

CONSULTATION PAPER

P01%- 20%&

.....>i bY 20%&

Rexkgy "qp'Tkum/Dcugf
Ecr kcn'Hramework hqt
Insurgtu'kp'Ukpi cr qtg
*STDE "4'T gxkgy \$+

MAS

Monetary Authority of Singapore

PREFACE

The Risk-Based Capital ("RBC") framework for insurance companies was first introduced in Singapore in 2004. It adopts a risk-focused approach to assessing capital adequacy and seeks to reflect the relevant risks that insurance companies face. While the RBC framework has served its purpose well, MAS is embarking on a review of the framework in light of evolving market practices and global regulatory developments.

2 This consultation paper sets out the roadmap for MAS' review of the RBC framework ('RBC 2 review') and seeks feedback on the areas for review and the implementation schedule.

3 MAS invites interested parties to provide their views and comments on the proposed RBC 2 roadmap. Written comments should be submitted by 25 August 2012 to:

Insurance Department
Monetary Authority of Singapore
10 Shenton Way
MAS Building
Singapore 079117

Fax: (65) 6229-9694
Email: rbc2con@mas.gov.sg

4 Please note that all submissions received may be made public unless confidentiality is specifically requested for the whole or part of the submission.

TABLE OF CONTENTS

Preface	i
Table of Contents	ii
1. Background	1
2. Components of Required Capital	3
Inclusion of New Risk Types	3
Target Criteria for Calibration of Risk Requirements	7
Diversification Benefits	9
Use of Internal Model	10
3. Components of Available Capital	12
Alignment with Basel III	12
Treatment of Negative Reserves	14
Treatment of Aggregate of Allowances for Provision for Non-Guaranteed Benefits	15
4. Solvency Intervention Levels	17
Prescribed Capital Requirement	17
Minimum Capital Requirement	18
5. Valuation of Assets and Liabilities	20
Long Term Risk-Free Discount Rate	20
Provision for Adverse Deviation	25
6. Enterprise Risk Management	27
7. Proposed Timeline	29

1 BACKGROUND

1.1 The RBC framework for insurance companies was first introduced in Singapore in 2004. It adopts a risk-focused approach to assessing capital adequacy and seeks to reflect the relevant risks that insurance companies face. The minimum capital prescribed under the framework serves as a buffer to absorb losses. The RBC framework also provides clearer information on the financial strength of insurers and facilitates early and effective intervention by MAS, if necessary.

1.2 Whilst the RBC framework has served us well, MAS is embarking on a review ("RBC 2") of the framework in light of evolving market practices and global regulatory developments. The review will take into account the revised Insurance Core Principles and Standards issued by the International Association of Insurance Supervisors last year.

1.3 A risk-focused approach to capital adequacy continues to be appropriate and relevant in the supervision of insurers. As such, the RBC 2 review is not expected to result in a significant overhaul to the current framework. Rather, the review aims to improve the comprehensiveness of the risk coverage and the risk sensitivity of the framework, as well as defining more specifically, MAS' supervisory approach with respect to the solvency intervention levels.

1.4 Section 2 of the paper details the proposed review in the areas of required capital. This touches on the expansion of the current framework to address more risk types, the introduction of target criteria for risk calibration, the diversification benefits from correlations between risk types, and the usage of internal models.

1.5 Section 3 elaborates on the components of available capital. These include the treatment for negative reserves and aggregate provisions for non-guaranteed benefits. In addition, it is envisaged that there will be some degree of convergence with Basel III global capital standards¹, as MAS seeks to improve the alignment of capital standards between the banking and insurance industries.

1.6 Section 4 sets out the two explicit solvency intervention levels, the Prescribed Capital Requirement as well as the Minimum Capital Requirement. Having clear and transparent solvency intervention levels is useful for insurers. MAS' expectations on the type of corrective capital actions to be taken by insurers, and the urgency which these actions should be taken, will be referenced against these solvency levels.

¹ Basel III sets out the global standards on bank capital adequacy established by the Basel Committee on Banking Supervision.

1.7 Section 5 sets out the proposed approach with regards to risk-free discount rate, and consults on an alternative approach to the derivation of the provision for adverse deviation (or risk margin).

1.8 The RBC 2 review will not just focus solely on the quantitative aspects of capital requirements. It also seeks to enhance insurers' risk management practices. As such, the scope of the review includes qualitative aspects on Enterprise Risk Management, as outlined in Section 6.

1.9 MAS hopes to work closely with the industry on the review, as was the case when the RBC framework was first developed. We anticipate that the industry will be involved through workgroup participation, quantitative impact studies and consultation feedback.

2 COMPONENTS OF REQUIRED CAPITAL

2.1 The RBC framework requires insurers to hold capital against their risk exposures known as the Total Risk Requirements (“TRR”). Risks arising from an insurer’s assets and liabilities are grouped in to three distinct components:

- Component 1 (C1) requirement relates to insurance risks undertaken by insurers. C1 requirement for general insurance business is determined by applying specific risk charges on an insurer’s premium and claims liabilities. Risk charges applicable to different business lines vary with the volatility of the underlying business. The requirement for life insurance business is calculated by applying specific risk margin to key parameters affecting policy liabilities such as mortality, morbidity, expenses and policy termination rates.
- Component 2 (C2) requirement relates to risks inherent in an insurer’s asset portfolio, such as market risk and credit risk. It is calculated based on an insurer’s exposure to various markets including equity, debt, property and foreign exchange. The C2 requirement also captures the extent of asset-liability mismatch present in an insurer’s portfolio.
- Component 3 (C3) requirement relates to asset concentration risks in certain types of assets, counterparties or groups of counterparties. C3 charges are computed based on an insurer’s exposure in excess of the concentration limits as prescribed under the Insurance (Valuation and Capital) Regulations 2004.

