

2011/12 Assessment of Clearing and Settlement Facilities in Australia

SEPTEMBER 2012

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ISSN 2201-1226 (Online)

1. Introduction and Executive Summary

Under the *Corporations Act 2001*, a licensed clearing and settlement (CS) facility must comply with the Reserve Bank's *Financial Stability Standards* (FSSs) and do all other things necessary to reduce systemic risk. The Reserve Bank (the Bank) is required to assess annually how well each CS facility is complying with these obligations.

Currently, five CS facilities are licensed to operate in Australia. Of these, two are central counterparties (CCPs) – ASX Clear Pty Limited (ASX Clear) and ASX Clear (Futures) Pty Limited (ASX Clear (Futures)) – and three are securities settlement facilities (SSFs) – ASX Settlement Pty Limited (ASX Settlement), Austraclear Limited (Austraclear) and IMB Limited (IMB).

This report presents the Bank's annual Assessment of the four licensed CS facilities in the ASX Group (ASX). All four facilities were found to have complied with the relevant obligations in the Assessment period.

IMB is a building society that also operates a market for trading in its own shares by its members, and an associated SSF to settle these trades.¹ In light of its small size and limited scope, the operations of IMB's SSF are unlikely to have implications for the stability of the financial system and therefore its activities are not covered in this report.

Developments in 2011/12

The number of trades on the equities and derivatives markets served by the ASX CCPs increased in 2011/12. However, consistent with a broad fall in equity prices, the overall value of cash equity trading fell slightly. Volatility in market prices was higher overall and contributed to an increase in the margins collected on derivatives positions by ASX Clear and ASX Clear (Futures). However, for cash equities, despite the increased volatility, the notional margins calculated (not currently collected) by ASX Clear fell, due in part to the decrease in value traded. This was also reflected in a lower value of cash equity settlements by ASX Settlement. The value of debt securities settled by Austraclear was broadly unchanged.

There were also a number of important regulatory developments in 2011/12. These included a review of the framework for regulation of financial market infrastructures in Australia, public consultation on the central clearing of over-the-counter (OTC) derivatives in Australia, and the finalisation of the new *Principles for Financial Market Infrastructures* (the Principles) by the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO).

Also during the period, Chi-X Australia Pty Ltd (Chi-X) commenced offering trading in ASX-listed equities. Chi-X's trades are cleared and settled by ASX Clear and ASX Settlement, respectively, via a Trade Acceptance Service developed by ASX.

¹ IMB's SSF is currently exempt from the FSSs, since the value of financial obligations it currently settles in any financial year falls well below the \$100 million threshold value specified in the relevant Standard. According to data reported to the Australian Securities and Investments Commission, the value of shares traded on IMB's market in the 12 months to 24 February 2012, and settled by IMB's SSF, was \$5.3 million.

Central counterparties

Both CCPs continued to improve their risk and operating frameworks over the Assessment period. In particular, the facilities made changes in the following areas:

- *CME SPAN.* ASX has introduced CME SPAN, a widely used margining system, at ASX Clear (Futures) and will do so shortly at ASX Clear. This is expected to facilitate better calibration of exposures to ASX's risk tolerance, and will consolidate the two CCPs' risk management for derivatives on a common platform.
- *Default management.* ASX's CCPs successfully handled the default of the MF Global Holdings Limited subsidiaries in November 2011, in accordance with their default management framework. ASX nevertheless continues to review and enhance its default management arrangements on an ongoing basis and has implemented some changes in response to lessons learned from this event.
- *Participant monitoring.* ASX improved its participant monitoring processes by refining its participant 'watch list'; in particular, arrangements were put in place to coordinate actions and information sharing between different areas within ASX. ASX also increased its face-to-face engagement with participants, and progressed a number of projects related to monitoring participants' compliance with ASX's rules.
- *Participation requirements.* From 1 January 2012 the minimum 'core capital' requirement for participants that offer third-party clearing was increased from \$10 million to \$20 million. Subject to further review in late 2012, an increase in the minimum core capital requirement for all other participants, from \$5 million to \$10 million, is planned for January 2014.

The Bank welcomes these measures, which should further enhance the CCPs' risk management frameworks. Progress has also been made by ASX Clear to introduce routine margining of cash equities. However, the Bank notes that this work has fallen behind the intended time frame, with implementation now scheduled for June 2013. While the Bank appreciates the complexities involved in implementing cash equity margining, and fully acknowledges the competing demands on participants' technology resources, this remains an important improvement to risk management at ASX Clear. Furthermore, the implementation of new FSSs, aligned with the Principles, in 2012/13 will require that margining arrangements are in place. While, as a general matter, transitional arrangements will be considered in implementing the new FSSs, the Bank is not considering transitional relief for the application of routine margining of cash equities beyond 30 June 2013. The Bank therefore expects collection of margin to be implemented in line with ASX Clear's revised timetable and will continue to monitor developments over the coming months.

Securities settlement facilities

Other than the operational and strategic developments discussed below, there were no material developments in Austraclear over the Assessment period.

ASX Settlement, however, continued to refine its settlement process, in accordance with recommendations in the Bank's 2008 *Review of Settlement Practices for Australian Equities*.² In particular, in August 2012, ASX finalised an agreement with authorised deposit-taking institutions that act as Payment Providers within the system to establish an earlier deadline for authorisation of the funding of settlement participants' obligations. The Bank welcomes this development. Setting an earlier deadline reduces the potential for settlement delay and should therefore mitigate the possibility that uncertainty over a participant's ability to meet its obligations affects confidence in the market at large. The Bank also welcomes the forthcoming introduction of so-called

² The Review is available at <<http://www.rba.gov.au/payments-system/clearing-settlement/review-practices/index.html>>.

'prolonged margining' of low exercise price options (LEPOs) using CME SPAN as a permanent solution to manage the risk around LEPO expiries.

Also in 2011/12, ASX Settlement developed two new settlement services: a delivery-versus-payment (DvP) settlement service for non-ASX listed securities; and a payment and unit allocation service for managed funds. In extending DvP settlement to non-ASX listed securities, ASX Settlement allows participants in these markets to avoid incurring principal risk during the settlement process. The new service for managed funds has the potential to improve the efficiency of the payment arrangements in this market. While the managed fund service is subject to approval from other regulators, the Bank is satisfied that the implementation of these new services is consistent with ASX Settlement's ongoing compliance with the FSS. Nevertheless, the Bank will continue to monitor the composition of the daily settlement batch as an indication of the potential for the settlement of novated market transactions to be disrupted by problems arising in the settlement of unrelated transactions.

Operational risk

ASX completed the move to its new operations centre. The Bank welcomes this initiative, which has improved redundancy arrangements for the core systems of all four ASX CS facilities. The new operations centre will facilitate rapid recovery in the event of an operational incident, and provides an alternative workspace for a significant proportion of ASX staff.

In general, over the Assessment period, all of the ASX CS facilities' core systems operated soundly, meeting their availability and capacity targets. A small number of operational incidents nevertheless occurred, involving the core systems of ASX Settlement and Austraclear. The Bank is satisfied with both ASX's immediate responses to these incidents, as well as the follow-up action to prevent recurrence. Since the issues at ASX Settlement affected both the ASX market and Chi-X, one response has been to develop a multi-market communication protocol in the event of an operational incident at the securities settlement facility.

The Austraclear incidents were related to a system upgrade and the move to the new operations centre. ASX is in the process of increasing the level of in-house development and support for Austraclear's core system and plans to simplify the system design to facilitate maintenance and upgrades. The Bank is supportive of these plans which, when implemented, will facilitate more timely responses to operational incidents and also give ASX greater control over initiatives to enhance the stability of the Austraclear system. The Bank will, however, continue to review developments to ensure that ASX can adequately resource this function, without impacting the quality of support for other systems.

Strategic initiatives

The Assessment also identifies a number of strategic initiatives in train that are likely to be relevant to the Bank's future Assessments of the CS facilities. These include:

- *ASX Collateral.* ASX intends to introduce a new service that will assist users to more efficiently manage and reallocate the collateral they post to counterparties.
- *Central clearing of OTC derivatives.* ASX is studying the feasibility of offering central clearing of OTC derivatives.
- *Retail trading in Commonwealth Government Securities (CGS).* ASX has developed a proposal for trading, clearing and settling CGS depository interests using its existing cash-market infrastructure.

The Bank welcomes ASX continuing the dialogue with its regulators as these plans develop to ensure that these initiatives are pursued in a manner consistent with ASX's ongoing compliance with the FSSs.

