline by requiring disclosures of key information relating to a Reporting Bank's regulatory capital and risk exposures on a consistent and comparable basis. Some disclosures also serve as a qualifying criterion for more advanced approaches under Pillar 1[1068].

Principles for Disclosures

11.1.2 A Reporting Bank must apply the following principles[1069] in making its disclosures:

(a) the Reporting Bank must ensure that disclosures are clear. The Reporting Bank must present the disclosures in a form that is understandable and communicate the disclosures through an accessible medium. The Reporting Bank must highlight important messages which must be easily located. The Reporting Bank must explain complex issues in simple language with key terms defined. The Reporting Bank must present related risk information together;

(b) the Reporting Bank must ensure that disclosures are comprehensive. The Reporting Bank must disclose its main activities and all significant risks, supported by relevant data and information. The Reporting Bank must describe significant changes in risk exposures between reporting periods, together with the management's response. The Reporting Bank must provide sufficient qualitative and quantitative information on its processes and procedures for identifying, measuring and managing those risks. The Reporting Bank must ensure that the level of detail of such disclosures is proportionate to the complexity of the Reporting Bank. The Reporting Bank's disclosures must reflect how the Board and senior management internally assess and manage risks and strategy, helping users to better understand the risk tolerance or appetite of the Reporting Bank;

(c) the Reporting Bank must ensure that disclosures provide meaningful information to users. The Reporting Bank must highlight its most significant current and emerging risks and how these risks are managed, including information that is likely to receive market attention;

(d) the Reporting Bank must ensure that disclosures are consistent over time[1070]. The Reporting Bank must highlight and explain additions, deletions and important changes in disclosures from previous reports,

[1068] Disclosures marked with an asterisk in this Part are conditions for use of a particular approach for the calculation of regulatory capital.

[1069] These principles aim to strengthen the transparency and quality of risk disclosures that will enable users to better understand and compare the Reporting Bank's business and its risks.

[1070] This is to enable users to identify trends in the risk profile of the Reporting Bank across all significant aspects of its business.

including those arising from the Reporting Bank's specific, regulatory or market developments.

Division 2: General Requirements

Sub-division 1: Scope of Application

11.2.1 This Part applies to a Reporting Bank at the Group level, in accordance with paragraph 3.1.1(b) unless otherwise stated.

11.2.2 A Reporting Bank need not comply with the requirements in this Part if it is a subsidiary of –

(a) another Reporting Bank which is subject to the requirements in this Part; or

(b) a financial holding company which is subject to requirements similar to that set out in this Part.

Sub-division 2: Frequency and Timing of Disclosures

11.2.3 A Reporting Bank must make the disclosures required under Division 3 of this Part according to the frequency of disclosure for each disclosure requirement set out in Table 11-1.

11.2.4 Notwithstanding paragraph 11.2.3, where the Reporting Bank is not designated by the Authority as a D-SIB and –

(a) has not been notified by the Authority that it is an internationally active bank; or

(b) is a subsidiary of a banking institution incorporated outside Singapore,

the Reporting Bank may make the disclosures required under Division 3 of this Part, except for disclosure requirements set out in Table 11-2, as follows:

(i) where the frequency of disclosure for a disclosure requirement set out in Table 11-1 is on a quarterly basis, the Reporting Bank may make such disclosures on a semi-annual basis;

(ii) where the frequency of disclosure for a disclosure requirement set out in Table 11-1 is on a semi-annual basis, the Reporting Bank may make such disclosures on an annual basis.

11.2.5 For disclosures which are required to be made for a reporting period ending otherwise than at the close of an annual reporting period in this Part, a Reporting Bank which issues quarterly financial statements must make such disclosure concurrently with the publication of its quarterly financial statements, and in any case no later than 45 days after the end of the reporting period. A Reporting Bank which does not issue quarterly

financial statements must make such disclosure no later than 45 days after the end of the reporting period.

11.2.6 For disclosures which are required to be made for a reporting period ending at the close of an annual reporting period in this Part, a Reporting Bank which issues an annual report must make such disclosure concurrently with the publication of its annual report or financial statements, and in any case no later than 4 months after the end of the reporting period. A Reporting Bank which does not issue an annual report must make such disclosure no later than 4 months after the end of the reporting period.

11.2.7 A Reporting Bank must make the disclosures required under Division 3 of this Part with effect from 1 July 2024.

Sub-division 3: Location and Form of Disclosures

11.2.8 Subject to paragraphs 11.3.18 and 11.3.30, a Reporting Bank must disclose the information required in Division 3 of this Part, in a standalone document ("standalone Pillar 3 report"), which may be appended to, or form a discrete section of its annual report or periodic financial statements. The Reporting Bank must ensure that the standalone Pillar 3 report is easily identifiable to users. The Reporting Bank must make available on its website, an archive of a minimum of 5 years, of information disclosed pursuant to this Part relating to prior reporting periods.

11.2.9 A Reporting Bank may disclose items set out in the tables marked as having a flexible format in Division 3 of this Part in a separate document from the standalone Pillar 3 report, provided that –

(a) the level of assurance on the reliability of data in the separate document is equivalent to, or greater than, the internal assurance level required for the standalone Pillar 3 report, as set out in paragraphs 11.2.18 to 11.2.20; and

(b) the Reporting Bank includes in the standalone Pillar 3 report, the following information:

(i) the title and the number of the disclosure requirement;

(ii) the full name of the separate document in which the disclosure requirement has been published;

(iii) a URL to such disclosure of information on its website, where relevant;

(iv) the page and paragraph number of the separate document where the disclosure requirement may be located.

11.2.10 A Reporting Bank must complete the quantitative data required under the tables in Division 3 of this Part in accordance with the definitions provided in the table. The Reporting Bank must present narrative commentaries to supplement such required quantitative disclosures in a format to be determined at the Reporting Bank's discretion and to explain any significant changes between reporting periods and any other issues of interest to market participants.

Tables with a Fixed Format in Division 3 of this Part

11.2.11 Where the format of a table in Division 3 of this Part is marked as fixed, a Reporting Bank must complete the fields in accordance with the instructions given in the table. Subject to paragraph 11.2.16, the Reporting Bank may delete rows or columns from the table but must not alter the numbering of subsequent rows and columns. The Reporting Bank may add additional sub-rows and sub-columns to the table to provide additional details to a disclosure requirement. However, the Reporting Bank must not alter the numbering of prescribed rows and columns in the table.

Tables with a Flexible Format in Division 3 of this Part

11.2.12 Where the format of a table in Division 3 of this Part is marked as flexible, a Reporting Bank may present the required information either in the format provided in the table, or in one that is more suitable for the Reporting Bank. However, where a customised presentation of the information is used, the Reporting Bank must provide information that is comparable[1071] with the disclosure requirements set out in the table.

Disclosure Requirements Presented in the Form of Tables or Templates in Division 3 of this Part

11.2.13 For the disclosure requirements presented in the form of templates or tables in Division 3 of this Part, a Reporting Bank has the discretion to determine the form of the disclosures required in this Part, and may choose to use either graphical or such other forms or both, that the Reporting Bank deems appropriate to assist users in forming an opinion on the risk profile and capital adequacy of the Reporting Bank.

Sub-division 4: Omissions

11.2.14 A Reporting Bank may omit certain disclosures in this Part if the omitted item is proprietary or confidential in nature, where "*proprietary*" and "*confidential*" are defined, respectively, as follows:

(a) proprietary information refers to information that if shared with the public would undermine the competitive position of the Reporting Bank;

(b) confidential information refers to information that if shared with the public would cause the Reporting Bank to breach the terms of a legal agreement.

11.2.15 The Reporting Bank must identify the specific information that it has omitted to disclose in the narrative commentary to the disclosure requirement and provide a reason for the omission. The Reporting Bank must also disclose general qualitative information about the subject matter of the requirement.

11.2.16 In line with the principle set out in paragraph 11.1.2(c), a Reporting Bank may omit part or all of the disclosures in the tables in Division 3 of this Part, if the information required to be disclosed is assessed by the Reporting Bank not to provide meaningful information to users. In particular, the Reporting Bank must assess if the information required to be disclosed would provide meaningful information to users in accordance with

[1071] At a similar level of granularity.

the requirements set out in the scope of application fields in the tables. The Reporting Bank which omits disclosures in the tables in Division 3 of this Part on the basis that the disclosure of the information is not meaningful must state clearly in a narrative commentary why such information is considered not to be meaningful to users. Where applicable, the Reporting Bank must describe the portfolios excluded from the disclosures and the aggregate total RWA of those portfolios.

11.2.17 A Reporting Bank may omit disclosures required under any item in this Part, marked as qualitative disclosures, if the Reporting Bank –

(a) is a subsidiary of a banking institution that is incorporated outside Singapore and the banking institution is subject to disclosure requirements similar to those set out in this Part on a consolidated basis that is inclusive of the operations of the Reporting Bank; and

(b) makes clear reference in the standalone Pillar 3 report to the location of the relevant disclosures made by the banking institution referred to in sub-paragraph (a).

Sub-division 5: Disclosure Policy

11.2.18 A Reporting Bank must ensure that the information it discloses in accordance with Division 3 of this Part is subject, at a minimum, to the same level of internal review and internal control processes as the information provided by the Reporting Bank for its financial reporting, if applicable, and the level of assurance must be the same as for information provided within the management discussion and analysis part of its annual report.

11.2.19 A Reporting Bank must have in place a written disclosure policy which sets out the approach of the Reporting Bank for determining which disclosures it will make and the internal controls over the disclosure process, and the Reporting Bank must ensure that this policy is approved by the Board of the Reporting Bank.

11.2.20 A Reporting Bank must describe the key elements of the disclosure policy in the year-end standalone Pillar 3 report or cross-reference to another location[1072] where they are available. The Reporting Bank must ensure that the Board and senior management of the Reporting Bank are responsible for establishing and maintaining effective internal control processes over the disclosure of financial information, including the disclosures required under this Part, and the appropriate review of the disclosures. The Reporting Bank must ensure that one or more senior officers of the Reporting Bank, ideally a Board member or equivalent, attest in writing that the disclosures required under this Part have been prepared in accordance with the internal control processes approved by the Board of the Reporting Bank.

11.2.21 A Reporting Bank may disclose[1073] additional quantitative and qualitative information to provide users with a broader picture of the Reporting Bank's risk position and promote market discipline.

[1072] For example, the Reporting Bank's website or publicly available regulatory reports.

[1073] If the Reporting Bank discloses additional quantitative and qualitative information, it should ensure that such information provides sufficient meaningful information to enable users to understand and analyse any figures provided, and is accompanied by a qualitative discussion.

Sub-division 6: Transitional Arrangements

11.2.22 For templates which require the disclosure of data points for current and previous reporting periods, the Reporting Bank may omit the disclosure of the data point for the previous period when a metric is reported for the first time unless such disclosure of the data point is explicitly stated in the disclosure requirement.

11.2.23 When a Reporting Bank is applying transitional arrangements permitted by this Notice, the Reporting Bank must report the transitional data unless otherwise specified in the relevant disclosure templates or this Division or the Reporting Bank is applying the fully loaded requirements.[1074] To avoid doubt, this paragraph does not apply to the transitional arrangement in respect of the output floor calibration set out in paragraph 5.1.6 and risk weights applicable to equity exposures as set out in paragraph 7.3.85.

11.2.24 Despite paragraph 11.2.23, the Reporting Bank must omit the disclosures in the tables in Sub-division 7 and Sub-division 15 of Division 3 of this Part, for the period from 1 July 2024 to 31 December 2024 (both dates inclusive).

11.2.25 Despite paragraph 11.2.23, the Reporting Bank must make the disclosures in Table 11-24 and the tables in Sub-division 7 of Division 3 of Part XI of MAS Notice 637 in force immediately before 1 July 2024, for the period from 1 July 2024 to 31 December 2024 (both dates inclusive).

11.2.26 Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, for the reporting period ending before 1 July 2024, if the Reporting Bank has not by 1 July 2024 made the disclosures referred to in paragraph 11.2.3 of MAS Notice 637 in force immediately before 1 July 2024, paragraphs 11.2.5 and 11.2.6 of this Notice does not apply, and the Reporting Bank must comply with paragraphs 11.2.4 and 11.2.5 of MAS Notice 637 in force immediately before 1 July 2024.

11.2.27 Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, where the Reporting Bank is or was required to comply with paragraph 11.2.3 of MAS Notice 637 in force immediately before 1 July 2024, the Reporting Bank must continue to make available on its website an archive of a minimum of five years of information disclosed pursuant to Part XI of MAS Notice 637 in force immediately before 1 July 2024 relating to prior reporting periods.

[1074] The Reporting Bank should clearly state whether the figures disclosed are computed on a transitional or fully-loaded basis. Where applicable, the Reporting Bank under a transitional regime may separately disclose fully-loaded figures in addition to transitional metrics.

Division 3: Specific Disclosure Requirements

Sub-division 1: Introduction

11.3.1 Table 11-1 presents a summary of the disclosure requirements set out in Sub-divisions 2 to 15 of this Division.

11.3.2 For Table 11B-1, the frequency of disclosure may, with the prior approval of the Authority, be made with at least the same frequency as the publication of the Reporting Bank's financial statements. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, any approval granted under footnote 800A of MAS Notice 637 in force immediately before 1 July 2024, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 11.3.2 of this Notice. The Authority may at any time vary or revoke any existing conditions or restrictions of approval, or impose conditions or restrictions, or additional conditions or restrictions.

11.3.3 For Table 11D-1, the frequency of disclosure may, with the prior approval of the Authority, be made with at least the same frequency as the publication of the Reporting Bank's financial statements. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, any approval granted under footnote 800B of MAS Notice 637 in force immediately before 1 July 2024, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 11.3.3 of this Notice. The Authority may at any time vary or revoke any existing conditions or restrictions of approval, or impose conditions or restrictions, or additional conditions or restrictions.

Table 11-1: Summary of Disclosure Requirements

	Tables	Fixed format	Flexible format	Quarterly	Semi-annually	Annually
Sub-division 2: Overview of Key Prudential Metrics, Risk Management and RWA	Table 11-2: Key Metrics	✓		✓		
	Table 11-3: Risk Management Approach		✓			✓
	Table 11-4: Overview of RWA	✓		✓		
	Table 11-5: Comparison of Modelled and Standardised RWA at Risk Level	✓		✓		
	Table 11-6: Comparison of Modelled and Standardised RWA for Credit Risk at Asset Class Level	✓			✓	
Sub-division 3: Linkages between Financial Statements and Regulatory Exposures	Table 11-7: Differences between Accounting and Regulatory Scopes of Consolidation and Mapping of Financial Statement Categories with Regulatory Risk Categories		✓			✓
	Table 11-8: Main Sources of Differences between Regulatory Exposure Amounts and Carrying Amounts in Financial Statements		✓			✓
	Table 11-9: Qualitative Disclosure of Differences between Carrying Amounts in Financial Statements and Regulatory Exposure Amounts		✓			✓
	Table 11-10: Prudent Valuation Adjustments	✓				✓
Sub-division 4: Credit Risk	Table 11-11: General Qualitative Disclosures on Credit Risk		✓			✓
	Table 11-12: Credit Quality of Assets	✓			✓	
	Table 11-13: Changes in Stock of Defaulted Loans and Debt Securities	✓			✓	
	Table 11-14: Additional Disclosures related to the Credit Quality of Assets		✓			✓

	Tables	Fixed format	Flexible format	Quarterly	Semi-annually	Annually
	Table 11-15: Qualitative Disclosures related to CRM Techniques		✓			✓
	Table 11-16: Overview of CRM Techniques	✓			✓	
	Table 11-17: Qualitative Disclosures on the Use of External Credit Ratings Under the SA(CR)		✓			✓
	Table 11-18: SA(CR) – Credit Risk Exposure and CRM Effects	✓			✓	
	Table 11-19: SA(CR) – Exposures by Asset Classes and Risk Weights	✓			✓	
	Table 11-20: Qualitative Disclosures for IRBA Models		✓			✓
	Table 11-21: IRBA – Credit Risk Exposures by Portfolio and PD Range	✓			✓	
	Table 11-22: IRBA – Effect on RWA of Credit Derivatives Used as CRM	✓			✓	
	Table 11-23: IRBA – RWA Flow Statement for Credit Risk Exposures	✓		✓		
	Table 11-24: IRBA – Backtesting of PD Per Portfolio		✓			✓
	Table 11-25: IRBA – Specialised Lending under the Slotting Approach		✓		✓	
Sub-division 5: Counterparty Credit Risk	Table 11-26: Qualitative Disclosures related to CCR		✓			✓
	Table 11-27: Analysis of CCR Exposure by Approach	✓			✓	
	Table 11-28: Standardised Approach – CCR Exposures by Portfolio and Risk Weights	✓			✓	
	Table 11-29: IRBA – CCR Exposures by Portfolio and PD Range	✓			✓	

	Tables	Fixed format	Flexible format	Quarterly	Semi-annually	Annually
	Table 11-30: Composition of Collateral for CCR Exposure		✓		✓	
	Table 11-31: Credit Derivative Exposures		✓		✓	
	Table 11-32: RWA Flow Statements under the CCR Internal Models Method	✓		✓		
	Table 11-33: Exposures to Central Counterparties	✓			✓	
Sub-division 6: Securitisation	Table 11-34: Qualitative Disclosures related to Securitisation Exposures		✓			✓
	Table 11-35: Securitisation Exposures in the Banking Book		✓		✓	
	Table 11-36: Securitisation Exposures in the Trading Book		✓		✓	
	Table 11-37: Securitisation Exposures in the Banking Book and Associated Regulatory Capital Requirements – A Reporting Bank acting as Originator or as Sponsor	✓			✓	
	Table 11-38: Securitisation Exposures in the Banking Book and Associated Regulatory Capital Requirements – A Reporting Bank acting as Investor	✓			✓	
Sub-division 7: Market Risk	Table 11-39: Qualitative Disclosures related to Market Risk		✓			✓
	Table 11-40: Qualitative Disclosures related to IMA		✓			✓
	Table 11-41: Market Risk under SA(MR)	✓			✓	
	Table 11-42: Market Risk for Banks using the IMA	✓		✓		
	Table 11-43: Market Risk under the SSA(MR)	✓			✓	

	Tables	Fixed format	Flexible format	Quarterly	Semi-annually	Annually
Sub-division 8: Operational Risk	Table 11-44: General Qualitative Information on a Reporting Bank's Operational Risk Framework		✓			✓
	Table 11-45: Historical Losses	✓				✓
	Table 11-46: Business Indicator and Subcomponents	✓				✓
	Table 11-47: Minimum Required Operational Risk Capital	✓				✓
Sub-division 9: Interest Rate Risk in the Banking Book	Table 11-48: IRRBB Risk Management Objectives and Policies		✓			✓
	Table 11-49: Quantitative Information on IRRBB	✓				✓
Sub-division 10: Remuneration	Table 11-50: Remuneration Policy		✓			✓
	Table 11-51: Remuneration Awarded during the Financial Year		✓			✓
	Table 11-52: Special Payments		✓			✓
	Table 11-53: Deferred Remuneration		✓			✓
Sub-division 11: Composition of Capital	Table 11A-1: Composition of Regulatory Capital	✓			✓	
	Table 11B-1: Reconciliation of Regulatory Capital to Balance Sheet		✓		✓	
	Table 11C-1: Main Features of Regulatory Capital Instruments		✓		✓	
Sub-division 12: Leverage Ratio	Table 11D-1: Leverage Ratio Summary Comparison Table	✓		✓		
	Table 11E-1: Leverage Ratio Common Disclosure Template	✓		✓		
Sub-division 13: Macroprudential	Table 11-54: Geographical Distribution of Credit Exposures Used in the Calculation of the		✓		✓	

	Tables	Fixed format	Flexible format	Quarterly	Semi-annually	Annually
Supervisory Measures	Bank-specific Countercyclical Capital Buffer Requirement					
	Table 11-55: Disclosure of G-SIB Indicators		✓			✓
Sub-division 14: Asset Encumbrance	Table 11-56: Asset Encumbrance	✓			✓	
Sub-division 15: Credit Valuation Adjustment Risk	Table 11-57: General Qualitative Disclosure Requirements Related to CVA		✓			✓
	Table 11-58: The Reduced BA-CVA	✓			✓	
	Table 11-59: The Full BA-CVA	✓			✓	
	Table 11-60: Qualitative Disclosures for Reporting Banks Using the SA-CVA		✓			✓
	Table 11-61: SA-CVA	✓			✓	
	Table 11-62: RWA Flow Statements of CVA Risk Exposures Under SA-CVA	✓		✓		

Sub-division 2: Overview of Key Prudential Metrics, Risk Management and RWA

11.3.4 A Reporting Bank must disclose all items set out in Tables 11-2 to 11-4. In the case where a Reporting Bank has adopted –

(a) the nominated approaches that are not standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable, the Reporting Bank must disclose all items set out in Table 11-5; and

(b) the IRBA, the Reporting Bank must disclose all items set out in Table 11-6.

Table 11-2: Key Metrics

Purpose	To provide an overview of a Reporting Bank's prudential regulatory metrics.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Key prudential metrics related to regulatory capital, leverage ratio and liquidity standards. The Reporting Bank is required to disclose each metric's value using the corresponding standard's specifications for the reporting period-end (designated by T in the template below) as well as the 4 previous quarter-end figures (T-1 to T-4).
Frequency	Quarterly
Format	Fixed. If the Reporting Bank wishes to add rows to provide additional regulatory or financial metrics, it must provide definitions for these metrics and a full explanation of how the metrics are calculated (including the scope of consolidation and the regulatory capital used if relevant). The additional metrics must not replace the metrics in this disclosure requirement.
Accompanying narrative	The Reporting Bank must supplement the template with a narrative commentary to explain any significant change in each metric's value compared with previous quarters, including the key drivers of such changes.[1075]

		(a)	(b)	(c)	(d)	(e)
		T	T-1	T-2	T-3	T-4
	Available capital (amounts)					
1	CET1 Capital					
2	Tier 1 Capital					
3	Total capital					
	RWA (amounts)					
4	Total RWA					
4a	Total RWA (pre-floor)					
	Risk-based capital ratios as a percentage of RWA					
5	CET1 ratio (%)					
5a	CET1 ratio (%) (pre-floor ratio)					
6	Tier 1 ratio (%)					

[1075] For example, whether the changes are due to changes in the regulatory framework, or the group structure or business model of the Reporting Bank.

6a	Tier 1 ratio (%) (pre-floor ratio)					
7	Total capital ratio (%)					
7a	Total capital ratio (%) (pre-floor ratio)					
	Additional CET1 buffer requirements as a percentage of RWA					
8	Capital conservation buffer requirement (%)					
9	Countercyclical buffer requirement (%)					
10	G-SIB and/or D-SIB additional requirements (%)					
11	Total of CET1 specific buffer requirements (%) (row 8 + row 9 + row 10)					
12	CET1 available after meeting the Reporting Bank's minimum capital requirements (%)					
	Leverage Ratio					
13	Total Leverage Ratio exposure measure					
14	Leverage Ratio (%) (row 2 / row 13)					
14a	Leverage Ratio (%) incorporating mean values for SFT assets					
	Liquidity Coverage Ratio					
15	Total High Quality Liquid Assets					
16	Total net cash outflow					
17	Liquidity Coverage Ratio (%)					
	Net Stable Funding Ratio					
18	Total available stable funding					
19	Total required stable funding					
20	Net Stable Funding Ratio (%)					

Table 11-2A: Explanatory Notes to Key Metrics

Definitions	
(a)	*Pre-floor total RWA (in row 4a)*: A Reporting Bank must exclude any adjustment made to total RWA from the application of the output floor.
(b)	*Pre-floor risk based ratios (in rows 5a, 6a and 7a)*: The Reporting Bank must exclude the impact of the output floor in the calculation of the ratios.
(c)	*CET1 available after meeting the Reporting Bank's minimum capital requirements (in row 12)*: This is to be calculated as the CET1 of the Reporting Bank (as a percentage of floor-adjusted risk-weighted assets), less any CET1 Capital used to meet the Reporting Bank's CET1, Tier 1 and total capital requirements. See Explanatory Notes in Table 11A-1A, row 68.
(d)	*Total Leverage Ratio exposure measure (in row 13)*: This is in accordance with Sub-division 12 of Division 3 of this Part.

(e)	*Liquidity Coverage Ratio metrics: (in rows 15, 16 and 17)*: The Reporting Bank must disclose the total adjusted values in accordance with MAS Notice 651.
(f)	*Net Stable Funding Ratio metrics (in rows 18, 19 and 20)*: The Reporting Bank must disclose the ratios in accordance with MAS Notice 653.
Linkages across tables	
(g)	Amount in [Table 11-2:1/a] is equal to [Table 11A-1:32/a].
(h)	Amount in [Table 11-2:2/a] is equal to [Table 11A-1:46/a].
(i)	Amount in [Table 11-2:3/a] is equal to [Table 11A-1:59/a].
(j)	Amount in [Table 11-2:4/a] is equal to [Table 11A-1:60/a] and is equal to [Table 11-4:31/a].
(k)	Amount in [Table 11-2:4a/a] is equal to [Table 11-4:31/a] minus [Table 11-4:30/a].
(l)	Amount in [Table 11-2:5/a] is equal to [Table 11A-1:61/a].
(m)	Amount in [Table 11-2:6/a] is equal to [Table 11A-1:62/a].
(n)	Amount in [Table 11-2:7/a] is equal to [Table 11A-1:63/a].
(o)	Amount in [Table 11-2:8/a] is equal to [Table 11A-1:65/a].
(p)	Amount in [Table 11-2:9/a] is equal to [Table 11A-1:66/a].
(q)	Amount in [Table 11-2:10/a] is equal to [Table 11A-1:67/a].
(r)	Amount in [Table 11-2:12/a] is equal to [Table 11A-1:68/a].
(s)	Amount in [Table 11-2:13/a] is equal to [Table 11E-1:24/a] (only if the same calculation basis is used).
(t)	Amount in [Table 11-2:14/a] is equal to [Table 11E-1:25/a] (only if the same calculation basis is used).
(u)	Amount in [Table 11-2:14a/a] is equal to [Table 11E-1:31/a].
(v)	Amount in [Table 11-2:15/a] is equal to [LCR Disclosure Template under Appendix 1 of MAS Notice 651:21/b].
(w)	Amount in [Table 11-2:16/a] is equal to [LCR Disclosure Template under Appendix 1 of MAS Notice 651:22/b].
(x)	Amount in [Table 11-2:17/a] is equal to [LCR Disclosure Template under Appendix 1 of MAS Notice 651:23/b].
(y)	Amount in [Table 11-2:18/a] is equal to [NSFR Disclosure Template under Annex 1 of MAS Notice 653:14/e].
(z)	Amount in [Table 11-2:19/a] is equal to [NSFR Disclosure Template under Annex 1 of MAS Notice 653:33/e].
(aa)	Amount in [Table 11-2:20/a] is equal to [NSFR Disclosure Template under Annex 1 of MAS Notice 653:34/e].

Table 11-3: Risk Management Approach

Purpose	To provide a description of a Reporting Bank's strategy and how senior management and the Board assess and manage risks, enabling users to gain a clear understanding of the Reporting Bank's risk tolerance or risk appetite in relation to its main activities and significant risks.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must provide a description of its risk management objectives and policies, in particular, a description of –	
(a)	(i) how the business model determines and interacts with the overall risk profile[1076]; and (ii) how the risk profile of the Reporting Bank interacts with the risk tolerance approved by the Board.
(b)	its risk governance structure: (i) the responsibilities attributed throughout the Reporting Bank[1077]; and (ii) the relationships between the structures involved in risk management processes[1078].
(c)	channels that communicate, decline and enforce the risk culture within the Reporting Bank[1079].
(d)	scope and main features of risk measurement systems.
(e)	the process of risk information reporting provided to the Board and senior management, including the scope and main content of reporting on risk exposure.
(f)	stress testing[1080].
(g)	(i) strategies and processes to manage, hedge and mitigate risks that arise from its business model; and (ii) processes for monitoring the continuing effectiveness of hedges and mitigants.

[1076] For example, the key risks related to the business model and how each of these key risks is reflected and described in the risk disclosures.

[1077] For example, oversight and delegation of authority, breakdown of responsibilities by risk type and business unit etc.

[1078] For example, the Board, senior management, the Board Risk Committee, risk management structure, compliance function, IA function.

[1079] For example, code of conduct; manuals containing operating limits or procedures to deal with violations or breaches of risk thresholds; procedures to raise and share risk issues between business lines and risk functions.

[1080] For example, portfolios subject to stress testing, scenarios adopted and methodologies used, and the use of stress testing in risk management.

Table 11-4: Overview of RWA

Purpose	To provide an overview of total RWA and further breakdowns of RWA.
Scope of application	This table is mandatory for all Reporting Banks.
Content	RWA and capital requirements[1081] under Pillar 1. A Reporting Bank must split CCR exposures based on the EAD methodology applied and not the risk-weighting methodology. Nevertheless, the Reporting Bank must add extra rows, as appropriate, to split the CCR exposures by risk-weighting methodology, in order to facilitate the reconciliation with the RWA changes in Table 11-32.
Frequency	Quarterly
Format	Fixed
Accompanying narrative	The Reporting Bank must supplement the table with a narrative commentary identifying and explaining the drivers behind differences in current and prior quarterly reporting periods, where such differences are significant. The Reporting Bank must explain in the narrative commentary the adjustments made where minimum capital requirements in column (c) do not correspond to the RWA in column (a) multiplied by the minimum Total CAR requirement applicable to the Reporting Bank as defined in paragraph 4.1.5 or 4.1.6, as the case may be.

		(a)	(b)	(c)
		RWA		Minimum capital requirements
		As at end of current quarter	As at end of prior quarter	As at end of current quarter
1	Credit risk (excluding CCR)			
2	Of which: Standardised Approach			
3	Of which: F-IRBA			
4	Of which: supervisory slotting approach			
5	Of which: A-IRBA			
6	CCR			
7	Of which: SA-CCR			
8	Of which: CCR internal models method			
9	Of which: other CCR			
10	Of which: CCP			
11	CVA			
12	Equity investments in funds – look-through approach			
13	Equity investments in funds – mandate-based approach			

[1081] RWA and capital requirements under the Standardised Approach for credit risk-weighting are to be subdivided in the SA-CCR and the CCR internal models method, and the same for RWA and capital requirements under the IRBA for credit risk-weighting.

14	Equity investments in funds – fall-back approach			
15	Equity investment in funds – partial use of an approach			
16	Unsettled transactions			
17	Securitisation exposures in the banking book			
18	Of which: SEC-IRBA			
19	Of which: SEC-ERBA			
20	Of which: SEC-IAA			
21	Of which: SEC-SA			
22	Market risk (excluding CVA and capital charge for switch between trading book and banking book)			
23	Of which: SA(MR)			
24	Of which: SSA(MR)			
25	Of which: IMA			
26	Capital charge for switch between trading book and banking book			
27	Operational risk			
28	Amounts below the thresholds for deduction (subject to 250% risk weight)			
29	Output floor calibration			
30	Floor adjustment			
31	**Total**			

Table 11-4A: Explanatory Notes to Overview of RWA

Definitions	
(a)	*Minimum capital requirements in column (c)*: This refers to Pillar 1 capital requirements (based on the minimum Total CAR requirement applicable to a Reporting Bank as defined in paragraph 4.1.5 or 4.1.6, as the case may be) at the reporting date.
(b)	*Credit risk (excluding CCR)*: This excludes RWA and capital requirements for – (i) CCR (reported in row 6), i.e. capital requirements for pre-settlement counterparty exposures arising from OTC derivative transactions, long settlement transactions and SFTs and capital requirements for exposures to CCPs included in the calculation of CCP RWA; (ii) equity investments in funds held in the banking book (reported in rows 12 to 15); (iii) unsettled transactions (reported in row 16); (iv) securitisation exposures (reported in row 17); and (v) amounts below the thresholds for deduction (reported in row 28).
(c)	*Credit risk (excluding CCR) of which: Standardised Approach*: This comprises SA(CR) exposures (excluding equity investments in funds held in the banking book, which are reported in rows 12 to 15).
(d)	*Credit risk (excluding CCR) of which: F-IRBA*: This comprises IRBA exposures for which the Reporting Bank is using the F-IRBA to calculate credit risk-weighted exposure amounts.

(e)	*Supervisory slotting approach*: This is in accordance with Sub-division 13 of Division 4 of Part VII.
(f)	*Credit risk (excluding CCR) of which: A-IRBA*: This comprises IRBA exposures for which the Reporting Bank is using the A-IRBA or the IRBA for the IRBA retail asset class to calculate credit risk-weighted exposure amounts.
(g)	*CCR*: Row 6 relates to capital requirements for CCR (including CCP RWA). The Reporting Bank must report in row 7 of this table, information corresponding to CCR exposures calculated using the SA-CCR in accordance with Annex 7D. The Reporting Bank must report in row 8 of this table, information corresponding to CCR exposures calculated using the CCR internal models method in accordance with Annex 7E. CCP RWA are excluded in rows 7 and 8.
(h)	*CCR of which: other CCR*: Row 9 relates to capital requirements for CCR calculated using a method other than the SA-CCR or CCR internal models method and excludes CCP RWA, which is reported in row 10.
(i)	*CCR of which: CCP*: Row 10 relates to capital requirements for CCP exposures.
(j)	*CVA*: Row 11 relates to – (i) for the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the capital requirements for CVA risk calculated in accordance with Annex 7AI of Part VII of MAS Notice 637 in force immediately before 1 July 2024; and (ii) from 1 January 2025, the capital requirements for CVA risk calculated in accordance with Division 5 of Part VIII.
(k)	*Equity investments in funds – look-through approach*: This is in accordance with paragraphs 7.5.4 to 7.5.10.
(l)	*Equity investments in funds – mandate-based approach*: This is in accordance with paragraphs 7.5.11 to 7.5.14.
(m)	*Equity investments in funds – fall-back approach*: This is in accordance with paragraphs 7.5.15.
(n)	*Equity investment in funds – partial use of an approach*: This is in accordance with paragraph 7.5.17.
(o)	*Unsettled transactions*: This is in accordance with Division 8 of Part VII.
(p)	*Securitisation exposures in the banking book*: The RWA amounts do not systematically correspond to the RWA reported in Tables 11-37 and 11-38, which are before application of the cap.
(q)	*Market risk (excluding CCR, CVA and capital charge for switch between trading book and banking book)*: (i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), this includes RWA and capital requirements for securitisation exposures booked in the trading book, but excludes capital requirements for CCR (reported in row 6), and row 25 would be zero; (ii) From 1 January 2025, this includes RWA and capital requirements for securitisation exposures booked in the trading book, but excludes capital requirements for CCR (reported in row 6), capital requirements for CVA risk under Division 5 of Part VIII (reported in row 11), and the Pillar 1 RWA surcharge calculated in accordance with paragraphs 8.1.39 to 8.1.41 (reported in row 26). To avoid doubt, this includes any RWA arising from net short positions in funds calculated in accordance with paragraph 8.1.11.

