1 Introduction

Securities Clearing and Settlement Systems and the Role of Central Banks

1 Securities Clearing and Settlement Systems (SCSS)\(^1\) are key components of the financial market infrastructure. They improve the functioning of financial markets by concentrating transaction flows and establishing market standards for securities clearing and settlement processes. If these systems are insufficiently protected against risk, disruptions within them may trigger or transmit further disruptions amongst participants or systemic disruptions in the financial area. SCSS that are capable of transmitting disruptions in this way are considered systemically important.

2 In recognition of the importance of SCSS, many central banks and financial regulators oversee these systems to promote their safety and efficiency so as to facilitate the smooth functioning of financial markets and the financial system.

3 This document provides an overview of the roles and responsibilities of the Monetary Authority of Singapore (MAS) in relation to securities clearing and settlement systems in Singapore. It complements MAS’ Monograph on the “Objectives and Principles of Financial Supervision in Singapore”. In particular, it sets out in greater detail, information on some of MAS’ activities relevant to achieving its supervisory objective of a safe and efficient financial infrastructure.\(^2\)

Roles and Responsibilities of MAS

Owner and Operator

4 MAS is the owner and operator of the SCSS for Singapore Government Securities (SGS). This system is a subsystem of Singapore’s high value payment system, the MAS Electronic Payment System (MEPS), and is known as MEPS-SGS. MAS has developed an internal oversight framework for MEPS that covers MEPS-SGS. A separate department within MAS from those that use and operate MEPS carries out the oversight function.

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\(^1\) In this document, the term “securities” is used to mean both securities and derivatives products. “Securities Clearing and Settlement Systems” are therefore systems that clear and settle transactions in both securities and derivatives products.

\(^2\) This was one of the six Objectives of Supervision set out in the “Objectives and Principles of Financial Supervision in Singapore” Monograph.
**Regulator**

5 MAS has explicit responsibility for the regulation of clearing houses approved under the Securities and Futures Act (SFA). Under the SFA, SCSS are referred to as “clearing facilities”, and operators of SCSS approved and regulated by the Authority are known as “clearing houses”.

6 Presently, there are two approved clearing houses both operated by the Singapore Exchange Limited (SGX) – namely, the Central Depository (Pte) Limited (CDP) for transactions in securities, and the Singapore Exchange – Derivatives Clearing Limited (SGX-DC) for transactions in derivatives.

(a) CDP is a wholly-owned subsidiary of SGX. It operates the SCSS for:

   (i) The clearing and settlement of trades in securities (whether equities or debt instruments) executed on the market operated by the Singapore Exchange Securities Trading Limited (SGX-ST), for which CDP acts as a central counterparty; and,

   (ii) The settlement of trades in debt instruments done over-the-counter directly between counterparties, for which CDP does not act as a central counterparty.

(b) SGX-DC clears and settles transactions in derivatives executed on the Singapore Exchange Derivatives Trading Limited (SGX-DT). In this process, SGX-DC acts as a central counterparty to its participants.
2 SCSS Oversight Objectives and Arrangements

Oversight Objectives

1 MAS seeks to promote the safety and efficiency of SCSS in Singapore through an active oversight role.

Safety

2 SCSS are important nodes in the financial system. Their failure may amplify systemic risks by seizing up financial flows, undermining the fulfilment of obligations and transmitting shocks from one institution to another. The safe operation of SCSS is therefore essential for preserving stability in the financial system.

3 A safe SCSS requires an understanding of the risks that arise from clearing and settlement processes. To improve the safety of a SCSS, these risks should be effectively managed by the operator and participants of the SCSS.

Efficiency

4 SCSS should also be efficient in helping to reduce friction, lower costs, and maximise the economic benefits of financial intermediation. Improvements to the safety and reliability of SCSS must be judiciously balanced against the costs of doing so.

5 Promoting the efficient operation of SCSS requires an understanding of the SCSS’ cost structure and design. To improve the efficiency of SCSS, costs need to be kept reasonable and the system should meet the needs of its users without being unnecessarily complex.

International Standards

6 In assessing the safety and efficiency of SCSS, MAS relies on the systems’ compliance with standards such as the CPSS-IOSCO Recommendations for Securities Settlement Systems and the CPSS Core Principles for Systemically Important Payment Systems.3 These are

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3 CPSS is the Committee on Payment and Settlement Systems. For more information on CPSS, refer to the website of the Bank of International Settlements at http://www.bis.org/. IOSCO is the International Organisation of Securities Commissions. For more information on IOSCO, refer to its website at http://www.iosco.org/.
internationally accepted standards to encourage safer and more efficient design and operation of SCSS.