New Financial Stability Standards

In April 2012, CPSS and IOSCO finalised the new Principles. The Bank has developed proposed new FSSs, aligned with the Principles, which were recently released for consultation and with a view to applying them in future Assessments of licensed CS facilities, subject to appropriate transitional arrangements. Given the proposed change in the FSSs, the Bank has decided to depart from its recent practice of highlighting one particular measure of the existing FSS for detailed discussion. Section 4 offers an overview of how the Bank intends to implement the new international standards in the Australian regulatory regime.

ASX is already considering the implications of various measures required under the Principles, thereby ensuring its readiness for the introduction of new FSSs aligned with the Principles. ASX's plans to introduce margining of cash equities in the forthcoming Assessment period is also consistent with explicit requirements under the Principles. Several other changes are under consideration, on which ASX plans to consult with participants and other stakeholders over the coming period. These include:

- Alternative options for meeting new expectations around segregation and portability of client positions and collateral.
- Amendments to the CCPs' stress-testing arrangements, including to provide for the coverage of obligations arising in the event of the default of not only the participant with the largest stress exposure, but also any affiliated entities.
- Potential amendments to ASX Clear's rules to provide for more robust access to liquidity in the event of a participant default. This would make it less likely that cash equity settlements needed to be rescheduled in such circumstances.
- Revisions to ASX's collateral acceptance policies.

The Bank welcomes ASX's consideration of these measures and will remain in dialogue with ASX through the consultation process and subsequent policy development.

In conjunction with this work, ASX is also encouraged to carry out a review of its Treasury Investment policy, in consultation with the Bank. The Bank's 2008/09 Assessment identified the risk that ASX assumed large concentrated exposures to the large domestic banks under its Treasury Investment policy and encouraged ASX to consider options to reduce this risk, such as entering into repurchase agreements backed by CGS. Given developments in the market for CGS since the Bank's initial recommendation it is timely for ASX to revisit this issue. Such a review will also support an assessment of ASX's Treasury Investment policy against explicit recommendations in the Principles.

The rest of the Assessment is organised as follows. Section 2 introduces the Australian clearing and settlement landscape. Sections 3 and 4 satisfy a requirement under section 25M of the *Reserve Bank Act 1959* for the Payments System Board to report annually to the Minister on material developments in clearing and settlement in Australia and any changes to the FSSs. Section 5 fulfils the Bank's statutory obligations under section 823CA of the Corporations Act to report to the Minister, and to the Australian Securities and Investments Commission, on its annual Assessment of the licensed CS facilities.

The Bank welcomes ASX's continued efforts towards ensuring its CS facilities contribute to financial stability, and appreciates the open and constructive dialogue between the Bank and ASX in relation to financial stability matters.

2. Clearing and Settlement in Australia

Two types of clearing and settlement (CS) facilities operate in Australia: central counterparties (CCPs) and securities settlement facilities (SSFs). Under the *Corporations Act 2001*, these facilities are required to hold a CS facility licence and to comply with the relevant *Financial Stability Standard* determined by the Reserve Bank (the Bank).

Central Counterparties

A CCP interposes itself as the legal counterparty to all purchases and sales via a process known as novation. This involves the replacement of the original contract with separate contracts between the buyer and the CCP, and between the seller and the CCP. These arrangements provide substantial benefits to participants in terms of counterparty risk management as well as greater opportunities for netting of obligations. At the same time, however, they result in a significant concentration of risk in the CCP. This risk can crystallise if a participant defaults on its obligations to the CCP, since the CCP must continue to meet its obligations to all of the non-defaulting participants. Accordingly, it is critical that the CCP has appropriate risk controls and other measures in place such that it could with a high degree of confidence accommodate a default without threatening the CCP's solvency, or significantly disrupting financial markets or the financial system more generally. It is also important that CCPs identify and properly control other risks associated with their operations in order to contribute to the stability of the Australian financial system. The objective of the Bank's *Financial Stability Standard for Central Counterparties* is to ensure that these outcomes are achieved.

The following licensed CCPs are required to comply with the Standard:

- ASX Clear Pty Limited (ASX Clear), which provides CCP services for a range of financial products traded on the ASX market, including cash equities and equity options.
- ASX Clear (Futures) Pty Limited (ASX Clear (Futures)), which provides CCP services for derivatives traded on the ASX 24 market, including futures and options on interest rate, equities, energy and commodity products.

Securities Settlement Facilities

An SSF provides for the final settlement of securities transactions. Settlement involves transfer of the title to the security, and transfer of cash. These functions are linked via appropriate delivery-versus-payment arrangements incorporated within the settlement process. Since SSFs are important financial market infrastructures that are critical to the smooth operation of the financial system, it is important that they identify and properly control risks associated with their operation in order to contribute to the stability of the Australian financial system. The

objective of the Bank's *Financial Stability Standard for Securities Settlement Facilities* is to ensure these outcomes are achieved.

The following licensed SSFs are required to comply with the Standard:

- ASX Settlement Pty Limited (ASX Settlement), which provides for the settlement of equities and other deliverable products traded on the ASX market.
- Austraclear Limited (Austraclear), which offers securities settlement services for trades in debt securities.

Although ASX Clear, ASX Clear (Futures), ASX Settlement and Austraclear are all part of a single corporate group – ASX Group – each facility holds an individual CS facility licence.

3. Developments in the Clearing and Settlement Industry in 2011/12

The number of trades on the equities and derivatives markets served by the ASX Group (ASX) central counterparties (CCPs) increased in 2011/12. However, consistent with a further decline in average trade size and a broad fall in equity prices, the overall value of cash equity trading fell slightly. Volatility in market prices was higher overall and contributed to an increase in the margins collected on derivatives positions by ASX Clear Pty Limited (ASX Clear) and ASX Clear (Futures) Pty Limited (ASX Clear (Futures)). However, for cash equities, despite the increased volatility, the 'notional' margin (calculated by ASX Clear for risk monitoring purposes, but not currently collected from participants) fell due to the decrease in value traded. This decrease was also reflected in a lower value of settlements of cash equities by ASX Settlement Pty Limited (ASX Settlement). The value of debt securities settled by Austraclear Limited (Austraclear) was broadly unchanged. During 2011/12, the ASX CCPs also handled their first ever default of an active clearing participant when the subsidiaries of MF Global Holdings Limited (MF Global) went into administration in November 2011.

There were a number of important regulatory developments in 2011/12. These included a review of the framework for regulation of financial market infrastructures (FMIs) in Australia, public consultation on the central clearing of over-the-counter (OTC) derivatives in Australia, and the finalisation of the new *Principles for Financial Market Infrastructures* (the Principles) by the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO).

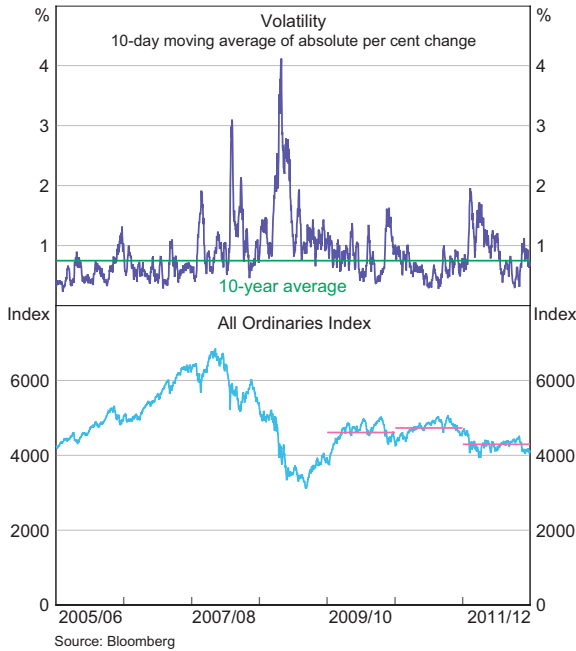
Meanwhile, trading in ASX-listed equities on the market operated by Chi-X Australia Pty Ltd (Chi-X) commenced on 31 October 2011. Separately, the Financial and Energy Exchange Limited (FEX) has applied for a market licence to offer trading in commodity, energy and environmental derivatives, and LCH.Clearnet Limited (LCH), a London-based CCP, has applied for a clearing and settlement (CS) facility licence to clear for FEX.