(r)	*Capital charge for switch between trading book and banking book*: (i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), this is zero; (ii) From 1 January 2025, this is the outstanding accumulated Pillar 1 RWA surcharge calculated in accordance with paragraphs 8.1.39 to 8.1.41. The outstanding accumulated Pillar 1 RWA surcharge takes into account any adjustment due to run-off of the Pillar 1 RWA surcharge as the instruments contributing to the Pillar 1 RWA surcharge mature or expire, in accordance with paragraph 8.1.40.
(s)	*Operational risk*: This is in accordance with Part IX.
(t)	*Amounts below the thresholds for deduction (subject to 250% risk weight)*: The amounts correspond to items as defined under paragraph 6.1.5(p)(iii), subject to a 250% risk weight.
(u)	*Output floor calibration*: This is the output floor calibration set out in Table 5-3 that is applicable as at the reporting date. To avoid doubt, despite any percentage determined by the Authority to be applicable to the Reporting Bank under paragraph 5.1.6, the Reporting Bank must still disclose the applicable percentage set out in Table 5-3.
(v)	*Floor adjustment*: This is the difference between – (a) the sum of the Reporting Bank's credit RWA, market RWA and operational RWA calculated using the Reporting Bank's nominated approaches (sum of rows 1, 6, 11, 12, 13, 14, 15, 16, 17, 22, 26, 27 and 28); and (b) the Reporting Bank's output floor calculated in accordance with Part V, based on the output floor calibration in row 29.
(w)	*Total*: This is the sum of rows 1, 6, 11, 12, 13, 14, 15, 16, 17, 22, 26, 27, 28 and 30.
Linkages across tables	
(x)	Amount in [Table 11-4:2/a + Table 11-4: 28/a] is equal to [Table 11-18:14/e].
(y)	Amount in [Table 11-4:3/a + Table 11-4:5/a] is equal to the sum of [Table 11-21: Total (all portfolios)/i].
(z)	Amount in [Table 11-4:6/a] is equal to the sum of [Table 11-27:6/f + Table 11-33:1/b + Table 11-33:11/b].
(aa)	Amount in [Table 11-4:17/c] is equal to the sum of [Table 11-37:1/p + Table 11-37:1/q + Table 11-37:1/r + Table 11-37:1/s + Table 11-37:1/t] + [Table 11-38:1/p + Table 11-38:1/q + Table 11-38:1/r + Table 11-38:1/s + Table 11-38:1/t].
(ab)	(i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), amount in [Table 11-4:23/a] is equal to [Table 11-38:9/a] in force immediately before 1 July 2024. (ii) From 1 January 2025, where a Reporting Bank is designated by the Authority as a D-SIB, amount in [Table 11-4:23/c] is equal to 1.25 x [Table 11-41:12/a]. Where a Reporting Bank is not designated by the Authority as a D-SIB, amount in [Table 11-4:23/c] is equal to [Table 11-41:12/a].
(ac)	(i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), amount in [Table 11-4:25/a] is equal to [Table 11-39:8/f] in force immediately before 1 July 2024. (ii) From 1 January 2025, where a Reporting Bank is designated by the Authority as a D-SIB, amount in [Table 11-4:25/c] is equal to 1.25 x

	[Table 11-42:16 minus Table 11-42:13]. Where a Reporting Bank is not designated by the Authority as a D-SIB, amount in [Table 11-4:25/c] is equal to [Table 11-42:16 minus Table 11-42:13].

[MAS Notice 637 (Amendment) 2024]

Table 11-5: Comparison of Modelled and Standardised RWA at Risk Level

Purpose	To compare the RWA calculated using a Reporting Bank's nominated approaches against the RWA calculated using only standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable.
Scope of application	This table is mandatory for the Reporting Bank using nominated approaches that are not standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable.
Content	RWA
Frequency	Quarterly
Format	Fixed
Accompanying narrative	The Reporting Bank must explain the main drivers of difference[1082] between the RWA calculated using the Reporting Bank's nominated approaches and the RWA calculated using only standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable. The Reporting Bank must ensure that its explanation is supplemented with quantitative information, where appropriate. In particular, if the RWA for securitisation exposures in the banking book are a main driver of the difference, the Reporting Bank must explain the extent to which it is using each of the 3 potential approaches (SEC-ERBA, SEC-SA and 1250% risk weight) for calculating RWA for securitisation exposures.

		a	b	c	d
		RWA			
		RWA for portfolios where the Reporting Bank uses modelled approaches	RWA for portfolios where the Reporting Bank uses standardised approaches	Total RWA (a + b)	Total RWA calculated using only standardised approaches
1	Credit risk (excluding counterparty credit risk)				
2	Counterparty credit risk				
3	Credit valuation adjustment				
4	Securitisation exposures in the banking book				
5	Market risk				
6	Operational risk				
7	Residual RWA				
8	Total				

[1082] For example, asset class or IRBA sub-asset class of a particular risk category, key assumptions underlying parameter estimates, and national implementation differences.

Table 11-5A: Explanatory Notes to Comparison of Modelled and Standardised RWA at Risk Level

Definitions	
(a)	***Credit risk (excluding counterparty credit risk, credit valuation adjustments, securitisation exposures in the banking book, equity investments in funds, unsettled transactions and amounts below the thresholds for deduction) (row 1)***: A Reporting Bank must exclude RWA for CCR (reported in row 2), securitisation exposures in the banking book (reported in row 4), equity investments in funds (reported in row 7), unsettled transactions (reported in row 7), and amounts below the thresholds for deduction (reported in row 7). *RWA for portfolios where the Reporting Bank uses modelled approaches (cell 1/a)*: This refers to RWA for exposures where the RWA is computed based on the IRBA. *RWA for portfolios where the Reporting Bank uses standardised approaches (cell 1/b)*: This refers to RWA for exposures which the Reporting Bank has calculated using the SA(CR). *Total RWA (cell 1/c)*: This is the sum of cells 1/a and 1/b. *Total RWA calculated using only standardised approaches (cell 1/d)*: This refers to the total RWA that would result from the Reporting Bank applying only standardised approaches set out in column (b) of Table 5-1 to the exposures giving rise to the RWA in cell 1/c.
(b)	***Counterparty credit risk (row 2)*:** *RWA for portfolios where the Reporting Bank uses modelled approaches (cell 2/a)*: (i) If the Reporting Bank has calculated exposures for derivative transactions using the CCR internal models method or calculated RWA arising from derivative transactions using the IRBA, the Reporting Bank must report the RWA arising from derivative transactions in cell 2/a. (ii) If the Reporting Bank has calculated exposures for SFTs using the CCR internal models method or VaR models approach, or calculated RWA arising from SFTs using the IRBA, the Reporting Bank must report the RWA arising from SFTs in cell 2/a. *RWA for portfolios where the Reporting Bank uses standardised approaches (cell 2/b)*: (i) If the Reporting Bank has calculated exposures for derivative transactions using the SA-CCR and calculated RWA arising from derivative transactions using the SA(CR), the Reporting Bank must report the RWA arising from derivative transactions in cell 2/b. (ii) If the Reporting Bank has calculated exposures for SFTs using the FC(SA) or FC(CA), whichever is applicable, and calculated RWA arising from SFTs using the SA(CR), the Reporting Bank must report the RWA arising from SFTs in cell 2/b. *Total RWA (cell 2/c)*: This is the sum of cells 2/a and 2/b.

	Total RWA calculated using only standardised approaches (cell 2/d): This refers to the total RWA that would result from the Reporting Bank applying only standardised approaches set out in column (b) of Table 5-1 to all exposures giving rise to the RWA in cell 2/c.
(c)	***Credit valuation adjustment (row 3)*:** *RWA for portfolios where the Reporting Bank uses modelled approaches (cell 3/a)*: (i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the Reporting Bank must report the CVA RWA for exposures which the Reporting Bank has calculated using the CVA advanced method set out in Section 3 of Annex 7AI of MAS Notice 637 in force immediately before 1 July 2024; (ii) From 1 January 2025, the Reporting Bank must keep this cell blank and report all CVA RWA in cell 3/b. *RWA for portfolios where the Reporting Bank uses standardised approaches (cell 3/b)*: (i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the Reporting Bank must report the CVA RWA for exposures which the Reporting Bank has calculated using the CVA standardised method set out in Section 2 of Annex 7AI of MAS Notice 637 in force immediately before 1 July 2024. To avoid doubt, this also applies where the Reporting Bank uses the CVA standardised method in combination with CCR internal models method for CCR exposures; (ii) From 1 January 2025, the Reporting Bank must report the Reporting Bank's CVA RWA. *Total RWA (cell 3/c)*: This is the sum of cells 3/a and 3/b. *Total RWA calculated using only standardised approaches (cell 3/d)*: This refers to the total RWA that would result from the Reporting Bank applying only standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable, to the exposures giving rise to the RWA in cell 3/c.
(d)	***Securitisation exposures in the banking book (row 4)*:** *RWA for portfolios where the Reporting Bank uses modelled approaches (cell 4/a)*: This refers to RWA for exposures which the Reporting Bank has calculated using the SEC-IRBA or SEC-IAA. *RWA for portfolios where the Reporting Bank uses standardised approaches (cell 4/b)*: This refers to RWA for exposures which the Reporting Bank has calculated using the SEC-ERBA, the SEC-SA or a risk weight of 1250% for securitisation exposures as set out in paragraph 7.6.19. *Total RWA (cell 4/c)*: This is the sum of cells 4/a and 4/b. *Total RWA calculated using only standardised approaches (cell 4/d)*: This refers to the total RWA that would result from the Reporting Bank applying only standardised approaches set out in column (b) of Table 5-1 to the exposures giving rise to the RWA in cell 4/c.

(e)	***Market risk (excluding counterparty credit risk, credit valuation adjustment, and capital charge for switch between trading book and banking book) (row 5)*:** (i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the Reporting Bank must exclude RWA for CCR (reported in row 2), and CVA RWA (reported in row 3); (ii) From 1 January 2025, the Reporting Bank must exclude RWA for CCR (reported in row 2), CVA RWA (reported in row 3), and the Pillar 1 RWA surcharge calculated in accordance with paragraphs 8.1.39 to 8.1.41 (reported in row 7). To avoid doubt, the Reporting Bank must include any RWA arising from net short positions in funds calculated in accordance with paragraph 8.1.11. *RWA for portfolios where the Reporting Bank uses modelled approaches (cell 5/a)*: (i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the Reporting Bank must report the RWA for exposures which the Reporting Bank has calculated using IMA; (ii) From 1 January 2025, the Reporting Bank must report the RWA for exposures which the Reporting Bank has calculated using IMA. *RWA for portfolios where the Reporting Bank uses standardised approaches (cell 5/b)*: (i) For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), the Reporting Bank must report the RWA for exposures which the Reporting Bank has calculated using SA(MR); (ii) From 1 January 2025, the Reporting Bank must report the RWA for exposures which the Reporting Bank has calculated using SA(MR) or SSA(MR). This also includes any RWA arising from net short positions in funds calculated in accordance with paragraph 8.1.11. To avoid doubt, this also applies where the Reporting Bank uses SA(MR) or SSA(MR), as the case may be, in combination with SEC-IRBA or SEC-IAA to calculate the market risk capital requirements for securitisation exposures held in the trading book. *Total RWA (cell 5/c)*: This is the sum of cells 5/a and 5/b. *Total RWA calculated using only standardised approaches (cell 5/d)*: This refers to the total RWA that would result from the Reporting Bank applying only standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable, to exposures giving rise to the RWA in cell 5/c.
(f)	***Operational risk (row 6)*:** *RWA for portfolios where the Reporting Bank uses standardised approaches (cell 6/b), Total RWA (cell 6/c), and Total RWA calculated using only standardised approaches (cell 6/d)*: The Reporting Bank must calculate RWA using the SA(OR).
(g)	***Residual RWA (row 7)*:** The Reporting Bank must include RWA not captured within rows 1 to 6 (i.e. the RWA arising from equity investments in funds (rows 12 to 15 in Table 11-4), unsettled transactions (row 16 in Table 11-4), capital charge for switch between

	trading book and banking book (row 26 in Table 11-4) and amounts below the thresholds for deduction (row 28 in Table 11-4). *Total RWA calculated using only standardised approaches (cell 7/d)*: This refers to the total RWA that would result from the Reporting Bank applying only standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable, to exposures giving rise to the RWA in cell 7/c.
(h)	***Total (row 8)*:** *RWA for portfolios where the Reporting Bank uses modelled approaches (cell 8/a)*: This is the total sum of cells 1/a, 2/a, 3/a, 4/a, and 5/a. *RWA for portfolios where the Reporting Bank uses standardised approaches (cell 8/b)*: This is the total sum of cells 1/b, 2/b, 3/b, 4/b, 5/b, 6/b and 7/b. *Total RWA (cell 8/c)*: This refers to the Reporting Bank's total RWA calculated using the Reporting Bank's nominated approaches. This is the total sum of cells 1/c, 2/c, 3/c, 4/c, 5/c, 6/c and 7/c. *Total RWA calculated using only standardised approaches (cell 8/d)*: This refers to the Reporting Bank's Total RWA calculated using only standardised approaches set out in column (b) of Table 5-1 or 5-2, as applicable. This is the total sum of cells 1/d, 2/d, 3/d, 4/d, 5/d, 6/d and 7/d.
Linkages across templates	
(i)	Amount in [Table 11-5:1/c] is equal to [Table 11-4:1/a].
(j)	Amount in [Table 11-5:2/c] is equal to [Table 11-4:6/a].
(k)	Amount in [Table 11-5:3/c] is equal to [Table 11-4:11/a].
(l)	Amount in [Table 11-5:4/c] is equal to [Table 11-4:17/a].
(m)	Amount in [Table 11-5:5/c] is equal to [Table 11-4:22/a].
(n)	Amount in [Table 11-5:6/c] is equal to [Table 11-4:27/a].

[MAS Notice 637 (Amendment) 2024]

Table 11-6: Comparison of Modelled and Standardised RWA for Credit Risk at Asset Class Level

Purpose	To compare the RWA calculated according to a Reporting Bank's nominated approaches (including both the SA(CR) and the IRBA) at the asset class level against the corresponding RWA calculated using only the SA(CR).
Scope of application	The template is mandatory for the Reporting Bank using the IRBA. The Reporting Bank must exclude counterparty credit risk, credit valuation adjustments, securitisation exposures in the banking book, equity investments in funds, unsettled transactions and amounts below the thresholds for deduction.
Content	RWA
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must explain the main drivers of differences between the RWA for credit risk in row 1 of Table 11-5 calculated using the Reporting Bank's nominated approaches and the RWA re-computed using only the SA(CR).[1083]

		a	b	c	d
		RWA			
		RWA for IRBA exposures calculated using IRBA	RWA for IRBA exposures calculated using SA(CR)	Total RWA for IRBA exposures and SA(CR) exposures calculated using nominated approaches	Total RWA for IRBA exposures and SA(CR) exposures calculated using SA(CR)
1	Sovereign				
1A	Of which: categorised as MDB/PSE in SA				
2	Banks and other financial institutions treated as banks				
3	Equity				
4	Purchased receivables				
5	Corporates				
5A	Of which: F-IRBA is applied				
5B	Of which: A-IRBA is applied				
6	Retail				

[1083] Where differences are attributable to the mapping between IRBA and SA asset classes, the Reporting Bank may explain and provide estimated materiality.

6A	Of which: QRRE				
6B	Of which: other retail				
6C	Of which: retail residential mortgages				
7	Specialised lending				
7A	Of which: IPRE and HVCRE				
8	Others				
9	Total				

Table 11-6A: Explanatory Notes to Comparison of Modelled and Standardised RWA for Credit Risk at Asset Class Level

Definitions	
(a)	*RWA for IRBA exposures calculated using IRBA (column (a))*: This refers to RWA for IRBA exposures only, which the Reporting Bank must calculate in accordance with the IRBA.
(b)	*RWA for IRBA exposures calculated using SA(CR) (column (b))*: This refers to RWA for IRBA exposures only, which the Reporting Bank must re-compute using only SA(CR).
(c)	*Total RWA for IRBA exposures and SA(CR) exposures calculated using nominated approaches (column (c))*: This is the sum of the RWA for IRBA exposures and SA(CR) exposures, which the Reported Bank must calculate using its nominated approaches.
(d)	*Total RWA for IRBA exposures and SA(CR) exposures calculated using SA(CR) (column (d))*: This is the sum of the RWA for IRBA exposures and SA(CR) exposures, which the Reporting Bank must re-compute using only SA(CR).
(e)	*Other financial institutions treated as banks (row 2)*: These refer to entities set out in paragraph 7.3.1(e)(ii) to (v).
Linkages across templates	
(f)	[Table 11-6:9/a] is equal to [Table 11-5:1/a].
(g)	[Table 11-6:9/c] is equal to [Table 11-5:1/c].
(h)	[Table 11-6:9/d] is equal to [Table 11-5:1/d].

Sub-division 3: Linkages between Financial Statements and Regulatory Exposures

11.3.5 A Reporting Bank must disclose all items set out in Tables 11-7 to 11-10.

11.3.6 For the purposes of Tables 11-7 to 11-36, 'carrying amounts' refer to values of items as reported in financial statements but according to the scope of regulatory consolidation, unless otherwise specified in Sub-divisions 3 to 6 in this Division.

Table 11-7: Differences between Accounting and Regulatory Scopes of Consolidation and Mapping of Financial Statement Categories with Regulatory Risk Categories

Purpose	Columns (a) and (b) enable users to identify the differences between a Reporting Bank's accounting scope of consolidation and its regulatory scope of consolidation. Columns (c) to (g) break down the amount reported in the Reporting Bank's financial statements by regulatory risk categories.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Carrying amounts
Frequency	Annually
Format	Flexible but the Reporting Bank must ensure that the rows align with the presentation of the Reporting Bank's financial report.
Accompanying narrative	See Table 11-9. The Reporting Bank must provide qualitative explanation on items that are subject to regulatory capital requirements in more than one risk category.

	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Carrying amounts as reported in balance sheet of published financial statements	Carrying amounts under regulatory scope of consolidation	Carrying amounts of items –				
			subject to credit risk requirements	subject to CCR requirements	subject to securitisation framework	subject to market risk requirements	not subject to capital requirements or subject to deduction from regulatory capital
Assets							
Cash and balances at central banks							
Items in the course of collection from other banks							
Trading portfolio assets							
Financial assets designated at fair value							

Derivative financial instruments							
Loans and advances to banks							
Loans and advances to customers							
Reverse repos and other similar secured lending							
Fair value through other comprehensive income financial investments							
Current and deferred tax assets							
Prepayments, accrued income and other assets							
Investments in associates and joint ventures							
Goodwill and intangible assets							
Property, plant and equipment							
Total assets							
Liabilities							
Deposits from banks							
Items in the course of collection due to other banks							
Customer accounts							
Repos and other similar secured borrowings							
Trading portfolio liabilities							

Financial liabilities designated at fair value							
Derivative financial instruments							
Debt securities in issue							
Accruals, deferred income and other liabilities							
Current and deferred tax liabilities							
Subordinated liabilities							
Provisions							
Retirement benefit liabilities							
Total liabilities							

Table 11-7A: Explanatory Notes to Differences between Accounting and Regulatory Scopes of Consolidation and Mapping of Financial Statement Categories with Regulatory Risk Categories

Instructions	
(a)	A Reporting Bank must strictly follow the balance sheet presentation in its financial reporting.
(b)	Columns (a) and (b) must be merged if the Reporting Bank's accounting scope of consolidation is the same as its regulatory scope of consolidation.
(c)	Column (g) includes amounts not subject to capital requirements or subject to deductions from regulatory capital. The Reporting Bank must include in column (g) elements which are deducted from the Reporting Bank's regulatory capital[1084], taking into consideration the different thresholds that apply where relevant. The Reporting Bank must disclose the assets for the amount that is actually deducted from capital[1085]. The Reporting Bank must disclose the 1250% risk-weighted exposures in the relevant credit risk or securitisation framework requirements under columns (c) to (e), instead of disclosing them under column (g). Liabilities disclosed in column (g) are all liabilities under the regulatory scope of consolidation, except for the following, which are disclosed in columns (c), (d), (e) and (f) as applicable: liabilities that are included in the determination of the exposure values in the market risk or the counterparty credit risk framework, and liabilities that are eligible under the Basel netting rules.
(d)	Where an item is subjected to capital requirements from more than one risk category framework, the Reporting Bank must report the item in all columns that it is subjected to capital requirements. Therefore, the sum of amounts reported in columns (c) to (g) may be greater than the amount reported in column (b)[1086].

[1084] For example, goodwill, intangible assets and deferred tax assets.

[1085] Some examples are shown below:

(a) Goodwill and intangible assets: the amount to be disclosed in column (g) is the amount of any goodwill or intangibles, including any goodwill included in the valuation of significant investments in the capital of banking, financial and insurance entities that are outside the scope of regulatory consolidation. The amount disclosed in the assets rows is net of any associated deferred tax liability which would be extinguished if the intangible assets become impaired or derecognised under the relevant accounting standards. The associated deferred tax liability is also to be disclosed in the liabilities rows of column (g).

(b) Deferred tax assets: for all types of deferred tax assets to be deducted from own funds, the amount to be disclosed in column (g) is net of associated deferred tax liabilities that are eligible for netting. The associated deferred tax liabilities are to be disclosed in the liabilities rows of column (g). For deferred tax assets, for which the deduction is subject to a threshold, the amount disclosed in column (g) in the assets rows is the amount, net of any eligible deferred tax liability, above the threshold. The associated deferred tax liabilities are also to be disclosed in the liabilities rows of column (g).

(c) Defined benefit pension fund assets: the amount disclosed is net of any deferred tax liabilities which would be extinguished if the asset should become impaired or derecognised under the relevant accounting standards. These deferred tax liabilities are also to be disclosed in the liabilities rows of column (g).

(d) Investments in own shares (treasury stock) or own instruments of regulatory capital: when investments in own shares or own instruments of regulatory capital are not already derecognised under the relevant accounting standards, the deducted amount disclosed is net of short positions in the same underlying exposure or in the same underlying index allowed to be netted under the Basel framework. These short positions are also to be disclosed in the liabilities rows of column (g).

[1086] For example, derivative assets/liabilities held in the regulatory trading book may relate to both column (d) and column (f). In such circumstances, the sum of the values in columns (c) to (g) would not equal to that in column (b). When amounts disclosed in 2 or more different columns are material and result in a difference between column (b) and the sum of columns (c) to (g), the reasons for this difference should be explained by the Reporting Bank in the accompanying narrative.

Table 11-8: Main Sources of Differences between Regulatory Exposure Amounts and Carrying Amounts in Financial Statements

Purpose	To provide information on the main sources of differences, other than due to the difference in scope of consolidation, between regulatory exposure amounts and carrying amounts in financial statements.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Carrying amounts for rows 1 to 3 and exposure amounts considered for regulatory purposes for row 9
Frequency	Annually
Format	Flexible. Row headings are provided for illustrative purposes only and the rows must be adapted by a Reporting Bank to describe the most meaningful drivers for differences between regulatory exposure amounts and carrying amounts in financial statements.
Accompanying narrative	Set out in Table 11-9.

		(a)	(b)	(c)	(d)	(e)
		Total	Items subject to –			
			credit risk requirements	securitisation requirements	CCR requirements	market risk requirements
1	**Asset carrying amount under regulatory scope of consolidation (as per Table 11-7)**					
2	Liabilities carrying amount under regulatory scope of consolidation (as per Table 11-7)					
3	Total net amount under regulatory scope of consolidation (Row 1 minus Row 2)					
4	Off-balance sheet amounts					
5	Differences in valuations					
6	Differences due to different netting rules, other than those already included in row 2					
7	Differences due to consideration of provisions					
8	Differences due to prudential filters					

9	**Exposure amounts considered for regulatory purposes**					

Table 11-8A: Explanatory Notes to Main Sources of Differences between Regulatory Exposure Amounts and Carrying Amounts in Financial Statements

Instructions	
(a)	*Asset carrying amount under regulatory scope of consolidation*: This includes only assets that are risk-weighted under the Basel framework, while row 2 includes liabilities that are considered for the application of the riskweighting requirements, either as short positions, trading or derivative liabilities, or through the application of the netting rules to calculate the net position of assets to be risk-weighted. These liabilities are not included in column (g) in Table 11-7. Assets that are risk-weighted under the Basel framework include assets that are not deducted from capital because they are under the applicable thresholds or due to the netting with liabilities.
(b)	*Netting between assets and liabilities*: This does not lead to accounting equity under a regulatory scope of consolidation being disclosed in row 3. Assets and liabilities included in rows 1 and 2 are limited to those assets and liabilities that are taken into consideration in the regulatory framework. Other assets and liabilities not considered in the regulatory framework are to be disclosed in column (g) in Table 11-7 and are consequently excluded from rows 1 and 2 of Table 11-8.
(c)	*Off-balance sheet amounts*: This includes notional amounts of off-balance sheet items in column (a) and the amounts subject to regulatory framework, after application of the CCFs in columns (b) to (e), where relevant.
(d)	*Differences due to different netting rules, other than those already included in row 2*: Row 2 refers to balance sheet netting, while row 6 refers to incremental netting in application of the Basel rules (when not already covered by balance sheet netting). The netting rules under the Basel framework are different from the rules under the applicable accounting frameworks. The incremental netting in row 6 could represent an additional deduction from the net exposure value before application of the Basel netting rules (when those rules lead to more netting than the balance sheet netting in row 2) or a gross-up of the net exposure value when the off-balance sheet netting operated in row 2 is broader than what the Basel netting rules allow.
(e)	*Differences due to consideration of provisions*: The exposure values under row 1 are the carrying amounts and hence net of specific and general allowances as set out in paragraphs 6.3.1(d), and 6.3.3 to 6.3.5. Nevertheless, exposures under the F-IRB and A-IRB approaches are risk-weighted gross of provisions. Row 7 therefore is the re-inclusion of general and specific allowances in the carrying amount of exposures in the F-IRB and A-IRB approaches so that the carrying amount of those exposures is reconciled with their regulatory exposure value. Row 7 may also include the elements qualifying as general allowances that may have been deducted from the carrying amount of exposures under the standardised approach and that therefore need to be reintegrated in the regulatory exposure value of those exposures. A Reporting Bank must include any differences between the accounting impairment and the regulatory allowances under the Basel framework that have an impact on the exposure amounts considered for regulatory purposes in row 7.
(f)	*Exposure amounts considered for regulatory purposes*: This refers to the aggregate amount considered as a starting point of the RWA calculation for each risk category.

(g)	Column (a) is not necessarily equal to the sum of columns (b) to (e) due to assets being risk-weighted more than once (see Table 11-7). In addition, exposure values used for riskweighting may differ under each risk framework depending on whether standardised approaches or internal models are used in the computation of this exposure value. Therefore, for any type of risk framework, the exposure values under different regulatory approaches may be presented separately in each of the columns if a separate presentation eases the reconciliation of the exposure values for the Reporting Bank.
Linkages across tables	
(h)	Amounts in rows 1 and 2 of columns (b) to (e) correspond to amounts in columns (c) to (f) of Table 11-7.
(i)	Column (a) in Table 11-8 corresponds to amounts in column (b) minus (g) in Table 11-7.
(j)	Table 11-8 is focused on assets in the regulatory scope of consolidation that are subject to the regulatory framework. Therefore, column (g) in Table 11-7, which includes the elements of the balance sheet that are not subject to the regulatory framework, is not included in Table 11-8.

Table 11-9: Qualitative Disclosure of Differences between Carrying Amounts in Financial Statements and Regulatory Exposure Amounts

Purpose	To provide qualitative explanation on the differences between carrying amounts in financial statements and regulatory exposure amounts under each framework.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Qualitative information
Frequency	Annually
Format	Flexible

A Reporting Bank must explain the sources of the differences between accounting amounts as reported in financial statements and regulatory exposure amounts, as disclosed in Tables 11-7 and 11-8. The Reporting Bank must provide a description of –	
(a)	the sources of any significant differences between the amounts in columns (a) and (b) in Table 11-7.
(b)	the sources of differences between accounting amounts as reported in financial statements and exposure amounts considered for regulatory purposes shown in Table 11-8.
(c)	the systems and controls to ensure that the valuation adjustments are prudent and reliable, in accordance with the standards for a prudent valuation framework set out in Annex 6C. The Reporting Bank must include a description of – (i) valuation methodologies, including a description of the extent that mark-to-market and mark-to-model methodologies are used; (ii) independent price verification process; and (iii) procedures for valuation adjustments or reserves, including a description of the process and the methodology for valuing trading positions by type of instrument.
(d)	a Reporting Bank with insurance subsidiaries must disclose that it had used the approach set out in paragraph 3.1.2 with respect to insurance subsidiaries in determining its reported capital positions.

Table 11-10: Prudent Valuation Adjustments

Purpose	To provide a breakdown of the constituent elements of a Reporting Bank's prudent valuation adjustments in accordance with paragraphs 1.15 to 1.20 in Annex 6C. The Reporting Bank must take into account the guidance set out in *Supervisory Guidance for Assessing Banks' Financial Instrument Fair Value Practices* issued by the BCBS in April 2009, in particular Principle 10 in providing the breakdown.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Prudent valuation adjustments for all assets measured at fair value (marked to market or marked to model) and for which valuation adjustments are required. Assets can be non-derivative or derivative instruments.
Frequency	Annually
Format	Fixed. The row numbers cannot be altered. Rows which are not applicable to the Reporting Bank must be filled with "0" and the reason why they are not applicable must be explained in the accompanying narrative.
Accompanying narrative	The Reporting Bank must supplement the table with a narrative commentary to explain any significant changes over the reporting period and the key drivers of such changes. In particular, the Reporting Bank must provide details on other prudent valuation adjustments in row 11, where significant, and define them in the narrative commentary when they are not listed in Annex 6C. The Reporting Bank must also explain the types of financial instruments for which high amounts of valuation adjustments are observed.

		(a)	(b)	(c)	(d)	(e)	**(f)**	(g)	(h)
		Equity	Interest rates	FX	Credit	Commodities	**Total**	of which: in the trading book	of which: in the banking book
1	Closeout uncertainty								
2	of which: Mid-market value								
3	of which: Closeout cost								
4	of which: Concentration								
5	Early termination								
6	Model risk								
7	Operational risk								

8	Investing and funding costs								
9	Unearned credit spreads								
10	Future administrative costs								
11	Other								
12	**Total adjustment**								

Table 11-10A: Explanatory Notes to Prudent Valuation Adjustments

Definitions	
(a)	*Closeout cost (in row 3)*: This refers to valuation adjustments required to take account of the valuation uncertainty to adjust for the fact that the position level valuations calculated do not reflect an exit price for the position or portfolio.[1087]
(b)	*Concentration (in row 4)*: This refers to valuation adjustments over and above market price and closeout costs that would be required to get to a prudent exit price for positions that are larger than the size of positions for which the valuation has been calculated.[1088]
(c)	*Early termination (in row 5)*: This refers to valuation adjustments to take into account the potential losses arising from contractual or non-contractual early terminations of customer trades that are not reflected in the valuation.
(d)	*Model risk (in row 6)*: This refers to valuation adjustments to take into account valuation model risk which arises due to: (i) the potential existence of a range of different models or model calibrations which are used by users of Pillar 3 data; (ii) the lack of a firm exit price for the specific product being valued; (iii) the use of an incorrect valuation methodology; (iv) the risk of using unobservable and possibly incorrect calibration parameters; or (v) the fact that market or product factors are not captured by the core valuation model.
(e)	*Operational risk (in row 7)*: This refers to valuation adjustments to take into account the potential losses that may be incurred as a result of operational risk related to valuation processes.
(f)	*Investing and funding costs (in row 8)*: This refers to valuation adjustments to reflect the valuation uncertainty in the funding costs that other users of Pillar 3 data would factor into the exit price for a position or portfolio. It includes funding valuation adjustments on derivatives exposures.

[1087] For example, where such valuations are calibrated to a mid-market price.

[1088] In cases where the aggregate position held by the Reporting Bank is larger than normal traded volume or larger than the position sizes on which observable quotes or trades that are used to calibrate the price or inputs used by the core valuation model are based.

(g)	*Unearned credit spreads (in row 9)*: This refers to valuation adjustments to take account of the valuation uncertainty in the adjustment necessary to include the current value of expected losses due to counterparty default on derivative positions, including the valuation uncertainty on CVAs.
(h)	*Future administrative costs (in row 10)*: This refers to valuation adjustments to take into account the administrative costs and future hedging costs over the expected life of the exposures for which a direct exit price is not applied for the closeout costs. This valuation adjustment has to include the operational costs arising from hedging, administration and settlement of contracts in the portfolio. The future administrative costs are incurred by the portfolio or position but are not reflected in the core valuation model or the prices used to calibrate inputs to that model.
(i)	*Other (in row 11)*: This refers to valuation adjustments which are required to consider factors that will influence the exit price, but which do not fall in any of the categories listed in paragraph 1.16 in Annex 6C. These must be described by the Reporting Bank in the narrative commentary that supports the disclosure.
Linkages across tables	
(j)	[Table 11-10:12/f] is equal to [Table 11A-1:6/a].