**Oversight Arrangements**

7 In MAS, the Specialist Risk Supervision Department (SRD) oversees payment systems and SCSS that are owned and operated by MAS, while the Securities and Futures Supervision Department (SFD) has supervisory responsibility for SCSS regulated under the Securities and Futures Act (SFA).

8 SRD and SFD work closely on issues related to SCSS. Both departments are represented in MAS’ committees such as the Payment and Settlement Steering Committee and the Financial Infrastructure Committee. These committees serve as fora for discussing issues relating to policies, legislation and the operation of SCSS. Significant initiatives resulting from these discussions are taken to senior management within MAS and to the industry for broader consultation.

9 MAS regularly reviews the legislation and policies relating to SCSS with a focus on improving the safety and efficiency of these systems. The review process includes industry consultation on any proposed legislative amendments, and changes to agreements and operating rules.

10 The subsequent chapters of this document describe how MAS carries out its responsibilities – in the oversight of MEPS-SGS, and as a regulator of clearing houses approved under the SFA – to achieve its oversight objectives.
3 Oversight of MEPS-SGS

To achieve its objectives of safety and efficiency, MAS’ oversight of MEPS focuses on three main areas – governance framework, legal framework and operational reliability.

Governance Framework

MAS has implemented a governance framework for MEPS that provides for a clear decision-making process, accountability and transparency. It consists of:

(a) An inter-departmental committee that formulates and advises management on policies relating to systemically important systems;

(b) A department responsible for the oversight of payment and settlement systems and for the review of policies and procedures relating to these systems; and

(c) Internal and external audits, which are carried out for MEPS at regular intervals.

The inter-departmental Payment and Settlement Steering Committee (PSSC) is responsible for formulating and advising management on policies associated with systemically important payment and settlement systems (PSS) and other systems directly linked to them. PSSC makes recommendations relating to PSS policies and projects to MAS management and is the approving authority for operational policies and implementation issues on PSS projects.

The Specialist Risk Supervision Department (SRD) has responsibility for the oversight of payment systems and MEPS-SGS, and is not involved in the day-to-day operation of MEPS-SGS. Specifically SRD develops financial market infrastructure policies and strategic initiatives relating to the safety and efficiency of Singapore’s payment system. SRD also assesses MEPS’ compliance with international standards and makes recommendations for improvements.

MAS’ oversight framework for MEPS-SGS is the same as that for MEPS, as MEPS-SGS is a sub-system of MEPS. References to MEPS in this section should therefore be read as including references to MEPS-SGS.

Self-assessments of MEPS against the CPSS-IOSCO Recommendations for Securities Settlement Systems and the CPSS Core Principles for Systemically Important Payment Systems have been completed.
Users of MEPS are consulted whenever there are policy or system changes. For example, MEPS’ participants and members of the Association of Banks in Singapore were consulted on the systems requirements and project implementation schedule in the MEPS+ project.  

Audits for MEPS are carried out at regular intervals. Internal audits are carried out by MAS’ Internal Audit Department (IAD) and external audits are carried out by the Auditor-General’s Office (AGO). Audits by IAD include reviews of system security and operational controls. External audits by AGO are restricted to such tests as are necessary for the overall audit of MAS' financial statements. Results of the audits are presented to MAS’ Senior Management and the Audit Committee.

**Legal Framework**

A legal framework defines the relationships, rights and obligations of the operator and the participants of MEPS. The legal framework of MEPS includes:

(a) Laws that empower MAS to operate MEPS and provide certainty to settlement finality and netting arrangements; and

(b) Service Agreement and Operating Rules that define the rights and obligations of MAS as the operator of MEPS and the participants.

Section 29A of the MAS Act empowers MAS to establish and operate one or more Real Time Gross Settlement systems; to enter into agreements with participants and issue to the participants in writing, rules for the operation of the settlement system; and to establish linkages to other SCSS. MAS also administers the Payments and Settlement Systems (Finality and Netting) Act which gives certainty to netting arrangements and provides settlement finality to transactions of systems designated under the Act. MEPS is a designated system under the Act.