Activity in the Licensed CS Facilities

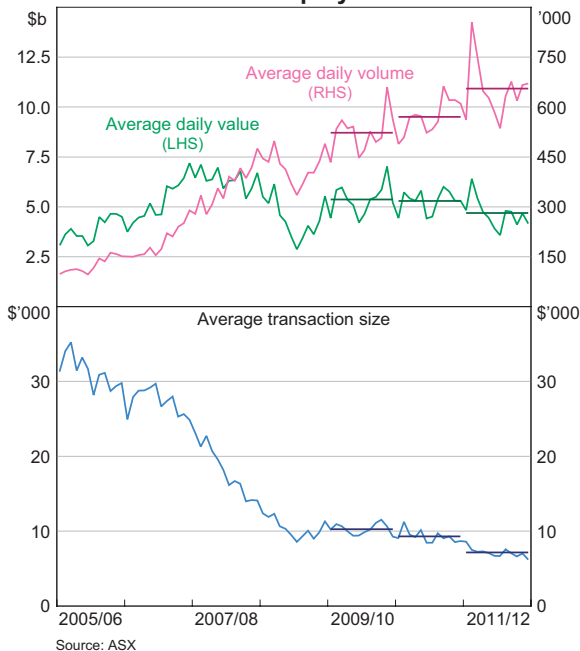
In 2011/12, markets cleared and settled by ASX CS facilities exhibited periods of increased price volatility. This was particularly the case in August 2011, as a result of global market factors such as the legislative gridlock over the US debt ceiling, and continuing European sovereign debt concerns. Volatility rose once more in May and June 2012, as euro zone issues escalated further. Despite this, trading turnover was generally higher across all markets. Trends in daily average trading value, however, varied from market to market: falling for cash equities, while increasing slightly for debt securities settled by Austraclear. The level of risk faced by the CCPs, as indicated by margin held, increased in 2011/12, although peak levels remained well below those of 2008.

The average volatility in equity prices, as measured by the 10-day moving average of absolute daily percentage changes in the S&P ASX All Ordinaries Index, increased from 0.6 per cent in 2010/11 to 0.9 per cent in 2011/12 (Graph 1, top panel). Although volatility increased significantly in August 2011, its peak at this time remained

Graph 1
All Ordinaries



Graph 2
ASX Cash Equity Trades



around half that observed in 2008. Volatility returned to around the 10-year average in early 2012, before increasing again as markets reacted to renewed concerns over events in Europe.

Trends in the growth of the number and value of cash equity trades continued to diverge over 2011/12. The daily average volume of these trades increased by 15 per cent in 2011/12, while daily average value fell by 11 per cent (Graph 2). The average daily value of securities transactions settled by ASX Settlement decreased by 10 per cent in 2011/12, to \$7.3 billion; some difference between traded values and settlement values is to be expected due to settlement of non-market transactions and multilateral netting of participants' obligations. The average size of trades declined by 23 per cent; in part this reflected falls in equity prices, with the All Ordinaries down 9 per cent on a financial year average basis (Graph 1, bottom panel). Other factors in the decline in the average size of trades since 2005 are the growth in algorithmic trading and an increasingly common practice of breaking up large trade orders for gradual release into the market.

The average daily number of equity derivative contracts traded on the ASX market increased by 19 per cent in 2011/12, while the daily average number of derivative contracts traded on the ASX 24 market grew by 6 per cent in 2011/12.³ Although there were decreases in the daily average for many of the less heavily traded contracts, this was more than offset by significant increases for several major contracts, most notably 10-year Treasury bond futures (up 13 per cent), ASX SPI 200 index futures (up 12 per cent) and 3-year Treasury bond futures (up 9 per cent).

In 2011/12, the average daily value of debt securities settled through Austraclear increased slightly, by around 1 per cent, to \$40 billion, which includes outright purchases and sales of securities,

³ In May 2011, the standard equity derivative contract size was changed from 1 000 shares to 100 shares. To calculate a consistent measure of equity derivatives growth, the data have been adjusted to reflect trading volumes based on the earlier contract size.

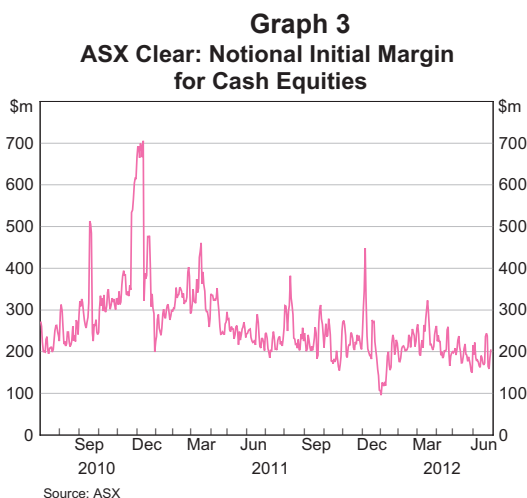
and securities transferred to effect repurchase agreements (other than intraday repurchase agreements with the Reserve Bank).

Risk Management in the Licensed CCPs

A CCP is exposed to credit risk arising from potential changes in the market value of a defaulting participant's open positions between the last settlement of variation margin and close out by the CCP. To mitigate this risk, initial margin is calibrated against expected volatility in normal market conditions.

As measured by margin requirements, the total credit exposure assumed by the CCPs increased in 2011/12, but peak levels remained well below those of 2008. In derivatives markets this was due to the combination of an increased volume of transactions processed by the CCPs and higher volatility in market prices. In the case of cash equities, however, higher volatility was offset by lower values traded.

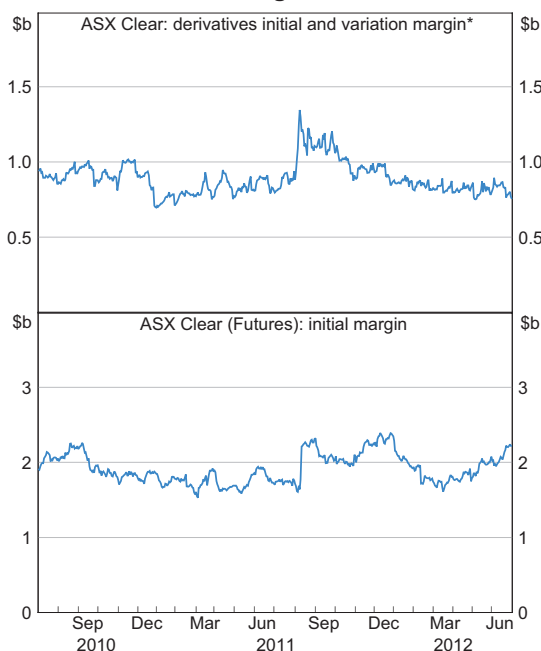
As discussed in Section 5.1 of this Assessment, ASX Clear plans to introduce margining of cash equities in the coming financial year. Although margins are not currently collected for cash equities, ASX Clear, as part of its internal risk management process, monitors its credit exposure by calculating notional margin requirements using its 'Real Risk' model. Average daily notional initial margin requirements calculated by the model decreased by 30 per cent to \$218 million in 2011/12 (Graph 3). These were largely driven by lower market prices for cash equities and smaller net end-of-day positions (on which margin is calculated), though the decrease was in part due to the average for 2010/11 having been inflated by a short period of high notional margin requirements following the initial public offering of QR National in November 2010. ASX noted that this reflected more the current treatment of new stocks in its Real Risk model than a significant increase in actual risk to the CCP. The cash equity margining model to be introduced by ASX Clear will provide for more tailored treatment of new stocks.



The average of daily margins (both initial and variation) collected by ASX Clear on derivatives positions increased 6 per cent in 2011/12, to \$917 million (Graph 4, top panel). This was due to an increase in volume, as well as increases in margin rates in the second half of 2011 as the volatility in equity prices picked up.

The average of daily initial margins collected by ASX Clear (Futures) increased by 8 per cent to \$2 billion (Graph 4, bottom panel). The increase in margins reflected the overall rise in the average number of contracts traded on the ASX 24 market, as well as an increase in margin rates in late 2011. Nevertheless, the total amount of initial margin held remained significantly below the levels at the height of the global financial crisis in 2008/09. Margin rates for derivatives traded on ASX 24 were reduced in early 2012, but generally remained at or above the levels of 2010/11 for the remainder of 2011/12.

**Graph 4
Margins**



* Variation margin is also known as mark-to-market margin
Source: ASX

During 2011/12, the ASX CCPs also handled their first ever active clearing participant default when the subsidiaries of MF Global went into administration in November 2011.⁴ The ASX CCPs' exposures were well covered by margin from the MF Global subsidiaries. There was therefore no need for ASX to call on pooled risk resources. ASX successfully managed the defaults in accordance with its default management framework. ASX nevertheless continues to review and enhance its default management arrangements on an ongoing basis and has implemented some changes in response to lessons learned from this event (discussed in Box B).