Sub-division 4: Credit Risk

11.3.7 This Sub-division includes items subject to the credit risk requirements under Part VII, excluding –

(a) capital requirements for securitisation exposures which are reported in Sub-division 6, as set out in Division 6 of Part VII; and

(b) capital requirements relating to CCR which are reported in Sub-division 5 (i.e. capital requirements for pre-settlement counterparty exposures arising from OTC derivative transactions, exchange-traded derivative transactions, long settlement transactions and SFTs, capital requirements for exposures to CCPs arising from CCR exposures and default fund exposures included in the calculation of CCP RWA).

11.3.8 A Reporting Bank must disclose all items set out in Tables 11-11 to 11-16. In the case where a Reporting Bank has adopted –

(a) the SA(CR), the Reporting Bank must disclose all items set out in Tables 11-17 to 11-19; and

(b) the IRBA, the Reporting Bank must disclose all items set out in Tables 11-20 to 11-25.

Table 11-11: General Qualitative Disclosures on Credit Risk

Purpose	To describe the main characteristics and elements of credit risk management, including a Reporting Bank's business model, credit risk profile, organisation and functions involved in credit risk management and risk management reporting.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must provide a description of its risk management objectives and policies for credit risk, in particular, a description of –	
(a)	how the business model translates into the components of the Reporting Bank's credit risk profile.
(b)	criteria and approach used for defining credit risk management policy and the setting of credit risk limits.
(c)	structure and organisation of the credit risk management and control function.
(d)	relationships between the credit risk management, risk control, compliance and IA functions.
(e)	scope and main content of the reporting on credit risk exposure and credit risk management function to the senior management and the Board.

Table 11-12: Credit Quality of Assets

Purpose	To provide a comprehensive overview of the credit quality of a Reporting Bank's on- and off-balance sheet assets.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Carrying amounts
Frequency	Semi-annually
Format	Fixed. The Reporting Bank may add a row between rows 2 and 3 for "Other investment" and explain the nature of "Other investment" in the accompanying narrative.
Accompanying narrative	The Reporting Bank must provide its definition of default.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)
		Gross carrying amount of		Allowances and impairments	of which: allowances for standardised approach exposures		of which: allowances for IRBA exposures	Net values (a + b - c)
		Defaulted exposures	Non-defaulted exposures		of which: specific allowances	of which: general allowances		
1	Loans							
2	Debt securities							
3	Off-balance sheet exposures							
4	**Total**							

Table 11-12A: Explanatory Notes of Credit Quality of Assets

Definitions	
(a)	*Gross carrying amount*: The gross carrying amount is the accounting value before any allowances and impairments but after any write-offs. A Reporting Bank must not take into account any CRM. The Reporting Bank must ensure that the gross carrying amount of off-balance sheet exposures, which excludes revocable loan commitments for the purposes of this table, is measured as – (a) for guarantees, the maximum amount that the Reporting Bank would have to pay if the guarantees were called, gross of any CCF or CRM; and (b) for irrevocable loan commitments, the total amount that the Reporting Bank has committed to lend, gross of any CCF or CRM.
(b)	*Write-offs*: This refers to a direct reduction of the carrying amount when the Reporting Bank has no reasonable expectations of recovery.
(c)	*Defaulted exposures*: This refers to exposures that the Reporting Bank has defined as defaulted for regulatory purposes. A Reporting Bank using the standardised approach for credit risk must ensure that the defaulted exposures in Tables 11-12 and 11-13 correspond to the secured and unsecured portions of claims that is defaulted, as stated in Section 1 of Annex 7L.
(d)	*Non-defaulted exposures*: This refers to any exposures that are not defaulted exposures.
(e)	*Allowances and impairments*: This refers to the total amount of specific allowances and general allowances. The Reporting Bank must ensure that the categorisation of specific allowances and general allowances for standardised approach exposures is consistent with the information provided in Table 11-14.
(f)	*Net values*: This is the total gross carrying amount less allowances and impairments.
(g)	*Debt securities*: To avoid doubt, this excludes equity exposures within the scope of paragraphs 7.3.9 and 7.3.10.
Linkages across tables	
(h)	Amount in [Table 11-12:1/g] is equal to the sum [Table 11-16:1/a + Table 11-16:1/b].
(i)	Amount in [Table 11-12:2/g] is equal to the sum [Table 11-16:2/a + Table 11-16:2/b].
(j)	Amount in [Table 11-12:1/a + Table 11-12:2/a] is equal to [Table 11-13:6/a].

Table 11-13: Changes in Stock of Defaulted Loans and Debt Securities

Purpose	To identify the changes in the defaulted exposures of a Reporting Bank, the flows between non-defaulted and defaulted exposure categories and reductions in the defaulted exposures due to write-offs.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Carrying amounts
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must explain the drivers of any significant changes in the amount of defaulted exposures from the previous semi-annual reporting period and any significant flows between defaulted and non-defaulted loans.

		(a)
1	**Defaulted loans and debt securities at end of the previous semi-annual reporting period**	
2	Loans and debt securities that have defaulted since the previous semi-annual reporting period	
3	Returned to non-defaulted status	
4	Amounts written-off	
5	Other changes	
6	**Defaulted loans and debt securities at end of the semi-annual reporting period (1+2-3-4±5)**	

Table 11-13A: Explanatory Notes of Changes in Stock of Defaulted Loans and Debt Securities

Definitions	
(a)	*Defaulted exposures*: A Reporting Bank must ensure that such exposures are net of write-offs and gross of impairment allowances. A Reporting Bank using the SA(CR) must ensure that the defaulted exposures in Tables 11-12 and 11-13 correspond to the secured and unsecured portions of claims that have defaulted, as stated in Section 1 of Annex 7L.
(b)	*Loans and debt securities that have defaulted since the previous semi-annual reporting period*: This refers to any loans or debt securities that became marked as defaulted during the semi-annual reporting period.
(c)	*Return to non-defaulted status*: This refers to defaulted loans or debt securities that the Reporting Bank deems as non-defaulted assets during the semi-annual reporting period.
(d)	*Amounts written-off*: This refers to both total and partial write-offs.
(e)	*Other changes*: These are the balancing items that are necessary to enable reconciliation.

Table 11-14: Additional Disclosures related to the Credit Quality of Assets

Purpose	To provide information on the credit quality of a Reporting Bank's assets.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Qualitative and quantitative (carrying amounts) information
Frequency	Annually
Format	Flexible

Qualitative Disclosures	
The Reporting Bank must provide a description of –	
(a)	Scope and definitions of past due and impaired exposures in accordance with the Accounting Standards and the differences, if any, between the definition of past due and default for accounting and regulatory purposes.
(b)	Extent of exposures that have defaulted which are not considered to be impaired and its justifications.
(c)	Methods used for determining specific allowances and general allowances, and information on the rationale for the categorisation of specific allowances and general allowances for standardised approach exposures.
(d)	Definition of a restructured exposure.
Quantitative Disclosures	
(e)	Breakdown of credit risk exposures by geographical areas, industry and residual maturity.
(f)	Amounts of impaired exposures (using the definition of impairment in accordance with the Accounting Standards) and related allowances and write-offs, broken down by geographical areas and industry.
(g)	Ageing analysis of past due exposures in accordance with the Accounting Standards.
(h)	Breakdown of restructured exposures, by impaired and non-impaired exposures.

Table 11-15: Qualitative Disclosures related to CRM Techniques

Purpose	To provide qualitative information on the mitigation of credit risk.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Qualitative
Frequency	Annually
Format	Flexible

A Reporting Bank must provide a description of –	
(a)	(i) core features of policies and processes for on- and off-balance sheet netting; and (ii) extent to which the Reporting Bank makes use of on- and off-balance sheet netting.
(b)	core features of policies and processes for collateral evaluation and management.
(c)	market or credit risk concentrations under the CRM instruments used[1089].
(d)	a meaningful breakdown of its credit derivative providers, and set the level of granularity of this breakdown in accordance with paragraph 11.1.2. The Reporting Bank is not required to identify its derivative counterparties nominally if the name of the counterparty is considered to be confidential information. Instead, the Reporting Bank may break down its credit derivative exposure by rating class or by type of counterparty[1090].

[1089] By guarantor type, collateral and credit derivative providers.
[1090] For example, banks, other financial institutions, non-financial institutions.

Table 11-16: Overview of CRM Techniques

Purpose	To provide information on the extent of usage of CRM techniques.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Carrying amounts. A Reporting Bank must include all CRM techniques used to reduce capital requirements and must disclose all secured exposures, irrespective of whether the SA(CR) or IRBA is used for RWA calculation.
Frequency	Semi-annually
Format	Fixed. In the event that the Reporting Bank is unable to categorise exposures secured by collateral, financial guarantees and credit derivatives into loans and debt securities, the Reporting Bank may merge row 1 and row 2 or divide the amount by the pro-rata weight of gross carrying amounts, but must explain which method it adopted. For the purposes of this Part, when an exposure benefits from multiple types of credit risk mitigation mechanisms, the Reporting Bank must allocate the exposure value to each mechanism by order of priority based on the credit risk mitigation mechanism which the Reporting Bank would apply in the event of loss. The Reporting Bank must ensure that disclosure is limited to the value of the exposure.[1091] If the Reporting Bank wishes to disclose information regarding the over-collateralisation, it may do so in the accompanying narrative. The Reporting Bank must disclose the amount of credit risk mitigation (ascribed to collateral, guarantees and credit derivatives) calculated according to the regulatory framework, including both the cost to sell and haircuts.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and key drivers of such changes.

		(a)	(b)	(c)	(d)	(e)
		Exposures unsecured	Exposures secured	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
1	Loans					
2	Debt securities					
3	**Total**					
4	Of which: defaulted					

[1091] The amount of over-collateralisation does not need to be disclosed in the table.

Table 11-16A: Explanatory Notes of Overview of CRM Techniques

Definitions	
(a)	*Exposures unsecured*: This refers to the carrying amount of exposures (net of allowances and impairments) that do not benefit from a CRM technique.
(b)	*Exposures secured*: This refers to the carrying amount of exposures that is secured by at least one CRM technique. For the purposes of this Part, a Reporting Bank must ensure that the allocation of the carrying amount of multi-secured exposures to their different CRM techniques is by the order which the CRM techniques are to be called first in the event of a loss, within the limits of the carrying amount of the secured exposures.
(c)	*Exposures secured by collateral*: This refers to the carrying amount of exposures (net of allowances and impairments) partly or totally secured by collateral. Where an exposure is secured by collateral and other CRM techniques, the carrying amount of the exposure secured by collateral is the remaining share of the exposure secured by collateral after consideration of the shares of the exposure already secured by other CRM techniques expected to be called beforehand in the event of a loss, without considering over-collateralisation.
(d)	*Exposures secured by financial guarantees*: This refers to the carrying amount of exposures (net of allowances and impairments) partly or totally secured by financial guarantees. Where an exposure is secured by financial guarantees and other CRM techniques, the carrying amount of the exposure secured by financial guarantees is the remaining share of the exposure secured by financial guarantees after consideration of the shares of the exposure already secured by other CRM techniques expected to be called beforehand in the event of a loss, without considering over-collateralisation.
(e)	*Exposures secured by credit derivatives*: This refers to the carrying amount of exposures (net of allowances and impairments) partly or totally secured by credit derivatives. Where an exposure is secured by credit derivatives and other CRM techniques, the carrying amount of the exposure secured by credit derivatives is the remaining share of the exposure secured by credit derivatives after consideration of the shares of the exposure already secured by other CRM techniques expected to be called beforehand in the event of a loss, without considering over-collateralisation.

Table 11-17: Qualitative Disclosures on the Use of External Credit Ratings Under the SA(CR)

Purpose	To supplement the information on a Reporting Bank's use of SA(CR) with qualitative information on the use of external ratings.
Scope of application	This table is mandatory for Reporting Banks using the SA(CR) for its RWA calculation. The Reporting Bank may omit disclosures pertaining to certain SA(CR) asset classes if the exposures and RWA amounts are negligible. The Reporting Bank must explain clearly why it considers the omitted information not to be meaningful to users, including a description of the portfolios concerned and the aggregate total RWA these asset classes represent.
Content	Qualitative
Frequency	Annually
Format	Flexible

For portfolios under the SA(CR), the Reporting Bank must disclose information on –	
(a)	the names of the ECAIs used by the Reporting Bank, and the reasons for any changes of ECAIs used over the annual reporting period.
(b)	the asset classes for which each ECAI is used.
(c)	the process used to transfer the issuer to issue credit ratings onto comparable assets in the banking book, as set out in paragraphs 7.3.31, 7.3.32 and 7.3.36.

Table 11-18: SA(CR) – Credit Risk Exposure and CRM Effects

Purpose	To illustrate the effects of CRM on the calculation of capital requirements for SA(CR). The RWA density provides a synthetic metric on the riskiness of each portfolio.
Scope of application	This table is mandatory for Reporting Banks using the SA(CR). A Reporting Bank may omit disclosures pertaining to certain portfolios in this table if the exposures and RWA amounts are negligible. The Reporting Bank must state clearly why it considers the omitted information not to be meaningful to users, including a description of the portfolios concerned and the aggregate total RWA these portfolios represent.
Content	Regulatory exposure amounts
Frequency	Semi-annually
Format	Fixed. Columns are fixed and the rows reflect the asset classes under SA(CR) under Part VII.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes. The Reporting Bank must describe the sequence in which CCFs, provisioning and credit risk mitigation measures are applied.

		(a)	(b)	(c)	(d)	(e)	(f)
		Exposures before CCF and CRM		**Exposures post-CCF and post-CRM**		**RWA and RWA density**	
	Asset classes and sub-classes	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA density
1	Cash items						
2	Central government and central bank						
3	PSE						
4	MDB						
5	Bank						
6	Covered bond						
7	Corporate						
7A	Of which: General						
7B	Of which: Corporate SME						
7C	Of which: SL						
8	Equity and subordinated debt						
9	Regulatory retail						

10	Other retail						
11	Real estate						
12	Other exposures						
13	Defaulted exposures						
14	**Total**						

Table 11-18A: Explanatory Notes of SA(CR) – Credit Risk Exposure and CRM Effects

Definitions	
(a)	*Other exposures*: This refers to SA(CR) exposures in the other exposures asset class as set out in paragraph 7.3.1(l).
(b)	*Exposures before CCF and CRM, on-balance sheet amount*: A Reporting Bank must disclose the regulatory exposure amount (net of impairment allowances and write-offs) under the regulatory scope of consolidation gross of any CRM.
(c)	*Exposures before CCF and CRM, off-balance sheet amount*: The Reporting Bank must disclose the off-balance sheet exposures, gross of CCF and any CRM under the regulatory scope of consolidation.
(d)	*Exposures post-CCF and post-CRM*: This is the amount to which the capital requirements are applied. It is a net credit equivalent amount, after having applied CRM and CCF.
(e)	*RWA density*: This corresponds to total RWA divided by the exposures post-CCF and post-CRM, expressed as a percentage.
Linkages across tables	
(f)	The amount in [Table 11-18:14/c + Table 11-18:14/d] is equal to the amount in [Table 11-19:14L/d].

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Table 11-19: SA(CR) – Exposures by Asset Classes and Risk Weights

Purpose	To present the breakdown of credit risk exposures under the SA(CR) by asset class and risk weight, corresponding to the level of risk attributed to the exposures.
Scope of application	This table is mandatory for Reporting Banks using the SA(CR). A Reporting Bank may omit disclosures pertaining to certain portfolios in this table if the exposures and RWA amounts are negligible. The Reporting Bank must state clearly why it considers the omitted information not to be meaningful to users, including a description of the portfolios concerned and the aggregate total RWA these portfolios represent.
Content	Regulatory exposure amounts
Frequency	Semi-annually
Format	Fixed. The rows reflect the asset classes and sub-classes under SA(CR) under Part VII.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes. The Reporting Bank must describe the sequence in which CCFs, provisioning and credit risk mitigation measures are applied.

		0%	20%	Total credit exposure amount (post-CCF and post-CRM)
1	Cash items			

		0%	20%	50%	100%	150%	Other	Total credit exposure amount (post-CCF and post-CRM)
2	Central government and central bank							

		20%	50%	100%	150%	Other	Total credit exposure amount (post-CCF and post-CRM)
3	PSE						

		0%	20%	30%	50%	100%	150%	Other	Total credit exposure amount (post-CCF and post-CRM)
4	MDB								

		20%	30%	40%	50%	75%	100%	150%	Other	Total credit exposure amount (post-CCF and post-CRM)
5	Bank									
5A	Of which: securities firms and other financial institutions									

		10%	15%	20%	25%	35%	50%	100%	Other	Total credit exposure amount (post-CCF and post-CRM)
6	Covered bonds									

		20%	50%	65%	75%	80%	85%	100%	130%	150%	Other	Total credit exposure amount (post-CCF and post-CRM)
7	Corporate											
7A	Of which: General corporate											
7B	Of which: securities firms and other financial institutions											
7C	Of which: Corporate SME											
7D	Of which: securities firms and other financial institutions											
7E	Of which: SL											

		100%	150%	250%	400%	1250%	Other	Total credit exposure amount (post-CCF and post-CRM)
8	Equity and subordinated debt[1092]							

		45%	75%	100%	Other	Total credit exposure amount (post-CCF and post-CRM)
9	Regulatory retail					

		45%	75%	100%	Other	Total credit exposure amount (post-CCF and post-CRM)
10	Other retail					

		0 %	20 %	25 %	30 %	35 %	40 %	45 %	50 %	60 %	65 %	70 %	75 %	85 %	90 %	100 %	105 %	110 %	150 %	Other	Total credit exposure amount (post-CCF and post-CRM)
11	Real estate																				
11A	Of which: ADC																				
11B	Of which: Regulatory real estate																				
11C	Of which: RRE																				
11D	Of which: CRE																				
11E	Of which: Other real estate																				

[1092] For disclosure purposes, a Reporting Bank that uses the standardised approach for credit risk during the transitional period should report its equity exposures according to whether they would be classified as "all other equity exposures" (250%) or "speculative unlisted equity exposures" (400%). The Reporting Bank should ensure that risk weights disclosed for "speculative unlisted equity exposures" and "all other equity exposures" reflect the actual risk weights applied to these exposures in a particular year (please refer to the respective transitional arrangements set out in paragraph 7.3.85).

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		50%	100%	150%	Other	Total credit exposure amount (post-CCF and post-CRM)
12	Defaulted exposures					

		0%	20%	100%	250%	1250%	Other	Total credit exposure amount (post-CCF and post-CRM)
13	Other exposures							

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Exposure amounts and CCFs applied to off-balance sheet exposures, categorised based on risk bucket of converted exposures					
14[1092A]	**Risk weight**	(a)	(b)	(c)	(d)
		On-balance sheet exposure	***Off-balance sheet exposure (pre-CCF)***	***Weighted average CCF****	***Exposure (post-CCF and post-CRM)***
14A	*Less than 40%*				
14B	*40–70%*				
14C	*75%*				
14D	*80–85%*				
14E	*90–100%*				
14F	*105–130%*				
14G	*150%*				
14H	*250%*				
14I	*400%*				
14J	*1250%*				

[1092A] For disclosure purposes, a Reporting Bank that uses the standardised approach for credit risk during the transitional period should report its equity exposures according to whether they would be classified as "all other equity exposures" (250%) or "speculative unlisted equity exposures" (400%). The Reporting Bank should ensure that risk weights disclosed for "speculative unlisted equity exposures" and "all other equity exposures" reflect the actual risk weights applied to these exposures in a particular year (please refer to the respective transitional arrangements set out in paragraph 7.3.85).

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14K	*Other*				
14L	***Total exposures***				
* Weighting is based on off-balance sheet exposure (pre-CCF).					

[MAS Notice 637 (Amendment) 2024]

Table 11-19A: Explanatory Notes of SA(CR) – Exposures by Asset Classes and Risk Weights

Definitions	
(a)	*Total credit exposure amount (post-CCF and post-CRM)*: This refers to the amount used for computing capital requirements (both for on- and off-balance sheet amounts), net of impairment allowances and write-offs and after applying CRM and CCF but before the application of the relevant risk weights.
(b)	*Defaulted exposures*: This corresponds to the uncollateralised or unprotected portion of any exposures that is in default, as set out in paragraph 7.3.109.
(c)	*Other exposures*: This refers to SA(CR) exposures in the other exposures asset class as set out in paragraph 7.3.1(l).

Table 11-20: Qualitative Disclosures for IRBA Models

Purpose	To provide additional information on models used to compute RWA under IRBA models.
Scope of application	This table is mandatory for Reporting Banks using the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class for some or all of their exposures. To provide meaningful information to users, a Reporting Bank must describe the main characteristics of the models used, in accordance with the regulatory scope of consolidation, and explain how the scope of the described models was determined. The Reporting Bank must ensure that the commentary includes the percentage of RWA covered by the models of each of the regulatory portfolios.
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must provide a description of –	
(a)	internal model development, controls and changes, in particular, the role of the functions involved in the development, approval and subsequent changes of the credit risk models.
(b)	(i) relationships between risk management function and IA function; and (ii) procedure to ensure the independence of the function in charge of the review of the models from the function in charge of the development of the models.
(c)	scope and main content of the reporting related to credit risk models.
(d)	scope of approval by the Authority on the approach. This refers to the scope of internal models approved by the Authority for entities within the Group, portfolios and exposure classes, with a breakdown between F-IRBA, and A-IRBA and IRBA for the IRBA retail asset class, where applicable.
(e)	for each of the portfolios, the portion of E or EAD, whichever is applicable, within the Group (expressed as a percentage of total credit risk exposure) covered by SA(CR), F-IRBA, A-IRBA, IRBA for the IRBA retail asset class and the portion of portfolios that are involved in a rollout plan.
(f)	number of key models used with respect to each portfolio, with a brief description of the main differences among the models within the same portfolios.
(g)	main characteristics of the approved models, including – (i) definitions, methods and data for estimation and validation of PD[1093]; (ii) LGD[1094], where applicable; and (iii) CCFs, including assumptions employed in the derivation of these variables, where applicable.

[1093] For example, how PDs are estimated for low default portfolios, if there are regulatory floors, the drivers for differences observed between PD and actual default rates at least for the last 3 annual reporting periods.

[1094] For example, methods to calculate downturn LGD, how LGDs are estimated for low default portfolio, the time lapse between the default event and the closure of the exposure.

Table 11-21: IRBA – Credit Risk Exposures by Portfolio and PD Range

Purpose	To provide main parameters used for the calculation of capital requirements for IRBA models, so as to enhance the transparency of RWA calculations and the reliability of regulatory measures.
Scope of application	This table is mandatory for Reporting Banks using the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class for some or all of their credit risk exposures.
Content	All columns are based on the regulatory scope of consolidation.
Frequency	Semi-annually
Format	Fixed. The columns and PD range in the rows are fixed. A Reporting Bank must disclose one table for portfolios using F-IRBA, and one table for portfolios using A-IRBA and IRBA for the IRBA retail asset class.
Accompanying narrative	The Reporting Bank must explain the effect of credit derivatives on RWA.

PD range	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	Original on-balance sheet gross exposures	Off-balance sheet exposures pre-CCF	Average CCF	EAD post-CRM and post-CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWA	RWA density	EL	TEP
Portfolio X												
0.00 to < 0.15												
0.15 to <0.25												
0.25 to <0.50												
0.50 to <0.75												
0.75 to < 2.50												
2.50 to < 10.00												
10.00 to <100.00												
100.00 (Default)												
Sub-total												
Total (all portfolios)												

Table 11-21A: Explanatory Notes to IRBA – Credit Risk Exposures by Portfolio and PD Range

Definitions	
(a)	*Portfolio X* includes the following regulatory portfolios under the F-IRBA: (i) Sovereign; (ii) Banks; (iii) General Corporate; (iv) Corporate small business; (v) SL; (vi) HVCRE; (vii) Eligible Purchased Receivables, as defined in Part VII. *Portfolio X also* includes the following regulatory portfolios under the A-IRBA and IRBA for the IRBA retail asset class: (i) Sovereign; (ii) General Corporate; (iii) Corporate small business; (iv) SL; (v) HVCRE; (vi) Retail - QRRE; (vii) Retail - Residential mortgage; (viii) Retail - Other retail exposures; (ix) Eligible Purchased Receivables, as defined in Part VII.
(b)	*Original on-balance sheet gross exposure*: This refers to the amount of the on-balance sheet exposure gross of impairment allowances (before taking into account the effect of CRM).
(c)	*Off-balance sheet exposure pre-CCF*: This refers to the exposure value without taking into account valuation adjustments and impairment allowances, CCFs and the effect of CRM.
(d)	*Average CCF*: This refers to EAD post-CCF for off-balance sheet exposure to total off-balance sheet exposure pre-CCF.
(e)	*EAD post-CRM and post-CCF*: This refers to the amount relevant for the capital requirements calculation.
(f)	*Number of obligors*: This corresponds to the number of obligors in each PD range. Approximation to the nearest rounded number is acceptable.
(g)	*Average PD*: This refers to the PD associated with each obligor grade or pool, weighted by EAD post-CRM and post-CCF.
(h)	*Average LGD*: This refers to the LGD associated with each obligor grade or pool, weighted by EAD post-CRM and post-CCF. A Reporting Bank must ensure that the LGD is net of any CRM.
(i)	*Average maturity*: This refers to the obligor maturity in years weighted by EAD post-CRM and post-CCF. This parameter needs to be filled in only when it is used for the RWA calculation.
(j)	*RWA density*: This corresponds to total RWA to EAD post-CRM and post-CCF.
(k)	*EL*: This is calculated according to Sub-division 14 of Division 4 of Part VII.

Table 11-22: IRBA – Effect on RWA of Credit Derivatives Used as CRM

Purpose	To illustrate the effect of credit derivatives on the calculation of IRBA capital requirements. Pre-credit derivatives RWA assess the impact of credit derivatives on RWA, irrespective of the effects of CRM.
Scope of application	This table is mandatory for Reporting Banks using the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class for some or all of their credit risk exposures. A Reporting Bank must disclose in column (a), the RWA of an exposure secured by a credit derivative calculated without reflecting the risk mitigating effect of credit derivatives, and in column (b), the RWA of the same exposure calculated reflecting the risk mitigating effect of credit derivatives.
Content	RWA that are subject to credit risk approach
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must explain the effect of credit derivatives on its RWA.

		(a)	(b)
		Pre-credit derivatives RWA	Actual RWA
1	Sovereign – F-IRBA		
2	Sovereign – A-IRBA		
3	Bank – F-IRBA		
4	General Corporate – F-IRBA		
5	General Corporate – A-IRBA		
6	Corporate small business – F-IRBA		
7	Corporate small business – A-IRBA		
8	SL – F-IRBA		
9	SL – A-IRBA		
10	HVCRE – F-IRBA		
11	HVCRE – A-IRBA		
12	Retail – QRRE		
13	Retail – residential mortgage		
14	Retail – other retail exposures		
15	Purchased receivables – F-IRBA		
16	Purchased receivables – A-IRBA		
17	**Total**		

Table 11-22A: Explanatory Notes of IRBA – Effect on RWA of Credit Derivatives Used as CRM

Definitions	
(a)	*Pre-credit derivatives RWA*: This refers to the hypothetical RWA calculated assuming the absence of recognition of the credit derivative as a CRM technique.
(b)	*Actual RWA*: This refers to the RWA taking into account the effects of CRM through the use of the credit derivative.

Table 11-23: IRBA – RWA Flow Statement for Credit Risk Exposures

Purpose	To present a flow statement explaining variations in the credit RWA determined under the IRBA.
Scope of application	This table is mandatory for Reporting Banks using the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class for some or all of their credit risk exposures.
Content	RWA corresponding to credit risk only, excluding CCR. A Reporting Bank must base changes in RWA amounts over the quarterly reporting period for each of the key drivers on the Reporting Bank's reasonable estimation of the figure.
Frequency	Quarterly
Format	Fixed. The column and rows 1 and 9 are fixed. The Reporting Bank must add additional rows between rows 7 and 8 to disclose other material drivers of RWA movements over the quarterly reporting period.
Accompanying narrative	The Reporting Bank must explain any significant change over the quarterly reporting period and the key drivers of such changes.

		(a)
		RWA amounts
1	**RWA as at end of previous quarter**	
2	Asset size	
3	Asset quality	
4	Model updates	
5	Methodology and policy	
6	Acquisitions and disposals	
7	Foreign exchange movements	
8	Other	
9	**RWA as at end of quarter**	

Table 11-23A: Explanatory Notes of IRBA – RWA Flow Statement for Credit Risk Exposures

Definitions	
(a)	*Asset size*: This refers to organic changes in book size and composition (including origination of new businesses and maturing loans) but excludes changes in book size due to acquisitions and disposal of entities.
(b)	*Asset quality*: This refers to changes in the assessed quality of a Reporting Bank's assets due to changes in obligor risk, such as rating grade migration or similar effects.
(c)	*Model updates*: This refers to changes due to model implementation, changes in model scope, or any changes intended to address model weaknesses.
(d)	*Methodology and policy*: This refers to changes due to methodological changes in calculations driven by regulatory policy changes, including both revisions to existing regulations and new regulations.
(e)	*Acquisitions and disposals*: This refers to changes in book sizes due to acquisitions and disposal of entities.
(f)	*Foreign exchange movements*: This refers to changes driven by market movements such as foreign exchange movements.
(g)	*Other*: This category captures changes that cannot be attributed to any other category.

Table 11-24: IRBA – Backtesting of PD Per Portfolio

Purpose	To provide backtesting data to validate the reliability of PD calculations. This table compares the PD used in IRBA capital calculations with the effective default rates of a Reporting Bank's obligors. The Reporting Bank must use, at a minimum, a 5-year average annual default rate to compare the PD with a more stable default rate. The Reporting Bank may use a longer historical period that is consistent with its actual risk management practices.
Scope of application	This table is mandatory for Reporting Banks using the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class for some or all of their credit risk exposures. To provide meaningful information to users on the backtesting of its internal models, the Reporting Bank must include the key models used, in accordance with the regulatory scope of consolidation and explain how the scope of the described models was determined. The Reporting Bank must ensure that the commentary includes the percentage of RWA covered by the models for which backtesting results are shown for each of the Reporting Bank's regulatory portfolios. The models to be disclosed refer to any model, or combination of models, approved by the Authority, for the generation of PD used for calculating capital requirements under the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class. This may include the model that is used to assign a risk rating to an obligor, and / or the model that calibrates the internal ratings to the PD scale.
Content	Modelling parameters used in IRBA calculation
Frequency	Annually. The frequency of the disclosure is not linked to the timing of the Reporting Bank's backtesting. The annual disclosure frequency does not require a timetable of model backtesting that is calibrated on a calendar year basis. When the backtesting reference period is not calibrated on a calendar year basis, but on another time interval[1095], "annual reporting period" as used in columns (f), (g) and (h) means "over the period used for the backtesting of a model". The Reporting Bank must, however, disclose the time horizon (observation period/timetable) it uses for its backtesting.
Format	Flexible. The Reporting Bank must disclose one table for portfolios using F-IRBA, and one table for portfolios using A-IRBA and IRBA for the IRBA retail asset class.
Accompanying narrative	The Reporting Bank must explain any significant change over the annual reporting period and the key drivers of such changes. The Reporting Bank may disclose the amount of exposure and number of obligors whose defaulted exposures have been cured in the annual reporting period.

[1095] For instance, a 12-month interval.

(a)	(b)	(c)			(d)	(e)	(f)		(g)	(h)	(i)
Portfolio X	PD Range	S&P	Fitch's Rating	Moody's Rating	Weighted average PD	Arithmetic average PD by obligors	Number of obligors		Defaulted obligors in the annual reporting period	of which: new defaulted obligors in the annual reporting period	Average historical annual default rate
							End of previous annual reporting period	End of the annual reporting period			

Table 11-24A: Explanatory Notes of IRBA – Backtesting of PD Per Portfolio

Definitions	
(a)	*Portfolio X* includes the following regulatory portfolios under the F-IRBA: (i) Sovereign; (ii) Banks; (iii) General Corporate; (iv) Corporate small business; (v) SL; (vi) HVCRE; (vii) Eligible Purchased Receivables, as defined in Part VII. *Portfolio X* also includes the following regulatory portfolios under the A-IRBA and IRBA for the IRBA retail asset class: (i) Sovereign; (ii) General Corporate; (iii) Corporate small business; (iv) SL; (v) HVCRE; (vi) Retail - QRRE; (vii) Retail - Residential mortgage; (viii) Retail - Other retail exposures; (ix) Eligible Purchased Receivables, as defined in Part VII.
(b)	*Weighted average PD*: This refers to the PD associated with each obligor grade or pool, weighted by EAD post-CCF and post-CRM. A Reporting Bank must use the formula $\sum(PD_i*EAD_i)/(\sum EAD_i)$ to calculate "weighted average PD", where the "weight" is the EAD at the beginning of the period.
(c)	*Arithmetic average PD by obligors*: This refers to the arithmetic mean of PDs of the number of obligors within the PD range.
(d)	*Number of obligors*: This includes the number of obligors at both (i) the end of the previous annual reporting period; and (ii) the end of the annual reporting period.
(e)	*Defaulted obligors in the annual reporting period*: This refers to the number of defaulted obligors during the annual reporting period.
(f)	*Defaulted obligors in the annual reporting period, of which: new defaulted obligors in the annual reporting period*: This refers to the number of obligors that defaulted during the last 12-month period that were not funded at the end of the previous financial annual reporting period.
(g)	*Average historical annual default rate*: The 5-year average of the annual default rate (number of obligors at the beginning of each year that have defaulted during that year divided by the total number of obligors at the beginning of the year) is a minimum. The Reporting Bank may use a longer historical period that is consistent with the Reporting Bank's risk management practices. The Reporting Bank must ensure that the average historical annual default rate disclosed is before the application of the margin of conservatism.