2.2 The following paragraphs set out where enhancements are expected.

Inclusion of New Risk Types

2.3 The current RBC framework already captures most of the material risks such as market risk, credit risk, underwriting risk and concentration risk. For risks which are not specifically quantified under RBC, they are considered qualitatively under MAS’ risk-based supervision and MAS has the powers under the Insurance Act to impose additional capital requirements if necessary. For the RBC 2 review, MAS is reviewing the risk coverage in line with evolving global regulatory and market developments.

Spread risk

2.4 The current RBC framework takes into account the credit risk of corporate bonds² but does not capture credit spread risk. In MAS' annual stress testing exercise, insurers were found to be susceptible to credit spread shocks. This is not surprising given that insurers hold a high proportion of corporate bonds. MAS proposes to explicitly capture credit spread risk under the RBC 2 framework. This is similar to the credit spread shocks applied during stress testing. Spread risk results from the sensitivity of the value of assets and liabilities to changes in the level or in the volatility of credit spreads over the risk-free interest rate. More details are found in the section on the calibration of risk requirements (see paragraphs 2.15 to 2.22, pages 7 to 9).

Proposal 1

MAS proposes to incorporate an explicit risk charge to capture spread risk within the RBC 2 framework.

Liquidity risk

2.5 Liquidity risk is the exposure to loss in the event that insufficient liquid assets are available from the assets supporting the policy liabilities, to meet the cash flow requirements of policyholder obligations, or assets may be available, but can only be liquidated to meet policyholder obligations at excessive cost.

2.6 However, we do not propose to impose an explicit risk charge for liquidity risk as there is no well-established methodology to quantify capital requirements for liquidity risk. MAS will continue to assess the robustness of insurers' liquidity risk management through supervision.

Proposal 2

MAS proposes not to impose an explicit risk charge for liquidity risk. MAS will work with the industry to conduct liquidity stress-testing, and assess the soundness of the insurer's liquidity risk management practices as part of MAS' risk-based supervision.

² Under Table 7 of the Insurance (Valuation and Capital) Regulations 2004, a corporate bond of investment grade would attract a debt specific risk charge of 0.25% (not more than 6 months), 1.00% (more than 6 months but not more than 24 months) and 1.60% (for more than 24 months). Whilst a corporate bond of non-investment grade would attract a debt specific risk charge of 8%.

Operational risk

2.7 Operational risk refers to the risk of loss arising from complex operations, inadequate internal controls, processes and information systems, organisation changes, fraud or human errors, (or unforeseen catastrophes including terrorist attacks). Operational risk is recognised as a relevant and material risk that needs to be addressed in a supervisory framework. Currently there is no explicit risk charge for operational risk under the RBC framework, though operational risk is assessed as part of MAS' ongoing supervision of insurers. However, both Basel II and a number of major jurisdictions have explicitly introduced capital requirements for operational risk in their capital framework.

2.8 Methodologies to quantify operational risk continue to evolve globally. The insurance industry also does not presently collect sufficient operational risk data. As such, MAS intends to start off with a simplified and pragmatic method to quantify the operational risk charge, and refine its methodology in future as more data becomes available and practices are more established internationally. The proposed method is broadly similar to some of the approaches used in other jurisdictions such as the European Economic Area (under the standardised formula approach of Solvency II) and Australia.

2.9 MAS proposes to put a cap on the amount of operational risk charge such that it will not be larger than 10% of an insurer's total risk requirements. This is based on our observation on banks' operational risk charge as a percentage of the total capital requirements. There is no evidence to suggest that an insurer's operational risk would be vastly different from that experienced by a bank.

Proposal 3

MAS proposes to incorporate an explicit risk charge to capture operational risk within the RBC 2 framework, calculated as:

x% of the higher of the past 3 years' averages of (a) earned premium income; and (b) gross policy liabilities, subject to a maximum of 10% of the total risk requirements.

Where $x = 4\%$ (except for investment-linked business, where $x = 0.25\%$ given that most of the management of investment-linked fund is outsourced)

Consultation Question 1

Is this formula or bases chosen appropriate? Should we be using written premium or net policy liabilities instead? Should there be differences in the formula for different types of insurers, for example, direct life, direct general and reinsurers?

Consultation Question 2

What type of data can the insurance industry start to collect in order to build up sufficient data to better quantify or model operational risks?

Insurance catastrophe risk

2.10 While concentration risk is covered under the existing framework (as C3 risk requirements), it is only confined to asset concentration risk. The RBC framework does not capture insurance catastrophe risk, which is the risk that a catastrophe causes a one-time spike in claims experience, with a corresponding impact on claims and/or liabilities. Such claims experience can have a significant impact on an insurer's solvency, particularly if the insurer has a concentration of risks written in a particular area or business line³. Recent natural catastrophes in the region have shown that insurance catastrophe risk is a real and relevant risk to insurers here which write risks in the region.

2.11 There are a few options to explicitly address this risk under the RBC 2 framework. One option would be to require insurers to construct a catastrophe scenario that is most relevant to them and has the greatest impact, benchmarked to some target criteria⁴ (e.g. 1 in 200 year event), and work out the capital that has to be set aside to meet that event net of reinsurance arrangements. This is similar to the approach of allowing the use of internal models⁵. The second option⁶ would be for the regulator to prescribe a number of man-made and natural catastrophe scenarios. An explicit risk charge is then computed accordingly from a combination of these scenarios. The third option would be to get the insurers to stress test on a number of standardised catastrophe scenarios, and additional capital requirements would only be imposed for the insurers that are more vulnerable. This would, however, be less transparent.

³ Taking the example of the Thailand floods in late 2011, an insurer with a concentration of exposures to property risks in Thailand would be more adversely affected than an insurer which has a more diversified portfolio of risks.

⁴ As adopted in Australia for general insurance business.

⁵ As adopted under Swiss Solvency Test in Switzerland.

⁶ As adopted in Bermuda and in European Economic Area (under Solvency II).