Regulatory Developments

In April 2011, the Council of Financial Regulators (the Council) was asked by the Deputy Prime Minister and Treasurer (the Treasurer) to consider possible changes to the regulation of FMIs to strengthen regulators' ability to provide effective oversight and manage risks to both stability and market integrity. In response, a Working Group, chaired by

the Treasurer and comprising representatives of the Australian Prudential Regulation Authority (APRA), the Australian Securities and Investment Commission (ASIC) and the Reserve Bank (the Bank), developed a series of proposals, which were released for consultation in October 2011.⁵ Having reviewed submissions and engaged directly with stakeholders, the Council recommended to the Treasurer a program of legislative reform in line with the proposals in its original consultation paper. The Treasurer released the Council's advice publicly in March 2012, inviting further consultation with stakeholders on the final framework for implementation of the Council's proposals.⁶

One core concern of regulators is how to ensure the continuity of critical services when an FMI is in financial distress (and possibly insolvent). If an FMI is unable to implement an effective recovery plan, regulators may need to intervene in order to maintain continuity of services while organising a recapitalisation or orderly wind-down (resolution) of the FMI. The Council therefore recommended legislative change to provide for the appointment of a statutory manager (a so-called 'step in') to a distressed FMI. A similar power is available to APRA in relation to authorised deposit-taking institutions (ADIs) under the *Banking Act 1959*. Implementation of the Council's recommendation needs to be considered in the context of broader international work on resolution of FMIs. Particularly relevant here is a consultation paper released by CPSS and IOSCO in July 2012

4 While Opes Prime was technically an ASX Clear participant when it went into receivership in March 2008, its membership was inactive as it cleared indirectly. ASX Clear therefore had no exposure to Opes Prime.

5 The consultation paper released by the Council is available at <http://www.treasury.gov.au/~media/Treasury/Consultations%20and%20Reviews/2011/Review%20of%20Financial%20Market%20Infrastructure%20Regulation/Key%20Documents/CFR_review_of_FMI_regulation_issues.ashx>.

6 The Council's letter to the Deputy Prime Minister and Treasurer is available at <http://www.treasury.gov.au/~media/Treasury/Consultations%20and%20Reviews/2012/Council%20of%20Financial%20Regulators%20Working%20Group%20on%20Financial%20Market%20Infrastructure%20Regulation/Key%20Documents/CoFR_Letter_to_Deputy_PM.ashx>.

which addresses key issues in the design of an effective resolution regime for FMI.⁷ The paper identifies the power to appoint a statutory manager as one of a number of potential tools to be applied as part of a broader resolution plan.

Another important element of the package of regulatory reform measures for FMI recommended by the Council is cross-border policy. In order for the Bank and ASIC to carry out their regulatory responsibilities with respect to cross-border CS facilities, they must have sufficient influence over the activities and risk management practices of such facilities, including in stressed circumstances. Accordingly, the Council recommended giving the regulators explicit powers under the *Corporations Act 2001* to support a 'proportional and graduated' policy that could require certain elements of a licensed facility's operations to be located in Australia. To give stakeholders further clarity on the specific measures that might be applied under such a policy, the Council issued a supplementary paper in July 2012.⁸ Consistent with a graduated approach, the paper describes a framework within which incremental requirements could be imposed on cross-border CS facilities that are systemically important in Australia, or that have a strong connection to the Australian financial system and real economy.

The Council's advice to the Treasurer also noted that the Council was continuing its work with the Australian Competition and Consumer Commission to develop further analysis of issues around competition in clearing and settlement. The first phase of the agencies' work on these issues comprised development of a discussion paper on competition in the clearing of cash equities, which was released on 15 June 2012. While recognising the potential benefits, the paper acknowledges that the entry of competing CCPs could significantly alter the way in which key financial markets operate. Stakeholder feedback was therefore sought on a number of policy matters relevant to the responsibilities of the Council agencies, and possible responses.

At the same time, the Council agencies continue to work on the implementation of Australia's G-20 commitments to undertake significant reforms to strengthen OTC derivatives markets. In June 2011, the Bank, on behalf of the Council agencies, issued a discussion paper, *Central Clearing of OTC Derivatives in Australia*.⁹ Further to this consultation, in March 2012 the Council provided a report to the Australian Government outlining its view that, in the first instance, industry-led solutions should be the preferred route to increasing the use of central clearing within the Australian OTC derivatives market, but that the capacity to mandate central clearing should be developed through legislation.¹⁰ This report also recommended that a similar power should be developed around possible mandatory trade reporting and trade execution obligations. Following this report, the Australian Government consulted on a legislative framework to ensure the implementation of the key G-20 commitments, and has now introduced a bill into parliament that would give effect to this through amendments to the Corporations Act.¹¹

Another significant global regulatory development is the release of new best-practice standards for FMI. In April 2012, CPSS and IOSCO finalised a single set of *Principles for Financial Market Infrastructures* (the Principles),

7 CPSS-IOSCO (2012), *Recovery and Resolution of Financial Market Infrastructures: Consultative Report*, July. Available at <<http://www.bis.org/publ/cpss103.htm>>.

8 Council of Financial Regulators (2012), *Ensuring Appropriate Influence for Australian Regulators over Cross-border Clearing and Settlement Facilities*, July. Available at <<http://www.treasury.gov.au/~media/Treasury/Consultations%20and%20Reviews/2012/cross%20border%20clearing/key%20documents/pdf/cross-border-provision.ashx>>.

9 Available at <<http://www.rba.gov.au/publications/consultations/201106-otc-derivatives/pdf/201106-otc-derivatives.pdf>>.

10 Council of Financial Regulators (2012), 'OTC Derivatives Market Reform Considerations', March. Available at <<http://www.rba.gov.au/payments-system/clearing-settlement/otc-derivatives/201203-otc-der-mkt-ref-con/index.html>>.

11 The bill is available at <<http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=ld%3A%22legislation%2Fbillhome%2Fr4879%22>>.

which is intended to replace the three existing sets of standards.¹² The new Principles acknowledge the critical, and expanding, role played by FMIs, including CS facilities, in the financial system and aim to strengthen and harmonise the standards to which they are held internationally. The Bank's proposed approach to implementing the Principles in its oversight of CS facilities is discussed in Chapter 4. ASIC has also released a consultation paper on proposed changes to its Regulatory Guide 211.¹³

New Financial Market Infrastructure

Chi-X commenced offering trading in ASX-listed equities on 31 October 2011. Currently, Chi-X's trades are cleared and settled through ASX's Trade Acceptance Service. However, Chi-X's market licence permits clearing and settlement to be conducted by any CS facility licensee approved for the purpose.

A new derivatives exchange, FEX, has also applied for a market licence. FEX plans to offer trading in commodity, energy and environmental derivatives, and has approached LCH to provide clearing services. LCH is a London-based CCP that clears equities and derivatives for a number of exchange-traded and OTC markets overseas. It is regulated and supervised by the UK's Financial Services Authority. In order to clear for FEX, however, LCH must be licensed in Australia.

The Corporations Act provides for an alternative licensing process for overseas CS facilities that operate under a regulatory regime deemed to be sufficiently equivalent to the Australian regime.¹⁴ LCH's application is being considered under that process.

¹² The Principles are available at <<http://www.bis.org/publ/cpss101.htm>>. The three existing sets of standards are: *Core Principles for Systemically Important Payment Systems* (CPSS, 2001); *Recommendations for Securities Settlement Systems* (CPSS and IOSCO, 2001); and *Recommendations for Central Counterparties* (CPSS and IOSCO, 2004).

¹³ ASIC's consultation on amendments to its regulatory guidance for CS facilities is available at <<http://www.asic.gov.au/asic/asic.nsf/byHeadline/12-221MR%20ASIC%20consults%20on%20amendments%20to%20clearing%20and%20settlement%20facilities%20guidance?opendocument>>.

¹⁴ While 'sufficient equivalence' is not defined in the Corporations Act, the Bank has developed guidance on the matters it would take into consideration in its assessment of equivalence. This guidance is available at <<http://www.rba.gov.au/payments-system/clearing-settlement/standards/overseas-equivalence.html>>.

4. The Financial Stability Standards

The *Corporations Act 2001* provides that the Reserve Bank (the Bank) may determine financial stability standards to ensure that clearing and settlement (CS) facilities promote overall stability in the financial system. Accordingly, the Bank has determined two sets of *Financial Stability Standards* (FSSs): one for central counterparties (CCPs) and one for securities settlement facilities (SSFs) (see below).

The Financial Stability Standard for Central Counterparties – FSS 2009.1

A CS facility licensee must conduct its affairs in a prudent manner, in accordance with the standards of a reasonable CS facility licensee in contributing to the overall stability of the Australian financial system, to the extent that it is reasonably practical to do so. This Standard applies to all CS facility licensees that operate a central counterparty with the exception of those CS facility licensees granted a licence under section 824B(2) of the *Corporations Act*. This exception applies only for such time as the Reserve Bank receives annual documentary evidence from the licensee's overseas regulator that the licensee has complied in all material respects with the requirements of the overseas regulator related to matters affecting stability. Such evidence must be provided in a form and at a time agreed with the Reserve Bank.