Table 11-25: IRBA – Specialised Lending under the Slotting Approach

Purpose	To provide quantitative disclosures of a Reporting Bank's specialised lending using the supervisory slotting approach.
Scope of application	This table is mandatory for Reporting Banks using the supervisory slotting approach.
Content	Carrying values, exposure amounts and RWA
Frequency	Semi-annually
Format	Flexible
Accompanying narrative	The Reporting Bank must explain any significant change over the semi-annual reporting period and the key drivers of such changes.

SL											
Other than HVCRE											
Regulatory categories	Remaining maturity	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount					RWA	Expected losses
					PF	OF	CF	IPRE	Total		
Strong	Less than 2.5 years			50%							
	Equal to or more than 2.5 years			70%							
Good	Less than 2.5 years			70%							
	Equal to or more than 2.5 years			90%							
Satisfactory				115%							
Weak				250%							
Default				-							
Total											
HVCRE											
Regulatory categories	Remaining maturity	On-balance sheet amount	Off-balance sheet amount	Risk weight	Exposure amount					RWA	Expected losses
Strong	Less than 2.5 years			70%							

	Equal to or more than 2.5 years			95%			
Good	Less than 2.5 years			95%			
	Equal to or more than 2.5 years			120%			
Satisfactory				140%			
Weak				250%			
Default				-			
Total							

Table 11-25A: Explanatory Notes of IRBA - Specialised Lending under the Slotting Approach

Definitions	
(a)	*On-balance sheet amount*: This is the EAD post-CRM (net of impairment allowances and write-offs) under the regulatory scope of consolidation.
(b)	*Off-balance sheet amount*: This is the EAD before CCF and CRM.
(c)	*Exposure amount*: This is the amount for the capital requirement computation, post-CCF and post-CRM.
(d)	*Expected losses*: This is the EL calculated in accordance with Sub-division 14 of Division 4 of Part VII.

Sub-division 5: Counterparty Credit Risk

11.3.9 The counterparty credit risk section includes all exposures in the banking book and trading book that are subject to capital requirements for CCR, i.e. capital requirements for pre-settlement counterparty exposures arising from OTC derivative transactions, exchange-traded derivative transactions, long settlement transactions and SFTs, capital requirements for exposures to CCPs arising from CCR exposures and default fund exposures included in the calculation of CCP RWA.

11.3.10 A Reporting Bank must disclose all items set out in Tables 11-26, 11-27, 11-30, 11-31 and 11-33. In the case where a Reporting Bank has adopted –

(a) the SA(CR) to compute RWA for CCR exposures, the Reporting Bank must disclose all items set out in Table 11-28;

(b) the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class to compute RWA for CCR exposures, the Reporting Bank must disclose all items set out in Table 11-29; and

(c) the CCR internal models method, the Reporting Bank must disclose all items set out in Table 11-32.

Table 11-26: Qualitative Disclosures related to CCR

Purpose	To describe the main characteristics of CCR management.[1096]
Scope of application	This table is mandatory for all Reporting Banks.
Content	Qualitative information
Frequency	Annually
Format	Flexible

A Reporting Bank must provide a description of –	
(a)	risk management objectives and policies related to CCR.
(b)	methodologies used to assign economic capital and credit limits for counterparty credit exposures and for CCP exposures.
(c)	policies relating to guarantees and assessments concerning CCR, including exposures towards CCPs.
(d)	policies relating to general or specific wrong-way risk exposures.
(e)	impact of the amount of collateral that the Reporting Bank would be required to provide given a credit rating downgrade.

[1096] For example, operating limits, use of guarantees and other CRM techniques and impact of own credit downgrading.

Table 11-27: Analysis of CCR Exposure by Approach

Purpose	To provide a comprehensive view of the methods used to calculate CCR regulatory requirements and the main parameters used within each method.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Regulatory exposures, RWA and parameters used for RWA calculations for all exposures subject to capital requirements for CCR (excluding capital requirements for exposures to CCPs included in the calculation of CCP RWA, and the capital requirements for CVA risk).
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	A Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

		(a)	(b)	(c)	(d)	(e)	(f)
		Replacement cost	Potential future exposure	Effective EPE	α used for computing regulatory EAD	EAD (post-CRM)	RWA
1	SA-CCR (for derivatives)				1.4		
2	CCR internal models method (for derivatives and SFTs)						
3	FC(SA) (for SFTs)						
4	FC(CA) (for SFTs)						
5	VaR for SFTs						
6	**Total**						

Table 11-27A: Explanatory Notes to Analysis of CCR Exposure by Approach

Definitions	
(a)	*Replacement cost*: The replacement cost under the SA-CCR is calculated in accordance with Section 2 of Annex 7D.
(b)	*Potential future exposure*: The potential future exposure under the SA-CCR is calculated in accordance with Section 3 of Annex 7D.
(c)	*Effective EPE*: Effective EPE is computed in accordance with Section 3 of Annex 7E.
(d)	*EAD (post-CRM)*: This refers to the amount relevant for the capital requirements calculation after applying CRM, computed in accordance with paragraphs 7.1.8 to 7.1.10, 7.2.32, 7.2.37 and 7.2.50.

Table 11-28: Standardised Approach – CCR Exposures by Portfolio and Risk Weights

Purpose	To provide a breakdown of CCR exposures calculated in accordance with the SA(CR), by regulatory portfolio and risk weight.
Scope of application	This table is mandatory for all Reporting Banks using the SA(CR) to compute RWA for CCR, regardless of the CCR approach used to determine E or EAD. A Reporting Bank may omit disclosures pertaining to a certain portfolio in this table if the exposures and RWA amounts are negligible. The Reporting Bank, which omits disclosures in this table, must state clearly why it considers the information not to be meaningful to users, including a description of the exposures in the portfolios concerned, and the aggregate total of RWA from such exposures.
Content	Credit exposure amounts
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Risk Weight / Asset classes	0%	10%	20%	50%	75%	100%	150%	Others	Total Credit Exposure
Central government and central bank									
PSE									
MDB									
Bank									
Covered bond									
Corporate									
Equity and subordinated debt									
Regulatory retail									
Other retail									
Real estate									
Other exposures									
Total									

Table 11-28A: Explanatory Notes to Standardised Approach – CCR Exposures by Portfolio and Risk Weights

Definitions	
(a)	*Total credit exposure*: This refers to the post-CRM amount relevant for the capital requirements calculation.
(b)	*Other exposures*: This amount excludes exposures to CCPs, which are reported in Table 11-33.

Table 11-29: IRBA – CCR Exposures by Portfolio and PD Range

Purpose	To provide all relevant parameters used for the calculation of CCR capital requirements for IRBA models.
Scope of application	This table is mandatory for all Reporting Banks using the A-IRBA, F-IRBA or IRBA for the IRBA retail asset class to compute RWA for CCR exposures, regardless of the CCR approach used to determine E or EAD. A Reporting Bank must include in this table the key models used at the group-wide level (according to the scope of regulatory consolidation) and explain how the scope of models described in this table was determined. The Reporting Bank must also disclose the percentage of RWA covered by the models shown in this table for each of the Reporting Bank's regulatory portfolios.
Content	RWA and parameters used for RWA calculations for all exposures subject to the capital requirements for CCR (excluding capital requirements for exposures to CCPs included in the calculation of CCP RWA, and the capital requirements for CVA risk).
Frequency	Semi-annually
Format	Fixed. The columns and PD range are fixed. The Reporting Bank must disclose one table for portfolios using F-IRBA, and one table for portfolios using A-IRBA and IRBA for the IRBA retail asset class.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

	PD range	(a) EAD post-CRM	(b) Average PD	(c) Number of obligors	(d) Average LGD	(e) Average maturity	(f) RWA	(g) RWA density
Portfolio X								
	0.00 to < 0.15							
	0.15 to < 0.25							
	0.25 to < 0.50							
	0.50 to < 0.75							
	0.75 to < 2.50							
	2.50 to < 10.00							
	10.00 to < 100.00							
	100.00 (Default)							
	Sub-total							
Total (sum of portfolios)								

Table 11-29A: Explanatory Notes to IRBA – CCR Exposures by Portfolio and PD Range

Definitions	
(a)	*Portfolio X* includes the following regulatory portfolios under the F-IRBA: (i) Sovereign; (ii) Banks; (iii) General Corporate; (iv) Corporate small business; (v) SL; (vi) HVCRE, as defined in Part VII. *Portfolio X* also includes the following regulatory portfolios under the A-IRBA and IRBA for the IRBA retail asset class: (i) Sovereign;(ii) General Corporate; (iii) Corporate small business; (iv) SL; (v) HVCRE; (vi) Retail – Other retail exposures, as defined in Part VII.
(b)	*EAD post-CRM*: This refers to the amount relevant for the capital requirements calculation, having applied the CCR approach and CRM, but gross of any impairment allowance as determined in accordance with the Accounting Standards.
(c)	*Number of obligors*: This corresponds to the number of individual PDs in this band. Approximation to the nearest rounded number is acceptable.
(d)	*Average PD*: This refers to the PD associated with each obligor grade, weighted by EAD post-CRM.
(e)	*Average LGD*: This refers to the LGD associated with each obligor grade, weighted by EAD post-CRM. The LGD must be net of any CRM.
(f)	*Average maturity*: This refers to the obligor maturity weighted by EAD post-CRM.
(g)	*RWA density*: This corresponds to total RWA to EAD post-CRM.

Table 11-30: Composition of Collateral for CCR Exposure

Purpose	To provide a breakdown of all types of collateral posted or received by a Reporting Bank to support or reduce the CCR exposures related to derivative transactions or to SFTs, including transactions cleared through a CCP. The purpose of the table is to provide a view on the collateral posted or received by the Reporting Bank rather than the value accounted for within the regulatory computation.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Carrying amounts of collateral used in derivative transactions or SFTs, regardless of whether the transactions are cleared through a CCP, or whether the collateral is posted to a CCP. The adjusted fair value of collateral reported must be computed based on the total collateral posted or received by the Reporting Bank and is not limited to the collateral used for mitigating CCR.
Frequency	Semi-annually
Format	Flexible. The columns are fixed, but the rows are flexible.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes. The Reporting Bank may disclose the collateral eligible for credit risk mitigation using an accompanying narrative.

	(a)	(b)	(c)	(d)	(e)	(f)
	Collateral used in derivative transactions				Collateral used in SFTs	
	Adjusted fair value of collateral received		Adjusted fair value of collateral posted		Adjusted fair value of collateral received	Adjusted fair value of collateral posted
	Segregated	Unsegregated	Segregated	Unsegregated		
Cash - domestic currency						
Cash - other currencies						
Domestic sovereign debt						
Other sovereign debt						
Government agency debt						
Corporate bonds						
Equity securities						
Other collateral						
Total						

Table 11-30A: Explanatory Notes to Composition of Collateral for CCR Exposure

Definitions	
(a)	*Collateral*: This refers to both legs of the transaction.[1097] The collateral received is reported in columns (a), (b) and (e), while the collateral posted by the Reporting Bank is reported in columns (c), (d) and (f). The adjusted fair value of collateral received or posted must be computed after applying the standard supervisory haircuts in Annex 7J. This means the fair value of collateral received will be reduced by the haircut (i.e. C(1 - H), where C is the fair value of the collateral received and H is the appropriate haircut) and the fair value of collateral posted will be increased after the haircut (i.e. E(1 + H), where E is the fair value of the collateral posted and H is the appropriate haircut).
(b)	*Segregated*: This refers to collateral which is held in a bankruptcy-remote manner. In the case where collateral is posted for centrally cleared trades, this refers to collateral that is posted by a clearing member or a client of a clearing member, is held by a custodian and is bankruptcy remote from the CCP, the clearing member, and other clients as set out in paragraphs 7.7.25 and 7.7.27.
(c)	*Unsegregated*: This refers to collateral that is not held in bankruptcy-remote manner.
(d)	*Domestic sovereign debt*: This refers to the debts of sovereign issuers in Singapore.
(e)	*Cash - domestic currency*: This refers to cash collateral that is denominated in SGD.

[1097] For example, a Reporting Bank transfers securities to a third party, and the third party in turn posts collateral to the Reporting Bank.

Table 11-31: Credit Derivative Exposures

Purpose	To illustrate the extent of a Reporting Bank's exposure to credit derivative transactions broken down between credit derivatives bought or sold.
Scope of application	This table is mandatory for all Reporting Banks.
Content	Notional derivative amounts, before any netting, and fair values.
Frequency	Semi-annually
Format	Flexible. The columns are fixed, but the rows are flexible.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

		(a)	(b)
		Protection bought	Protection sold
	Notionals		
1	Single-name credit default swaps		
2	Index credit default swaps		
3	Total return swaps		
4	Credit options		
5	Other credit derivatives		
6	**Total notionals**		
	Fair values		
7	Positive fair value (asset)		
8	Negative fair value (liability)		

Table 11-32: RWA Flow Statements under the CCR Internal Models Method

Purpose	To present a flow statement explaining changes in CCR RWA determined under the CCR internal models method (derivatives and SFTs).
Scope of application	This table is mandatory for all Reporting Banks using the CCR internal models method, irrespective of the credit risk approach used to compute RWA.
Content	RWA corresponding to CCR. Credit risk shown in Table 11-23 is excluded. Changes in RWA amounts over the quarterly reporting period for each of the key drivers must be based on a Reporting Bank's reasonable estimation of the figure.
Frequency	Quarterly
Format	Fixed. The column and rows 1 and 9 are fixed. The Reporting Bank may add additional rows between rows 7 and 8 to disclose other material drivers of RWA movements over the quarterly reporting period. The Reporting Bank may add rows to report any changes relating to risk-weighting methodology. The Reporting Bank may add rows in the table, if it has made changes to the IRBA model, which resulted in changes to the RWA of CCR exposures where the exposure values have been determined based on the CCR internal models method.
Accompanying narrative	The Reporting Bank must explain any significant changes over the quarterly reporting period and the key drivers of such changes.

		(a)
		Amounts
1	**RWA as at end of previous quarter**	
2	Asset size	
3	Credit quality of counterparties	
4	Model updates (CCR internal models method only)	
5	Methodology and policy (CCR internal models method only)	
6	Acquisitions and disposals	
7	Foreign exchange movements	
8	Other	
9	**RWA as at end of current quarter**	

Table 11-32A: Explanatory Notes to RWA Flow Statements under CCR Internal Models Method

Definitions	
(a)	*Asset size*: This refers to organic changes in book size and composition[1098] but excludes changes in book size due to acquisitions and disposal of entities.
(b)	*Credit quality of counterparties*: This refers to changes in the assessed quality of a Reporting Bank's counterparties as measured under the credit risk framework, regardless of the approach the Reporting Bank uses. This row includes potential changes due to IRBA models when the Reporting Bank uses IRBA.
(c)	*Model updates*: This refers to changes due to model implementation, changes in model scope, or any changes intended to address model weaknesses. This row addresses only changes in the CCR internal models method.
(d)	*Methodology and policy*: This refers to methodology changes in calculations driven by regulatory policy changes, such as new regulations (only in the CCR internal models method).
(e)	*Acquisitions and disposals*: This refers to changes in book sizes due to acquisitions and disposal of entities.
(f)	*Foreign exchange movements*: This refers to changes driven by foreign exchange rates.
(g)	*Other*: This category captures changes that cannot be attributed to the above categories.

[1098] This includes origination of new businesses and maturing exposures.

Table 11-33: Exposures to Central Counterparties

Purpose	To provide a comprehensive picture of a Reporting Bank's exposures to CCPs, including all types of exposures (due to operations, margins, contributions to default funds) and related capital requirements.
Scope of application	This table is mandatory for all Reporting Banks. The Reporting Bank must set out its exposures resulting from CCP trade exposures, collaterals and default fund contributions[1099] in this table.
Content	Exposures at default and RWA corresponding to exposures to CCPs.
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must also supplement this table with a narrative commentary to explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

		(a)	(b)
		EAD (post-CRM)	RWA
1	**Total exposures to qualifying CCPs**		
2	Exposures to qualifying CCPs (excluding collateral and default fund contributions)		
3	arising from: OTC derivative transactions;		
4	arising from: Exchange-traded derivative transactions;		
5	arising from: SFTs; and		
6	arising from: Netting sets where cross-product netting has been approved		
7	Segregated collateral		
8	Unsegregated collateral		
9	Pre-funded default fund contributions		
10	Unfunded default fund contributions		
11	**Total exposures to non-qualifying CCPs**		
12	Exposures to non-qualifying CCPs (excluding collateral and default fund contributions)		
13	arising from: OTC derivative transactions;		
14	arising from: Exchange-traded derivative transactions;		
15	arising from: SFTs; and		
16	arising from: Netting sets where cross-product netting has been approved		
17	Segregated collateral		
18	Unsegregated collateral		
19	Pre-funded default fund contributions		
20	Unfunded default fund contributions		

[1099] This refers to the aggregate of pre-funded default fund contributions and unfunded default fund contributions.

Table 11-33A: Explanatory Notes to Exposures to Central Counterparties

Definitions	
(a)	*Exposures to central counterparties (in rows 2 to 6 and rows 12 to 16)*: This refers to CCP trade exposures as described in paragraphs 7.7.15 to 7.7.35.
(b)	*EAD (post-CRM)*: This refers to the amount relevant for the capital requirements calculation after applying CRM, computed in accordance with paragraph 7.7.17.
(c)	*Qualifying CCP*: A qualifying CCP is as defined in Annex 2A.
(d)	*Prefunded default fund contributions*: This refers to prefunded clearing member contributions towards, or underwriting of, a CCP's mutualised loss-sharing arrangements.
(e)	*Unfunded default fund contributions*: This refers to unfunded clearing member contributions towards, or underwriting of, a CCP's mutualised loss-sharing arrangements. If a Reporting Bank is not a clearing member but a client of a clearing member, it must include its exposures to unfunded default fund contributions if applicable. Otherwise, the Reporting Bank must leave this row empty and explain the reason in the accompanying narrative.
(f)	*Segregated collateral*: This refers to collateral which is held in a bankruptcy-remote manner in accordance with paragraphs 7.7.25 and 7.7.27.
(g)	*Unsegregated collateral*: This refers to collateral that is not held in a bankruptcy-remote manner.

Sub-division 6: Securitisation

11.3.11 A Reporting Bank must –

(a) where applicable, disclose all securitisation exposures in Tables 11-34 to 11-36;

(b) where applicable, disclose securitisation exposures that are in its banking book and subject to capital requirements in Division 6 of Part VII, in Tables 11-37 and 11-38; and

(c) exclude disclosing in this Sub-division, the capital requirements for securitisation positions in its trading book that are reported in Sub-division 7.

11.3.12 A Reporting Bank must disclose, in Tables 11-37 and 11-38, only securitisation exposures that meet the requirements for the recognition of risk transference as set out in Sub-division 2 of Division 6 of Part VII. The Reporting Bank must disclose all securitisation exposures, including those that do not meet the requirements for the recognition of risk transference, in Tables 11-35 and 11-36. As a result, Tables 11-35 and 11-36 may include exposures that are subject to credit risk and market risk capital requirements and that are also included in other parts of the standalone Pillar 3 report. The purpose is to provide a comprehensive view of the Reporting Bank's securitisation activities. There is no double-counting of capital requirements as Tables 11-37 and 11-38 are limited to securitisation exposures subject to capital requirements set out in Division 6 of Part VII.

Table 11-34: Qualitative Disclosures related to Securitisation Exposures

Purpose	To provide qualitative information on a Reporting Bank's strategy and risk management with respect to its securitisation activities.
Scope of application	This table is mandatory for all Reporting Banks with securitisation exposures.
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must provide a description of –	
(a)	its risk management objectives and policies for securitisation activities and main features of these activities based on the rows (c) to (g) of this table. If the Reporting Bank holds securitisation exposures in both the banking book and the trading book, the Reporting Bank must describe each of the points set out in rows (c) to (g) of this table by distinguishing the activities in each of the books.
(b)	the Reporting Bank's objectives in relation to its securitisation and re-securitisation activity, including the extent to which these activities transfer credit risk of the underlying securitised exposures away from the Reporting Bank to other entities, including the type of risks assumed and retained.
(c)	a list of – (i) SPEs where it acts as sponsor[1100] (but not as an originator such as an ABCP conduit), indicating whether the Reporting Bank consolidates the SPEs into its scope of regulatory consolidation; (ii) affiliates that the Reporting Bank manages or advises; and that invest either in the securitisation exposures that the Reporting Bank has securitised or in SPEs that the Reporting Bank sponsors; and (iii) entities to which the Reporting Bank provides implicit support and the associated capital impact for each of them.
(d)	summary of the Reporting Bank's accounting policies for securitisation activities[1101].
(e)	the names of ECAIs used for securitisations and the types of securitisation exposure for which each agency is used, if applicable.
(f)	the IAA process, including – (i) structure of the internal assessment process and the relation between internal assessment and external ratings, including information on ECAIs as referenced in row (e) of this table; (ii) control mechanisms for the internal assessment process including discussion of independence, accountability, and internal assessment process review; (iii) the exposure type to which the internal assessment process is applied; and (iv) stress factors used for determining credit enhancement levels, by exposure type[1102].
(g)	the use of internal assessment other than for IAA capital purposes.

[1100] A Reporting Bank would generally be considered "a sponsor" if it, in fact or in substance, manages or advises the programme, places securities into the market, or provides liquidity and/or credit enhancements. The programme may include, for example, the ABCP conduit programme and structured investment vehicles.

[1101] Where meaningful, the Reporting Bank should differentiate between accounting policies applied for securitisation exposures and resecuritisation exposures.

[1102] For example, credit cards, home equity, auto, and securitisation exposures detailed by underlying exposure type and security type (e.g. residential mortgage-backed securities, commercial mortgage-backed securities, asset-backed securities, collateralised debt obligations) etc.

Table 11-35: Securitisation Exposures in the Banking Book

Purpose	To present a Reporting Bank's securitisation exposures in its banking book.
Scope of application	This table is mandatory for all Reporting Banks with securitisation exposures in the banking book.
Content	Carrying amounts. In this table, securitisation exposures include securitisation exposures even where criteria for recognition of risk transference are not met.
Frequency	Semi-annually
Format	Flexible. The Reporting Bank may modify the breakdown and order of proposed rows if another breakdown (e.g. whether or not criteria for recognition of risk transference are met) would be more appropriate to reflect their activities. Where the Reporting Bank acts both as originator and sponsor, the Reporting Bank may merge the 2 columns of 'a Reporting Bank acts as originator' and 'a Reporting Bank acts as sponsor' and use 'a Reporting Bank acts as originator/sponsor' column.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		A Reporting Bank acts as originator				A Reporting Bank acts as sponsor				A Reporting Bank acts as investor			
		Traditional	Of which STC	Synthetic	Sub-total	Traditional	Of which STC	Synthetic	Sub-total	Traditional	Of which STC	Synthetic	Sub-total
1	Total retail												
2	of which: residential mortgage												
3	of which: credit card												
4	of which: other retail exposures												
5	of which: resecuritisation												
6	Total wholesale												

7	of which: loans to corporates												
8	of which: commercial mortgage												
9	of which: lease and receivables												
10	of which: other wholesale												
11	of which: resecuritisation												

Table 11-35A: Explanatory Notes to Securitisation Exposures in the Banking Book

Definitions	
(a)	When 'a *Reporting Bank acts as originator*', the securitisation exposures are retained positions, even where not eligible for the securitisation framework due to the absence of significant and effective risk transfer.
(b)	When 'a *Reporting Bank acts as sponsor*', the securitisation exposures include exposures to commercial paper conduits to which the Reporting Bank provides programme-wide enhancements, liquidity and other facilities. Where the Reporting Bank acts both as originator and sponsor, it must avoid double-counting.
(c)	When 'a *Reporting Bank acts as investor*', the securitisation exposures are investment positions purchased in third-party deals.
(d)	*Synthetic transactions*: If the Reporting Bank has purchased protection, it must report the unsecured net exposure amounts to which it is exposed under columns 'a Reporting Bank acts as originator' or 'a Reporting Bank acts as sponsor'. If the Reporting Bank has sold protection, the exposure amount of the credit protection must be reported in the 'Reporting Bank acts as investor' column.
(e)	*Resecuritisation*: All securitisation exposures related to resecuritisation must be completed in rows 5 and 11 of this table, and not in the other rows of this table which contain only securitisation exposures other than resecuritisation.

Table 11-36: Securitisation Exposures in the Trading Book

Purpose	To present a Reporting Bank's securitisation exposures in its trading book.
Scope of application	This table is mandatory for all Reporting Banks with securitisation exposures in the trading book.
Content	Carrying amounts. In this table, securitisation exposures include securitisation exposures even where criteria for recognition of risk transference are not met.
Frequency	Semi-annually
Format	Flexible. The Reporting Bank may modify the breakdown and order of proposed rows if another breakdown (e.g. whether or not criteria for recognition of risk transference are met) would be more appropriate to reflect their activities. Where the Reporting Bank acts both as originator and sponsor, the Reporting Bank may merge the 2 columns of 'a Reporting Bank acts as originator' and 'a Reporting Bank acts as sponsor' and use 'a Reporting Bank acts as originator/sponsor' column.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
		A Reporting Bank acts as originator				A Reporting Bank acts as sponsor				A Reporting Bank acts as investor			
		Traditional	Of which STC	Synthetic	Sub-total	Traditional	Of which STC	Synthetic	Sub-total	Traditional	Of which STC	Synthetic	Sub-total
1	Total retail												
2	of which: residential mortgage												
3	of which: credit card												
4	of which: other retail exposures												
5	of which: resecuritisation												
6	Total wholesale												
7	of which: loans to corporates												

8	of which: commercial mortgage												
9	of which: lease and receivables												
10	of which: other wholesale												
11	of which: resecuritisation												

Table 11-36A: Explanatory Notes to Securitisation Exposures in the Trading Book

Definitions	
(a)	When 'a *Reporting Bank acts as originator*', the securitisation exposures are retained positions, even where not eligible for the securitisation framework due to the absence of significant and effective risk transfer.
(b)	When 'a *Reporting Bank acts as sponsor*', the securitisation exposures include exposures to commercial paper conduits to which the Reporting Bank provides programme-wide enhancements, liquidity and other facilities. Where the Reporting Bank acts both as originator and sponsor, it must avoid double-counting.
(c)	When 'a *Reporting Bank acts as investor*', the securitisation exposures are investment positions purchased in third-party deals.
(d)	*Synthetic transactions*: If the Reporting Bank has purchased protection, it must report the unsecured net exposure amounts to which it is exposed under columns 'a Reporting Bank acts as originator' or 'a Reporting Bank acts as sponsor'. If the Reporting Bank has sold protection, the exposure amount of the credit protection must be reported in 'a Reporting Bank acts as investor' column.
(e)	*Resecuritisation*: All securitisation exposures related to resecuritisation must be completed in rows 5 and 11 of this table, and not in the other rows of this table which contain only securitisation exposures other than resecuritisation.

Table 11-37: Securitisation Exposures in the Banking Book and Associated Regulatory Capital Requirements – A Reporting Bank acting as Originator or as Sponsor

Purpose	To present a Reporting Bank's securitisation exposures in the banking book when the Reporting Bank acts as originator or sponsor, and the associated capital requirements.
Scope of application	This table is mandatory for all Reporting Banks with securitisation exposures as sponsor or originator.
Content	Exposure values, RWA and capital requirements. Only securitisation exposures where the risk transference recognition criteria are met must be disclosed here. The Reporting Bank must disclose the amounts in columns (a) to (o) prior to application of the caps as specified in paragraphs 7.1.15 to 7.1.23, while the amounts in columns (p) to (t) must be disclosed after application of the caps as specified in paragraphs 7.1.15 to 7.1.23.
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
		Exposure values (by risk weight bands)					Exposure values (by regulatory approach)					RWA (by regulatory approach)					Capital requirement after cap				
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC-IRBA	SEC-ERBA	SEC-IAA	SEC-SA	1250%	SEC-IRBA	SEC-ERBA	SEC-IAA	SEC-SA	1250%	SEC-IRBA	SEC-ERBA	SEC-IAA	SEC-SA	1250%
1	**Total exposures**																				
2	Traditional securitisation																				
3	of which: securitisation																				
4	of which: retail underlying																				
5	of which: STC																				
6	of which: wholesale																				
7	of which: STC																				

8	of which: resecuritisation																				
9	of which: senior																				
10	of which: non-senior																				
11	Synthetic securitisation																				
12	of which: securitisation																				
13	of which: retail underlying																				
14	of which: wholesale																				
15	of which resecuritisation																				
16	of which: senior																				
17	of which: non-senior																				

Table 11-37A: Explanatory Notes to Securitisation Exposures in the Banking Book and Associated Regulatory Capital Requirements – A Reporting Bank acting as Originator or as Sponsor

Definitions	
(a)	Columns (j), (o) and (t) refer to securitisation exposures subject to a 1250% risk weight as the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied, and exclude securitisation exposures capitalised under the SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA which are subject to a 1250% risk weight.

Table 11-38: Securitisation Exposures in the Banking Book and Associated Regulatory Capital Requirements – A Reporting Bank acting as Investor

Purpose	To present a Reporting Bank's securitisation exposures in the banking book when the Reporting Bank acts as investor and the associated capital requirements.
Scope of application	This table is mandatory for all Reporting Banks with securitisation exposures as investor.
Content	Exposure values, RWA and capital requirements. Only securitisation exposures where the risk transference recognition criteria are met must be disclosed here. The Reporting Bank must disclose the amounts in columns (a) to (o) prior to application of the caps as specified in paragraphs 7.1.15 to 7.1.23, while the amounts in columns (p) to (t) must be disclosed after application of the caps as specified in paragraphs 7.1.15 to 7.1.23.
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
		Exposure values (by risk weight bands)					Exposure values (by regulatory approach)					RWA (by regulatory approach)					Capital requirement after cap				
		≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC-IRBA	SEC-ERBA	SEC-IAA	SEC-SA	1250%	SEC-IRBA	SEC-ERBA	SEC-IAA	SEC-SA	1250%	SEC-IRBA	SEC-ERBA	SEC-IAA	SEC-SA	1250%
1	**Total exposures**																				
2	Traditional securitisation																				
3	of which: securitisation																				
4	of which: retail underlying																				
5	of which: STC																				
6	of which: wholesale																				

7	of which: STC																				
8	of which: resecuritisation																				
9	of which: senior																				
10	of which: non-senior																				
11	Synthetic securitisation																				
12	of which: securitisation																				
13	of which: retail underlying																				
14	of which: wholesale																				
15	of which resecuritisation																				
16	of which: senior																				
17	of which: non-senior																				

Table 11-38A: Explanatory Notes to Securitisation Exposures in the Banking Book and Associated Regulatory Capital Requirements – A Reporting Bank acting as Investor

Definitions	
(a)	Columns (j), (o) and (t) refer to securitisation exposures subject to a 1250% risk weight as the SEC-IRBA, SEC-ERBA, SEC-IAA and SEC-SA cannot be applied, and exclude securitisation exposures capitalised under the SEC-IRBA, SEC-ERBA, SEC-IAA or SEC-SA which are subject to a 1250% risk weight.

Sub-division 7: Market Risk

11.3.13 The market risk section includes the market risk capital requirements calculated for trading book and banking book exposures that are subject to a market risk capital requirement. It also includes capital requirements for securitisation exposures held in the trading book. However, it excludes the CCR capital requirements that apply to the same exposures, which are disclosed in Sub-division 5 of this Division.

11.3.14 A Reporting Bank must disclose all items set out in Table 11-39. In the case where a Reporting Bank has adopted –

(a) the SA(MR), the Reporting Bank must disclose all items set out in Table 11-41;

(b) the IMA, the Reporting Bank must disclose all items set out in Tables 11-40 and 11-42; and

(c) the SSA(MR), the Reporting Bank must disclose all items set out in Table 11-43.

Table 11-39: Qualitative Disclosures related to Market Risk

Purpose	To provide a description of the risk management objectives and policies concerning market risk within the scope of the market risk capital requirement as set out in paragraph 8.1.2.
Scope of application	This table is mandatory for a Reporting Bank that is subject to the market risk capital requirement.
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must provide a description of –	
(a)	the strategies and processes of the Reporting Bank, including – (i) an explanation of management's strategic objectives in undertaking trading activities; (ii) processes implemented to identify, measure, monitor and control the Reporting Bank's market risks; (iii) policies for hedging risk; (iv) strategies or processes for monitoring the continuing effectiveness of hedges; (v) policies for determining if a position is designated as trading, including – (A) the definition of "stale positions" and the risk management policies for monitoring these positions; (B) cases where instruments referred to in paragraph 8.1.28 are assigned to the banking book in accordance with paragraph 8.1.30 and the market value and gross fair value of such instruments; (C) cases where instruments have been moved from the trading book to banking book, or the banking book to the trading book, since the last reporting period, including the gross fair value of such instruments and the reason for the move; and (vi) description of internal risk transfer activities, including the types of internal risk transfer desk.
(b)	the structure and organisation of the market risk management function, including a description of the market risk governance structure established to implement the strategies and processes of the Reporting Bank described in row (a) of this table.
(c)	the scope and nature of risk reporting and/or measurement systems.