2.12 As a target, MAS is of the view that it would be appropriate to adopt the first option, which is similar to allowing the use of internal models. This option would ensure that the catastrophe scenario constructed by each insurer is relevant to its own business and circumstances. However, we recognise that insurers would need time to build their own catastrophic risk modeling capabilities. As such, for a start, MAS proposes to adopt the second option to begin imposing specific risk charges for catastrophe risks. Under this option, MAS intends to work with the industry associations, reinsurance brokers and the other risk institutes/academia in Singapore to design relevant standardised catastrophic scenarios to derive explicit risk charges for insurance catastrophe risk.

2.13 For the life business, the explicit insurance catastrophe risk charge can be derived based on a pandemic event. It is noted that a few major jurisdictions have used 1.5 deaths per 1,000 in deriving the insurance catastrophe risk charge for its life business. We propose to adopt a similar approach.

Proposal 4

MAS proposes to incorporate an explicit insurance catastrophe risk charge in the RBC 2 framework. This would be done through prescribing a number of man-made and natural catastrophe scenarios, with an explicit risk charge computed accordingly from a combination of these scenarios. MAS intends to work with the industry associations, reinsurance brokers and the other risk institutes/academia in Singapore to design relevant standardised catastrophic scenarios. For life business, the explicit insurance catastrophic risk charge can be derived based on a pandemic event.

2.14 Currently, the offshore insurance fund of reinsurers is subject to either a simplified solvency regime (in the case of locally incorporated reinsurers) or exempted from any capital or solvency requirements altogether (in the case of reinsurance branches). MAS will, in consultation with the affected players, be reviewing the capital treatment of the offshore insurance fund for all reinsurers, whether locally or foreign-incorporated, under RBC 2. There will be a separate consultation paper on this.

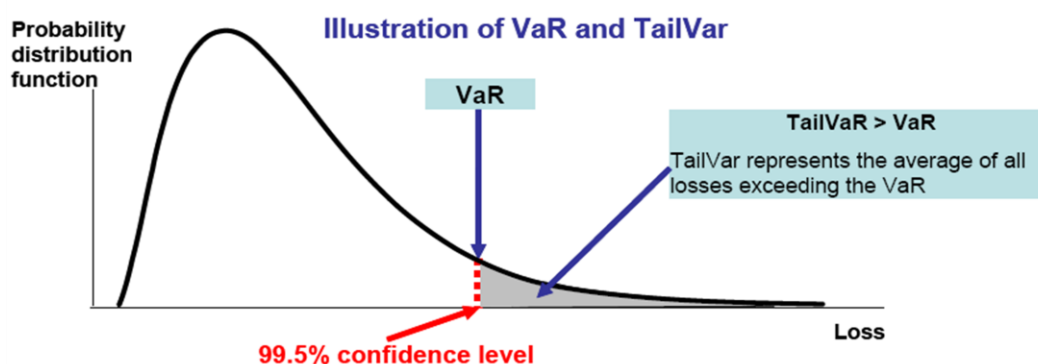
Target Criteria for Calibration of Risk Requirements

2.15 The RBC framework relies on the Fund Solvency Ratio (“FSR”) and the Capital Adequacy Ratio (“CAR”) as indicators of solvency at the fund and company level respectively. These ratios provide a snapshot of the insurer’s financial condition at a point in time, without any consideration of the confidence level and time horizon. Under

RBC 2, MAS intends to recalibrate the risk requirements based on a specified risk measure, confidence level and time horizon.

2.16 There are 2 common risk measures used internationally:

- Value at Risk (“VaR”) – this is the expected value of loss at a predefined confidence level (e.g. 99.5%). Thus, if the insurer holds capital equivalent to VaR, it will have sufficient assets to meet its regulatory liabilities with probability of a confidence level of 99.5% over a one year time horizon; and
- Tail Value at Risk (“tVaR”) – this is the expected value of the average loss where it exceeds the predefined confidence level (eg 99.5%). It is also known as the conditional tail expectation (“CTE”), expected shortfall or expected tail loss. If an insurer holds capital equivalent to tVaR, it will have sufficient assets to meet the average losses that exceed the predefined confidence level (of say 99.5%).



2.17 The VaR approach, while it has its limitations, is a generally accepted risk measure for financial risk management. It is easier to calibrate the risks under a VaR approach compared to using tVaR. However, VaR, unlike tVaR, tends to underestimate the exposure to tail events.

2.18 On balance, MAS proposes to adopt the VaR measure as it is easier to calibrate⁷. Tail VaR can be considered under the internal model approach (see paragraphs 2.25 and 2.26), if insurers deem it to be more appropriate for their business or risks. Tail event analysis can also be done during the annual industry wide stress testing exercise or the insurer’s own risk and solvency assessment (see Section 6).

⁷ Calibration under tVaR requires information on the full distribution of outcomes, Details of distribution of tail is not typically available and may require subjective assumptions being made.

2.19 MAS also proposes to adopt a time horizon of one year, and a confidence level of 99.5%. This corresponds to an investment grade credit rating and is used commonly by most of the other major jurisdictions.

2.20 There will be a change in the approach in deriving most of the asset-related risk requirements under RBC 2. Instead of applying a fixed factor on the market value (e.g. 16% on the equity market value for equity risk requirement) as per current approach, we will now apply a shock to the Net Asset (Assets less Liabilities) and measure the impact of the shock. The shock is calibrated at a VaR of 99.5% confidence level over a one year period. The new risk requirement will be equivalent to the amount of change in Net Asset for each respective risk.

2.21 For insurance risk requirements, the approach will be similar. For life business, the current insurance risk requirement is computed by applying prescribed loadings on best estimate assumptions such as mortality, lapse and expense. Under the new approach, the best estimate assumptions will be loaded up by some prescribed factors which will be calibrated at a VaR of 99.5% confidence level over a one year period which is the proposed target criteria. For general business, prescribed factors will still be applied to the premium and claims liabilities, though the factors will now be calibrated at the new target criteria.

2.22 MAS will consult separately on the data and methodology to be used for calibration, as well as on the recommended calibration factors or shock scenarios to be used to achieve the proposed new target criteria.