The Financial Stability Standard for Securities Settlement Facilities – FSS 2009.2

A CS facility licensee must conduct its affairs in a prudent manner, in accordance with the standards of a reasonable CS facility in contributing to the overall stability of the Australian financial system, to the extent that it is reasonably practical to do so.

This Standard only applies to CS facility licensees that provide a facility where the value of financial obligations settled in a financial year exceeds a threshold value of \$100 million. When this threshold value is exceeded for the first time, the provider of the facility must meet the standard by the beginning of the next financial year.

Under section 823CA of the Corporations Act, the Bank must assess, at least annually, how well each CS facility licensee is complying with the FSSs and its ancillary obligation to 'do all other things necessary to reduce systemic risk'. To assist in carrying out this assessment, the FSSs are supplemented by a set of detailed measures that the Bank considers relevant to compliance with the FSSs and other matters relevant to the assessment of systemic risks arising from the activities of licensed facilities (see Appendix A). These measures are designed to align with accepted international principles as set out by the Committee on Payment and Settlement Systems (CPSS) and International Organization of Securities Commissions (IOSCO).

The Corporations Act provides for an alternative regulatory regime for overseas CS facilities granted a licence under section 824B(2). Currently, there are no CS facilities licensed under that section. The Corporations Act allows the Bank to place some reliance in its assessments on the relevant overseas regulatory authority, so long as that authority's regulatory regime is sufficiently equivalent to that applying in Australia.

Section 25M(1)(a)–(c) of the *Reserve Bank Act 1959* requires that the Payments System Board describe any new standards for CS facilities determined during the year and any variations or revocations of existing standards. While no new standards for CS facilities were determined by the Bank under section 827D(1) of the Corporations Act during the year to June 2012, and no existing standards were varied or revoked, the Bank plans to update the FSSs to implement the new CPSS-IOSCO *Principles for Financial Market Infrastructure* (the Principles) which establish minimum standards for the operation of financial market infrastructures (FMIs). A consultation paper outlining the Bank's intended approach was released on 29 August 2012.¹⁵ As soon as possible following the consultation period, stakeholder feedback will be considered and incorporated into a final set of standards.

Proposed Financial Stability Standards

The proposed FSSs for each type of licensed CS facility aim to meet three objectives:¹⁶

- to fully align minimum requirements in the proposed FSSs with those Principles that address matters relevant to financial stability
- to incorporate complementary requirements, as appropriate, to uphold the standards to which CS facilities licensed to operate in Australia are already held under the measures of the current FSSs, and to reflect standards applied to CS facilities in other relevant jurisdictions
- to implement the key elements of the framework for ensuring regulatory influence over cross-border CS facilities, as articulated by the Council of Financial Regulators (the Council).

In order to meet these objectives, the proposed FSSs adopt the structure, form and language of the Principles, but with some adjustments to the key considerations and explanatory notes to incorporate complementary requirements.¹⁷

This constitutes a significant change in the structure and form of the FSSs. The current FSSs each comprise a high-level requirement, accompanied by measures relevant to the Bank's assessment of whether a licensee

¹⁵ The Bank's consultation paper is available at <<http://www.rba.gov.au/payments-system/clearing-settlement/consultations/201208-new-fin-stability-standards/index.html>>.

¹⁶ As in the FSSs themselves, any reference to a CCP or SSF in this section may also be read as a reference to the licensee as operator of the CCP or SSF.

¹⁷ The structure of the proposed FSSs does differ in that the Principles have been drafted to cover all types of FMI, while the proposed FSSs, as now, establish separate standards for each of CCPs and SSFs. While there is a high degree of overlap, the nature of applicable risks and requirements differs by facility type and therefore determining standards specific to the type of facility provides greater clarity to licensees and other stakeholders. The Principles differentiate between FMI types at a number of points, and the proposed CS facility-specific FSSs include only those principles and key considerations that are relevant to each CS facility type.

has complied with the applicable FSS. By contrast, in aligning with the structure of the Principles, the consultation paper proposes a more granular set of FSSs for each type of CS facility. Furthermore, by casting the key considerations as individually legally enforceable standards, the proposed FSSs provide for greater legal certainty for CS facility licensees.

It is intended that all licensed CS facilities operating either a CCP or an SSF, whether domestic (i.e. licensed under section 824B(1) of the Corporations Act) or overseas (i.e. licensed under section 824B(2) of the Corporations Act), would be required to comply with the relevant standards. It is, however, proposed that an activity threshold would continue to be applied for SSFs.

The application of the proposed FSSs to *all* licensed CS facilities (subject to the activity threshold for SSFs) would, in the case of CCPs, constitute a change in the Bank's approach. Under current arrangements, subject to certain conditions, the FSS for CCPs applies to '... all CS facility licensees that operate a central counterparty with the exception of those CS facility licensees granted a licence under section 824B(2) of the *Corporations Act 2001*'.

However, notwithstanding that a licensed overseas facility would be required to comply with the FSSs, the Bank's assessment of compliance would, in accordance with section 823CA of the Corporations Act and subject to certain conditions, take into account '... information and reports from [the] overseas regulatory authority' in the facility's principal place of business. This remains consistent with the objective articulated when the current exception was introduced in 2009; that is, to deliver a framework for regulation of overseas licensees that did 'not impose an unnecessary regulatory burden, while ensuring competitive neutrality in the Australian regulatory environment'.¹⁸

¹⁸ Since the current exception applies '... only for such time as the Reserve Bank receives annual documentary evidence from the licensee's overseas regulator that the licensee has complied in all material respects with the requirements of the overseas regulator related to matters affecting stability ...', the proposed approach delivers a similar outcome.

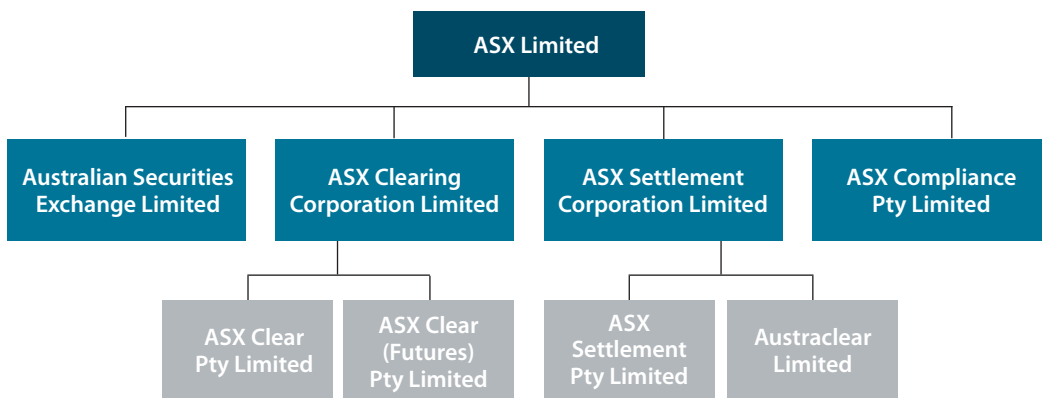
5. Assessment of Clearing and Settlement Facilities against the Financial Stability Standards

The Reserve Bank (the Bank) monitors licensed clearing and settlement (CS) facilities' compliance with the *Financial Stability Standards* (FSSs) on an ongoing basis and reports on its assessment annually. All four ASX licensees report financial information to the Bank quarterly, with the two central counterparties (CCPs) also reporting detailed risk management information, including outcomes of stress tests. These reporting requirements are supplemented by both formal and ad hoc dialogue with the licensees, and by the provision of data on activity, exposures and operational performance.

All four facilities were found to comply with the relevant Standards over the 2011/12 Assessment period, as well as their obligation to do all other things necessary to reduce systemic risk. This chapter focuses on key developments over the year to end June 2012, and considers the implications of these developments for each licensed facility's compliance with its obligations. This chapter first considers developments common to more than one facility, before going on to discuss matters specific to each facility in turn. Details of the information that the Bank has used to assess each facility against the measures underpinning the relevant Standards are presented in Appendix A, which builds on material included in prior Assessments.

All four CS facilities are part of the ASX Group (ASX). In the ASX corporate structure, the two CCPs are subsidiaries of ASX Clearing Corporation Limited (ASXCC), while the two securities settlement facilities (SSFs) are subsidiaries of ASX Settlement Corporation Limited (Figure 1). ASX Compliance Pty Limited (ASX Compliance) provides compliance and enforcement services to the CS facilities.