Table 11-40: Qualitative Disclosures related to IMA

Purpose	To provide the scope, main characteristics and the key modelling choices of the different models used for the computation of market risk capital requirements using the IMA.
Scope of application	This table is mandatory for a Reporting Bank using the IMA to calculate its market risk capital requirements. The Reporting Bank must include in this table a description of the main characteristics of the internal models used at the group-wide level (according to the scope of regulatory consolidation) and explain the extent to which they represent all the models used at the group-wide level. The Reporting Bank must also disclose the percentage of capital requirements covered by the models described in this table for each of the Reporting Bank's regulatory models (ES, DRC requirement and SES for NMRFs).
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must disclose the following information –	
(a)	a general description of the trading desk structure as defined in paragraph 8.1.62(b), and types of instruments included in trading desks that are in-scope of the IMA.
(b)	for ES models: (i) a description of trading desks covered by the ES models. Where applicable, the Reporting Bank must also describe the main trading desks that have not been included in ES regulatory calculations due to lack of historical data or model constraints; (ii) the soundness criteria on which the internal capital adequacy assessment is based[1103], and a description of the methodologies used to achieve a capital adequacy assessment that is consistent with the soundness criteria; (iii) a description of the ES models[1104]; (iv) the frequency by which model data is updated; (v) a description of the ES calculation based on the most recent 250-trading day observation period and the most severe 250-trading day period of stress[1105].
(c)	for SES models: (i) a general description of each methodology used to achieve a capital assessment that for categories of NMRFs is consistent with the required soundness standard set out in paragraph 8.3.203.
(d)	for a Reporting Bank using internal models to determine the DRC:

[1103] For example, the results of a forward-looking stress test may be used to assess if the soundness criteria on which the internal capital adequacy assessment is based is met.

[1104] For example, the Reporting Bank may describe whether the models are based on historical simulation, Monte Carlo simulations or other appropriate analytical methods, and provide details on the observation horizon for ESR,S, identified in accordance with paragraph 8.3.188.

[1105] The Reporting Bank should describe the reduced set of risk factors used to calibrate the period of stress, the share of the variations in the full ES that is explained by the reduced set of risk factors, and the observation period used to identify the period of stress.

	(i) a description of the methodology, including information about the characteristics and scope of the VaR and whether different models are used for different exposure classes[1106]; (ii) methodology used to achieve a capital assessment that is consistent with both the required soundness standard set out in paragraph 8.3.218 and paragraphs 8.3.213 to 8.3.240.
(e)	approaches used in the validation of the models and modelling processes, including a description of general approaches used for the validation, and the types of assumptions and benchmarks on which such approaches rely.

[MAS Notice 637 (Amendment) 2024]

[1106] For example, the Reporting Bank may describe the range of probability of default (PD) by obligors on the different types of positions, the approaches used to correct market-implied PDs as applicable, the treatment of netting, basis risk between long and short exposures of different obligors, mismatch between a position and its hedge, and concentrations that can arise within and across product classes during stressed conditions.

Table 11-41: Market Risk under SA(MR)

Purpose	To display the components of the capital requirements under the SA(MR).
Scope of application	This table is mandatory for a Reporting Bank using the SA(MR) . If the Reporting Bank uses the IMA, the SA(MR) capital requirements must be calculated based on the portfolios in trading desks that do not use the IMA[1107].
Content	Capital requirements
Frequency	Semi-annually
Format	Fixed, but additional rows can be added for the breakdown of other risks.
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes. In particular, the narrative must include changes in the scope of application[1108], for which capital requirements are calculated under SA(MR).

		(a)
		Capital Requirement
1	General interest rate risk	
2	Equity risk	
3	Commodity risk	
4	Foreign exchange risk	
5	Credit spread risk – non-securitisations	
6	Credit spread risk – securitisations (non-correlation trading portfolio)	
7	Credit spread risk – securitisations (correlation trading portfolio)	
8	Default risk – non-securitisations	
9	Default risk – securitisations (non-correlation trading portfolio)	
10	Default risk – securitisations (correlation trading portfolio)	
11	Residual risk add-on	
12	**Total**	
Linkages across templates		
Where a Reporting Bank is designated by the Authority as a D-SIB, amount in [Table 11-41:12/a] is equal to 0.8 x [Table 11-4:23/c]. Where a Reporting Bank is not designated by the Authority as a D-SIB, amount in [Table 11-41:12/a] is equal to [Table 11-4:23/c].		

[MAS Notice 637 (Amendment) 2024]

[1107] Trading desks that do not meet the conditions specified in paragraph 8.3.17 and are out-of-scope of the IMA.

[1108] For example, changes due to trading desks.

Table 11-42: Market Risk for Banks using the IMA

Purpose	To provide the components of the capital requirement under the IMA for market risk.
Scope of application	This table is mandatory for a Reporting Bank using the IMA for part or all of its market risk for regulatory capital calculations.
Content	Capital requirement calculation (in accordance with Division 3 of Part VIII) at the group-wide level (according to the scope of regulatory consolidation).
Frequency	Quarterly
Format	Fixed
Accompanying narrative	The Reporting Bank must provide the components of their total capital requirement that are included for their most recent measure, and the components that are included for the average of the previous 60 observations for ES, IMCC and SES and 12 weeks for DRC. The Reporting Bank must also provide a comparison of VaR estimates with actual gains or losses experienced by the Reporting Bank, with analysis of important "outliers" in backtest results. The Reporting Bank must include the corresponding figures at the previous quarter in this table, and explain any significant changes in the current figures.

			(a)	(b)	(c)	(d)	(e)	(f)	(g)
			At the current quarter					At the previous quarter	
			Risk measure: for previous 60 observations/12 weeks:				Number of backtesting exceptions	Risk measure: for previous 60 observations/12 weeks:	
			Most recent	Average	High	Low	VaR measure 99.0%	Most recent	Average
1	Unconstrained ES								
2	ES for the regulatory risk classes	General interest rate risk							
3		Equity risk							
4		Commodity risk							
5		Foreign exchange risk							
6		Credit spread risk							
7	Constrained ES								

8	IMCC (0.5*Unconstrained ES + 0.5*constrained risk class ES)							
9	Capital requirement for NMRFs; SES							
10	DRC requirement model capital requirement							
11	Capital surcharge for amber trading desks							
12	Capital requirements for green and amber trading desks (including capital surcharge)							
13	Total SA(MR) Capital requirements for trading desks that are out-of-scope of the IMA as reported in Table 11-41 (C_U)							
14	Difference in capital requirements under the IMA and SA(MR) for green and amber trading desks							
15	SA(MR) capital requirement for all trading desks (including trading desks that are in-scope of the IMA)							
16	Total market risk capital requirement: min(12+13; 15) + max (0, 14)							

Table 11-42A: Explanatory Notes to Market Risk for Banks using the IMA

Definitions	
Row number	**Explanation**
1	*Unconstrained ES*: This refers to ES as defined in paragraphs 8.3.182 to 8.3.196, calculated without supervisory constraints on cross-risk factor correlations.
7	*Constrained ES*: This refers to ES as defined in paragraphs 8.3.182 to 8.3.196, calculated in accordance with paragraph 8.3.199. The constrained ES disclosed is the sum of partial ES capital requirements, with all other risk factors to be held constant, for the range of broad regulatory risk factor classes[1109].
9	*Capital requirement for NMRFs*: This refers to aggregate regulatory capital measure calculated in accordance with paragraphs 8.3.203 to 8.3.212, for risk factors in model-eligible desks that are deemed non-modellable.
10	*DRC requirement model capital requirement*: This refers to measure of the default risk of trading book positions, except those subject to SA(MR) capital requirements. This covers, inter alia, sovereign exposures (including those denominated in the sovereign's domestic currency), equity positions, and defaulted debt positions.
11	*Capital surcharge for amber trading desks*: This refers to capital surcharge for eligible trading desks that are in the P&L attribution test "amber zone", calculated in accordance to paragraph 8.3.244.
12	*Subtotal for green and amber trading desks*: This is the sum of (C_A+DRC) and Capital surcharge, in accordance with paragraph 8.3.242, paragraph 8.3.223 and paragraph 8.3.244. Row 12= max[8/a+9/a; multiplier*8/b+9/b]+max[10/a; 10/b]+11
13	*Total SA(MR) capital requirements for trading desks that are out-of-scope of the IMA (C_U)*: This refers to SA(MR) capital requirements for trading desks that are either out-of-scope for model approval or that have been deemed ineligible to use the IMA, corresponding to the total capital requirement under the SA(MR) as reported in row 12 of Table 11-38.
14	*Difference in capital requirements under the IMA and SA(MR) for green and amber trading desks*: This is the difference in capital requirements for trading desks for green and amber trading desks under $IMA_{G,A}$, and capital requirements for green and amber trading desks under SA(MR) ($SA_{G,A}$) in accordance with paragraph 8.3.243.
15	*SA(MR) capital requirement for all trading desks (including trading desks that are in-scope of the IMA)*: This refers to the most recent SA(MR) capital requirement for all instruments across all trading desks, regardless of whether those trading desks are in-scope of the IMA, as set out in paragraph 8.3.243(f).
16	*Total market risk capital requirement*: This refers to the total market risk capital requirement as calculated in accordance with paragraph 8.3.243.

[1109] For example, interest rate risk, equity risk, foreign exchange risk, commodity risk and credit spread risk.

Linkages across templates
Where a Reporting Bank is designated by the Authority as a D-SIB, amount in [Table 11-42:16 minus Table 11-42:13] is equal to 0.8 x [Table 11-4:25/c]. Where a Reporting Bank is not designated by the Authority as a D-SIB, amount in [Table 11-42:16 minus Table 11-42:13] is equal to [Table 11-4:25/c].
Amount in [Table 11-42:16 minus Table 11-42:13] x 12.5 is equal to [Table 11-5:5/a] (The linkage to "Table 11-5: Comparison of Modelled and Standardised RWA at Risk Level" will not hold if a Reporting Bank using the SA(MR) also uses SEC-IRBA and/or SEC-IAA when determining the default risk charge component for securitisations held in the trading book.).
Amount in [Table 11-42:13] x 12.5 is equal to [Table 11-5:5/b] (The linkage to "Table 11-5: Comparison of Modelled and Standardised RWA at Risk Level" will not hold if a Reporting Bank using the SA(MR) also uses SEC-IRBA and/or SEC-IAA when determining the default risk charge component for securitisations held in the trading book.).
Amount in [Table 11-42:16] x 12.5 is equal to [Table 11-5:5/c].
Amount in [Table 11-42:15] x 12.5 is equal to [Table 11-5:5/d] (The linkage to "Table 11-5: Comparison of Modelled and Standardised RWA at Risk Level" will not hold if a Reporting Bank using the SA(MR) also uses SEC-IRBA and/or SEC-IAA when determining the default risk charge component for securitisations held in the trading book.).

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Table 11-43: Market Risk under the SSA(MR)

Purpose	To provide the components of the capital requirement under the SSA(MR).
Scope of application	This table is mandatory for a Reporting Bank using the SSA(MR).
Content	Capital requirement
Frequency	Semi-annually
Format	Fixed. Additional rows can be added for the breakdown of other risks.

		(a)	(b)	(c)	(d)
		Outright products	Options		
			Simplified approach	Delta-plus method	Scenario approach
1	Interest rate risk				
2	Equity risk				
3	Commodity risk				
4	Foreign exchange risk				
5	Securitisation				
6	**Total**				

Table 11-43A: Explanatory Notes to Market Risk under the SSA(MR)

Definitions	
Row Number	**Explanation**
5	*Securitisation*: This refers to specific risk capital requirement under paragraph 8.4.18(a).
Column Number	**Explanation**
(a)	*Outright products*: This refers to positions in products that are not optional. This refers to capital requirements under paragraphs 8.4.3 to 8.4.25 (interest rate risk), capital requirements under paragraphs 8.4.26 to 8.4.40 (equity risk), capital requirements under paragraphs 8.4.41 to 8.4.49 (FX risk), and capital requirements under paragraphs 8.4.50 to 8.4.61 (commodity risk).
(b)	*Options under the simplified approach*: This refers to capital requirements for options pertaining to interest rate, equity, foreign exchange and commodity related instruments under paragraphs 8.4.64 to 8.4.68.
(c)	*Options under the delta-plus method*: This refers to capital requirements for options pertaining to interest rate, equity, foreign exchange and commodity related instruments under paragraphs 8.4.69 to 8.4.77.
(d)	*Options under the scenario approach*: This refers to capital requirements for options pertaining to interest rate, equity, foreign exchange and commodity related instruments under paragraphs 8.4.78 to 8.4.85.

Sub-division 8: Operational Risk

11.3.15 A Reporting Bank must disclose all items set out in Tables 11-44, 11-46 and 11-47. A Reporting Bank which meets the criteria set out within the scope of application for Table 11-45 must disclose all items set out in Table 11-45.

Table 11-44: General Qualitative Information on a Reporting Bank's Operational Risk Framework

Purpose	To describe the main characteristics and elements of a Reporting Bank's operational risk management framework.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Qualitative information
Frequency	Annually
Format	Flexible

A Reporting Bank must provide a description of –	
(a)	the Reporting Bank's policies, frameworks and guidelines for the management of operational risk.
(b)	the structure and organisation of the Reporting Bank's operational risk management and control function.
(c)	the Reporting Bank's operational risk measurement system.[1110]
(d)	the scope and main context of the Reporting Bank's reporting framework on operational risk to senior management and the Board.
(e)	the risk mitigation and risk transfer used in the management of operational risk. This includes mitigation of operational risk by policy[1111], by divesting from high-risk businesses, and by the establishment of controls.[1112]

[1110] The systems and data used to measure operational risk in order to estimate the operational risk capital requirement.

[1111] For example, policies on risk culture, risk appetite and outsourcing.

[1112] The remaining exposures may then be absorbed by the Reporting Bank or transferred. For example, the impact of operational risk losses can be mitigated with insurance.

Table 11-45: Historical Losses

Purpose	To disclose aggregate operational risk losses incurred over the past ten consecutive financial years, based on the accounting date of the incurred losses. This disclosure informs the operational risk capital calculation. A Reporting Bank must not apply the general principle on retrospective disclosure set out in paragraph 11.2.22 for this template. From the implementation date of the template onwards, disclosure of all prior periods is required, unless the Reporting Bank has been permitted by the Authority to use fewer years in their capital calculation on a transitional basis in accordance with paragraph 9.1.14 or 9.1.15.
Scope of application	The template is mandatory for – (i) all Reporting Banks that have a BI greater than S$1.5 billion; and (ii) all Reporting Banks that have a BI less than or equal to S$1.5 billion and have obtained the Authority's written approval to calculate the ILM in accordance with paragraph 9.1.2(b) for the calculation of K_{ORC}.
Content	Quantitative information
Frequency	Annually
Format	Fixed
Accompanying Narrative	A Reporting Bank must supplement the template with narrative commentary explaining the rationale for new loss exclusions pursuant to paragraph 9.1.38 since the previous financial year's disclosure. A Reporting Bank must disclose any other material information that would help inform users of its aggregate operational risk losses or its recoveries, with the exception of confidential and proprietary information, including information about reserves.

		a	b	c	d	e	f	g	h	i	j	k
		T	T-1	T-2	T-3	T-4	T-5	T-6	T-7	T-8	T-9	10-year average
Using S$30,000 threshold												
1	Total amount of operational risk losses net of recoveries (no exclusions)											
2	Total number of operational risk losses											
3	Total amount of excluded operational risk losses											
4	Total number of exclusions											

5	Total amount of operational risk losses net of recoveries and net of excluded operational risk losses											
Using S$150,000 threshold												
6	Total amount of operational risk losses net of recoveries (no exclusions)											
7	Total number of operational risk losses											
8	Total amount of excluded operational risk losses											
9	Total number of exclusions											
10	Total amount of operational risk losses net of recoveries and net of excluded operational risk losses											
Details of operational risk capital calculations												
11	Are losses used to calculate the ILM (yes/no)?											
12	If "no" in row 11, is the exclusion of											

	internal loss data due to non-compliance with the criteria set out in paragraphs 9.1.16 to 9.1.41 (yes/no)?	
13	Threshold of S$30,000 or S$150,000 for the operational risk capital calculation, if applicable	

Table 11-45A: Explanatory Notes to Historical Losses

Row Number	Explanatory Notes
1	This is the total loss amount net of recoveries resulting from operational loss events equal to or above a threshold of S$30,000 for each of the past 10 consecutive financial years. Operational risk losses excluded from the operational risk capital calculation pursuant to paragraph 9.1.38 must still be included in this row.
2	This is the total number of operational risk losses equal to or above a threshold of S$30,000.
3	This is the total loss amounts net of recoveries resulting from operational loss events equal to or above a threshold of S$30,000 excluded pursuant to paragraph 9.1.38[1113] for each of the past 10 consecutive financial years.
4	This is the total number of operational loss events equal to or above a threshold of S$30,000 excluded pursuant to paragraph 9.1.38.
5	This is the total amount of operational risk losses resulting from operational loss events equal to or above a threshold of S$30,000 net of recoveries and excluded losses pursuant to paragraph 9.1.38.
6	This is the total loss amount net of recoveries resulting from operational loss events equal to or above a threshold of S$150,000 for each of the past 10 consecutive financial years. Operational risk losses excluded from the operational risk capital calculation pursuant to paragraph 9.1.38 must still be included in this row.
7	This is the total number of operational risk losses equal to or above a threshold of S$150,000.
8	This is the total loss amount net of recoveries resulting from operational loss events equal to or above a threshold of S$150,000 excluded pursuant to paragraph 9.1.38[1114] for each of the past 10 consecutive financial years.
9	This is the total number of operational loss events equal to or above a threshold of S$150,000 excluded pursuant to paragraph 9.1.38.
10	This is the total amount of operational risk losses resulting from operational loss events equal to or above a threshold of S$150,000, net of recoveries and excluded losses pursuant to paragraph 9.1.38.
11	This is to indicate whether the Reporting Bank uses operational risk losses to calculate the ILM.
12	If the answer to row 11 is "No", this is to indicate whether internal loss data are not used in the ILM calculation due to non-compliance with the criteria set out in paragraphs 9.1.16 to 9.1.41. A Reporting Bank must disclose the application of any resulting multipliers in row 2 of Table 11-47 and include a narrative with the disclosure.
13	This is the threshold used in the actual operational risk capital calculation (S$30,000 or S$150,000) if applicable.

[1113] For example, due to divested businesses.
[1114] For example, due to divested businesses.

Instructions	
(a)	For rows 1 to 10, T denotes the most recent financial year, T-1 the previous financial year, and so on and so forth. Column (k) refers to the average annual operational risk losses net of recoveries and excluded losses pursuant to paragraph 9.1.38 over the past 10 consecutive financial years.
(b)	Operational loss amounts and the associated recoveries must be reported in the year in which they were recorded in financial statements.

Table 11-46: Business Indicator and Subcomponents

Purpose	To disclose the BI and its subcomponents, as listed in the table below and in Annex 9A, which are used in the calculation of the operational risk capital requirement. A Reporting Bank must not apply the general principle on retrospective disclosure set out in paragraph 11.2.22 for this template. From the implementation date of this template onwards, disclosure of all prior periods is required.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Quantitative information
Frequency	Annually
Format	Fixed
Accompanying Narrative	A Reporting Bank must supplement the template with narrative commentary to explain any significant changes over the reporting period and the key drivers of such changes. A Reporting Bank that has received the Authority's approval to exclude divested activities from the calculation of the BI pursuant to paragraph 9.1.7(a) is required to disclose this in the accompanying narrative.

		(a)	(b)	(c)
	BI and its subcomponents	T	T-1	T-2
1	Interest, lease and dividend component			
1a	Interest and lease income			
1b	Interest and lease expense			
1c	Interest earning assets			
1d	Dividend income			
2	Services component			
2a	Fee and commission income			
2b	Fee and commission expense			
2c	Other operating income			
2d	Other operating expense			
3	Financial component			
3a	Net P&L on the trading book			
3b	Net P&L on the banking book			
4	BI			
5	Business indicator component (BIC)			
Disclosure on the BI:				
			(a)	
6	BI gross of excluded divested businesses pursuant to paragraph 9.1.7(a)			
7	Reduction in BI due to excluded divested businesses pursuant to paragraph 9.1.7(a)			

Table 11-46A: Explanatory Notes to Business Indicator and Subcomponents

Row Number	Explanatory Notes
1	This is the interest, leases and dividend component (ILDC) as defined in paragraph 9.1.3(a). In the formula, all the terms are calculated as the average over the past 3 consecutive financial years: T, T-1 and T-2. T denotes the annual reporting period-end, and T-1 and T-2 denote the 2 previous annual reporting period-end.
1a	This is interest income from all financial assets and other interest income.
1b	This is interest expenses from all financial liabilities and other interest expenses.
1c	This is total gross outstanding loans, advances, interest-bearing securities (including government bonds) and lease assets measured at the end of each financial year.
1d	This is dividend income from investments in stocks and funds not consolidated in the Reporting Bank's financial statements, including dividend income from non-consolidated subsidiaries and associates, of the Reporting Bank, and joint ventures entered into by the Reporting Bank.
2	This is service component (SC) as defined in paragraph 9.1.3(b). In the formula, all the terms are calculated as the average over the past 3 consecutive financial years: T, T-1 and T-2. T is as defined in row 1.
2a	This is income received from providing advice and services, including outsourcing fees received by the Reporting Bank for the supply of financial services.
2b	This is expenses paid for receiving advice and services, including outsourcing fees paid by the Reporting Bank for the supply of financial services, but not outsourcing fees paid for the supply of non-financial services[1115].
2c	This is income from ordinary banking operations not included in other subcomponents of BI (i.e. items 1a to 1d, 2a to 2b, 2d, and 3a to 3b). A Reporting Bank must include income from operating leases in ILDC and exclude the same from SC.
2d	This is expenses and losses from ordinary banking operations of the Reporting Bank not included in other BI items. A Reporting Bank must include expenses from operating leases in ILDC and exclude the same from SC.
3	This is financial component (FC) as defined in paragraph 9.1.3(c). In the formula, all the terms are calculated as the average over the past 3 consecutive financial years: T, T-1 and T-2. T is as defined in row 1.
3a	This is the sum of (i) net profit / loss on trading assets and trading liabilities[1116]; (ii) net profit / loss from hedge accounting; and (iii) net profit / loss from differences in exchange rates.
3b	This is the sum of (i) net profit / loss on financial assets and liabilities measured at fair value through profit and loss; (ii) realised gains / losses on financial assets and liabilities not measured at fair value through profit and loss[1117]; (iii) net profit / loss from hedge accounting; and (iv) net profit / loss from differences in exchange rates.

[1115] For example, logistical, IT and human resource services.

[1116] For example, derivatives, debt securities, equity securities, loans and advances, short positions and other assets and liabilities.

[1117] For example, loans and advances, assets available for sale, assets held to maturity and financial liabilities measured at amortised cost.

Row Number	Explanatory Notes
4	The BI is the sum of the 3 components: ILDC, SC and FC.
5	The BIC is calculated as the sum of (i) 12% of the Reporting Bank's BI;(ii) if the Reporting Bank's BI exceeds S$1.5 billion, 3% of the amount by which the BI exceeds S$1.5 billion; and (iii) if the Reporting Bank's BI exceeds S$45 billion, 3% of the amount by which the BI exceeds S$45 billion.
6	The BI reported in this row includes divested businesses pursuant to paragraph 9.1.7(a), even where the Reporting Bank has received approval from the Authority to exclude the divested businesses from the calculation of the BI.
7	This is the difference between BI gross of divested businesses pursuant to paragraph 9.1.7(a) (row 6) and BI net of divested businesses pursuant to paragraph 9.1.7(a) (row 4).
Linkages across tables	
(a)	[Table 11-46:5/a] is equal to [Table 11-47:1/a].

Table 11-47: Minimum Required Operational Risk Capital

Purpose	To disclose operational risk regulatory capital requirements.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Quantitative information
Frequency	Annually
Format	Fixed

		(a)
1	Business indicator component (BIC)	
2	Internal loss multiplier (ILM)	
3	Minimum required operational risk capital (K_{ORC})	
4	Operational RWA	

Table 11-47A: Explanatory Notes to Minimum Required Operational Risk Capital

Row Number	**Explanatory Notes**
1	This is the BIC used for calculating minimum regulatory capital requirements for operational risk.
2	This is the ILM used for calculating minimum regulatory capital requirements for operational risk.
3	This is minimum Pillar 1 operational risk capital requirements. For a Reporting Bank using operational risk losses to calculate the ILM, this must be equal to the BIC multiplied by the ILM. For a Reporting Bank not using operational risk losses to calculate the ILM, this must be equal to the BIC.
4	The operational RWA is obtained by converting the minimum Pillar 1 operational risk capital requirement into RWA.

Sub-division 9: Interest Rate Risk in the Banking Book

11.3.16 A Reporting Bank must disclose all items set out in Tables 11-48 and 11-49[1118].

[MAS Notice 637 (Amendment) 2024]

Table 11-48: IRRBB Risk Management Objectives and Policies

Purpose	Provide a description of the risk management objectives and policies concerning IRRBB.
Scope of application	This template is mandatory for all Reporting Banks.
Content	Qualitative and quantitative information. Quantitative information is based on the daily or monthly average of the year or on the data as at the reporting date.
Frequency	Annually
Format	Flexible

Qualitative Disclosures	
(a)	A description of how the Reporting Bank defines IRRBB for the purposes of risk control and measurement.
(b)	A description[1119] of the Reporting Bank's overall IRRBB management and mitigation strategies.
(c)	The frequency of the calculation of the Reporting Bank's IRRBB measures, and a description of the specific measures that the Reporting Bank uses to gauge its sensitivity to IRRBB.
(d)	A description of the interest rate shock and stress scenarios that the Reporting Bank use to estimate changes in the economic value and in earnings.
(e)	Where significant modelling assumptions used in the Reporting Bank's IMS (i.e. the EVE metric generated by the bank for purposes other than disclosure[1120]) are different from the modelling assumptions prescribed for the disclosure in Table 11-49, the Reporting Bank must provide a description of those assumptions and their directional implications and explain its rationale for making those assumptions[1121].
(f)	A general description of how the Reporting Bank hedges its IRRBB, as well as the associated accounting treatment.
(g)	A general description of key modelling and parametric assumptions used in calculating ΔEVE and ΔNII in Table 11-49, which includes – (i) For ΔEVE, whether commercial margins and other spread components have been included in the cash flows used in the computation, and discount rate used;

[1118] In addition to the required disclosures in Table 11-48 and Table 11-49, the Reporting Bank may disclose information on internal measures of IRRBB that would assist the market in interpreting the required disclosures in these tables.

[1119] For example, monitoring of EVE and NII in relation to established limits, hedging practices, conduct of stress testing, outcome analysis, the role of independent audit, the role and practices of the asset and liability management committee, the Reporting Bank's practices to ensure appropriate model validation, and timely updates in response to changing market conditions. In addition, the Reporting Bank should state whether its overall IRRBB management strategy is based on "material currencies" (i.e. currencies for which the Reporting Bank has material positions for the purposes of Annex 10C) or "all currencies".

[MAS Notice 637 (Amendment) 2024]

[1120] For example, for internal assessment of capital adequacy.

[1121] For example, historical data, published research, management judgment and analysis.

	(ii) How the average repricing maturity assigned to non-maturity deposits has been determined (including any unique product characteristics that affect assessment of repricing behaviour by the Reporting Bank); (iii) The methodology used to estimate the prepayment rates of customer loans, and/or the early withdrawal rates for time deposits, and other significant assumptions; (iv) Any other assumptions (including for instruments with behavioural optionalities that have been excluded) that have a material impact on the disclosed ΔEVE and ΔNII in Table 11-49, including an explanation of why these are material; and (v) Any methods of aggregation across currencies and any significant correlation between interest rates in different currencies.
(h)	(Optional) Any other information which the Reporting Bank wishes to disclose regarding its interpretation of the significance and sensitivity of the IRRBB measures disclosed and/or an explanation of any significant variations in the level of the reported IRRBB since the previous reporting period.
Quantitative Disclosures	
(i)	Average repricing maturity assigned to NMDs[1121A].
(j)	Longest repricing maturity assigned to NMDs[1121B].

[MAS Notice 637 (Amendment) 2024]

[1121A] The Reporting Bank should compute the average repricing maturity assigned to NMDs based on the aggregate of "material currencies" or "all currencies", depending on which would more accurately reflect how it assesses and manages its IRRBB risks. The Reporting Bank should state whether the average repricing maturity assigned to NMDs is based on "material currencies" or "all currencies".

[MAS Notice 637 (Amendment) 2024]

[1121B] The Reporting Bank should compute the longest repricing maturity assigned to NMDs based on the aggregate of "material currencies" or "all currencies", depending on which would more accurately reflect how it assesses and manages its IRRBB risks. The Reporting Bank should state whether the longest repricing maturity assigned to NMDs is based on "material currencies" or "all currencies".

[MAS Notice 637 (Amendment) 2024]

Table 11-49: Quantitative Information on IRRBB

Purpose	Provide information on a Reporting Bank's changes in EVE and NII under each of the 6 standardised interest rate shock scenarios set out in Annex 10C.
Scope of application	This template is mandatory for all Reporting Banks.
Content	Quantitative information
Frequency	Annually
Format	Fixed
Accompanying narrative	Commentary on the significance of the reported values and an explanation of any material changes since the previous reporting period.

Changes in EVE and NII under standardised interest rate shock scenarios				
	ΔEVE		**ΔNII**	
Period	**T**	**T-1**	**T**	**T-1**
Parallel up				
Parallel down				
Steepener				
Flattener				
Short rate up				
Short rate down				
Maximum				
Tier 1 Capital				
Period	**T**		**T-1**	
Tier 1 Capital				

Table 11-49A: Explanatory Notes to Quantitative Information on IRRBB

Instructions	
(a)	For each of the 6 standardised interest rate shock scenarios set out in Annex 10C, the Reporting Bank must report in the reporting currency for the current period (T) and for the previous period (T-1) – (i) ΔEVE under the interest rate shock scenario[1121C], calculated based on its IMS and in accordance with paragraphs 5.34 to 5.36 of Annex 10A; and (ii) ΔNII under the interest rate shock scenario[1121D], calculated in accordance with paragraphs 5.37 and 5.38 of Annex 10A.
Definitions	
(b)	*Maximum*: This refers to the worst aggregated reduction in economic value of equity (across the 6 standardised interest rate shock scenarios) and the worst aggregated reduction in net interest income (across the 2 standardised interest rate shock scenarios). The Reporting Bank must calculate ΔEVE or ΔNII as the reduction to EVE or NII by deducting the stressed EVE or NII from its current

[1121C] The Reporting Bank should compute the ΔEVE and ΔNII under the interest rate shock scenario based on the aggregate of "material currencies" or "all currencies", depending on which would more accurately reflect how it assesses and manages its IRRBB risks. The Reporting Bank should state whether the ΔEVE and ΔNII under the interest rate shock scenario are based on "material currencies" or "all currencies".

[MAS Notice 637 (Amendment) 2024]

[1121D] The Reporting Bank should compute the ΔEVE and ΔNII under the interest rate shock scenario based on the aggregate of "material currencies" or "all currencies", depending on which would more accurately reflect how it assesses and manages its IRRBB risks. The Reporting Bank should state whether the ΔEVE and ΔNII under the interest rate shock scenario are based on "material currencies" or "all currencies".

[MAS Notice 637 (Amendment) 2024]

	EVE or NII. Positive values of ΔEVE or ΔNII indicate reductions in EVE or NII under the respective scenarios.

[MAS Notice 637 (Amendment) 2024]

Sub-division 10: Remuneration

11.3.17 A Reporting Bank must disclose all items set out in Tables 11-50 to 11-53.

Table 11-50: Remuneration Policy

Purpose	Describe a Reporting Bank's remuneration policy as well as key features of the remuneration system to allow meaningful assessments by users of Pillar 3 data of bank's compensation practices.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Qualitative information
Frequency	Annually
Format	Flexible

A Reporting Bank must describe the main elements of its remuneration system and how it develops this system. In particular, the following elements, where relevant, must be described:	
(a)	Information relating to the bodies that oversee remuneration. Disclosures must include – (i) the name, composition and mandate of the main body overseeing remuneration; (ii) the external consultants whose advice have been sought, the body by which they were commissioned, and in what areas of the remuneration process; (iii) a description of the scope of the Reporting Bank's remuneration policy[1122], including the extent to which it is applicable to foreign subsidiaries and branches; and (iv) a description of the types of employees considered as material risk-takers and as senior managers.
(b)	Information relating to the design and structure of remuneration processes. Disclosures must include – (i) an overview of the key features and objectives of remuneration policy; (ii) whether the remuneration committee reviewed the firm's remuneration policy during the past year, and if so, an overview of any changes that were made, the reasons for those changes and their impact on remuneration; and (iii) a description of how the Reporting Bank ensures that risk and compliance employees are remunerated independently of the businesses they oversee.
(c)	Description of the ways in which current and future risks are taken into account in the remuneration processes. Disclosures must include a description of the key risks, their measurement and how these measures affect remuneration.
(d)	Description of the ways in which the Reporting Bank seeks to link performance during a performance measurement period with levels of remuneration. Disclosures must include – (i) a description of main performance metrics for the Reporting Bank, top-level business lines and individuals; (ii) a description of how amounts of individual remuneration are linked to bank-wide and individual performance; and

[1122] For example, by regions or business lines.

	(iii) a description of the measures the Reporting Bank will implement to adjust remuneration in the event that performance metrics are weak, including the Reporting Bank's criteria for determining "weak" performance metrics.
(e)	Description of the ways in which the Reporting Bank seeks to adjust remuneration to take account of longer-term performance. Disclosures must include – (i) a description of the Reporting Bank's policy on deferral and vesting of variable remuneration and, if the fraction of variable remuneration that is deferred differs across employees or groups of employees, a description of the factors that determine the fraction and their relative importance; and (ii) a description of the Reporting Bank's policy and criteria for adjusting deferred remuneration before vesting and after vesting through clawback arrangements.
(f)	Description of the different forms of variable remuneration that the Reporting Bank utilises and the rationale for using these different forms. Disclosures must include – (i) a description of the forms of variable remuneration offered[1123]; and (ii) a description of the use of the different forms of variable remuneration and, if the mix of different forms of variable remuneration differs across employees or groups of employees, a description of the factors that determine the mix and their relative importance.

[1123] For example, cash, shares and share-linked instruments and other forms.

Table 11-51: Remuneration Awarded during the Financial Year

Purpose	Provide quantitative information on fixed and variable remuneration for the financial year.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Quantitative information
Frequency	Annually
Format	Flexible
Accompanying narrative	A Reporting Bank may supplement the template with a narrative commentary to explain any significant movements over the reporting period and the key drivers of such movements.