Proposal 5

MAS proposes to recalibrate risk requirements using the Value at Risk ("VaR") measure of 99.5% confidence level over a one year period.

MAS will be engaging the industry on the calibration exercise, and target to finalise the calibration factors/shock scenarios by 1Q 2013. Data would need to be collected for this purpose. The recommended calibration factors or scenarios will be consulted prior to its finalisation.

Diversification Benefits

2.23 Under RBC, the total risk requirements are obtained by summing the C1, C2 and C3 risk requirements. Within the C1 or C2 risk requirements, the underlying risk

requirements⁸ are also added together, without allowing for any diversification effects with the help of correlation matrices. Some major jurisdictions such as the European Economic Area (under Solvency II), Australia and Bermuda have moved towards allowing for diversification effects when combining various risk modules⁹, and even within sub-modules, using prescribed correlation matrices. This has the effect of reducing the overall regulatory capital requirements. The level of sophistication of the correlation matrices varies, and is based to some degree, on judgment.

2.24 MAS looked into the possibility of recognising diversification benefits when aggregating the risk requirements under RBC 2. However, dependencies between different risks will vary as market conditions change and correlation has been shown to increase significantly during periods of stress or when extreme events occur. In the absence of any conclusive studies to show otherwise, MAS proposes not to take into account diversification effects for the aggregation of risk requirements under RBC 2. This approach is consistent with the capital framework for banks, where we do not allow for any diversification benefits when risks are combined.

Proposal 6

MAS proposes not to allow for diversification benefits when aggregating the capital risk requirements.

MAS is, however, prepared to consider diversification benefits if the industry is able to substantiate, with robust studies and research conducted on the local insurance industry, that there are applicable correlations which can be relied on during normal and stressed times.

Use of Internal Model

2.25 MAS intends to allow insurers to use partial or full internal models to determine the regulatory capital requirements in the longer run, in line with international best

⁸ For C1 (insurance risks) for general business, premium liability and claims liability risk requirements are summed together. In the case of life business, the effects of the loadings on the best estimate assumptions (e.g. mortality, morbidity, lapse, expense, etc) are applied in an additive manner. For C2 (asset risks), the respective risk requirements are added together, for example, equity, property, debt, asset-liability mismatch, foreign currency mismatch, loan risk requirement, etc..

⁹ Examples of risk modules can be life insurance risk, general insurance risk, asset risk and counterparty risk.

Examples of sub-risk modules can be equity risk, property risk, interest rate risk, spread risk and foreign exchange risk within the asset risk module. Or mortality risk, morbidity risk, lapse risk, expense risk and catastrophe risk within the life insurance risk module.

practices. The internal models will have to be calibrated at the same target criteria as the standardised approach, and be subject to MAS' approval.

2.26 The use of internal model will be looked at under the next phase of the review, after the standardised approach has been rolled out. This will allow the larger and more complex insurers time to prepare themselves for a more sophisticated and tailored approach. MAS would also be able to check the reasonableness of the internal model assumptions and results against the experience of the standardised approach.

Proposal 7

MAS proposes to allow the use of partial or internal model in the next phase of the RBC 2 review, after the implementation of the standardised approach. The internal model, which will be subject to approval by MAS, will have to be calibrated at the same level as the standardised approach.

3 COMPONENTS OF AVAILABLE CAPITAL

3.1 The amount of capital available to meet the TRR is referred to as “financial resources” (“FR”) under the RBC framework. FR comprises three components, namely Tier 1 resources, Tier 2 resources and the provision for non-guaranteed benefits.

- Tier 1 resources are capital resources of the highest quality. These capital instruments are able to absorb losses on an on-going basis. They have no maturity date and, if redeemable, can only be redeemed at the option of the insurer. They should be issued and fully paid-up and non-cumulative in nature. They should be ranked junior to policyholders, general creditors, and subordinated debt holders of the insurer. Tier 1 resources should neither be secured nor covered by a guarantee of the issuer or related entity or other arrangement that may legally or economically enhance the seniority of the claims vis-à-vis the policyholders. Tier 1 resources are generally represented by the aggregate of the surpluses of an insurer’s insurance funds. A locally incorporated insurer may add to its Tier 1 resources its paid-up ordinary share capital, its surpluses outside of insurance funds and irredeemable and non-cumulative preference shares.
- Tier 2 resources are only applicable to locally incorporated insurers and consist of capital instruments that are of a lower quality than that of Tier 1 resources but may be available to serve as a buffer against losses incurred by the insurer. Examples of these instruments include redeemable or cumulative preference shares and certain subordinated debt. Tier 2 resources in excess of 50% of Tier 1 resources will not be recognised as FR.
- The allowance for provision for non-guaranteed benefits is applicable only to insurers who maintain a participating fund. As the allowance for provision for non-guaranteed benefits is only available to absorb losses of the participating fund, the allowance is adjusted to ensure that the unadjusted capital ratio¹⁰ of the insurer is not greater than its adjusted ratio¹¹.

Alignment with Basel III

3.2 As an integrated supervisor overseeing banking and insurance entities in Singapore, MAS seeks to ensure a level playing field across the financial sectors by

¹⁰ Unadjusted capital ratio, or CAR, is the ratio of total FR to TRR.

¹¹ Adjusted capital ratio, or adjusted CAR, is the ratio of FR (excluding FR relating to participating fund) to TRR (excluding TRR relating to participating fund).

having a consistent regulatory and supervisory framework for the regulated financial institutions. The Tier 1 and Tier 2 capital components are largely aligned between the existing RBC framework for insurers and the capital adequacy framework for banks under Basel III, with the exception of surpluses in the insurance funds or balance in the surplus account, which are insurance-specific in nature. However, Basel III has strengthened the “equity-like” characteristics needed for a hybrid capital instrument to be included in Tier 1 regulatory capital (i.e. capital of the highest quality). Besides having to show greater capacity to absorb losses, these hybrid capital instruments also need to have features that clearly enable the instrument to undergo a principle write-down or to convert into common equity in the event of a bank stress.