The MEPS Service Agreement and Operating Rules define the rights and obligations of the operator and the participants. The Service Agreement sets out the payment charges, the circumstances under which participation may be terminated, and actions to be taken by the operator of the system in the case of a participant’s default. The Operating Rules set out the participants’ responsibilities in relation to their front-end systems, and the operator’s responsibilities in relation to the host system and the general administration of the system.

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6 MEPS+ is a new real time gross settlement system in Singapore to replace MEPS.  
7 The MEPS Service Agreement is an agreement between MAS, as the operator of MEPS, and the participants of the MEPS.
Safeguards to Maintain Operational Reliability

MAS has a number of safeguards in place to maintain MEPS’ operational reliability. They include:

(a) Full redundancy for each of MEPS’ components;

(b) Ongoing monitoring of MEPS’ activities to detect and respond to any exceptions; and

(c) Business continuity arrangements.

Each of the components of MEPS’ operations - hardware, software, telecommunications network and power supply - have been designed with full redundancy capability to eliminate any one single point of failure. MEPS’ activities are monitored by MAS’ Information Technology Department data centre in order to detect and respond to any exceptional conditions promptly. System utilisation and capacity is monitored on a regular basis to ensure optimal performance. Staff are also guided by procedures and automated job scheduling systems to carry out periodic administrative tasks, such as backups, change management and problem logging and resolution.

Business continuity plans are documented and are subjected to periodic reviews. MAS maintains a disaster recovery “hot” backup site at a remote location and tests this fail-over arrangement with the industry on an annual basis.
4 **Regulation of SCSS under the SFA**

1. Under the Securities and Futures Act (SFA), SCSS are known as “clearing facilities”. Any person seeking to establish a clearing facility in Singapore has to be approved by MAS as a “clearing house” [s50(1)], unless otherwise exempted. The framework for MAS’ regulation of clearing houses, to achieve its objectives of safety and efficiency, is found in Part III of the SFA.

2. MAS’ regulatory and supervisory functions in relation to clearing houses can be divided into three broad categories – authorisation, on-going supervision, and oversight of business rules.

**Authorisation**

3. All applications by operators of clearing facilities seeking to be approved by MAS as clearing houses, have to be lodged with MAS in the manner, and with the required forms and documents, as stipulated in the Securities and Futures (Clearing Facilities) Regulations [Reg 4]. To defray the costs of processing, an application fee must also accompany the application [Reg 5].

4. In reviewing the application, MAS assesses the applicant’s ability to meet the requirements set out in s51(4). In particular, MAS will look very closely at the following aspects of an application:

   (a) Past experience and competency of the management in operating clearing facilities or related businesses;

   (b) Sound governance arrangement that ensures appropriate oversight of the applicants’ clearing and settlement operations by senior management, and promotes clear lines of responsibility and accountability;

   (c) Thorough discussion of the risks arising in the operation of the clearing facility, including risks that its participants would be

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8 In this section, frequent references will be made to specific sections of the SFA or specific regulations in the Securities and Futures (Clearing Facilities) Regulations e.g. “s50(1)” refers to section 50(1) of the SFA, while “Reg 11” refers to Regulation 11 in the Securities and Futures (Clearing Facilities) Regulations.

9 Refinements to SFA Part III are being drafted to reflect changes to be made to our regulatory framework for clearing houses. As part of these refinements, our regulatory objectives of safety and efficiency would also be more explicitly stated. This note will be amended accordingly to reflect changes to SFA Part III, once these have been implemented.
exposed to, and a robust framework for the management of these risks;

(d) A clear and coherent set of rules supporting all key aspects of the operations of the clearing facility;

(e) Information technology systems that the applicant would employ, focusing especially on proven capabilities and operational reliability of critical systems; and,

(f) The availability of sufficient resources to carry out the operations of the clearing facility, to manage the risks associated with the facility, and to meet contingencies.

5 If the application has been lodged in accordance with the Regulations, and MAS is satisfied that the applicant can fulfill all the requirements under s51(4), then the applicant will be approved as a clearing house. The approval may be subject to conditions or restrictions, such as a restriction on the product classes that may be cleared by the corporation, or a restriction on the markets for which the corporation may clear trades.

**On-going Supervision**

6 On an ongoing basis, an approved clearing house will have to meet its authorisation requirements (see paragraph 4.4 above), as well as any conditions or restrictions that MAS may impose on it [s54(1)]. MAS performs on-going supervision of clearing houses to satisfy itself that such obligations are being met by clearing houses.