			(a)	(b)
			Senior management	Other material risk-takers
1	Fixed remuneration	Number of employees		
2		Total fixed remuneration (row 3 + row 5 + row 7)		
3		of which: cash-based		
4		of which: deferred		
5		of which: shares and other share-linked instruments		
6		of which: deferred		
7		of which: other forms of remuneration		
8		of which: deferred		
9	Variable remuneration	Number of employees		
10		Total variable remuneration (row 11 + row 13 + row 15)		
11		of which: cash-based		
12		of which: deferred		
13		of which: shares and other share-linked instruments		
14		of which: deferred		
15		of which: other forms of remuneration		
16		of which: deferred		
17	Total remuneration (row 2 + row 10)			

Table 11-51A: Explanatory Notes to Remuneration Awarded during the Financial Year

Explanatory Notes	
(a)	Senior management and other material risk-takers categories in columns (a) and (b) must correspond to the type of employees described in Table 11-50.
(b)	Other forms of remuneration in rows 7 and 15 must be described in Table 11-50 and, if needed, in the accompanying narrative to Table 11-51.

Table 11-52: Special Payments

Purpose	Provide quantitative information on special payments for the financial year.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Quantitative information
Frequency	Annually
Format	Flexible
Accompanying narrative	A Reporting Bank may supplement the template with a narrative commentary to explain any significant movements over the reporting period and the key drivers of such movements.

		Guaranteed bonuses		Sign-on awards		Severance payments	
		Number of employees	Total amount	Number of employees	Total amount	Number of employees	Total amount
1	Senior management*						
2	Other material risk-takers						

* Where the disclosure of the total amount of certain special payments will reveal information relating to the remuneration of specific employees, the Reporting Bank may omit the disclosure. Nonetheless, the Reporting Bank must provide the reason for the omission in the narrative commentary and disclose the omitted information to the Authority to assist the Authority in its assessment of the Reporting Bank's remuneration practices.

Table 11-52A: Explanatory Notes to Special Payments

Explanatory Notes	
(a)	Senior management and other material risk-takers categories in rows 1 and 2 must correspond to the type of employees described in Table 11-50.
(b)	Guaranteed bonuses are payments of guaranteed bonuses during the financial year.
(c)	Sign-on awards are payments allocated to employees upon recruitment during the financial year.
(d)	Severance payments are payments allocated to employees dismissed during the financial year.

Table 11-53: Deferred Remuneration

Purpose	Provide quantitative information on deferred and retained remuneration.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Quantitative information
Frequency	Annually
Format	Flexible
Accompanying narrative	A Reporting Bank may supplement the template with a narrative commentary to explain any significant movements over the reporting period and the key drivers of such movements.

		(a)	(b)	(c)	(d)	(e)
	Deferred and retained remuneration	Total outstanding deferred remuneration	of which: total outstanding deferred and retained remuneration exposed to ex post explicit and/or implicit adjustments	Total amendments during the year due to ex post explicit adjustments	Total amendments during the year due to ex post implicit adjustments	Total deferred remuneration paid out in the financial year
1	Senior management					
2	Cash					
3	Shares					
4	Share-linked instruments					
5	Other					
6	Other material risk-takers					
7	Cash					
8	Shares					
9	Share-linked instruments					
10	Other					
11	Total					

Table 11-53A: Explanatory Notes to Deferred Remuneration

Explanatory Notes	
(a)	*Outstanding exposed to ex post explicit adjustment*: This refers to part of the deferred and retained remuneration that is subject to direct adjustment clauses.[1124]
(b)	*Outstanding exposed to ex post implicit adjustment*: This refers to part of the deferred and retained remuneration that is subject to adjustment clauses that could change the remuneration, due to the fact that they are linked to the performance of other indicators.[1125]
(c)	In columns (a) and (b), a Reporting Bank must disclose the figures as at reporting date (cumulated over the last years). In columns (c) to (e), the Reporting Bank must disclose the movements during the financial year. While columns (c) and (d) must show the movements specifically related to column (b), column (e) must show payments that have affected column (a).

[1124] For example, subject to malus, clawbacks or similar reversal or downward revaluations of awards.
[1125] For example, fluctuation in the value of shares performance or performance units.

Sub-division 11: Composition of Capital

11.3.18 To enable users to compare the capital adequacy of banks across countries or jurisdictions, a Reporting Bank must disclose the information set out in this Sub-division in its published financial statements, or provide a URL in its published financial statements to such disclosure which is made on its website or publicly available regulatory reports. Regardless of the location of the disclosure, all disclosures must be in the format set out in this Sub-division.

Composition of Capital Template

11.3.19 To improve consistency and ease of use of disclosures relating to the composition of regulatory capital, and to mitigate the risk of inconsistent formats undermining the objective of enhanced disclosure, a Reporting Bank must provide a breakdown of its regulatory capital and regulatory adjustments in the format as set out in the template in Annex 11A of this Part. The Reporting Bank must use the template in Annex 11A to capture its capital position. Where the Reporting Bank has restated its prior year accounting balance sheet, it must document in its past reconciliation template, the amendments that were made as a result of the restatement of its prior year accounting balance sheet.

11.3.20 To prevent a divergence of templates that could undermine the objectives of consistency and comparability, a Reporting Bank must not add, delete or change the definitions of any rows from the template set out in Annex 11A of this Part.

11.3.21 In cases where a more conservative definition of an element is required under this Notice relative to those set out under the Basel III capital standards, a Reporting Bank must clearly label them as being different from the Basel III definition, and separately disclose the impact of each of these differences in the notes to the template.

Reconciliation Requirements

11.3.22 A Reporting Bank must, for the purposes of the reconciliation, publish its financial statements in accordance with the Accounting Standards, as at each reporting date for which the Reporting Bank provides its reconciliation disclosures, on its website. To show a full reconciliation between the balance sheet in its published financial statements and the regulatory capital elements reported using the template in Annex 11A, the Reporting Bank must perform the 3 following steps using the template in Annex 11B of this Part:

(a) Step 1: Disclose the reported balance sheet under the regulatory scope of consolidation.

(i) The difference in scope of consolidation for accounting purposes and for regulatory purposes often explains much of the difference between the numbers used in the calculation of regulatory capital and the numbers used in the Reporting Bank's published financial statements. As such, a key element of the reconciliation requirements involves disclosing how the balance sheet in its published financial statements changes when the regulatory scope of consolidation is applied.

(ii) In addition to sub-paragraph (a)(i), the Reporting Bank must disclose the list of legal entities that are included within its accounting scope of consolidation but excluded from its regulatory scope of consolidation, and vice versa[1126]. For entities that are included in both the regulatory and accounting scopes of consolidation, but the method of consolidation differs between these 2 scopes, the Reporting Bank must list these legal entities separately and explain the differences in the consolidation methods. For each legal entity that is required to be disclosed by this sub-paragraph, the Reporting Bank must disclose the entity's total balance sheet assets, total balance sheet equity (as stated on the accounting balance sheet of the legal entity) and a description of the principal activities of the entity.

(iii) Where its regulatory scope of consolidation is identical to its accounting scope of consolidation, the Reporting Bank must state that there is no difference between the regulatory and accounting scopes of consolidation and proceed to Step 2 below.

(b) Step 2: Expand the lines of the balance sheet under the regulatory scope of consolidation to identify all components of regulatory capital reported using the template set out in Annex 11A[1127].

(i) As many elements used in the calculation of regulatory capital cannot be readily identified from the face of the balance sheet, the Reporting Bank must expand the rows of the regulatory-scope balance sheet such that all components of regulatory capital reported using the template set out in Annex 11A are disclosed separately.

(ii) In addition, each element of the expanded balance sheet must be given a reference number or letter for the purposes of Step 3 below.

(c) Step 3: Map each element disclosed under Step 2 to the composition of capital disclosure template set out in Annex 11A.

(i) The Reporting Bank must use the reference numbers or letters from Step 2 to show the source of every input to each component of regulatory capital reported using the template set out in Annex 11A.

11.3.23 The 3-step approach described above offers the following benefits:

(a) the level of disclosure is proportionate, varying with the complexity of the balance sheet and capital structure of a Reporting Bank. Where no further information is added by a step, the Reporting Bank can skip the step;

[1126] This refers to legal entities that are included in the regulatory scope of consolidation, but excluded from the accounting scope of consolidation.

[1127] The Reporting Bank would only need to expand the lines of the balance sheet to the extent necessary to reach the components of capital disclosed in the capital disclosure template set out in Annex 11A.

(b) users can trace the origin of the elements of the regulatory capital back to their exact location on the Reporting Bank's balance sheet under the regulatory scope of consolidation;

(c) the approach is flexible enough to be used under any accounting standard. The Reporting Bank is required to map all regulatory capital components reported in the disclosure template back to its balance sheet under the regulatory scope of consolidation regardless of whether the accounting standards require the source to be reported on the balance sheet.

Main Features Template

11.3.24 To ensure that the main features of the regulatory capital instruments of a Reporting Bank are disclosed in a consistent and comparable way, the Reporting Bank must complete, for each regulatory capital instrument issued, the main features template set out in Annex 11C of this Part.

11.3.25 This template represents the minimum level of summary disclosure that a Reporting Bank is required to report in respect of each regulatory capital instrument issued. In this regard, the Reporting Bank must –

(a) report each regulatory capital instrument issued, including ordinary shares, in a separate column of the template, such that the completed template provides a 'main features report' that summarises all of the regulatory capital instruments of the Reporting Bank's banking group;

(b) disclose the list of features set out in Annex 11C and any other features of its regulatory capital instruments that it deems to be important;

(c) keep the main features report up to date, such that the disclosure is updated and made publicly available whenever the Reporting Bank issues or repays a capital instrument and whenever there is a redemption, conversion/write-down or other material change in the nature of an existing capital instrument; and

(d) ensure that the main features report is included in the Reporting Bank's published financial statements or, at a minimum, that these financial statements provide a URL to where the main features report can be found on the Reporting Bank's website or publicly available regulatory reports.

Other Disclosure Requirements

11.3.26 A Reporting Bank which discloses non-regulatory ratios [1128] involving components of regulatory capital, must accompany such disclosures with a comprehensive explanation of how these ratios are calculated.

11.3.27 A Reporting Bank must make available on its website, the full terms and conditions of all capital instruments included in its regulatory capital. This will allow users to investigate the specific features of individual capital instruments. Such disclosures must be updated whenever the Reporting Bank issues or repays a capital instrument and

[1128] For example, "Equity Tier 1", "Core Tier 1" or "Tangible Common Equity" ratios.

whenever there is a redemption, conversion/write-down or other material change in the nature of an existing capital instrument.

11.3.28 A Reporting Bank must also maintain a section on its website, where all the information relating to disclosure of regulatory capital is made available to users ("regulatory disclosures section"). In cases where the disclosure requirements set out in this Sub-division are met via publication through publicly available regulatory reports, the regulatory disclosures section of the Reporting Bank's website must provide URLs to the relevant regulatory reports that relate to the Reporting Bank.

11.3.29 A Reporting Bank is encouraged to include the information disclosed in the regulatory disclosures section of the website in its published financial statements. At a minimum, the Reporting Bank must ensure that the published financial statements direct users to the relevant section of its website, where the full set of required regulatory disclosure is provided.

Sub-division 12: Leverage Ratio

11.3.30 A Reporting Bank must disclose the information set out in this Sub-division in its published financial statements, or provide a URL in its published financial statements to such disclosure which is made on its website or publicly available regulatory reports.

11.3.31 Regardless of the location of the disclosure, a Reporting Bank must make all disclosures in the format set out in this Sub-division. To prevent a divergence of formats that could undermine the objectives of consistency and comparability, the Reporting Bank must not add, delete or change the definitions of any rows from the templates set out in this Sub-division.

Summary Comparison Table

11.3.32 A Reporting Bank must, for the purposes of the reconciliation, publish its financial statements in accordance with the Accounting Standards, as at each reporting date for which the Reporting Bank provides its reconciliation disclosures, on its website. The Reporting Bank must disclose a reconciliation of its balance sheet assets in its published financial statements with the leverage ratio exposure measure in accordance with Annex 11D.

Common Disclosure Template

11.3.33 A Reporting Bank must disclose a breakdown of the main leverage ratio regulatory elements in accordance with Annex 11E.

Sub-division 13: Macroprudential Supervisory Measures

11.3.34 A Reporting Bank must disclose all items set out in Tables 11-54 and 11-55.

Table 11-54: Geographical Distribution of Credit Exposures Used in the Calculation of the Bank-specific Countercyclical Capital Buffer Requirement

Purpose	To provide an overview of the geographical distribution of private sector credit exposures relevant for the calculation of the countercyclical buffer.
Scope of application	The template is mandatory for all Reporting Banks subject to a countercyclical buffer requirement based on the countries or jurisdictions in which they have private sector credit exposures subject to a countercyclical buffer requirement compliant with the Basel standards. Only a Reporting Bank with exposures to countries or jurisdictions in which the countercyclical buffer rate is higher than zero must disclose this template set out in Table 11-54.
Content	Private sector credit exposures and other relevant inputs necessary for the computation of the bank-specific countercyclical buffer requirement.
Frequency	Semi-annually
Format	Flexible
Accompanying narrative	For the purposes of the countercyclical buffer, a Reporting Bank must use, where possible, exposures on an "ultimate risk" basis. The Reporting Bank must disclose the methodology of geographical allocation used, and explain the countries or jurisdictions or types of exposures for which the ultimate risk method is not used as a basis for allocation. The allocation of exposures to countries or jurisdictions must be determined in accordance with paragraph 4.1.20. Information about the drivers for changes in the exposure amounts and the applicable country- or jurisdiction-specific rates must be summarised.

	(a)	(b)	(c)	(d)
Geographical breakdown	Country- or jurisdiction-specific countercyclical capital buffer requirement	RWA for private sector credit exposures used in the computation of the countercyclical buffer	Bank-specific countercyclical capital buffer requirement	Countercyclical capital buffer amount
(Home) Country or jurisdiction 1				
Country or jurisdiction 2				
Country or jurisdiction 3				
…				
Country or jurisdiction N				
Sum				
Total				

Table 11-54A: Explanatory Notes to Geographical Distribution of Credit Exposures Used in the Calculation of the Bank-specific Countercyclical Capital Buffer Requirement

Definitions	
(a)	*RWA for private sector credit exposures*: This is in accordance with paragraph 4.1.18(b).
(b)	*Country or jurisdiction*: This refers to the country or jurisdiction in which the Reporting Bank has relevant private sector credit exposures, and which has set a countercyclical capital buffer rate greater than zero that was applicable during the reporting period covered by the template set out in Table 11-54.
(c)	*Sum*: This is the sum of RWA for private sector credit exposures, in countries or jurisdictions with a non-zero countercyclical capital buffer rate.
(d)	*Country- or jurisdiction- specific countercyclical capital buffer requirement*: This is the requirement that is applicable at the reporting date, calculated in accordance with paragraph 4.1.18(a).
(e)	*Bank-specific countercyclical capital buffer requirement*: This is calculated in accordance with paragraphs 4.1.19 and 4.1.20.
(f)	*Total*: This refers to the total of RWA for private sector credit exposures, across all countries or jurisdictions to which the Reporting Bank is exposed, including countries or jurisdictions with no countercyclical buffer rate or with a countercyclical buffer rate set at zero, and value of the bank-specific countercyclical capital buffer rate and resulting countercyclical buffer amount.
(g)	*Countercyclical capital buffer amount*: This refers to the amount of CET1 Capital held to meet the countercyclical capital buffer requirement determined in accordance with paragraphs 4.1.17 to 4.1.27.
Linkages across tables	
(h)	Amount in [Table 11-54:Total/c] is equal to [Table 11-2:9/a] for the semi-annual disclosure of Table 11-2, and to [Table 11-2:9/b] for the quarterly disclosure of Table 11-2.
(i)	Amount in [Table 11-54:Total/c] is equal to [Table 11A-1:66/a].

Table 11-55: Disclosure of G-SIB Indicators

Purpose	Provide an overview of the indicators for assessing the systemic importance of global banks.
Scope of application	The template is mandatory for Reporting Banks where the Reporting Bank (i) has been classified as a G-SIB[1129] in the previous year; (ii) has a leverage ratio exposure measure[1130] exceeding EUR 200 billion; or (iii) has been included in the BCBS' G-SIB assessment sample by the Authority based on supervisory judgment.[1131] For application of the threshold of EUR 200 billion, Reporting Banks must use the applicable exchange rate information provided on the BCBS website at www.bis.org/bcbs/gsib/. The disclosure itself is made in the Reporting Bank's own currency.
Content	At least the 13 indicators (including the two sub-indicators for the trading volume indicator, i.e. (i) trading volume of fixed income, and (ii) trading volume of equities and other securities) used in the assessment methodology of the G-SIB framework.[1132]
Frequency	Annually, or in circumstances when a Reporting Bank is required to restate figures to reflect final data submitted to the BCBS[1133]. This template must also be included in a Reporting Bank's financial year-end Pillar 3 report.
Format	Flexible. The information disclosed must be fully consistent with the data submitted to the Authority for subsequent remittance to the BCBS in the context of its annual data collection exercise for the assessment and identification of G-SIBs. Where Reporting Banks disclose the full breakdown of the indicators, such disclosure must take place using the template and related instructions that sample Reporting Banks use to report their data for the BCBS' data collection exercise or as required by the Authority.[1134]
Accompanying narrative	A Reporting Bank must indicate the annual reference date of the information reported as well as the date of first public disclosure. A Reporting Bank must include a web link to the disclosure of the previous G-SIB assessment exercise. A Reporting Bank may supplement the template with a narrative commentary to explain any relevant qualitative characteristic deemed necessary for understanding the quantitative data. This information may include explanations about the use of estimates with a short explanation as regards the method used, mergers or modifications of

[1129] The list of G-SIBs will be designated annually based on the BCBS' methodology for assessing the systemic importance of G-SIBs.

[1130] For G-SIB assessment purposes, the applicable leverage ratio exposure measure definition is contained in the Basel III leverage ratio standard of December 2017. Its scope also includes exposures arising from insurance subsidiaries.

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[1131] See paragraphs 26 and 42 of BCBS, *Global systemically important banks: revised assessment methodology and the higher loss absorbency requirement*, July 2018, www.bis.org/bcbs/publ/d445.htm.

[1132] See BCBS, *Global systemically important banks: revised assessment methodology and the higher loss absorbency requirement*, July 2018, www.bis.org/bcbs/publ/d445.htm.

[1133] Restatements are only necessary if considered so by the Authority or on voluntary basis.

[1134] The data template and reporting instructions can be found at: www.bis.org/bcbs/gsib/reporting_instructions.htm.

	the legal structure of the entity subjected to the reported data, the bucket to which the Reporting Bank was allocated and changes in HLA requirements, or reference to the BCBS website for data on denominators, cutoff scores and buckets. Regardless of whether Table 11-55 is included in the annual Pillar 3 report, a Reporting Bank's annual Pillar 3 report as well as all the interim Pillar 3 reports must include a reference to the website where current and previous disclosures of Table 11-55 can be found.

	Category	Individual indicator	Values
1	Cross-country or -jurisdictional activity	Cross-country or -jurisdictional claims	
2		Cross-country or -jurisdictional liabilities	
3	Size	Total exposures as defined for use in the Basel III leverage ratio*	
4	Interconnectedness	Intra-financial system assets*	
5		Intra-financial system liabilities*	
6		Securities outstanding*	
7	Substitutability / Financial institution infrastructure	Assets under custody	
8		Payments activity	
9		Underwritten transactions in debt and equity markets	
10a		Trading volume of fixed income instruments	
10b		Trading volume of equities and other securities	
11	Complexity	Notional amount of OTC derivatives*	
12		Level 3 assets*	
13		Trading and available-for-sale securities	
* Extended scope of consolidation to include insurance activities.			

Table 11-55A: Explanatory Notes to Disclosure of G-SIB Indicators

Definitions and Instructions	
(a)	The template must be completed according to the instructions and definitions set out in the corresponding rows in force at the disclosure's reference date, which is based on the BCBS' G-SIB identification exercise.

Sub-division 14: Asset Encumbrance

11.3.35 A Reporting Bank must disclose all items set out in Table 11-56.

Table 11-56: Asset Encumbrance

Purpose	To provide the amount of encumbered and unencumbered assets.
Scope of application	The template is mandatory for all Reporting Banks.
Content	Carrying amount for encumbered and unencumbered assets on the balance sheet using period-end values. For this purpose, 'carrying amount' refers to the net carrying amount as set out in a Reporting Bank's financial statements. A Reporting Bank must use the specific definition of "encumbered assets" and "unencumbered assets" set out in the instructions below in making the disclosure. The scope of consolidation for the purposes of this disclosure requirement must be based on the Reporting Bank's regulatory scope of consolidation, including its securitisation and securitised exposures. The Reporting Bank must include any assets used in central bank facilities together with other encumbered and unencumbered assets, in the respective columns.
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must supplement the template with a narrative commentary to explain (i) any significant change in the amount of encumbered and unencumbered assets from the previous disclosure; and (ii) any other relevant information necessary to understand the context of the disclosed figures.

[MAS Notice 637 (Amendment) 2024]

	(a)	**(b)**	**(c)**
	Encumbered assets	**Unencumbered assets**	**Total**
The assets on the balance sheet, as disaggregated[1135]			

Table 11-56A: Explanatory Notes to Asset Encumbrance

Definitions	
(a)	*Encumbered assets*: Encumbered assets are assets that the Reporting Bank is restricted or prevented from liquidating, selling, transferring or assigning due to legal, regulatory, contractual or other limitations. To avoid doubt, an asset that falls within this definition is an encumbered asset regardless whether the Reporting Bank has the ability to monetise these assets during a stress period or whether these assets qualify as high quality liquid assets under MAS Notice 649.
(b)	*Unencumbered assets*: Unencumbered assets are assets which do not fall within the definition of encumbered assets.

[1135] There is no limit to such disaggregation.

Instructions	
(c)	*Total (in column (c))*: This is the sum of encumbered assets and unencumbered assets. The scope of consolidation for the purposes of this disclosure requirement must be based on the Reporting Bank's regulatory scope of consolidation, including its securitisation and securitised exposures.

Sub-division 15: Credit Valuation Adjustment Risk

11.3.36 A Reporting Bank that is required to calculate CVA RWA under Division 5 of Part VIII must disclose all items set out in Table 11-57. In the case where a Reporting Bank has used –

(a) the reduced BA-CVA, the Reporting Bank must disclose all items set out in Table 11-58;

(b) the full BA-CVA, the Reporting Bank must disclose all items set out in Table 11-59; and

(c) the SA-CVA, the Reporting Bank must disclose all items set out in Tables 11-60 to 11-62.

Table 11-57: General Qualitative Disclosure Requirements Related to CVA

Purpose	To provide a description of the risk management objectives and policies for CVA risk.
Scope of application	This table is mandatory for a Reporting Bank that is subject to capital requirements for CVA risk, including when the Reporting Bank is qualified and has chosen to calculate its CVA RWA in accordance with paragraph 8.5.10.
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must provide a description of –	
(a)	an explanation, or a description, or both, of the Reporting Bank's processes implemented to identify, measure, monitor and control the Reporting Bank's CVA risks, including policies for hedging CVA risk and the processes for monitoring the continuing effectiveness of hedges.
(b)	whether the Reporting Bank is qualified and has chosen to calculate its CVA RWA in accordance with paragraph 8.5.10.

Table 11-58: The Reduced BA-CVA

Purpose	To provide the components used for the computation of the CVA risk capital requirement under the reduced BA-CVA in accordance with paragraph 8.5.13.
Scope of application	This table is mandatory for a Reporting Bank having part or all its CVA risk capital requirement measured according to the reduced BA-CVA in accordance with paragraph 8.5.13. The table must be completed with only the amounts obtained from the netting sets which have their CVA risk capital requirement computed under the reduced BA-CVA.
Content	CVA risk capital requirement
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must describe the types of hedge it uses even if the hedge is not taken into account under the reduced BA-CVA.

		(a)	(b)
		Components	CVA risk capital requirement under BA-CVA
1	Aggregation of systematic components of CVA risk		
2	Aggregation of idiosyncratic components of CVA risk		
3	**Total**		

Table 11-58A: Explanatory Notes to The Reduced BA-CVA

Definitions	
1	*Aggregation of systematic components of CVA risk*: This refers to the CVA risk capital requirement under perfect correlation assumption ($\sum_c SCVA_c$) calculated in accordance with paragraph 8.5.14.
2	*Aggregation of idiosyncratic components of CVA risk*: This refers to the CVA risk capital requirement under zero correlation assumption ($sqrt(\sum_c SCVA_c^2)$) calculated in accordance with paragraph 8.5.14.
3	*Total*: This refers to $K_{reduced}$ calculated in accordance with paragraph 8.5.14, multiplied by DS_{BA-CVA} of 0.65.
Linkages across tables	
If a Reporting Bank only uses the reduced BA-CVA for all CVA risk exposures, where the Reporting Bank is designated by the Authority as a D-SIB, amount in [Table 11-58:3/b] is equal to 0.8 x [Table 11-4:11/c]. Where the Reporting Bank is not designated by the Authority as a D-SIB, amount in [Table 11-58:3/b] is equal to [Table 11-4:11/c].	

[MAS Notice 637 (Amendment) 2024]

Table 11-59: The Full BA-CVA

Purpose	To provide the components used for the computation of the CVA risk capital requirement under the full BA-CVA in accordance with paragraph 8.5.16.
Scope of application	This table is mandatory for a Reporting Bank having part or all of its CVA risk capital requirement measured according to the full version of the BA-CVA in accordance with paragraph 8.5.16. The table must be filled with only the amounts obtained from the netting sets which have their CVA risk capital requirement computed under the full BA-CVA.
Content	CVA risk capital requirement
Frequency	Semi-annually
Format	Fixed, but additional rows can be inserted for the breakdown of other risks.

		(a)
		CVA risk capital requirement under BA-CVA
1	K Reduced	
2	K Hedged	
3	**Total**	

Table 11-59A: Explanatory Notes to The Full BA-CVA

Definitions	
1	*K Reduced*: This refers to $K_{reduced}$ calculated in accordance with paragraph 8.5.14, multiplied by $DS_{BA\text{-}CVA}$ of 0.65.
2	*K Hedged*: This refers to K_{hedged} calculated in accordance with paragraph 8.5.17, multiplied by $DS_{BA\text{-}CVA}$ of 0.65.
3	*Total*: This refers to K_{full} calculated in accordance with paragraph 8.5.17, multiplied by $DS_{BA\text{-}CVA}$ of 0.65.
Linkages across tables	
If a Reporting Bank only uses the full BA-CVA for all CVA risk exposures, where the Reporting Bank is designated by the Authority as a D-SIB, amount in [Table 11-59:3/a] is equal to 0.8 x [Table 11-4:11/c]. Where the Reporting Bank is not designated by the Authority as a D-SIB, amount in [Table 11-59:3/a] is equal to [Table 11-4:11/c].	

[MAS Notice 637 (Amendment) 2024]

Table 11-60: Qualitative Disclosures for Reporting Banks Using the SA-CVA

Purpose	To provide the main characteristics of a Reporting Bank's CVA risk management framework.
Scope of application	The table is mandatory for the Reporting Bank using the SA-CVA to calculate for part or all of its CVA risk capital requirement in accordance with paragraph 8.5.29.
Content	Qualitative information
Frequency	Annually
Format	Flexible

The Reporting Bank must provide a description of –	
(a)	the Reporting Bank's CVA risk management framework.
(b)	how senior management is involved in the CVA risk management framework.
(c)	an overview of the governance of the CVA risk management framework.[1136]

[1136] For example, a Reporting Bank may govern its risk management framework by –
(a) ensuring that the risk management framework is documented;
(b) establishing an independent control unit;
(c) ensuring that there is independent review of the risk management framework; and
(d) ensuring the independence of the data acquisition from the lines of business.

Table 11-61: SA-CVA

Purpose	To provide the components used for the computation of the CVA risk capital requirement under the SA-CVA in accordance with paragraph 8.5.29.
Scope of application	The table is mandatory for a Reporting Bank having part or all of its CVA risk capital requirement measured according to the SA-CVA in accordance with paragraph 8.5.29.
Content	CVA risk capital requirement
Frequency	Semi-annually
Format	Fixed, but additional rows can be inserted for the breakdown of other risks.

		(a)	(b)
		CVA risk capital requirement under SA-CVA	Number of counterparties
1	Interest rate risk		
2	Foreign exchange risk		
3	Reference credit spread risk		
4	Equity risk		
5	Commodity risk		
6	Counterparty credit spread risk		
7	**Total (sum of rows 1 to 6)**		

Table 11-61A: Explanatory Notes to SA-CVA

Linkages across tables
If a Reporting Bank only uses the SA-CVA for all CVA risk exposures, where the Reporting Bank is designated by the Authority as a D-SIB, amount in [Table 11-61:7/a] is equal to 0.8 x [Table 11-4:11/c]. Where the Reporting Bank is not designated by the Authority as a D-SIB, amount in [Table 11-61:7/a] is equal to [Table 11-4:11/c].

[MAS Notice 637 (Amendment) 2024]

Table 11-62: RWA Flow Statements of CVA Risk Exposures Under SA-CVA

Purpose	To present a flow statement explaining variations in CVA RWA determined under the SA-CVA.
Scope of application	The table is mandatory for a Reporting Bank having part or all of its CVA RWA measured according to the SA-CVA.
Content	CVA RWA. Changes in RWA amounts over the reporting period for each of the key drivers must be based on the Reporting Bank's reasonable estimation of the figure.
Frequency	Quarterly
Format	Fixed
Accompanying narrative	The Reporting Bank must supplement the table with a narrative commentary to explain any significant changes in CVA RWA over the reporting period and the key drivers of such changes[1137].

		(a)
1	Total CVA RWA at previous quarter-end	
2	Total CVA RWA at end of reporting period	

Table 11-62A: Explanatory Notes to RWA Flow Statements of CVA Risk Exposures Under SA-CVA

Linkages across tables
Amount in [Table 11-62:1/a] is equal to [Table 11-4:11/b].
Amount in [Table 11-62:2/a] is equal to [Table 11-4:11/a].

[MAS Notice 637 (Amendment) 2024]

[1137] Factors behind changes in CVA RWA could include movements in risk levels, scope changes (movement of netting sets between SA-CVA and BA-CVA), acquisition and disposal of business or product lines or entities, or foreign currency translation movements.

Annex 11A

COMPOSITION OF CAPITAL

A Reporting Bank must disclose its capital position using the template set out in Table 11A-1.

A Reporting Bank must complete column (b) to show the source of every major input, which is to be cross-referenced to the corresponding rows in Table 11B-1. This is Step 3 as required under the 3-step approach to reconciliation as explained and illustrated in paragraph 11.3.22(c) and Annex 11B. Table 11A-1A sets out the explanation of each row of Table 11A-1.

Table 11A-1: Composition of Regulatory Capital

Purpose	To provide a breakdown of the constituent elements of a Reporting Bank's capital.
Scope of application	The table is mandatory for all Reporting Banks at the consolidated level.
Content	Breakdown of regulatory capital according to the scope of regulatory consolidation.
Frequency	Semi-annually
Format	Fixed
Accompanying narrative	The Reporting Bank must explain any significant changes over the semi-annual reporting period and the key drivers of such changes.