Figure 1
ASX Corporate Structure



ASX Limited is a listed company. The ASX Limited Board is responsible for overseeing the processes for identifying significant risks to ASX and ensuring that appropriate policies as well as adequate control, monitoring and reporting mechanisms are in place. In addition, ASX Limited's Board assigns certain responsibilities to subsidiaries within the group, including the boards of the four CS facilities (the CS Boards). The CS Boards are responsible for managing the particular clearing and settlement risks faced by each respective CS facility, including through compliance with the FSSs.

Harmonisation and Linking of CCP Activity

Since the merger of the Australian Stock Exchange and Sydney Futures Exchange in 2006, ASX Clear Pty Limited (ASX Clear) and ASX Clear (Futures) Pty Limited (ASX Clear (Futures)) have continued to operate as separate CCPs. However, ASX has looked to harmonise and link the activities of the two CCPs where appropriate.

A common approach to risk management of similar products has the potential to simplify operations for both ASX and its clearing participants and permits better calibration of exposures to ASX's risk tolerance. ASX is introducing a common derivatives margining system across both CCPs by upgrading both CCPs' systems to CME SPAN. This is a widely used margining system developed by the Chicago Mercantile Exchange (CME), which is expected to improve the CCPs' margin calculations and processes. CME SPAN was successfully introduced at ASX Clear (Futures) in the first quarter of 2012 – replacing the OMX RIVA version of the Standard Portfolio Analysis of Risk (SPAN) methodology. ASX plans to introduce CME SPAN at ASX Clear in the fourth quarter of 2012 – replacing a system based on the Theoretical Intermarket Margin System (TIMS) methodology. Also, during the 2012/13 Assessment period, ASX plans to introduce a different system, the Cash Market Margining (CMM) system, for cash equity margining at ASX Clear. This is discussed further in Section 5.1.

The introduction of CME SPAN at ASX Clear (Futures) has enhanced the CCP's approach to margining in a number of respects. In particular, the new system provides for more granularity when setting margin rates for contracts with different expiries. At ASX Clear, a key improvement will be the ability to set specific pairwise offset rates for the large number of contract classes, replacing the single generic 30 per cent offset rate currently used. Box A provides more information about the CME SPAN system and the implications of the upgrade.

Following the implementation of CME SPAN at both CCPs, ASX will aim to link derivatives margin processing across the facilities. Using the same system at both facilities will permit the production of consistent margin reports and margin data. At a later date, ASX plans to consider introducing margin offsets between the two CCPs.

In the current Assessment period, ASX also improved its internal processes around margining by replacing a number of manual procedures with the 'Farsight' system. This is a database management system that performs a range of functions related to risk oversight, including managing the data used in risk analysis, calculating margin parameters for input to the margining systems, and generating a variety of risk reports used within ASX. In the next Assessment period, ASX plans to further enhance Farsight with an expanded range of risk reports, and improved operational processes for updating initial margin risk parameters. The introduction of Farsight has reduced the operational risk associated with processing margin parameters and conducting risk analysis and reporting.

The Bank welcomes these measures and is supportive of ASX's plans to further improve and, where appropriate, harmonise the risk management practices and systems of the two CCPs.

Box A

CME SPAN

Initial margin is often a CCP's first layer of financial protection against a participant default, and is therefore fundamental to its risk management framework. SPAN, originally developed by CME, is a widely used methodology for calculating initial margin. This box outlines the CME SPAN methodology, ASX's approach to setting the CME SPAN parameters, and the impact of this upgrade.

CME SPAN was introduced at ASX Clear (Futures) in early 2012 and is scheduled for rollout at ASX Clear in late 2012. It will be used for the margining of derivatives contracts and to facilitate continued margining of exercised equity options through to the settlement date of the underlying cash equity transactions (referred to as 'prolonged margining'). As discussed in Section 5.1, below, most cash equity margining will be performed separately using CMM. ASX's objectives with the upgrade to CME SPAN are to move to a system that is widely used and supported in the industry, enhance the accuracy of risk calculations, and harmonise margining processes across the two CCPs. A particular benefit of CME SPAN is that it allows participants to carry out their own margin calculations and risk analysis on real and hypothetical portfolios, using software such as CME SPAN's PC-SPAN.

The objective of any initial margin calculation system is to accurately estimate the potential portfolio losses that could occur in the period between the most recent settlement of variation margin and the close out of a defaulted participant's positions. The resulting initial margin should cover potential losses in *normal* market conditions with a high degree of confidence; the 'tail risk', representing *extreme but plausible* market conditions, is generally covered using pooled risk resources. At ASX, initial margin requirements are calculated at the end of each day based on participants' positions at market close, and collected the next morning. Initial margin may also be collected as part of an ad hoc intraday margin call resulting from ASX's monitoring of price movements and market activity.

The CME SPAN methodology calculates initial margin requirements that reflect the total risk of each portfolio – at ASX, each house or client account is considered a separate portfolio. In calculating the margin requirement for each portfolio, CME SPAN breaks down the portfolio by underlying 'commodity', with the group of contracts under a single underlying commodity referred to as a 'combined commodity'. For example, at ASX Clear (Futures), all futures and options based on 90-day bank bills, at all expiries, are grouped into a single combined commodity.

Scanning risk

The first step to calculating the margin for a combined commodity is to calibrate the so-called 'scanning risk'. CME SPAN does this by establishing the maximum loss from 16 hypothetical risk scenarios. These scenarios cover a range of changes in price and volatility, specified in relation to a predetermined 'price scanning range' (PSR) and a 'volatility scanning range' (VSR). These scanning ranges are calibrated to the maximum price and volatility movements for the contracts within that combined commodity under normal market conditions. For example,

in one risk scenario, price increases by one-third of the PSR and volatility falls by the full VSR, while in another scenario price falls by the full PSR and volatility rises by the full VSR.

CCPs using CME SPAN independently set the PSR and VSR parameters, based on their own analysis and processes. At ASX, the scanning ranges are set at three standard deviations of 60 days of historical data, using the higher of one- or two-day price movements. The inclusion of two-day price movements reflects the possibility that defaulted positions may take up to two days to close out.

ASX typically expresses PSR as an absolute dollar value and VSR as a percentage; for example, at the end of June 2012, the PSR for a SPI 200 futures contract (which has a notional value of around \$100 000) was \$6 000, while the VSR was 2.5 per cent (Table A1). CME SPAN also allows the PSR to be defined as a percentage of the current price, in which case different PSRs can be applied to different 'tiers' of contracts within the combined commodity. Individual expiries or groups of expiries are assigned to tiers based on their time to expiry. Each tier can also have a unique VSR assigned to it. Tiered and percentage-based PSRs are particularly useful where different expiries within a combined commodity vary considerably in price movements, or where open interest is spread fairly equally across multiple expiries. At ASX Clear (Futures), for example, this functionality is used for electricity futures, which exhibit strong seasonal effects that vary across different expiries.

Table A1: CME SPAN Margin Parameters for Major Contracts
As at end June 2012

Combined commodity name	Code	Price scan range \$ per contract	Volatility scan range Per cent	Intra-commodity charge rate \$ per contract	Short option minimum charge \$ per contract	Spot month isolation rate \$ per contract
ASX SPI 200	AP	6 000	2.50	430	25	250
90-day bank accepted bill	IR	730	0.05	Tiered ^(a)	24	260
3-year Treasury bond	YT	960	1.00	140	15	
10-year Treasury bond	XT	2 865	2.00	220	40	

(a) See Table A2
Source: ASX

Margin adjustments

Once the scanning risk for each combined commodity has been calculated, a series of adjustments are applied to account for correlations and specific risks. First, there is an upward adjustment to the margin requirement for a given combined commodity, to account for less-than-perfect correlation between contracts with different expiries (known as the 'intra-commodity spread charge'). This adjustment is based on a participant's actual net position at each expiry month multiplied by an 'intra-commodity charge rate', which is itself based on observed price correlations between the different expiries. The default setting is for a single charge rate for the combined commodity, although for some contracts ASX utilises CME SPAN's charge-rate tiering functionality, which allows the charge rates to vary depending on the temporal difference in the pair's expiries (see example in Table A2).