**Supervisory Assessment**

7 MAS periodically performs a supervisory assessment of the clearing house’s compliance with its statutory obligations, which takes into account the following:

(a) Information from an annual self-assessment report that the clearing house is required to submit, describing how it has discharged its responsibilities under the SFA and Regulations [Reg 11(1)];

(b) The effectiveness of the measures implemented to manage the risks of the clearing house;

(c) New initiatives introduced by the clearing house having significant implications for the risk exposure of the clearing house, or its participants;
(d) Operational reliability of critical information technology systems, taking into consideration any disruptions to these systems during the period of assessment, and how the problems have been rectified;

(e) Regulatory concerns identified from monitoring of the clearing house’s activities during the period of assessment, and from MAS’ inspections; and,

(f) Other topical areas of regulatory concern, depending on the external environment and market trends.

In making the supervisory assessment, MAS will consider the extent to which international standards on clearing and settlement have been met. In particular, MAS considers the *CPSS-IOSCO Recommendations for Securities Settlement Systems* to be the key set of international standards against which clearing houses should benchmark themselves. CDP has completed its responses to the key questions on the implementation of the *CPSS-IOSCO Recommendations for Securities Settlement Systems* and the responses are published on CDP’s website at the following URL: http://www.cdp.com.sg/

**Supervisory Programme**

The supervisory assessment provides the basis for planning MAS’ supervisory programme for the clearing house. The supervisory programme consists of two main elements – inspections and supervisory review.

**Inspections**

The scope of each inspection would vary according to the risks identified in the supervisory assessment. The SFA provides that MAS may inspect a clearing house, and require the clearing house to produce books, provide information and grant access to its facilities as required [s150].

**Supervisory Review**

A supervisory review includes:

(a) Regular meetings with the management of the clearing house, where MAS would seek updates on developments in the business of the clearing house, and discuss key risk management issues; and,

(b) Review of reports submitted by the clearing house. As mentioned in paragraph 4.7 (a) above, clearing houses are required to submit on an annual basis a self-assessment report [Reg 11(1)]. In
addition, the clearing house must submit an annual report prepared in accordance with the Companies Act, and the directors’ report and statement [Reg 12]. The SFA also provides that MAS may also generally require clearing houses to submit reports relating to the business of the clearing house either on a regular or an ad hoc basis [Reg 11(2)].

Oversight of Business Rules

Importance of Business Rules

A clearing house is the central node in a system comprising the clearing house and its participants. Given their direct interface with their participants, clearing houses are expected to have systems in place to manage their risk exposure to their participants.

As a clearing house’s relationship with its participants is generally governed by its business rules, such business rules should clearly set out the clearing and settlement processes, including any requirements imposed on the participants for risk management purposes e.g. financial resources, margining, etc.

This principle is articulated in the SFA, which requires that the business rules of a clearing house must make satisfactory provision for the proper regulation and efficient operation of the facility, as well as the proper regulation and supervision of its participants [s51(4)(e)]. In addition, the SFA imposes a statutory requirement for clearing houses to enforce compliance by its participants with its business rules [s51(4)(d)].

The business rules of a clearing house, which are statutorily deemed to be a contract between the clearing house and each participant [s58(1)], therefore play a key role in establishing the powers of the clearing house and the obligations of its participants in the clearing and settlement process. This not only provides the legal basis for actions taken by the clearing house in the management of its risks, but also provides for clarity and transparency in the clearing house’s operations.

Given the key role played by business rules in the context of the clearing house’s operations and risk management, the clearing house is required to notify MAS should it decide to make any amendments to its business rules [s59(1)]. MAS is empowered to then disallow, or to alter or supplement the proposed rule amendment [s59(3)].
**Default Rules and Clearing House Protection in the Event of Insolvency**

In the event of a participant’s default, the clearing house has to react quickly to isolate the defaulting participant and minimise the impact of the default on its other participants. The broad framework for the clearing house’s actions under such circumstances is provided in the clearing house’s default rules, which are part of its business rules.

To protect a clearing house that operates in Singapore, and thereby all the participants that utilise its facilities, SFA Part III Division 3 provides an exception to the laws of insolvency where a participant of a clearing house defaults on its obligations. By giving primacy to the default rules of the clearing house over the laws of insolvency, SFA Part III Division 3 enhances the safety of clearing houses.