Row Number		(a)	(b)
		Amount	Source based on reference numbers/letters of the balance sheet under the regulatory scope of consolidation
Common Equity Tier 1 Capital: instruments and reserves			
1	Paid-up ordinary shares and share premium (if applicable)		(g)
2	Retained earnings		
3[#]	Accumulated other comprehensive income and other disclosed reserves		
4	Minority interest that meets criteria for inclusion		
5	**Common Equity Tier 1 Capital before regulatory adjustments**		
Common Equity Tier 1 Capital: regulatory adjustments			
6	Prudent valuation adjustments pursuant to Part VI of MAS Notice 637		
7	Goodwill, net of associated deferred tax liability		(a) minus (d)

8#	Intangible assets, net of associated deferred tax liability		(b) minus (e)
9#	Deferred tax assets that rely on future profitability, excluding those arising from temporary differences (net of associated deferred tax liability)		
10	Cash flow hedge reserve		
11	Shortfall of TEP relative to EL under IRBA		
12	Increase in equity capital resulting from securitisation transactions		
13	Net exposures to credit-enhancing interest-only strips		
14	Unrealised fair value gains/losses on financial liabilities and derivative liabilities arising from changes in own credit risk		
15	Defined benefit pension fund assets, net of associated deferred tax liability		
16	Investments in own shares (if not already subtracted from paid-in capital on reported balance sheet)		
17	Reciprocal cross-holdings in ordinary shares of financial institutions		
18	Investments in ordinary shares of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake		
19	Investments in ordinary shares of unconsolidated financial institutions in which the Reporting Bank holds a major stake approved under section 32 of the Banking Act (including insurance subsidiaries) (amount above 10% threshold)		
20#	Mortgage servicing rights (amount above 10% threshold)		(c) minus (f) minus 10% threshold
21#	Deferred tax assets arising from temporary differences (amount above 10% threshold, net of associated deferred tax liability)		
22	Amount exceeding the 15% threshold		
23	Of which: investments in ordinary shares of unconsolidated financial		

	institutions in which the Reporting Bank holds a major stake approved under section 32 of the Banking Act (including insurance subsidiaries)		
24[#]	Of which: mortgage servicing rights		
25[#]	Of which: deferred tax assets arising from temporary differences		
26	National specific regulatory adjustments		
27	PE/VC investments held beyond the relevant holding periods set out in MAS Notice 630		
28	Capital deficits in subsidiaries and associates that are regulated financial institutions		
29	Any other items which the Authority may specify		
30	Regulatory adjustments applied in calculation of CET1 Capital due to insufficient AT1 Capital and Tier 2 Capital to satisfy required deductions		
31	**Total regulatory adjustments to CET1 Capital**		
32	**Common Equity Tier 1 Capital (CET1)**		
Additional Tier 1 Capital: instruments			
33	AT1 capital instruments and share premium (if applicable)		(h)
34	Of which: classified as equity under the Accounting Standards		
35	Of which: classified as liabilities under the Accounting Standards		
36	AT1 capital instruments issued by fully-consolidated subsidiaries that meet criteria for inclusion		
37	**Additional Tier 1 Capital before regulatory adjustments**		
Additional Tier 1 Capital: regulatory adjustments			
38	Investments in own AT1 capital instruments		
39	Reciprocal cross-holdings in AT1 capital instruments of financial institutions		
40	Investments in AT1 capital instruments of unconsolidated financial institutions in which the		

	Reporting Bank does not hold a major stake		
41	Investments in AT1 capital instruments of unconsolidated financial institutions in which the Reporting Bank holds a major stake approved under section 32 of the Banking Act (including insurance subsidiaries)		
42	National specific regulatory adjustments which the Authority may specify		
43	Regulatory adjustments applied in calculation of AT1 Capital due to insufficient Tier 2 Capital to satisfy required deductions		
44	**Total regulatory adjustments to Additional Tier 1 Capital**		
45	**Additional Tier 1 Capital (AT1)**		
46	**Tier 1 Capital (T1 = CET1 + AT1)**		
Tier 2 Capital: instruments and provisions			
47	Tier 2 capital instruments and share premium (if applicable)		
48	Tier 2 capital instruments issued by fully-consolidated subsidiaries that meet criteria for inclusion		
49	Provisions		
50	**Tier 2 Capital before regulatory adjustments**		
Tier 2 Capital: regulatory adjustments			
51	Investments in own Tier 2 capital instruments		
52	Reciprocal cross-holdings in Tier 2 capital instruments and other TLAC liabilities of financial institutions		
53	Investments in Tier 2 capital instruments and other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake		
54[#]	Investments in other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake: amount previously designated for the 5% threshold but that no longer meets the conditions		

55	Investments in Tier 2 capital instruments and other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank holds a major stake approved under section 32 of the Banking Act (including insurance subsidiaries)		
56	National specific regulatory adjustments which the Authority may specify		
57	**Total regulatory adjustments to Tier 2 Capital**		
58	**Tier 2 Capital (T2)**		
59	**Total capital (TC = T1 + T2)**		
60	**Floor-adjusted total risk-weighted assets**		
Capital adequacy ratios and buffers (as a percentage of floor-adjusted risk-weighted assets)			
61	**Common Equity Tier 1 CAR**		
62	**Tier 1 CAR**		
63	**Total CAR**		
64	Reporting Bank-specific buffer requirement		
65	Of which: capital conservation buffer requirement		
66	Of which: bank-specific countercyclical buffer requirement		
67	Of which: G-SIB and/or D-SIB buffer requirement (if applicable)		
68	Common Equity Tier 1 available after meeting the Reporting Bank's minimum capital requirements		
National minima			
69	Minimum CET1 CAR		
70	Minimum Tier 1 CAR		
71	Minimum Total CAR		
Amounts below the thresholds for deduction (before risk-weighting)			
72	Investments in ordinary shares, AT1 Capital, Tier 2 Capital and other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake		
73	Investments in ordinary shares of unconsolidated financial institutions in which the Reporting Bank holds a major stake approved under section 32 of the		

	Banking Act (including insurance subsidiaries)		
74	Mortgage servicing rights (net of associated deferred tax liability)		
75	Deferred tax assets arising from temporary differences (net of associated deferred tax liability)		
Applicable caps on the inclusion of provisions in Tier 2 Capital			
76	Provisions eligible for inclusion in Tier 2 Capital in respect of exposures subject to standardised approach (prior to application of cap)		
77	Cap on inclusion of provisions in Tier 2 Capital under standardised approach		
78	Provisions eligible for inclusion in Tier 2 Capital in respect of exposures subject to internal ratings-based approach (prior to application of cap)		
79	Cap for inclusion of provisions in Tier 2 Capital under internal ratings-based approach		

Items marked with a hash [#] are elements where a more conservative definition has been applied relative to those set out under the Basel III capital standards.

Table 11A-1A: Explanatory Notes to Composition of Regulatory Capital

Row Number	**Explanatory Notes**
1	This is the sum of components calculated in accordance with paragraphs 6.1.1(a) and 6.1.1(b).
2	This is as defined under paragraph 6.1.1(c).
3	This is the sum of components calculated in accordance with paragraphs 6.1.1(d) and 6.1.1(e).
4	This is as defined under paragraph 6.1.1(f).
5	This is the sum of rows 1 to 4.
6	This is as defined under paragraph 6.1.5(n).
7	This is as defined under paragraph 6.1.5(a).
8	This is as defined under paragraph 6.1.5(b).
9	This is as defined under paragraph 6.1.5(c).
10	This is as defined under paragraph 6.1.5(d).
11	This is as defined under paragraph 6.1.5(e).
12	This is as defined under paragraph 6.1.5(f).
13	This is as defined under paragraph 6.1.5(g).
14	This is as defined under paragraph 6.1.5(h).
15	This is as defined under paragraph 6.1.5(i).
16	This is as defined under paragraph 6.1.5(j).
17	This is as defined under paragraph 6.1.5(k).
18	This is as defined under paragraph 6.1.5(o).

Row Number	Explanatory Notes
19	This is as defined under paragraph 6.1.5(p).
20	Not applicable. This is the amount of mortgage servicing rights which is subject to threshold deduction in accordance with paragraphs 87 to 88 of Basel III. Mortgage servicing rights are required to be fully deducted.
21	Not applicable. This is the amount of deferred tax assets arising from temporary differences which is subject to threshold deduction in accordance with paragraphs 87 to 88 of Basel III. Deferred tax assets arising from temporary differences are required to be fully deducted.
22	This is the total amount by which the 3 threshold items exceed the 15% threshold, excluding amounts reported in rows 19 to 21, calculated in accordance with paragraph 6.1.5(p)(i)(B).
23	This is the amount reported in row 22 that relates to investments in the ordinary shares of unconsolidated financial institutions in which the Reporting Bank holds a major stake (including insurance subsidiaries).
24	Not applicable. This is the amount reported in row 22 that relates to mortgage servicing rights. Mortgage servicing rights are required to be fully deducted.
25	Not applicable. This is the amount reported in row 22 that relates to deferred tax assets arising from temporary differences. Deferred tax assets arising from temporary differences are required to be fully deducted.
26	This is the sum of rows 27 to 29.
27	This is as defined under paragraph 6.1.5(l).
28	This is as defined under paragraph 6.1.5(m).
29	This is as defined under paragraph 6.1.5(q).
30	This is as defined under paragraph 6.1.5(r).
31	This is the total regulatory adjustments to CET1 Capital, to be calculated as the sum of rows 6 to 22 plus rows 26 and 30.
32	This is CET1 Capital, to be calculated as row 5 minus row 31.
33	This is the sum of components calculated in accordance with paragraphs 6.2.1(a) and 6.2.1(b).
34	This is the amount in row 33 classified as equity under the Accounting Standards.
35	This is the amount in row 33 classified as liabilities under the Accounting Standards.
36	This is as defined under paragraph 6.2.1(c).
37	This is the sum of rows 33 and 36.
38	This is as defined under paragraph 6.2.6(a).
39	This is as defined under paragraph 6.2.6(b).
40	This is as defined under paragraph 6.2.6(c).
41	This is as defined under paragraph 6.2.6(d).
42	This is as defined under paragraph 6.2.6(e).
43	This is as defined under paragraph 6.2.6(f).
44	This is the sum of rows 38 to 43.
45	This is Additional Tier 1 Capital, to be calculated as row 37 minus row 44.
46	This is Tier 1 Capital, to be calculated as row 32 plus row 45.
47	This is the sum of components calculated in accordance with paragraphs 6.3.1(a) and 6.3.1(b).
48	This is as defined under paragraph 6.3.1(c).

Row Number	Explanatory Notes
49	This is the sum of components calculated in accordance with paragraphs 6.3.1(d) and 6.3.1(e).
50	This is the sum of rows 47 to 49.
51	This is as defined under paragraph 6.3.10(a).
52	This is as defined under paragraph 6.3.10(b).
53	This is as defined under paragraph 6.3.10(c).
54	These are investments in other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake, previously designated for the 5% threshold but no longer meeting the conditions under paragraph 6.3.10(c)(iii), measured on a gross long basis. The amount to be deducted will be the amount of other TLAC liabilities designated to the 5% threshold but not sold within 30 business days, no longer held in the trading book or now exceeding the 5% threshold[1138]. Amounts designated to this threshold may not subsequently be moved to the 10% threshold.
55	This is as defined under paragraph 6.3.10(d).
56	This is as defined under paragraph 6.3.10(e).
57	This is the sum of rows 51 to 56.
58	This is Tier 2 Capital, to be calculated as row 50 minus row 57.
59	This is Total capital, to be calculated as row 46 plus row 58.
60	This is the floor-adjusted total risk-weighted assets of the Reporting Bank, after incorporating the floor adjustment set out in Table 11-4A(v).
61	This is CET1 CAR, to be calculated as row 32 divided by row 60 (expressed as a percentage).
62	This is Tier 1 CAR, to be calculated as row 46 divided by row 60 (expressed as a percentage).
63	This is Total CAR, to be calculated as row 59 divided by row 60 (expressed as a percentage).
64	This is the bank-specific buffer requirement (minimum CET1 CAR requirement plus capital conservation buffer requirement plus countercyclical buffer requirement plus G-SIB and/or D-SIB buffer requirement, expressed as a percentage of risk-weighted assets). This is to be calculated as the sum of (i) the minimum CET1 CAR requirement in accordance with paragraph 4.1.5 or 4.1.6, as the case may be; (ii) the capital conservation buffer requirement in accordance with paragraphs 4.1.7 to 4.1.16; (iii) the bank-specific countercyclical buffer requirement calculated in accordance with paragraphs 4.1.17 to 4.1.32*;* and (iv) the buffer requirement for G-SIBs and/or D-SIBs (if applicable)[1139]. This row will show the CET1 CAR below which the Reporting Bank will become subject to constraints on distributions.
65	This is the amount in row 64 (expressed as a percentage of risk-weighted assets) that relates to the capital conservation buffer).
66	This is the amount in row 64 (expressed as a percentage of risk-weighted assets) that relates to the bank-specific countercyclical buffer requirement.

[1138] For example, in the instance of decreasing CET1 Capital.

[1139] This is set out in the BCBS' publication on "Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement" (revised July 2013).

Row Number	Explanatory Notes
67	This is the amount in row 64 (expressed as a percentage of risk-weighted assets) that relates to the Reporting Bank's G-SIB and/or D-SIB requirement, where relevant.
68	This is to be calculated as the CET1 of the Reporting Bank (as a percentage of floor-adjusted risk-weighted assets), less any CET1 Capital used to meet the Reporting Bank's CET1, Tier 1 and Total capital requirements.
69	A Reporting Bank must report the minimum CET1 CAR requirement applicable at that reporting date (pursuant to paragraph 4.1.5 or 4.1.6, as the case may be).
70	The Reporting Bank must report the minimum Tier 1 CAR requirement applicable at that reporting date (pursuant to paragraph 4.1.5 or 4.1.6, as the case may be).
71	The Reporting Bank must report the minimum Total CAR requirement applicable at that reporting date (pursuant to paragraph 4.1.5 or 4.1.6, as the case may be).
72	This is the Reporting Bank's investments in the ordinary shares, AT1 Capital, Tier 2 Capital and other TLAC liabilities of unconsolidated financial institutions in which the Reporting Bank does not hold a major stake, the total amount of such holdings that are not reported in row 18, row 40, row 53 and row 54.
73	This is the Reporting Bank's investments in the ordinary shares of unconsolidated financial institutions in which the Reporting Bank holds a major stake (including insurance subsidiaries), the total amount of such holdings that are not reported in row 19 and row 23.
74	Not applicable. This is the amount of mortgage servicing rights not reported in row 20 and row 24.
75	Not applicable. This is the amount of deferred tax assets arising from temporary differences not reported in row 21 and row 25.
76	This is the provisions eligible for inclusion in Tier 2 Capital in respect of exposures subject to SA(CR), calculated in accordance with paragraph 6.3.1(d), prior to the application of the cap.
77	This is the cap on inclusion of provisions in Tier 2 Capital in respect of exposures subject to SA(CR), calculated in accordance with paragraph 6.3.1(d).
78	This is the provisions eligible for inclusion in Tier 2 Capital in respect of exposures subject to IRBA, calculated in accordance with paragraph 6.3.1(e), prior to the application of the cap.
79	This is the cap for inclusion of provisions in Tier 2 Capital in respect of exposures subject to IRBA, calculated in accordance with paragraph 6.3.1(e).

Annex 11B

RECONCILIATION OF REGULATORY CAPITAL TO BALANCE SHEET

Table 11B-1: Reconciliation of Regulatory Capital to Balance Sheet

Purpose	To enable users to identify the differences between the scope of accounting consolidation and the scope of regulatory consolidation, and to show the link between a Reporting Bank's balance sheet in its published financial statements and the numbers that are used in the composition of capital disclosure template set out in Table 11A-1.
Scope of application	The table is mandatory for all Reporting Banks.
Content	Carrying values (corresponding to the values reported in financial statements.
Frequency	Semi-annually. The frequency of disclosure may, with the prior approval of the Authority, be made with at least the same frequency as the publication of the Reporting Bank's financial statements. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, any approval granted under footnote 800A of MAS Notice 637 in force immediately before 1 July 2024, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 11.3.2 of this Notice. The Authority may at any time vary or revoke any existing conditions or restrictions of approval, or impose conditions or restrictions, or additional conditions or restrictions.
Format	Flexible (but the rows must align with the presentation of the Reporting Bank's financial statements).
Accompanying narrative	The Reporting Bank must explain any significant changes in the expanded balance sheet items over the semi-annual reporting period and the key drivers of such changes. The Reporting Bank may explain significant changes in other balance sheet items in the narrative commentary of Table 11-9.

	(a)	**(b)**	**(c)**
	Balance sheet as per published financial statements	**Under regulatory scope of consolidation**	**Reference**
	As at reporting period end	**As at reporting period end**	
Assets			
Cash and balances at central banks			
Items in the course of collection from other banks			
Trading portfolio assets			
Financial assets designated at fair value			
Derivative financial instruments			
Loans and advances to banks			

Loans and advances to customers			
Reverse repos and other similar secured lending			
Fair value through other comprehensive income financial investments			
Current and deferred tax assets			
Prepayments, accrued income and other assets			
Investments in associates and joint ventures			
Goodwill and intangible assets			
Of which: goodwill			(a)
Of which: other intangibles (excluding mortgage servicing rights (MSRs))			(b)
#Of which: MSRs			(c)
Property, plant and equipment			
Total assets			
Liabilities			
Deposits from banks			
Items in the course of collection due to other banks			
Customer accounts			
Repos and other similar secured borrowing			
Trading portfolio liabilities			
Financial liabilities designated at fair value			
Derivative financial instruments			
Debt securities in issue			
Accruals, deferred income and other liabilities			
Current and deferred tax liabilities			
Of which: deferred tax liabilities (DTLs) related to goodwill			(d)
Of which: DTLs related to intangible assets (excluding MSRs)			(e)
#Of which: DTLs related to MSRs			(f)
Subordinated liabilities			
Provisions			
Retirement benefit liabilities			
Total liabilities			
Shareholders' Equity			
Paid-in share capital			
Of which: amount eligible for CET1			(g)

Of which: amount eligible for AT1			(h)
Retained earnings			
Accumulated other comprehensive income			
Total shareholders' equity			

Items marked with a hash [#] are elements where a more conservative definition has been applied relative to those set out under the Basel III capital standards.

A Reporting Bank must take its published financial statements (numbers reported in column (a) above) and report the numbers when the regulatory scope of consolidation is applied (numbers reported in column (b) above). This is referred to as Step 1 under the 3-step approach to reconciliation, as explained and illustrated in paragraph 11.3.22(a).

If there are rows in the balance sheet under the regulatory scope of consolidation that are not present in the published financial statements, a Reporting Bank is required to add these and give a value of zero in column (a).

If a Reporting Bank's scope of accounting consolidation and its scope of regulatory consolidation are exactly the same, columns (a) and (b) must be merged and this fact must be clearly disclosed in the accompanying narrative.

As in the case of Table 11-7, the rows in the above template set out in Table 11B-1 must follow the balance sheet presentation used by a Reporting Bank in its financial statements, on which basis the Reporting Bank is required to expand the balance sheet to identify all the items that are disclosed in Table 11A-1 (referred to as Step 2 under the 3-step approach to reconciliation, as explained and illustrated in paragraph 11.3.22(b)).[1140,1141] The Reporting Bank must make disclosure which is proportionate to the complexity of the Reporting Bank's balance sheet. The Reporting Bank must give each item a reference number/letter in column (c) that is used as cross-reference to column (b) of Table 11A-1.

Linkages across tables	
(a)	The Reporting Bank must ensure that the amounts in columns (a) and (b) in Table 11B-1 before balance sheet expansion (i.e. before Step 2) are same as the amounts in columns (a) and (b) in Table 11-7.
(b)	The Reporting Bank must cross-reference each expanded item to the corresponding item in Table 11A-1.

[1140] For example, paid-in share capital may be reported as one line on the balance sheet. However, some elements of this may meet the requirements for inclusion in CET1 and other elements may only meet the requirements for AT1 or Tier 2, or may not meet the requirements for inclusion in regulatory capital at all. Therefore, if the Reporting Bank has some paid-in capital that feeds into the calculation of CET1 and some that feeds into the calculation of AT1, it must expand the "paid-in capital" line of the balance sheet in the manner illustrated in Table 11B-1. As another example, one of the regulatory adjustments is the deduction of goodwill net of any associated deferred tax liability that would be extinguished if the goodwill becomes impaired or derecognised under the Accounting Standards. The Reporting Bank must expand elements of the balance sheet in the manner illustrated in Table 11B-1 to separately identify the components of goodwill and the associated deferred tax liability.

[1141] Items (a) to (h) in Table 11B-1 are examples of items that may need to be expanded for a particular banking group.

Annex 11C

MAIN FEATURES OF REGULATORY CAPITAL INSTRUMENTS

A Reporting Bank is required to complete Table 11C-1 for each outstanding regulatory capital instrument (Reporting Banks must insert "NA" if the question is not applicable).

A Reporting Bank is required to report each instrument, including common shares, in a separate column of Table 11C-1, such that the completed Table 11C-1 will provide a "main features report" that summarises all of the regulatory capital instruments of the banking group.

Using the reference numbers in the left-hand column of Table 11C-1, Table 11C-1A provides a more detailed explanation of what a Reporting Bank is required to report in each of the cells. Table 11C-1A sets out the explanation of each row of Table 11C-1.

Table 11C-1: Main Features of Regulatory Capital Instruments

Purpose	To provide a description of the main features of a Reporting Bank's regulatory capital instruments that are recognised as part of its capital base under Part VI of this Notice.
Scope of application	The table is mandatory for all Reporting Banks.
Content	Quantitative and qualitative information as required.
Frequency	Table 11C-1 must be posted on the Reporting Bank's website. It must be updated whenever the Reporting Bank issues or repays a capital instrument, and whenever there is a redemption, conversion/writedown or other material change in the nature of an existing instrument. The Reporting Bank must, at a minimum, update Table 11C-1 semi-annually. The Reporting Bank must include the web link in each Pillar 3 report to the issuances made over the previous period.
Format	Flexible
Accompanying narrative	The Reporting Bank is required to make available on its website the full terms and conditions of all instruments included in regulatory capital.

1	Issuer	
2	Unique identifier (eg CUSIP, ISIN or Bloomberg identifier for private placement)	
3	Governing law(s) of the instrument	
4	Transitional Basel III rules	
5	Post-transitional Basel III rules	
6	Eligible at Solo/Group/Group&Solo	
7	Instrument type (types to be specified by each country or jurisdiction)	
8	Amount recognised in regulatory capital (Currency in millions, as of most recent reporting date)	
9	Par value of instrument	
10	Accounting classification	
11	Original date of issuance	

12	Perpetual or dated	
13	Original maturity date	
14	Issuer call subject to prior supervisory approval	
15	Optional call date, contingent call dates and redemption amount	
16	Subsequent call dates, if applicable	
	Coupons / dividends	
17	Fixed or floating dividend/coupon	
18	Coupon rate and any related index	
19	Existence of a dividend stopper	
20	Fully discretionary, partially discretionary or mandatory	
21	Existence of step up or other incentive to redeem	
22	Non-cumulative or cumulative	
23	Convertible or non-convertible	
24	If convertible, conversion trigger(s)	
25	If convertible, fully or partially	
26	If convertible, conversion rate	
27	If convertible, mandatory or optional conversion	
28	If convertible, specify instrument type convertible into	
29	If convertible, specify issuer of instrument it converts into	
30	Write-down feature	
31	If write-down, write-down trigger(s)	
32	If write-down, full or partial	
33	If write-down, permanent or temporary	
34	If temporary write-down, description of write-up mechanism	
35	Type of subordination	
36	Position in subordination hierarchy in liquidation (specify instrument type immediately senior to instrument in the insolvency creditor hierarchy of the legal entity concerned)	
37	Non-compliant transitioned features	
38	If yes, specify non-compliant features	

Table 11C-1A: Explanatory Notes to Main Features of Regulatory Capital Instruments

Row Number	**Explanatory Notes**
1	This identifies the issuer legal entity. *Free text*
2	This is the unique identifier[1142] *Free text*
3	This specifies the governing law(s) of the instrument. *Free text*
4	This specifies the regulatory capital treatment during the Basel III transitional phase[1143]. *Select from menu: [Common Equity Tier 1] [Additional Tier 1] [Tier 2]*
5	This specifies the regulatory capital treatment under Basel III rules not taking into account transitional treatment.

[1142] For example, CUSIP, ISIN or Bloomberg identifier for private placement.
[1143] The component of capital that the instrument is being phased-out from.

Row Number	Explanatory Notes
	Select from menu: [Common Equity Tier 1] [Additional Tier 1] [Tier 2] [Ineligible]
6	This specifies the level(s) within the group at which the instrument is included in capital. *Select from menu: [Solo] [Group] [Solo and Group]*
7	This specifies the instrument type, varying by country or jurisdiction. It helps to provide more granular understanding of features, particularly during transition. *Select from menu: menu options to be provided to banks by each country or jurisdiction*
8	This specifies the amount recognised in regulatory capital. *Free text*
9	This is the Par value of the instrument. *Free text*
10	This specifies the accounting classification. It helps to assess loss absorbency. *Select from menu: [Shareholders' equity] [Liability – amortised cost] [Liability – fair value option] [Non-controlling interest in consolidated subsidiary]*
11	This specifies the date of issuance. *Free text*
12	This specifies whether it is dated or perpetual. *Select from menu: [Perpetual] [Dated]*
13	For dated instrument, this specifies the original maturity date (day, month and year). For perpetual instrument put "no maturity". *Free text*
14	This specifies whether there is an issuer call option. *Select from menu: [Yes] [No]*
15	For instrument with issuer call option, this specifies (i) the first date of call if the instrument has a call option on a specific date (day, month and year); (ii) if the instrument has a tax and/or regulatory event call; and (iii) the redemption price. *Free text*
16	This specifies the existence and frequency of subsequent call dates, if applicable. *Free text*
17	This specifies whether the coupon/dividend is fixed over the life of the instrument, floating over the life of the instrument, currently fixed but will move to a floating rate in the future, currently floating but will move to a fixed rate in the future. *Select from menu: [Fixed], [Floating] [Fixed to floating], [Floating to fixed]*
18	This specifies the coupon rate of the instrument and any related index that the coupon/dividend rate references. *Free text*
19	This specifies whether the non payment of a coupon or dividend on the instrument prohibits the payment of dividends on common shares (ie whether there is a dividend stopper). *Select from menu: [Yes], [No]*

Row Number	Explanatory Notes
20	This specifies whether the issuer has full discretion, partial discretion or no discretion over whether a coupon/dividend is paid. If the Reporting Bank has full discretion to cancel coupon/dividend payments under all circumstances it must select "fully discretionary" (including when there is a dividend stopper that does not have the effect of preventing the Reporting Bank from cancelling payments on the instrument). If there are conditions that must be met before payment can be cancelled[1144], the Reporting Bank must select "partially discretionary". If the Reporting Bank is unable to cancel the payment outside of insolvency the Reporting Bank must select "mandatory". *Select from menu: [Fully discretionary] [Partially discretionary] [Mandatory]*
21	This specifies whether there is a step-up or other incentive to redeem. *Select from menu: [Yes] [No]*
22	This specifies whether dividends / coupons are cumulative or non-cumulative. *Select from menu: [Non-cumulative] [Cumulative]*
23	This specifies whether the instrument is convertible or not. *Select from menu: [Convertible] [Nonconvertible]*
24	This specifies the conditions under which the instrument will convert, including point of non-viability. Where one or more authorities have the ability to trigger conversion, the authorities must be listed. For each of the authorities it must be stated whether the legal basis for the authority to trigger conversion is provided by the terms of the contract of the instrument (a contractual approach) or statutory means (a statutory approach). *Free text*
25	For conversion trigger separately, this specifies whether the instrument will: (i) always convert fully; (ii) may convert fully or partially; or (iii) will always convert partially *Free text referencing one of the options above*
26	This specifies the rate of conversion into the more loss absorbent instrument. *Free text*
27	For convertible instruments, this specifies whether the conversion is mandatory or optional. *Select from menu: [Mandatory] [Optional] [NA]*
28	For convertible instruments, this specifies the instrument type convertible into. *Select from menu: [Common Equity Tier 1] [Additional Tier 1] [Tier 2] [Other]*
29	If convertible, this specifies the issuer of instrument into which it converts. *Free text*
30	This specifies whether there is a write down feature. *Select from menu: [Yes] [No]*
31	This specifies the trigger at which write-down occurs, including point of non-viability. Where one or more authorities have the ability to trigger write-down, the authorities must be listed. For each of the authorities it must be stated whether the legal basis for the authority to trigger write-down is provided by the terms of the contract of the instrument (a contractual approach) or statutory means (a statutory approach).

[1144] For example, capital below a certain threshold.

Row Number	Explanatory Notes
	Free text
32	For each write-down trigger separately, this specifies whether the instrument will: (i) always be written down fully; (ii) may be written down partially; or (iii) will always be written down partially. *Free text referencing one of the options above*
33	For write down instrument, this specifies whether the write down is permanent or temporary. *Select from menu: [Permanent] [Temporary] [NA]*
34	For instrument that has a temporary write-down, this specifies the description of write-up mechanism. *Free text*
35	This specifies the type of subordination *Select from menu: [Structural] [Statutory] [Contractual] [Exemption from subordination]*
36	This specifies the instrument to which it is most immediately subordinate. Where applicable, the Reporting Bank must specify the column numbers of the instruments in the completed Table 11C-1 to which the instrument is most immediately subordinate. In the case of structural subordination, "NA" must be entered. *Free text*
37	This specifies whether there are non-compliant features. *Select from menu: [Yes] [No]*
38	If there are non-compliant features, the Reporting Bank must specify which ones. *Free text*

Annex 11D

LEVERAGE RATIO SUMMARY COMPARISON TABLE

Table 11D-1: Leverage Ratio Summary Comparison Table

Purpose	To reconcile the total assets in the published financial statements to the leverage ratio exposure measure.
Scope of application	The table is mandatory for all Reporting Banks.
Content	Quantitative information.[1145] A Reporting Bank must report disclosures on a quarter-end basis. However, the Reporting Bank may, with prior approval of the Authority, use more frequent calculations[1146]. The Reporting Bank is required to include the basis for the frequency of its disclosures.[1147]
Frequency	Quarterly. The frequency of disclosure may, with the prior approval of the Authority, be made with at least the same frequency as the publication of the Reporting Bank's financial statements. Despite the cancellation of MAS Notice 637 in force immediately before 1 July 2024, any approval granted under footnote 800B of MAS Notice 637 in force immediately before 1 July 2024, that was in force immediately before 1 July 2024, is treated as an approval granted under paragraph 11.3.3 of this Notice. The Authority may at any time vary or revoke any existing conditions or restrictions of approval, or impose conditions or restrictions, or additional conditions or restrictions.
Format	Fixed
Accompanying narrative	The Reporting Bank is required to disclose and detail the source of material differences between their total balance sheet assets as reported in their financial statements and their leverage ratio exposure measure.

	Item	**Amount**
1	Total consolidated assets as per published financial statements	
2	Adjustment for investments in entities that are consolidated for accounting purposes but are outside the regulatory scope of consolidation	
3	Adjustment for securitised exposures that meet the operational requirements for the recognition of risk transference	
4	Adjustment for fiduciary assets recognised on the balance sheet in accordance with the Accounting Standards but excluded from the calculation of the leverage ratio exposure measure	
5	Adjustments for regular-way purchases and sales of financial assets subject to trade date accounting	
6	Adjustments for eligible cash pooling arrangements	
7	Adjustment for derivative transactions	

[1145] The leverage ratio follows the same scope of regulatory consolidation as used for the risk-based capital framework.

[1146] For example, daily or monthly averaging.

[1147] For example, quarter-end, daily averaging or monthly averaging, or a combination thereof.

8	Adjustment for SFTs	
9	Adjustment for off-balance sheet items	
10	Adjustments for prudent valuation adjustments and specific and general allowances which have reduced Tier 1 Capital	
11	Other adjustments	
12	**Leverage ratio exposure measure**	

Table 11D-1A: Explanatory Notes to Leverage Ratio Summary Comparison Table

Row Number	**Explanatory Notes**
1	This is the total consolidated assets of a Reporting Bank as per its published financial statements.
2	This is the adjustment for investments in entities that are consolidated for accounting purposes, but outside the regulatory scope of consolidation in accordance with paragraphs 1.2 and 1.3 of Annex 4C.
3	This row shows the reduction of the leverage ratio exposure measure due to the exclusion of securitised exposures that meet the operational requirements for the recognition of risk transference in accordance with Section 1 of Annex 7AC. As these adjustments reduce the total leverage ratio exposure measure, the Reporting Bank must report such adjustments as a negative amount.
4	This relates to paragraph 2.10 of Annex 4C.
5	This row shows adjustments for regular-way purchases and sales of financial assets subject to trade date accounting. The adjustment reflects (i) the reverse-out of any offsetting between cash receivables for unsettled sales and cash payables for unsettled purchases of financial assets that may be recognised under the Accounting Standards, and (ii) the offset between those cash receivables and cash payables that are eligible in accordance with the criteria specified in paragraph 2.11 of Annex 4C. If this adjustment leads to an increase in exposure, the Reporting Bank must report the adjustment as a positive amount. If this adjustment leads to a decrease in exposure, the Reporting Bank must report the adjustment as a negative amount.
6	This row shows adjustments for cashpooling arrangements that meet the criteria in paragraph 2.12 of Annex 4C. The adjustment is the difference between the accounting value of cashpooling arrangements and the treatments specified in paragraph 2.12 of Annex 4C. If this adjustment leads to an increase in exposure, the Reporting Bank must report the adjustment as a positive amount. If this adjustment leads to a decrease in exposure, the Reporting Bank must report the adjustment as a negative amount.
7	This is the adjustment for the difference between the calculation of derivative transactions in accordance with the Accounting Standards, and the calculation of derivative transactions in accordance with paragraphs 2.13 to 2.39 of Annex 4C ("derivative exposure measures").
8	This is the adjustment for the difference between the calculation of SFTs in accordance with the Accounting Standards, and the calculation of SFTs in accordance with paragraphs 2.40 to 2.50 of Annex 4C ("SFT exposure measures").
9	This is the exposure measures of off-balance sheet items in accordance with paragraphs 2.51 to 2.53 of Annex 4C ("exposure measures of off-balance sheet items").

Row Number	Explanatory Notes
10	This row shows adjustments that reduce the leverage ratio exposure measure by the amount of prudent valuation adjustments, and by the amount of specific and general allowances, that have reduced Tier 1 Capital, as determined by paragraphs 1.3, 2.8 and 2.53 of Annex 4C respectively. The Reporting Bank must report the adjustment as a negative amount.
11	This is the sum of any other adjustments.
12	This is the sum of rows 1 to 11.
Linkages across tables	
Amount in Table 11D-1:12/a is equal to Table 11E-1:24/a (depending on basis of calculation).	

Annex 11E

LEVERAGE RATIO COMMON DISCLOSURE TEMPLATE

Table 11E-1: Leverage Ratio Common Disclosure Template

Purpose	To provide a detailed breakdown of the components of the leverage ratio denominator, as well as information on the actual leverage ratio, minimum requirements and buffers.
Scope of application	The table is mandatory for all Reporting Banks.
Content	Quantitative information. The disclosures must be made on a quarter-end basis, unless otherwise provided in the instructions for the relevant row. However, a Reporting Bank may, with prior approval of the Authority, use more frequent calculations[1148], as long as it does so consistently. The Reporting Bank is required to include the basis for the frequency for its disclosures.[1149]
Frequency	Quarterly
Format	Fixed
Accompanying narrative	The Reporting Bank must describe the key factors that have had a material impact on the leverage ratio at the end of the reporting period compared to the end of the previous reporting period. The Reporting Bank must also describe the key factors that explain any material differences between the amounts of SFTs that are included in the Reporting Bank's Pillar 1 leverage ratio exposure measures and the mean values of SFTs that are disclosed in row 28.