3.3 To align with the capital adequacy framework for banks, MAS proposes to incorporate the same Basel III features (i.e. equity conversion or write-down on breach of regulatory capital requirements) as conditions for a capital instrument to be approved by MAS as a Tier 1 resource¹² (“Approved Tier 1 Resource”).

Proposal 8

MAS proposes to incorporate the same Basel III features (i.e. equity conversion or write-down on breach of regulatory capital requirements) for the Approved Tier 1 resource.

This means that instruments that qualifies as Approved Tier 1 resource must:

- (a) automatically convert to ordinary share capital, as and when the insurer needs to absorb losses, and in any case, when the insurer breaches its regulatory capital requirement;
- (b) be subject to write down as long as losses persist, as and when the insurer needs to absorb losses, and in any case when the insurer breaches its regulatory capital requirement.

The limits on the amount of Approved Tier 1 resource that can be recognised, as set out in the existing Insurance (Valuation and Capital) Regulations 2004, will remain unchanged.

¹² As defined under sub-paragraph 1(2)(c)(iv) of the First Schedule of the Insurance (Valuation and Capital) Regulations 2004.

Treatment of Negative Reserves

3.4 For life business, policy liability is derived policy-by-policy by discounting the best estimate cash flows of future benefit payments, expense payments and receipts, with allowance for provision for adverse deviation. It is possible for the discounted value to be negative when the expected present value of the future receipts (like premium and charges) exceed the expected present value of the future outgo (such as benefit payments and expense payments), resulting in a negative reserve.

3.5 However, regulation 20(4) of the Insurance (Valuation and Capital) Regulations 2004 states that “A registered insurer shall not value the liability in respect of any liability to be less than zero, unless there are moneys due to the insurer when the policy is terminated on valuation date, in which even the value of the liability in respect of that policy may be negative to the extent of the amount due to the insurer.” This means that negative reserves are not recognised unless one expects a recovery of monies (for example, surrender penalty in the case of investment-linked policies).

3.6 Practices with regards to treatment of negative reserves differ internationally. Under Solvency II, the European Economic Area is considering recognising negative reserves¹³ as Tier 1 capital, while Canada recognises part of the negative reserves as Tier 2 capital.

3.7 MAS’ current position of not recognising negative reserves as a form of capital is a conservative one because it is akin to assuming a 100% lapse on all the policies, such that future premium receipts and charges are not recognised. In practice, the lapse rate would not be 100%. Therefore, there is scope to reconsider the current position given that under RBC 2, an insurer’s net asset value will be shocked for insurance risk, and specifically, lapse risk, at a 1-in-200 year level.

3.8 Hence, MAS would like to consult on recognising a part of the negative reserves as financial resources. We propose for this to be in the form of a positive financial resource adjustment, rather than as Tier 1 or Tier 2 capital. As the amount of negative reserves are currently sizeable in some life insurers, MAS will need to carefully review and establish a framework for calibrating the level of negative reserves that may be recognised.

¹³ Known as Expected Profits Included in Future Premiums (“EPIFP”) under Solvency II.

Proposal 9

MAS proposes to allow a part of the negative reserves to be recognised as a form of positive financial resource adjustment under Financial Resources. MAS will consult further on the amount to be recognised.

Treatment of Aggregate of Allowances for Provision for Non-Guaranteed Benefits

3.9 When assessing the quality of capital resources, insurance regulators are required under international standards to give consideration to its characteristics, including "the extent to which the resource is available to absorb losses, the extent of the permanent and/or perpetual nature of the capital and the existence of any mandatory servicing costs in relation to the capital"¹⁴.

3.10 Under the current RBC framework, as highlighted in Paragraph 3.1, an insurer maintaining any participating fund is allowed to count as financial resources, the aggregate of allowances for provision for non-guaranteed benefits ("APNGB"), subject to the unadjusted capital ratio of the insurer remaining below the adjusted ratio. However, as these allowances do not meet the qualities required of a capital instrument, MAS will be reclassifying APNGB as a form of positive financial resource adjustment ("FRA"), instead of a capital item.

Proposal 10

MAS proposes to classify Aggregate of Allowances for Provision for Non-Guaranteed Benefits, where applicable, as a form of positive financial resource adjustment, rather than as a capital item.

This applies to an insurer maintaining any participating fund, and subject to the condition that the unadjusted capital ratio remains below the adjusted capital ratio, where:

Adjusted capital ratio, in relation to the insurer, means the ratio of the financial resources of the insurer (excluding the financial resources of any participating fund) to the total risk requirement (calibrated at 99.5% VaR over a one-year period) of the insurer (excluding such requirement arising from any participating fund); and

¹⁴ As set out in IAIS' ICP 17 on Capital Adequacy.

Unadjusted capital ratio, in relation to the insurer, means the ratio of the financial resources of the insurer (including the financial resources of any participating fund) to the total risk requirement (calibrated at 99.5% VaR over a one-year period) of the insurer (including such requirement arising from any participating fund).

4 SOLVENCY INTERVENTION LEVELS

4.1 Currently, under the Insurance (Valuation and Capital) Regulations 2004, insurers have to maintain a minimum Capital Adequacy Ratio (“CAR”) of 100%. Registered insurers are also required to notify MAS about the occurrence or potential occurrence of any event that would result in the financial resources of the insurer being less than 120%, also known as the financial resources warning event. In practice, we would expect insurers to have capital management plans in place and hold a target CAR of more than 120%. In fact, all insurers generally hold at least a CAR of 150%.

4.2 International standards on capital adequacy¹⁵ prescribed by the IAIS set out two transparent triggers for supervisory intervention when assessing the capital adequacy of an insurer:

- a) Prescribed Capital Requirement (“PCR”), which is the higher solvency control level above which the insurance regulator would not intervene on capital adequacy grounds. The PCR is calibrated such that the assets of the insurer will exceed the policy liabilities and other liabilities with a specified level of safety over a defined time horizon; and
- b) Minimum Capital Requirement (“MCR”), which is the lower solvency control level at which, if breached, the insurance regulator would invoke its strongest actions, in the absence of appropriate corrective action by the insurer.