Table A2: CME SPAN Intra-commodity Spread Charges
90-day bank bill, as at end June 2012, dollars

Tier	Months in tier	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6	Tier 7
1	1							
2	2	160						
3	3	235	105					
4	4	255	125	55				
5	5	265	150	80	55			
6	6 to 7	255	145	100	80	55	265	
7	8 to 20	265	265	265	265	265	265	265

Source: ASX

The second set of adjustments applied to margin requirements consists of the ‘inter-commodity spread concessions’. These are deductions designed to account for reliable and economically robust correlations across different combined commodities. The scanning risk for each combined commodity is set based on the worst-case risk scenario for that combined commodity. In some cases, however, it may be highly unlikely that the set of worst-case scenarios will occur simultaneously, particularly if a participant holds net long and net short positions in different combined commodities that have a robust positive correlation. To adjust for this, an inter-commodity spread concession is deducted, which is calculated by applying (in a defined order) a spread ratio and concession rate to a participant’s actual net positions in pairs of combined commodities. The spread ratio determines the number of net positions in one combined commodity required to offset a position in another combined commodity. The concession rate is specified as a percentage of the scanning risk (after adjustments based on options characteristics) for both combined commodities in the pair. For example, at ASX Clear (Futures), for 10-year relative to 3-year Treasury bond futures, a spread ratio of 1:3 and a concession rate of 90 per cent would mean that one net position in the 3-year contract is offset against three net positions in the 10-year contract, and that the concession for that pairing will be 90 per cent of the scanning risk of the combined commodities used in the offset (Table A3). ASX calculates these parameters in the same manner as the price movement for the intra-commodity spread.

Finally, CME SPAN allows a CCP to require additional margin to cover specific risks. Specifically, ‘spot month isolation rates’ are added to cover additional risks at the time a contract expires, including the possibility that, for deliverable commodities, alternative delivery arrangements need to be made in the event of a default. In the case of ASX, this is also used to cover the CCP’s exposure on the day of expiry, because expiring positions are otherwise not included in that day’s initial margin calculations. Additional margin (known as a ‘short option minimum charge’) is also required for short positions in deep out-of-the-money options.

Margin Rate Setting policy

Using a margining system such as CME SPAN, a CCP has significant influence over margin rates through its role in setting the margin parameters (e.g. PSRs, VSRs). At ASX, this process is governed by a Margin Rate Setting policy, which is reviewed annually, with material changes approved by the CS Boards. The policy states that

Table A3: CME SPAN Inter-commodity Spread Concessions

As at end of June 2012

Order	Combined commodities	Spread ratio	Concession rate Per cent
1	10-year Treasury bond : 3-year Treasury bond	1:3	90
2	90-day bank bill : 30-day interbank cash rate	1:1	75
3	10-year bond : 90-day bank bill	1:4	75
4	30-day interbank cash rate : 3-year bond	1:1	70
5	3-year Treasury bond : 90-day bank bill	1:1	75
6	10-year Treasury bond : 10-year interest rate swap	1:1	90
7	3-year Treasury bond : 3-year interest rate swap	1:1	60
8	90-day bank bill : 3-month overnight index swap	1:1	65
9	WA wheat : NSW wheat	1:1	60
10	Wool deliverable : Fine wool	1:1	65

Source: ASX

margin rates must be reviewed at least every three months along with an annual review of the authorisation and documentation process for margin parameter changes, the statistical calculations used to determine margin rates, and guidelines for the application of management discretion.

Under the Margin Rate Setting policy, the Manager or General Manager of ASX's Clearing Risk Management (CRM) unit can approve the use of management discretion if the standard statistical analysis would result in an economically inappropriate margin rate. This may be due to the fact that the statistical analysis is, by definition, backward looking and therefore may not take appropriate account of expected future price movements. Other reasons for using management discretion include insufficient historical data (e.g. where a product is new), seasonality in some products, and one-off spikes in price movements that result in excessively high statistical recommendations. The Margin Rate Setting policy also allows the General Manager of Clearing Risk Policy to approve exceptions to the normal margin rate setting process based on a wider risk assessment.

The introduction of CME SPAN at ASX Clear (Futures) has not produced large changes in margin rates. The main change has been the introduction of more granular margin setting parameters, reflecting for instance PSR tiering and percentage-based PSRs on energy contracts. In considering the effectiveness of the new margining model and the adequacy of margin protections, Section 5.2 presents an initial analysis of observed margin coverage at ASX Clear (Futures).

Over time, ASX Clear (Futures) plans to further increase the granularity of margin rate parameters. This will allow parameter settings to more accurately reflect observed price correlations, potentially delivering lower margin rates without requiring a change to the CCP's risk appetite. This is likely to have a larger effect when CME SPAN is introduced at ASX Clear, since ASX plans to introduce around 1300 specific inter-commodity offsets to replace the single generic 30 per cent offset applied in the current TMS margining system.

Default Management

ASX carries out continuous review and improvement of its default management framework (DMF). The DMF is reviewed at least annually; in 2011/12, it was reviewed as part of the regular in-house default management ‘fire drills’ and following the default of MF Global Holdings Limited (MF Global) (discussed in Box B). The fire drills are used to test the effectiveness of the DMF using a number of hypothetical default scenarios, which are tracked through the entire default management process.

A subset of the fire drills centre on the role of ASX’s Default Management Committee (DMC), which is comprised of senior management from relevant policy and operational areas. The DMC is the primary decision-making entity for the management of a default; its responsibilities range from recommending declarations of default and suspensions, to devising a risk neutralisation plan and overseeing its implementation. A broader default management team participates in the remaining fire drills, which focus on the practical management of information gathering, close out, CCP solvency, funding and financial offset in a default.

As well as ensuring that relevant ASX personnel are familiar with the default management process, these tests help to identify areas in which the DMF should be refined. Among recent enhancements, ASX has completed work to clarify the role of the Directors’ Solvency Statement in establishing whether a default event has occurred. In addition, a new section to the DMF gives guidance on the use of the Solvency Statement, including the criteria under which it would be requested, and how actions would be coordinated with relevant regulators.

Box B

The MF Global Default

The ASX CCPs successfully applied their DMF to manage the defaults of the MF Global subsidiaries, the first clearing participant defaults these CCPs have faced. In the last week of October 2011, there were widespread concerns about the financial viability of MF Global, a commodities and futures broker headquartered in the United States. This followed disclosure of an unexpected loss and a net long position in short-duration European sovereign debt, including that of Belgium, Ireland, Italy, Portugal and Spain. MF Global’s subsidiaries were direct participants in a number of CCPs, including ASX Clear and ASX Clear (Futures). Given the stressed circumstances, over this period ASX monitored the situation closely, liaising with MF Global, and keeping both the Australian Securities and Investments Commission (ASIC) and the Bank informed of developments. To minimise the potential impact on the ASX CCPs, ASX imposed conditions on the three MF Global subsidiaries with membership of these facilities; namely, restrictions on new business; requiring domestic cash holdings (to prevent funds from being repatriated offshore); and requiring daily Directors’ Solvency Statements. A number of MF Global clients also reacted to the developments, moving their positions to other clearing participants.

After an attempt to sell MF Global failed (reportedly due to the potential buyer’s uncertainty over the status of some client funds), the company filed for bankruptcy in the US on 31 October 2011. In the wake of this bankruptcy filing, the UK Financial Services Authority put the UK subsidiary, MF Global UK – an ASX Clear

(Futures) and Austraclear participant – into special administration. The following morning, the two Australian subsidiaries, MF Global Australia and MF Global Securities Australia (which participated in ASX Clear, ASX Settlement Pty Limited (ASX Settlement) and Austraclear Limited (Austraclear)), appointed Deloitte Touche Tohmatsu as their administrator. In response, ASX recorded an event of default against all three subsidiaries of MF Global, and suspended them from participating in all ASX trading, clearing and settlement facilities.

MF Global UK was the only subsidiary with open positions at either CCP at the time of the default. These positions were well covered by initial margin posted by MF Global UK, and there was no need to call on pooled risk resources. When MF Global UK defaulted, it had no open house positions but ASX Clear (Futures) held \$36 million of client-related funds. After closing out its net client position with MF Global UK, the balance was \$34 million.

MF Global UK was, however, the dominant broker in ASX grains and wool futures, and cleared around 80 per cent of the open interest in these products. Given this, to prevent a disorderly market, ASX suspended trade in grain and wool futures on 1 November 2011; these markets were reopened the following day. While ASX already routinely monitors concentrations in the CCPs' overall exposures, in reviewing the DMF in light of the default of MF Global, one of the enhancements implemented in July 2012 was to introduce more granular monitoring of the concentrations in the clearing of particular products and contracts.

As noted, MF Global UK's positions were held on behalf of clients, including MF Global Australia. ASX had already identified the legal and practical impediments to the transfer (or 'porting') of client accounts from a defaulting participant to another participant. The default of MF Global further highlighted these issues, which include: arrangements to comply with 'know your client' regulations; CCP account structures (which was discussed in Box A of the 2010/11 Assessment); and legal restrictions on dealing with the assets and liabilities of an entity that has been placed into administration. ASX has completed an initial study of the circumstances under which it would attempt to transfer client positions in a default situation and the impediments to the wider use of transfers. The *Principles for Financial Market Infrastructures* (the Principles) introduce explicit requirements around segregation and portability and, as part of its consideration of measures required under the new Principles, ASX will be seeking participant feedback on this topic.