		Amount	
		(a)	**(b)**
	Item	**T**	**T-1**
	Exposure measures of on-balance sheet items		
1	On-balance sheet items (excluding derivative transactions and SFTs, but including on-balance sheet collateral for derivative transactions or SFTs)		
2	Gross-up for derivatives collateral provided where deducted from balance sheet assets in accordance with the Accounting Standards		
3	Deductions of receivable assets for cash variation margin provided in derivatives transactions		
4	Adjustment for collateral received under securities financing transactions that are recognised as assets		
5	Specific and general allowances associated with on-balance sheet exposures that are deducted from Tier 1 Capital		
6	Asset amounts deducted in determining Tier 1 Capital and regulatory adjustments		
7	**Total exposure measures of on-balance sheet items (excluding derivative transactions and SFTs)**		

[1148] For example, daily or monthly averaging.
[1149] For example, daily, monthly or quarterly averaging, or a combination thereof.

	Derivative exposure measures		
8	Replacement cost associated with all derivative transactions (net of the eligible cash portion of variation margins and net of bilateral netting)		
9	Potential future exposure associated with all derivative transactions		
10	CCP leg of trade exposures excluded in respect of derivative transactions cleared on behalf of clients		
11	Adjusted effective notional amount of written credit derivatives		
12	Further adjustments in effective notional amounts and deductions from potential future exposures of written credit derivatives		
13	**Total derivative exposure measures**		
	SFT exposure measures		
14	Gross SFT assets (with no recognition of accounting netting), after adjusting for sales accounting		
15	Eligible netting of cash payables and cash receivables		
16	SFT counterparty exposures		
17	SFT exposure measures where the Reporting Bank acts as an agent in the SFTs		
18	**Total SFT exposure measures**		
	Exposure measures of off-balance sheet items		
19	Off-balance sheet items at notional amount		
20	Adjustments for calculation of exposure measures of off-balance sheet items		
21	Specific and general allowances associated with off-balance sheet exposures deducted in determining Tier 1 Capital		
22	**Total exposure measures of off-balance sheet items**		
	Capital and Total exposures		
23	**Tier 1 Capital**		
24	**Total exposures**		
	Leverage ratio		
25	**Leverage ratio**		
26	**National minimum leverage ratio requirement**		
27	**Applicable leverage buffers**		
	Disclosures of mean values		
28	Mean value of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables		
29	Quarter-end value of gross SFT assets, after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables		
30	Total exposures incorporating values from row 28		
31	Leverage ratio incorporating values from row 28		

[MAS Notice 637 (Amendment) 2024]

Table 11E-1A: Explanatory Notes to Leverage Ratio Common Disclosure Template

Row Number	Explanatory Notes
1	A Reporting Bank must include all assets on its balance sheet in their exposure measure, including derivatives collateral and collateral for SFTs, on its balance sheet, with the exception of derivative and SFT assets that are on its balance sheet and included in rows 8 to 18. Derivatives collateral and collateral for SFTs refer to either collateral received or collateral provided (or any associated receivable asset) accounted as a balance sheet asset. Amounts are to be reported in accordance with paragraphs 2.8 to 2.12 of Annex 4C and, where applicable, paragraphs 2.6 and 2.7 of Annex 4C.
2	This is the grossed-up amount of collaterals where the collaterals provided by the Reporting Bank in relation to derivative transactions have reduced the value of its balance sheet assets in accordance with paragraph 2.17 of Annex 4C.
3	This is as defined under paragraph 2.21(b) of Annex 4C. The Reporting Bank must report a negative amount here.
4	This row shows adjustment for collateral received under the SFT, where the Reporting Bank has recognised the collateral as an asset on its balance sheet. The Reporting Bank must exclude these amounts from the exposure measure in accordance with paragraph 2.40 of Annex 4C. As the adjustments in this row reduce the exposure measure, the Reporting Bank must report the adjustments as negative figures.
5	This row shows amounts of general and specific allowances that are deducted from Tier 1 Capital, where such allowances may be deducted from the exposure measure in accordance with paragraph 2.8 of Annex 4C. As the adjustments in this row reduce the exposure measure, the Reporting Bank must report the adjustments as negative figures.
6	This is the amount of deductions from capital measure in accordance with paragraphs 1.2 and 1.3 of Annex 4C and excluded from the total exposures. Deductions must not include liability items in accordance with paragraph 2.5 of Annex 4C. The Reporting Bank must report a negative amount here.
7	This is the sum of rows 1 to 6.
8	This is the replacement cost associated with all derivative transactions in accordance with paragraphs 2.13(b) and 2.14(b) of Annex 4C, including exposures resulting from transactions described in paragraph 2.28 of Annex 4C. The calculation must be net of the cash portion of variation margins received in accordance with paragraph 2.21(a) of Annex 4C. The Reporting Bank must report this amount with the 1.4 alpha factor applied as specified in paragraphs 2.13(a) and 2.14(a) of Annex 4C.
9	This is the amount for potential future exposure associated with all derivative transactions in accordance with paragraphs 2.13(c) and 2.14(c) of Annex 4C. The Reporting Bank must report this amount with the 1.4 alpha factor applied as specified in paragraphs 2.13(a) and 2.14(a) of Annex 4C.
10	This is the amount of CCP trade exposures associated with the CCP leg of derivative transactions which are excluded in accordance with paragraph 2.22 of Annex 4C. The Reporting Bank must report a negative amount here.
11	This is the adjusted effective notional amounts (i.e. the effective notional amounts reduced by any negative change in fair value amounts) for written credit derivative transactions in accordance with paragraphs 2.30 to 2.38 of Annex 4C.

Row Number	Explanatory Notes
12	This is the sum of – • adjustments to the effective notional amounts of written credit derivative transactions in accordance with paragraphs 2.30 to 2.38 of Annex 4C; and • deductions from the amounts for potential future exposure of written credit derivative transactions in accordance with paragraph 2.39 of Annex 4C. The Reporting Bank must report a negative amount here.
13	This is the sum of rows 8 to 12.
14	This is the gross SFT assets with no recognition of any accounting netting in accordance with paragraph 2.40(a) but adjusted for the treatment of the following items: • novation with qualifying CCPs in accordance with paragraph 2.41 of Annex 4C; • collateral received under the SFT where the Reporting Bank has recognised the collateral as an asset on its balance sheet in accordance with paragraph 2.40(a)(i) of Annex 4C; • SFTs accounted for using sales accounting in accordance with paragraph 2.46 of Annex 4C.
15	This row shows the cash payables and cash receivables of gross SFT assets with netting determined in accordance with paragraph 2.40(a)(ii) of Annex 4C. As these adjustments reduce the exposure measure, the Reporting Bank must report the adjustments as negative figures.
16	This row shows the amount of the CCR add-on for SFTs, determined in accordance with paragraph 2.40(b) of Annex 4C.
17	This row shows the amount for which the Reporting Bank, acting as an agent in an SFT, has provided an indemnity or guarantee, determined in accordance with paragraphs 2.47 to 2.50 of Annex 4C.
18	This is the sum of rows 14 to 17.
19	This is the total notional amount of off-balance sheet items, before any adjustment for CCFs in accordance with paragraph 2.51 of Annex 4C.
20	This is the adjustment to the notional amount of off-balance sheet items due to the application of CCFs in accordance with paragraph 2.51 of Annex 4C. As these adjustments reduce the exposure measure, the Reporting Bank must report the adjustments as negative figures.
21	This row shows amounts of specific and general allowances associated with off-balance sheet exposures that are deducted from Tier 1 Capital. The Reporting Bank must ensure that the absolute value of the amount does not exceed the sum of rows 19 and 20. As these adjustments reduce the exposure measure, the Reporting Bank must report the adjustments as negative figures.
22	This is the sum of rows 19 to 21.
23	This is the capital measure in accordance with Annex 2A.
24	This is the sum of rows 7, 13, 18 and 22.
25	This is the leverage ratio, expressed as a percentage and calculated in accordance with paragraph 1.1 of Annex 4C.
26	This is the minimum leverage ratio the Reporting Bank must maintain at all times, as imposed by the Authority.

Row Number	Explanatory Notes
27	This row shows the total applicable leverage buffers. In reporting this figure, the Reporting Bank must include the D-SIB leverage ratio buffer requirement and any other applicable buffers.
28	This row shows the mean of the sums of rows 14 and 15, based on the sums calculated as of each day of the reporting quarter.
29	If rows 14 and 15 are based on quarter-end values, this amount is the sum of the figures reported in rows 14 and 15. If rows 14 and 15 are based on averaged values, this amount is the sum of quarter-end values corresponding to the figures reported in rows 14 and 15.
30	This row shows the total exposure measure using mean values calculated as of each day of the reporting quarter for the amounts of the exposure measure associated with gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables).
31	This row shows the capital measure in accordance with Annex 2A divided by the exposure measure, using mean values calculated as of each day of the reporting quarter for the amounts of the exposure measure associated with gross SFT assets (after adjustment for sale accounting transactions and netted of amounts of associated cash payables and cash receivables).
Linkages across tables (valid only if the relevant rows are all disclosed on a quarter-end basis)	
Amount in [Table 11E-1:23/a] is equal to [Table 11-2:2/a].	
Amount in [Table 11E-1:24/a] is equal to [Table 11-2:13/a] (only if the same calculation basis is used).	
Amount in [Table 11E-1:25/a] is equal to [Table 11-2:14/a] (only if the same calculation basis is used).	
Amount in [Table 11E-1:31/a] is equal to [Table 11-2:14a/a].	

PART XII: REPORTING REQUIREMENTS

Division 1: Introduction

12.1.1 A Reporting Bank must submit to the Authority, information relating to its capital adequacy, calculated according to the requirements of this Notice and in the format of the reporting schedules set out in Annexes 12A to 12F and such other reporting schedules as the Authority may specify. A summary of the reporting schedules in Annexes 12A to 12F is set out in Table 12-1. The Reporting Bank must submit the reporting schedules set out in Annex 12A to 12F in the format that is currently in force, which is published on the Authority's website at https://www.mas.gov.sg/regulation/notices/notice-637.

[MAS Notice 637 (Amendment) 2024]

Table 12-1: Summary of Reporting Schedules in Annexes 12A to 12F

Section		Annex/Schedule
1	**Capital Adequacy Reporting Schedules**	**Annex 12A**
1	CET1 CAR, Tier 1 CAR, Total CAR and Buffers	Schedule 1
	CET1 CAR, Tier 1 CAR, Total CAR and Buffers (Transitional Arrangements)	Schedule 1T
1-1	Definition of Capital	Schedule 1-1A
	Definition of Capital – Breakdown by subsidiaries	Schedule 1-1B
1-2	Capital Treatment of Allowances	Schedule 1-2A
1-3	Countercyclical Buffer	Schedule 1-3A
1-4	**Output Floor**	
	Output Floor – Overview	Schedule 1-4A
	Output Floor – Overview (Transitional Arrangements)	Schedule 1T-4A
	Output Floor – Credit RWA Part 1	Schedule 1-4B
	Output Floor – Credit RWA Part 2	Schedule 1-4C
	Output Floor – Market RWA	Schedule 1-4D
	Output Floor – Market RWA (Transitional Arrangements)	Schedule 1T-4D
1-5	Leverage Ratio	Schedule 1-5A
2	**Credit Risk Reporting Schedules**	**Annex 12B**
2	Summary of Credit RWA	Schedule 2
2-1	IRBA Coverage	Schedule 2-1A
2-2	**SA(CR)**	
	SA(CR) – Cash Items	Schedule 2-2A
	SA(CR) – Central Government and Central Bank Asset Class	Schedule 2-2B
	SA(CR) – PSE Asset Class	Schedule 2-2C

Section		Annex/Schedule
	SA(CR) – MDB Asset Class	Schedule 2-2D
	SA(CR) – Bank Asset Class, exclude exposures that fall under paragraph 7.3.1(e)(v)	Schedule 2-2EA
	SA(CR) – Bank Asset Class, exposures that fall under paragraph 7.3.1(e)(v)	Schedule 2-2EB
	SA(CR) – Bank Asset Class, Total	Schedule 2-2EC
	SA(CR) – Covered Bond Asset Class	Schedule 2-2F
	SA(CR) – Corporate Asset Class	Schedule 2-2G
	SA(CR) – Equity and Subordinated Debt Asset Class	Schedule 2-2H
	SA(CR) – Regulatory Retail Asset Class	Schedule 2-2I
	SA(CR) – Other Retail Asset Class	Schedule 2-2J
	SA(CR) – Real Estate Asset Class	Schedule 2-2K
	SA(CR) – Other Exposures Asset Class	Schedule 2-2L
2-3	**F-IRBA for Wholesale Asset Class**	
	F-IRBA – Sovereign Asset Sub-Class	Schedule
	- RWA	2-3A_RWA
	- LGD	2-3A_LGD
	F-IRBA – Bank Asset Sub-Class, exclude exposures to counterparties referred to in paragraph 7.3.1(e)(v) that fall under 7.4.42(d)(i)	Schedule
	- RWA	2-3BA_RWA
	- LGD	2-3BA_LGD
	F-IRBA – Bank Asset Sub-Class, exposures to counterparties referred to in paragraph 7.3.1(e)(v) that fall under 7.4.42(d)(i)	Schedule
	- RWA	2-3BB_RWA
	- LGD	2-3BB_LGD
	F-IRBA – Bank Asset Sub-Class, Total	Schedule
	- RWA	2-3BC_RWA
	- LGD	2-3BC_LGD
	F-IRBA – General Corporate Asset Sub-Class, exclude exposures to financial institutions	Schedule
	- RWA	2-3CA_RWA
	- LGD	2-3CA_LGD
	F-IRBA – General Corporate Asset Sub-Class, exposures to financial institutions	Schedule
	- RWA	2-3CB_RWA
	- LGD	2-3CB_LGD

Section		Annex/Schedule
	F-IRBA – General Corporate Asset Sub-Class, Total	Schedule
	- RWA	2-3CC_RWA
	- LGD	2-3CC_LGD
	F-IRBA – Corporate Small Business Asset Sub-Class, exclude exposures to financial institutions	Schedule
	- RWA	2-3DA_RWA
	- LGD	2-3DA_LGD
	F-IRBA – Corporate Small Business Asset Sub-Class, exposures to financial institutions	Schedule
	- RWA	2-3DB_RWA
	- LGD	2-3DB_LGD
	F-IRBA – Corporate Small Business Asset Sub-Class, Total	Schedule
	- RWA	2-3DC_RWA
	- LGD	2-3DC_LGD
	F-IRBA – SL Asset Sub-Class: IPRE	Schedule
	- RWA	2-3E_RWA
	- LGD	2-3E_LGD
	F-IRBA – SL Asset Sub-Class: PF/OF/CF	Schedule
	- RWA	2-3F_RWA
	- LGD	2-3F_LGD
	F-IRBA – HVCRE Asset Sub-Class	Schedule
	- RWA	2-3G_RWA
	- LGD	2-3G_LGD
2-4	**A-IRBA for Wholesale Asset Class**	
	A-IRBA – Sovereign Asset Sub-Class	Schedule
	- RWA	2-4A_RWA
	- LGD	2-4A_LGD
	- CCF	2-4A_CCF
	A-IRBA – General Corporate Asset Sub-Class, exclude exposures to financial institutions	Schedule
	- RWA	2-4CA_RWA
	- LGD	2-4CA_LGD
	- CCF	2-4CA_CCF
	A-IRBA – General Corporate Asset Sub-Class, exposures to financial institutions	Schedule
	- RWA	2-4CB_RWA

Section		Annex/Schedule
	- LGD	2-4CB_LGD
	- CCF	2-4CB_CCF
	A-IRBA – General Corporate Asset Sub-Class, Total	Schedule
	- RWA	2-4CC_RWA
	- LGD	2-4CC_LGD
	A-IRBA – Corporate Small Business Asset Sub-Class, exclude exposures to financial institutions	Schedule
	- RWA	2-4DA_RWA
	- LGD	2-4DA_LGD
	- CCF	2-4DA_CCF
	A-IRBA – Corporate Small Business Asset Sub-Class, exposures to financial institutions	Schedule
	- RWA	2-4DB_RWA
	- LGD	2-4DB_LGD
	- CCF	2-4DB_CCF
	A-IRBA – Corporate Small Business Asset Sub-Class, Total	Schedule
	- RWA	2-4DC_RWA
	- LGD	2-4DC_LGD
	A-IRBA – SL Asset Sub-Class: IPRE	Schedule
	- RWA	2-4E_RWA
	- LGD	2-4E_LGD
	- CCF	2-4E_CCF
	A-IRBA – SL Asset Sub-Class: PF / OF / CF	Schedule
	- RWA	2-4F_RWA
	- LGD	2-4F_LGD
	- CCF	2-4F_CCF
	A-IRBA – HVCRE Asset Sub-Class	Schedule
	- RWA	2-4G_RWA
	- LGD	2-4G_LGD
	- CCF	2-4G_CCF
2-5	**IRBA – Supervisory Slotting Criteria**	Schedule 2-5A
2-6	**IRBA for Retail Asset Class**	
	IRBA – Residential Mortgage Asset Sub-Class	Schedule
	- RWA	2-6A_RWA

Section		Annex/Schedule
	- LGD	2-6A_LGD
	- CCF	2-6A_CCF
	IRBA – QRRE Asset Sub-Class	Schedule
	- RWA	2-6B_RWA
	- LGD	2-6B_LGD
	- CCF	2-6B_CCF
	IRBA – Other Retail Exposures Asset Sub-Class, exclude exposures to small business	Schedule
	- RWA	2-6C_RWA
	- LGD	2-6C_LGD
	- CCF	2-6C_CCF
	IRBA – Other Retail Exposures Asset Sub-Class, exposures to small business	Schedule
	- RWA	2-6D_RWA
	- LGD	2-6D_LGD
	- CCF	2-6D_CCF
2-7	**IRBA – Eligible Purchased Receivables Asset Class**	
	- RWA	Schedule 2-7A_RWA
2-8	**CCR**	
	SA-CCR	Schedule 2-8A
	CCR Internal Models Method	Schedule 2-8B
2-9	**Equity Exposures**	
	Equity investments in funds, held in the banking book	Schedule 2-9A
2-10	**Securitisation Exposures**	
	Securitisation	Schedule 2-10A
	Securitisation – SEC-ERBA	Schedule 2-10B
	Securitisation – SEC-IAA	Schedule 2-10C
2-11	**Exposures to CCPs**	
	Exposures to Central Clearing Counterparties (CCP) – Overview	Schedule 2-11A
	Exposures to Central Clearing Counterparties (CCP) – Details	Schedule 2-11B
2-12	**Unsettled Transactions**	
	UST-DvP and UST-non-DvP RWA	Schedule 2-12A

Section		Annex/Schedule
2-13	**Off-Balance Sheet Exposures**	
	Off-Balance Sheet Exposures (Excluding Derivative Transactions and Securitisation Exposures)	Schedule 2-13A
2-14	**CRM**	
	Inflows into and Outflows from Asset Sub-classes due to Credit Protection	Schedule 2-14A
	SA(CR) – Eligible Financial Collateral	Schedule 2-14B
	IRBA – Eligible Financial Collateral, Eligible IRBA Collateral and Other Collateral	Schedule 2-14C
	Securitisation – Eligible Financial Collateral	Schedule 2-14D
2-15	Qualifying on-balance sheet netting arrangements	Schedule 2-15A
3	**Market Risk Reporting Schedules**	**Annex 12C**
3	Summary of Market RWA	Schedule 3
3-1	**SA(MR)**	
	SA(MR) – General Interest Rate Risk (GIRR)	Schedule 3-1A
	SA(MR) – Credit Spread Risk (CSR) – Non-Securitisation	Schedule 3-1B
	SA(MR) – Credit Spread Risk (CSR) – Securitisation Non-CTP	Schedule 3-1C
	SA(MR) – Credit Spread Risk (CSR) – Securitisation CTP	Schedule 3-1D
	SA(MR) – Equity Risk	Schedule 3-1E
	SA(MR) – Commodity Risk	Schedule 3-1F
	SA(MR) – Foreign Exchange Risk (FX) (Delta and Curvature Risks) – Reporting Currency Approach	Schedule 3-1G
	SA(MR) – Foreign Exchange Risk (FX) (Delta and Curvature Risks) – Base Currency Approach	Schedule 3-1H
	SA(MR) – Foreign Exchange Risk (FX) (Vega Risks)	Schedule 3-1I
	SA(MR) – Default Risk Capital Requirement (DRC)	Schedule 3-1J
	SA(MR) – Residual Risk Add-on (RRAO)	Schedule 3-1K

Section		Annex/Schedule
3-2	**IMA**	
	IMA – Capital Requirement for Modellable Risk Factors (IMCC)	Schedule 3-2A
	IMA – Capital Requirement for Non-Modellable Risk Factors (SES)	Schedule 3-2B
	IMA – Backtesting (IMA Portfolio Level)	Schedule 3-2C
	IMA – Backtesting (Trading Desk Level)	Schedule 3-2D
	IMA – PLA	Schedule 3-2E
	IMA – Trading Desks	Schedule 3-2F
3-3	**SSA(MR)**	
	SSA(MR) – Interest Rate Risk – Overview	Schedule 3-3A
	SSA(MR) – Interest Rate Risk – Specific Risk	Schedule 3-3B
	SSA(MR) – Interest Rate Risk – General Market Risk Summary	Schedule 3-3C
	SSA(MR) – Interest Rate Risk – General Market Risk	Schedule 3-3D
	SSA(MR) – Equity Risk – Overview	Schedule 3-3E
	SSA(MR) – Equity Risk – Specific Risk	Schedule 3-3F
	SSA(MR) – Equity Risk – General Market Risk	Schedule 3-3G
	SSA(MR) – Foreign Exchange Risk – Overview	Schedule 3-3H
	SSA(MR) – Foreign Exchange Positions	Schedule 3-3I
	SSA(MR) – Commodity Risk – Overview	Schedule 3-3J
	SSA(MR) – Commodity Risk – Simplified Approach	Schedule 3-3K
	SSA(MR) – Commodity Risk – Maturity Ladder Approach	Schedule 3-3L
	SSA(MR) – Options Position Risk – Simplified Approach	Schedule 3-3M
	SSA(MR) – Options Position Risk – Delta-Plus Approach	Schedule 3-3N
	SSA(MR) – Options Position Risk – Scenario Approach (IR)	Schedule 3-3O
	SSA(MR) – Options Position Risk – Scenario Approach (Equity)	Schedule 3-3P
	SSA(MR) – Options Position Risk – Scenario Approach (FX)	Schedule 3-3Q
	SSA(MR) – Options Position Risk – Scenario Approach (Commod)	Schedule 3-3R
3-4	**Credit Valuation Adjustments**	
	Summary of Credit Valuation Adjustments	Schedule 3-4A
	BA-CVA	Schedule 3-4B
	SA-CVA – Interest Rate Risk	Schedule 3-4C
	SA-CVA – Foreign Exchange Risk	Schedule 3-4D

Section		Annex/Schedule
	SA-CVA – Counterparty Credit Spread Risk	Schedule 3-4E
	SA-CVA – Reference Counterparty Credit Spread Risk	Schedule 3-4F
	SA-CVA – Equity Risk	Schedule 3-4G
	SA-CVA – Commodity Risk	Schedule 3-4H
	SA-CVA – Carved Out Netting Sets	Schedule 3-4I
3T	**Market Risk Reporting Schedules – Transitional Arrangements**	**Annex 12D**
3T	Market Risk Transitional Arrangements – Summary of Market RWA	Schedule 3T
3T-1	**Market Risk Transitional Arrangements**	
	Market Risk Transitional Arrangements – Interest Rate Risk – Overview	Schedule 3T-1A
	Market Risk Transitional Arrangements – Interest Rate Risk – Specific Risk	Schedule 3T-1B
	Market Risk Transitional Arrangements – Interest Rate Risk – General Market Risk Summary	Schedule 3T-1C
	Market Risk Transitional Arrangements – Interest Rate Risk – General Market Risk	Schedule 3T-1D
	Market Risk Transitional Arrangements – Equity Risk – Overview	Schedule 3T-1E
	Market Risk Transitional Arrangements – Equity Risk – Specific Risk	Schedule 3T-1F
	Market Risk Transitional Arrangements – Equity Risk – General Market Risk	Schedule 3T-1G
	Market Risk Transitional Arrangements – Foreign Exchange Risk – Overview	Schedule 3T-1H
	Market Risk Transitional Arrangements – Foreign Exchange Positions	Schedule 3T-1I
	Market Risk Transitional Arrangements – Commodity Risk – Overview	Schedule 3T-1J
	Market Risk Transitional Arrangements – Commodity Risk – Simplified Approach	Schedule 3T-1K
	Market Risk Transitional Arrangements – Commodity Risk – Maturity Ladder Approach	Schedule 3T-1L
	Market Risk Transitional Arrangements – Options Position Risk – Simplified Approach	Schedule 3T-1M
	Market Risk Transitional Arrangements – Options Position Risk – Delta-Plus Approach	Schedule 3T-1N
	Market Risk Transitional Arrangements – Options Position Risk – Scenario Approach (IR)	Schedule 3T-1O
	Market Risk Transitional Arrangements – Options Position Risk – Scenario Approach (Equity)	Schedule 3T-1P

Section		Annex/Schedule
	Market Risk Transitional Arrangements – Options Position Risk – Scenario Approach (FX)	Schedule 3T-1Q
	Market Risk Transitional Arrangements – Options Position Risk – Scenario Approach (Commod)	Schedule 3T-1R
3T-2	Market Risk Transitional Arrangements – Credit Valuation Adjustments	Schedule 3T-2A
4	**Operational Risk Reporting Schedules**	**Annex 12E**
4	Summary of Operational RWA	Schedule 4
4-1	Business Indicator	Schedule 4-1A
	Internal Loss Data	Schedule 4-1B
5	**Other Reporting Schedules**	**Annex 12F**
5-1	Interest Rate Risk in the Banking Book	Schedule 5-1A

Division 2: Scope and Frequency of Reporting

12.2.1 A Reporting Bank must submit to the Authority, all the reporting schedules in Table 12-1, except for Schedules 1T, 1T-4A, 1T-4D, 3-1A to 3-1K, 3T to 3T-1R, 3T-2A, and 3-4C to 3-4I –

(a) at the Solo level; and

(b) at the Group level,

as at the end of each quarter, no later than the end of the following month.

12.2.2 Where a Reporting Bank uses the IMA for one or more trading desks that are in-scope of the IMA pursuant to paragraph 8.3.17, or where a Reporting Bank uses the SA(MR), the Reporting Bank must submit to the Authority, Schedules 3-1A to 3-1K –

(a) at the Solo level; and

(b) at the Group level,

as at the end of each month, no later than the end of the following month.

12.2.3 For the purposes of paragraphs 12.2.2 and 12.2.5, where a Reporting Bank uses the IMA for one or more trading desks that are in-scope of the IMA pursuant to paragraph 8.3.17, the Reporting Bank must include the market risks arising from all the positions of all the Reporting Bank's trading desks in its submission of Schedules 3-1A to 3-1K, regardless of whether the trading desks are in-scope of the IMA.

12.2.4 Despite paragraph 12.2.2, a Reporting Bank may, with the Authority's approval, exclude the market risks arising from its non-banking subsidiaries in its submission of Schedules 3-1A to 3-1K at the Group level as at the end of each month, which is not the end of a quarter.

12.2.5 Where a Reporting Bank uses the IMA for one or more trading desks that are in-scope of the IMA pursuant to paragraph 8.3.17, or where a Reporting Bank uses the SA(MR), the Reporting Bank must provide to the Authority the calculation of market risk RWA of the Reporting Bank according to the SA(MR) in the format of Schedules 3-1A to 3-1K as at other reporting dates, upon the request of the Authority.

12.2.6 For the purposes of reporting in Schedule 3-2F of Annex 12C, in the case where a Reporting Bank uses the IMA for one or more trading desks that are in-scope of the IMA pursuant to paragraph 8.3.17, the Reporting Bank must –

(a) calculate the ES, using the formula set out in paragraph 8.3.184, at the 97.5^{th} percentile, one-tailed confidence level, for each trading desk, with no recognition of diversification or hedging effects with any position outside the trading desk; and

(b) calculate the capital requirement using the SA(MR) for each trading desk, with no recognition of diversification or hedging effects with any position outside the trading desk. For each trading desk, the Reporting Bank must calculate the capital requirement using the SA(MR) as the sum of the SBM capital requirement calculated in accordance with paragraph 8.2.8, the DRC requirement calculated in accordance with paragraphs 8.2.161 and 8.2.162, and the RRAO calculated in accordance with paragraph 8.2.217.

12.2.7 Where a Reporting Bank uses the SA-CVA for the calculation of its CVA risk capital requirements, the Reporting Bank must submit to the Authority, Schedules 3-4C to 3-4I –

(a) at the Solo level; and

(b) at the Group level,

as at the end of each month, no later than the end of the following month.

12.2.8 A Reporting Bank must include, with each quarterly or monthly submission of reporting schedules, as the case may be, a written confirmation from its chief financial officer, in the format set out in Annex 12G.

12.2.9 Where a Reporting Bank is aware of material misstatements in a reporting schedule subsequent to submitting the schedule to the Authority, the Reporting Bank must inform the Authority no later than 5 business days of the Reporting Bank becoming aware of such material misstatements and resubmit to the Authority such schedule with the information corrected, as soon as practicable.

Division 3: Transitional Arrangements

12.3.1 A Reporting Bank must comply with paragraphs 12.2.1 to 12.2.9 from 1 January 2025.

12.3.2 A Reporting Bank need not comply with paragraphs 12.2.1 to 12.2.9 for the period from 1 July 2024 to 31 December 2024 (both dates inclusive).

12.3.3 For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), a Reporting Bank must submit to the Authority, all the reporting schedules referred to in Table 12-1, except for Schedules 1, 1T, 1-4A, 1T-4A, 1-4D, 1T-4D, 3 to 3-4I, 3T to 3T-1R, and 3T-2A, based on the requirements set out in this Notice in force on 1 July 2024 –

(a) at the Solo level; and

(b) at the Group level,

as at the end of each quarter, no later than the end of the following month.

12.3.4 For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), a Reporting Bank must submit to the Authority, Schedules 3T to 3T-1R, and 3T-2A, based on the requirements set out in MAS Notice 637 in force immediately before 1 July 2024 –

(a) at the Solo level; and

(b) at the Group level,

as at the end of each quarter, no later than the end of the following month.

12.3.5 For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), a Reporting Bank must submit to the Authority Schedules 1T, 1T-4A and 1T-4D –

(a) at the Solo level; and

(b) at the Group level,

as at the end of each quarter, no later than the end of the following month.

12.3.6 For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), a Reporting Bank must submit to the Authority the relevant schedules set out in paragraph 12.3.7 based on the requirements set out in this Notice in force on 1 July 2024 –

(a) at the Solo level; and

(b) at the Group level,

as at the end of each quarter, no later than the end of the following month.

12.3.7 For the purposes of paragraph 12.3.6, a Reporting Bank must submit the schedules as follows:

(a) if the Reporting Bank intends to use the SA(MR) or IMA, for calculating market risk capital requirements from 1 January 2025, the Reporting Bank must submit Schedules 3 and 3-1A to 3-1K;

(b) if the Reporting Bank intends to use the SSA(MR) for calculating market risk capital requirements from 1 January 2025, the Reporting Bank must submit Schedules 3 and 3-3A to 3-3R, unless the Authority specifies otherwise;

(c) the Reporting Bank must submit Schedules 3-4A to 3-4I in accordance with the approach it intends to use to calculate CVA risk capital requirements from 1 January 2025, unless the Authority specifies otherwise.

12.3.8 For the purposes of paragraph 12.3.7, the Reporting Bank must notify the Authority of the approaches it intends to use for calculating market risk and CVA capital requirements from 1 January 2025, no later than 14 July 2024.

12.3.9 For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), a Reporting Bank must include with each quarterly submission of reporting schedules, a written confirmation from its chief financial officer, in the format set out in Annex 12G.

12.3.10 For the period from 1 July 2024 to 31 December 2024 (both dates inclusive), where a Reporting Bank is aware of material misstatements in a reporting schedule subsequent to submitting the schedule to the Authority, the Reporting Bank must inform the Authority no later than 5 business days of the Reporting Bank becoming aware of such material misstatements and resubmit to the Authority such schedule with the information corrected, as soon as practicable.

12.3.11 In respect of the reporting schedules referred to in paragraph 12.1.1 of MAS Notice 637 in force immediately before 1 July 2024, which relate to information as at 30 June 2024, paragraphs 12.2.1 to 12.3.10 of this Notice do not apply and –

(a) a Reporting Bank must submit the reporting schedules in accordance with paragraphs 12.2.1 and 12.2.2 of MAS Notice 637 in force immediately before 1 July 2024; and

(b) where a Reporting Bank is aware of material misstatements in the reporting schedules subsequent to submitting those schedules to the Authority, the Reporting Bank must resubmit to the Authority such schedules with the information corrected, as soon as practicable.

Annex 12G

MAS NOTICE 637

NOTICE ON RISK BASED CAPITAL ADEQUACY REQUIREMENTS FOR BANKS INCORPORATED IN SINGAPORE

Reporting Schedules

Name of Reporting Bank:

Statement as at:

Scope of Reporting: Solo ☐ Group ☐
("Tick" as appropriate)

We certify that:

1. The information provided in the reporting schedules is, to the best of our knowledge and belief, accurate and complete.

2. The capital adequacy ratios and the leverage ratio were at any time not less than that specified under Part IV of the Notice.

_____
Signature of Chief Financial Officer

_____
Name of Chief Financial Officer

_____
Date

***Endnotes of History of Amendments**

1. MAS Notice 637 (Amendment) 2024 dated 25 November 2024 with effect from 1 January 2025, except for amendments in (i) paragraph 4.1.18(b) relating to the calculation of the countercyclical buffer, (ii) paragraph 9.1.3(v) relating to the calculation of the components of a Reporting Bank's business indicator, (iii) Table 11-18A and Table 11-19 of Part XI relating to the public disclosure requirements and (iv) Part XII relating to the reporting schedules, which will take effect from 31 December 2024.

2. MAS Notice 637 (Amendment) 2025 dated 09 October 2025 with effect from 1 January 2026, except for amendments in Annex 10C of Part X relating to the standardised interest rate shock scenarios, which will take effect from 31 December 2025.