4.3 Globally, major jurisdictions are moving towards meeting the international standards of having a PCR and a MCR. MAS believes that having such transparent and clear solvency intervention levels would be most useful for insurers to better understand MAS’ expectations on the type of corrective capital actions required, and the urgency which they should be taken.

Prescribed Capital Requirement

4.4 Many insurance regulators of major jurisdictions have targeted a confidence level of 99.5% in setting regulatory capital requirements. This corresponds to an implied credit rating of at least an investment grade. MAS intends to calibrate the PCR of a solo insurer¹⁶ to the VaR of the insurer’s funds to a confidence level of 99.5% over a one

¹⁵ As set out in Insurance Core Principle 17 on Capital Adequacy

¹⁶ As set out in the Consultation paper on Insurance Group-wide Supervision which was issued in February 2012, it is proposed that the derivation of PCR and MCR for solo insurance entities will be extended to apply at the group level as well.

year period. If an insurer's capital falls below its PCR, it will need to submit a plan to restore its capital position within 3 months. As a countercyclical measure, MAS will have the flexibility and discretion to allow insurers more time to restore its capital position, for example, during periods of market stresses. For avoidance of doubt, PCR needs to be maintained at both the company level, as well as at an insurance fund level.

Proposal 11

PCR is the higher supervisory intervention level at which the insurer is required to hold sufficient financial resources to meet the total risk requirements which corresponds to a VaR of 99.5% confidence level over a one-year period.

An insurer which breaches its PCR will need to submit a plan on how to restore its capital position within 3 months. If the PCR is met, MAS will not normally intervene on capital adequacy grounds. This does not preclude MAS from requiring an insurer to maintain financial resources above the PCR if there are other supervisory concerns.

As a countercyclical measure, MAS will have the flexibility and discretion to allow insurers more time to restore its capital position, for example, during periods of market stresses.

PCR needs to be maintained at both the company level, as well as at an insurance fund level.

Minimum Capital Requirement

4.5 As for MCR, MAS plans to calibrate a solo entity MCR to the VaR of the insurer's funds to a confidence level of 90% over a one year period. This corresponds to an implied credit rating of B- and represents a 1 in 10 year event. During the calibration stage, the MCR may be expressed as a percentage of the total risk requirements required under PCR¹⁷ for ease of computation and future monitoring. For avoidance of doubt, MCR needs to be maintained at both the company level, as well as at an insurance fund level.

4.6 MAS intends to take its strongest enforcement actions if the MCR is breached. Such actions would include stopping new business, withdrawal of licence, or directing a transfer of portfolio to another insurer.

¹⁷ For example, it is noted that under Solvency II, the MCR is about 25-45% of the PCR.

Proposal 12

MCR is the lower supervisory intervention level at which the insurer is required to hold sufficient financial resources to meet the total risk requirements which corresponds to a VaR of 90% confidence level over a one-year period.

If an insurer breaches its MCR, MAS may choose to invoke the strongest supervisory action (such as stopping new business, withdrawal of licence etc).

MCR will be calibrated as a fixed percentage of the PCR. This percentage will be determined after quantitative impact studies are done.

MCR needs to be maintained at both the company level, as well as at an insurance fund level.

5 VALUATION OF ASSETS AND LIABILITIES

5.1 An insurer needs to determine the value of its assets and liabilities before computing its solvency requirements. Valuation rules for the RBC framework are specified within the Insurance (Valuation and Capital) Regulation 2004 and the relevant Notices.

5.2 Under current valuation rules, assets are to be valued at the market value, or the net realisable value, in the absence of market value. Policy liabilities are to be valued based on best estimate assumptions, with provision for adverse deviation (“PAD”). Policy liabilities for life insurance are computed using a prospective discounted cash flow method while that for general insurance consist of the premium liabilities and the claims liabilities.

5.3 We have identified two areas that will be reviewed under RBC 2.

Risk Free Discount Rate

Singapore dollar-denominated liabilities

5.4 Life insurers are currently required to calculate their policy liabilities using a prospective discounted cash-flow method, with MAS Notice 319 prescribing the use of the risk-free discount rate to determine the value of policy liabilities for non-participating policies, non-unit reserves of investment-linked policies, and the minimum condition liability of participating funds.

5.5 For Singapore dollar (“SGD”)-denominated liabilities, the risk free discount rate is:

- (a) where the duration of a liability is X years or less, the market yield of the Singapore Government Securities (“SGS”) of a matching duration as at valuation date;
- (b) where the duration of a liability is more than X years but less than Y years, a yield that is interpolated from the market yield of the X year SGS and a stable long term risk free discount rate (“LTRFDR”); and
- (c) where the duration of a liability is Y years or more, a stable LTRFDR.

The stable LTRFDR is to be calculated according to the following:

- (a) compute the average daily closing yield of the X-year SGS since its inception;

- (b) compute the average daily yield differential between the X-year and Y-year SGS since the inception of the Y-year SGS;
- (c) derive an estimate long-term yield by summing the values obtained under subparagraphs (a) and (b);
- (d) compute the prevailing average daily closing yield of the Y-year SGS over the past 6-month period;
- (e) allocate 90% weight to the estimated long-term yield obtained in subparagraph (c), and 10% to the prevailing average yield under subparagraph (d).
- (f) The LTRFDR is then obtained by summing the two values in (e).

Currently, X and Y are 10 and 15 respectively. With effect from 1 Jan 2013, X and Y will be 15 and 20¹⁸.

5.6 When RBC was first introduced in 2005, the longest dated SGS available then was the 15-year SGS (which was incepted in 2001). Recognising that the 15-year SGS might not be liquid enough and could cause undue volatility in the risk-free discount rate as well as policy liabilities at the longer end, the LTRFDR formula was introduced. The use of a weighted average formula has kept the LTRFDR "sticky" and value of policy liabilities steady. Whilst this is reflective of the underlying nature of long-term life insurance liabilities, it makes liability values less sensitive to market movement in yields, resulting in short-term earnings volatility due to differences in discounting of the assets and liabilities.

5.7 We now have 20-year (incepted in 2007) and 30-year SGS (incepted in 2012) available in the market. With effect from 1 January 2013, the 20-year SGS yield will be used in the derivation of the risk-free discount rate, that is, X and Y will be 15 and 20 years respectively in the formula set out in Section 5.5. MAS intends to further enhance the market consistency of the discount rate by incorporating the use of 30-year SGS yield.

Proposal 13

MAS proposes the following two approaches with regards to the risk-free discount rate for SGD-denominated liabilities.

¹⁸ MAS 319 has been recently amended to reflect the change.

(a) To keep to the same LTRFDR formula as set out in paragraph 5.5, but X and Y will now be 20 and 30 respectively. This is on the expectation that the 30-year SGS will have adequate liquidity when RBC 2 is implemented. This means:

- Durations 0 to year 20: Use prevailing yields of SGS
- Durations 30 year and above: 90% of historical average yields (since inception) and 10% of latest 6-month average yield of 30-year SGS
- Durations 20 to year 30: Interpolated yields

(b) To remove the LTRFDR formula altogether, ie.,

- Durations up to 30 Years: Use prevailing yields of SGS
- Durations 30 year and above: Keep the yield flat at the prevailing yield of 30-year SGS

Consultation Question 3

Which of the above approaches is more appropriate?

Consultation Question 4

Should MAS allow for some illiquidity premium adjustment in the risk-free discount rate for valuing certain portfolios such as annuity business?

5.8 We also considered the feasibility of using swap rates, instead of SGS, for discounting purposes. Some jurisdictions have moved to using swap rates for valuing policy liabilities, and a few insurers have asked MAS to consider similar approaches in Singapore. These insurers have fed back that the swap curve, extending to longer durations with rates determined by market forces, would provide a more accurate representation of risk-free market yields, with appropriate adjustments for credit risk.

5.9 MAS notes that the use of swap rates is typically allowed in certain jurisdictions because of insufficient supply of sovereign government bonds. In some countries, the bond market may not be as developed or liquid as the swap market. In fact, it is noted that where swaps do not exist or are not sufficiently liquid and reliable, the risk-free discount rate used for valuation should have reference to the government yield curve in

that currency. In Singapore, given that the government securities market is still more liquid and deep than the swap market¹⁹. MAS proposes to retain the use of SGS yields.

5.10 It is currently provided in MAS 319 that where an insurer implements an effective cash flow hedge or fair value hedge as defined under FRS 39 of the Accounting Standard, the insurer may elect to use the market yield of the SGS of a matching duration as at the valuation date for valuing such hedged Singapore dollar policy liabilities. For the hedged policy liabilities that have a duration exceeding the maximum duration available on the SGS yield curve, the market yield for the maximum duration SGS available shall be used. Where an insurer has elected to use the market yield of the SGS of a matching duration, it shall continue to do so as long as the designated liabilities remain a hedged liability as defined under FRS 39. MAS may at any time require the insurer to produce all necessary documentary evidence on the hedging of such policy liabilities within such time as may be specified by MAS. For the avoidance of doubt, MAS will be retaining this flexibility under RBC 2.

Non-SGD denominated liabilities

5.11 For liabilities denominated in a currency other than SGD, MAS 319 states that the risk-free discount rate to be used is the market yield of the foreign government securities of similar duration at the valuation date. Unlike for SGD-denominated liabilities, there is no similar concept of a LTRFDR here.

5.12 In the case of non-SGD denominated liabilities, MAS proposes to require insurers to follow the regulatory requirements pertaining to discounting as prescribed by the insurance supervisory authority in the jurisdiction issuing the currency. For example, for US-dollar denominated liabilities, the insurer will discount its liabilities according to the discounting requirements set by the National Association of Insurance Supervisors (“NAIC”) in US. For liabilities denominated in currencies of European Economic Area member states, the insurer will discount its liabilities according to the discounting requirements set by the European Commission under Solvency II. This proposal is premised on the fact that the insurance regulator in the jurisdiction issuing the currency will be best placed to set the discount rate for its home currency.

Proposal 14

MAS proposes that insurers follow the regulatory requirements pertaining to discounting as prescribed by the insurance supervisory authority in the jurisdiction issuing the

¹⁹ A comparison of the bid-ask spreads of the 5-, 10-, 15-, 20- and 30- year SGS versus that of the interest rate swaps of the same duration, shows that the bid-ask spreads of the interest rate swaps are higher and more volatile .

currency, for valuing non-Singapore dollar denominated liabilities for both life and general business.

Consultation Question 5

If the relevant foreign supervisory authority has not prescribed any basis for discounting the liabilities denominated in that home currency, what should be the approach taken? Should the risk-free discount rate be the market yield of the foreign government securities of similar duration, and the yield kept flat for liabilities extending beyond the longest available government securities?

General insurance policy liabilities

5.13 MAS 319 is currently applicable to insurers writing life business only. For general business, it is stated in guidelines ID 01/04 that discounting of liabilities should be carried out where the impact of such discounting is material. Where discounting of liabilities is used, the discount rate adopted should be the gross redemption yield as at the valuation date of a portfolio of government bonds (where applicable) with its currency and expected payment profile (or duration) similar to the insurance liabilities being valued.

5.14 MAS proposes to extend the discounting requirements for life business (as set out in the previous proposals) to general business. However, this would apply only to liabilities with durations above 1 year.

Proposal 15

MAS proposes to extend the discount rate requirements for life business to general business as well, for liability durations above 1 year. For liability duration of 1 year and less, no discounting would be required.

Provision for Adverse Deviation

5.15 Under the current RBC framework, policy liabilities for both life and general insurance business are to be determined using best estimates and a provision for adverse deviation ("PAD") (commonly known as a risk margin).

- For general business, the PAD for both claims liability and unexpired risk reserves are to be calculated at the 75% level of sufficiency, as set out in the Insurance (Valuation and Capital) Regulations 2004.
- For life business, MAS 319 requires the PAD to be determined using more conservative assumptions so as to buffer against fluctuations of the best estimate experience. The determination of the level of PAD is left to the professional judgment of the appointed actuaries, who are bound by the guidance note²⁰ issued by the Singapore Actuarial Society ("SAS").

A common method adopted by the appointed actuaries is for the loadings for policy liabilities with PAD to be calculated as half of the prescribed loadings²¹ for modified policy liabilities and modified minimum condition liabilities for the participating policies. Put simply, the PAD is roughly half of the C1 risk requirements.

5.16 Internationally, there are a number of methods being used for deriving PAD or risk margin. One method which is gaining prominence (as prescribed in Solvency II and the Swiss Solvency Test) is the cost-of-capital method. This method reflects the return on the capital a buyer would need to support the liabilities acquired from the holder over the whole run-off period. This method involves applying a cost-of-capital rate to projected risk charges and then discounting the calculated cost of capital at the risk-free rate of interest, to obtain the applicable risk margin. Both Solvency II and the Swiss Solvency Test adopt a cost-of-capital rate of 6% per annum. This rate corresponds to the spread above the risk-free interest rate that an investment grade insurer would be charged to raise capital for the portfolio, and is also consistent with what is assumed in the VaR assumptions under risk calibration.

²⁰ Section 4.13 of SAS GN L02 on Valuation of Policy Liabilities of Life Insurance Business

²¹ As set out in paragraphs 4(2) and 4(3) of the Third Schedule of the Insurance (Valuation and Capital) Regulations 2004

5.17 Although it is harder to compute, the cost-of-capital method has been assessed as the most market consistent in practice by some studies²². As such, MAS would like to seek the industry's views on using the cost-of-capital method in determining PAD.

Consultation Question 6

Do you agree that the cost-of-capital approach, for computing the provision for adverse deviation for both life and general insurance liabilities, is appropriate?

If so, do you agree that it is appropriate to adopt a cost-of-capital rate of 6% per annum? As there is no evidence to suggest that the cost of providing the amount of available capital to support the policy liabilities would be substantially different for life and general insurers, a uniform rate has been proposed for all types of insurers.

²² The International Association of Actuaries conducted a study which assessed each of the risk margin methods against IAIS' characteristics.

6 ENTERPRISE RISK MANAGEMENT

6.1 The RBC 2 review is not solely limited to the quantitative elements of the RBC framework; it also focuses on MAS’ continuing efforts to improve industry standards on governance, controls and in particular, risk management practices.

6.2 MAS has already issued a set of comprehensive guidelines on risk management practices²³ that applies both to a financial institution in general, as well as to an insurer specifically. The guidelines cover board and senior management, internal control, credit risk, market risk, technology risk, operational risk (business continuity management and outsourcing), insurance core activities and insurance fraud. MAS is looking at further enhancing the risk management guidelines to adopt a more holistic and enterprise-wide risk management framework, in line with evolving international standards²⁴ on Enterprise Risk Management (“ERM”) and best practices.

6.3 The ERM requirements, which we will consult on and expect to issue by the end of this year, will go beyond addressing risks in each activity or function. The new requirements will set out MAS’ expectations on how insurers identify and manage the interdependencies between key risks, and how this will be translated into strategic management actions and capital planning.

6.4 The international standard on ERM advocates ERM systems to have close linkages between ongoing operational management of risk, longer-term business goals and strategy, and economic capital management so as to ensure optimal financial efficiency, and sufficient levels of solvency to ensure adequate protection of policyholders. An insurer will be expected to carry out its own risk and solvency assessment (“ORSA”). The ORSA is a self-driven process by the insurer to assess the adequacy of its risk management practices, and both current and future solvency positions. The Board and senior management of the insurer are expected to take ownership of the process, which should be well-documented. In assessing its overall solvency needs, all identified relevant and material risks are to be subjected to rigorous stress and scenario testing.

6.5 We expect insurers to undertake its ORSA regularly and effectively, giving due consideration to the dynamic interactions between risks, and the link between risk management, business strategy and capital management. The sophistication of an insurer’s ERM framework should be commensurate with the nature, scale and complexity of the risks that it bears.

²³Guidelines can be assessed via the following link:

http://www.mas.gov.sg/legislation_guidelines/risk_mgt/Guidelines_on_Risk_Management_Practices.html

²⁴ As set out in IAIS’ ICP 16 on Enterprise Risk Management.

Proposal 16

MAS proposes to introduce Enterprise Risk Management requirements, including those relating to Own Risk and Solvency Assessment, to insurers. We will consult industry on the ERM requirements and target to issue a final document by end of 2012.

7 PROPOSED TIMELINE

7.1 MAS' proposed timeline for the various reviews outlined in Sections 2 to 5 of this paper are as follows:

- Finalise the calibration factors by 1Q 2013. During the calibration stage, insurers would be involved in a few rounds of quantitative impact studies;
- Finalise the changes to the Insurance (Valuation and Capital) Regulations 2004 and Insurance (Accounts and Statements) Regulations 2005 by 2Q 2013;
- Implement the RBC 2 requirements (with the exception of the insurance catastrophe risk charges which may need more time) for accounting year ending 31 Dec 2013. There will be at least 2 years of parallel run with the existing RBC framework, where the total risk requirements under RBC 2 framework would be subject to a floor of a specified percentage of the total risk requirements under the existing RBC framework. This is to prevent any sudden release in capital requirements;
- Commence work on the internal model approach with the industry after the implementation of RBC 2.

Proposal 17

MAS proposes to implement the RBC 2 requirements for the accounting year ending 31 December 2013. There will be at least 2 years of parallel run with the existing RBC framework and appropriate floors imposed to prevent sudden release in capital requirements.



Monetary Authority of Singapore