Participant Monitoring

Monitoring of clearing participants is conducted predominantly by the CRM unit, which covers both CCPs. CRM monitors day-to-day developments regarding, among other things, financial requirements, risk profiles, open positions and settlement obligations to the CCPs. It is also responsible for determining and reviewing internal credit ratings (ICRs) of participants, drawing in part on information provided by participants in their regular financial returns to ASX.

CRM also coordinates a 'watch list' of participants deemed to warrant more intensive monitoring. During the current Assessment period, the watch list regime was consolidated within CRM, whereas previously different teams within ASX (including CRM) had maintained separate watch lists with different triggers. The result is a more comprehensive and accessible picture of the factors affecting the risks that participants bring to the CCPs. This facilitates appropriate and coordinated responses to those risks.

Inclusion on the watch list is based on a range of factors, such as: concerns emerging from a specific event or media report; significant changes in a participant's own share price, bond yield or credit default swap price; ICR downgrades; calls for additional initial margin; operational issues; compliance issues; or issues arising from ASX's routine review of financial returns. Participants on the watch list may be subject to a more stringent intraday margin call regime, and CRM will typically also carry out a detailed credit review. The results of a credit review are examined by senior representatives of the Office of the Chief Risk Officer (CRO), ASX Compliance and Operations. In response to a review, restrictions may be placed on the participant's trading, clearing and settlement activities.

In early 2012, the CRO and the General Manager of CRM commenced a program of visits to clearing participants to improve communication at Senior Executive level on risk matters. Specifically, the program aims to: ensure that participants have up-to-date and relevant contact points at the clearing facility; give participants an opportunity to update ASX on any likely changes to their business models and risk management approaches; and allow participants to provide feedback on new clearing initiatives. The program is ongoing and ASX aims to visit each clearing participant annually.

Other ongoing participant-monitoring projects, mentioned in previous Assessments, are:

- *Spot checks on the accuracy of participants' financial returns.* ASX has an ongoing project to conduct ad hoc spot checks as appropriate, for example in the event of significant market volatility. During 2011/12, ASX initiated spot checks on two ASX Clear participants. There was also one industry-wide spot check, completed in March 2012, which focused on the consistency of returns submitted by participants who were members of both ASX Clear and ASX Clear (Futures). Following the heightened market volatility in both August 2011 and May 2012, ASX Clear participants were also required to submit ad hoc returns and information on capital ratios.
- *A self-assessment program covering participants' capital calculations.* This program is designed to check that participants are correctly calculating their capital requirements. During the Assessment period, work proceeded on phase one of the program, with 'major' participants (generally those with net tangible assets (NTAs) above \$200 million) required to complete self assessments. By the end of June 2012, these participants had completed their forms and these are now being reviewed by ASX. Depending on the results from phase one, ASX may proceed with a second phase involving all other participants.
- *Business continuity spot checks.* ASX has collated participant data from a series of business continuity spot checks. These checks have examined both the governance of business continuity planning and operational arrangements. ASX is reviewing the information received and aims to release an industry report for participants that have contributed to the initiative during the third quarter of 2012.

Business Continuity Arrangements

In early 2012, ASX completed the migration of all core systems to its new operations centre, which is now its primary site for information technology infrastructure. ASX's Bridge Street office in Sydney remains its primary site for staff and ASX has retained its original backup site. Each core system is replicated at both the new operations centre and the original backup site on multiple servers with spare capacity, delivering a high level of system redundancy. Additionally, should one level of redundancy be lost, ASX policy is to activate an additional tier of redundancy arrangements within 24 hours to meet the contingency of any further service interruption. ASX is able to fail over to its clearing and settlement backup systems within one hour in most circumstances. Furthermore, even in the event of delay during failover, any disruption to participants would be minimised

since ASX's systems could, in most circumstances, continue to accept messages submitted; these would be processed once failover was completed.

To further support rapid recovery in the event of an operational disruption, ASX is also gradually increasing the number of operational staff based at the new operations centre, and plans to have around 30 per cent of operational staff located there by early 2013. In case of a disruption to staffing arrangements at the Bridge Street office, the operations centre has capacity to house 65 per cent of all operational staff.

The Bank strongly endorses these enhancements, which are consistent with international best practice for systemically important systems.

Compliance with the Principles

Further to the release of the Principles in April 2012, ASX has begun to consider the implications of the various additional measures required. This work is important to ensure ASX's readiness to comply with regulatory requirements aligned with the Principles, both in Australia (i.e. the proposed new FSSs) and in relevant overseas jurisdictions (i.e. the home jurisdictions of participants in the ASX CS facilities).

Some actions in accordance with the new Principles are already underway. Ongoing work to introduce margining in the cash equity market (as discussed in Section 5.1, below) is consistent with new requirements under the Principles. In discussion with the Bank, ASX has identified a range of additional measures and policy clarifications arising from the Principles. ASX is planning to consult with participants and other stakeholders on issues such as:

- *Segregation and portability.* Examining alternative options for meeting new expectations around segregation and portability of client positions and collateral.
- *'Cover one plus affiliates' stress testing of credit and liquidity exposures.* Both ASX CCPs would need to ensure that their financial resources, currently calibrated to cover the default of the participant that would cause the largest aggregate credit exposure, were sufficient to cover the joint default of the participant *and its affiliates* that would cause the largest aggregate credit or liquidity exposure. ASX is working towards implementing regular 'cover one plus affiliates' stress testing of both credit and liquidity exposures at both CCPs during the 2012/13 Assessment period.
- *Access to liquidity to minimise the risk of rescheduling settlements.* Currently, ASX Settlement can reschedule transactions for settlement at a later date, one effect of which may be to defer ASX Clear's payment obligations in the event of a participant default. ASX Clear will need to consider additional steps to ensure that, in accordance with the Principles, it is able to meet its payment obligations at the time they fall due. One possibility may be to conclude explicit contingent *ex ante* agreements with participants for liquidity provision.
- *Collateral eligibility.* Under the Principles, the ASX CCPs will no longer be able to routinely accept bank guarantees as collateral. Other changes to ASX's collateral acceptance policies may also be required, including restrictions on the acceptance of collateral subject to 'wrong-way' risk.¹⁹ It is not expected that these changes would impose significant additional costs on the currently licensed CCPs, although there may be some additional costs to participants that need to supply alternative collateral.

The Bank welcomes ASX's early consideration of these measures and will remain in dialogue with ASX through the consultation process and subsequent policy development.

¹⁹ Wrong-way risk is the risk that the value of collateral held to cover an exposure to a given participant is positively correlated with the creditworthiness of that participant.

Treasury Investment Policy

In addition, ASX is encouraged to undertake a review of its Treasury Investment policy, in consultation with the Bank. In accordance with the Treasury Investment policy endorsed annually by both Clearing Boards, ASXCC invests both cash margin collected and pooled risk resources in short-dated highly rated assets. The policy establishes counterparty eligibility criteria and sets investment limits to control investment counterparty risk. Notwithstanding that the policy sets limits on both the absolute level and share of exposure to each of the four large domestic banks, it still allows relatively large and concentrated credit exposures to these banks.

This issue was discussed in the Bank's Assessments in 2007/08 and 2008/09, with ASX encouraged to review possible measures to reduce the size and concentration of its exposures to the large domestic banks.²⁰ Alternative measures considered included disincentivising the use of cash collateral, and investment on a secured basis by entering into repurchase (repo) arrangements backed by Commonwealth Government Securities (CGS). It was, however, acknowledged that a lack of depth in the CGS market might limit ASX's options, and that disincentivising the use of cash collateral could have adverse liquidity risk implications for the CCPs. While cash margins held by ASX have fallen markedly in recent years, to around 30 per cent of the peak levels reached in 2008/09, issuance of CGS has increased considerably and there is also some prospect of greater depth in the repo market in the near future (as noted in the 'Strategic Initiatives' section below). Given these developments, it is timely for ASX to revisit this issue. Such a review will also support an assessment of ASX's Treasury Investment policy against explicit recommendations in the Principles.

Strategic Initiatives

In 2012, ASX commenced a strategic review to develop its priorities over the next three years. The ASX Board is expected to finalise the review in the second half of 2012. The review covers a number of enhancements to its products, services and systems, some of which have been discussed in previous Assessments. Three initiatives will be of particular relevance to the Bank's future Assessments of the ASX CS facilities:

- *ASX Collateral.* ASX plans to offer a centralised collateral management service ('ASX Collateral') that will assist users to more efficiently manage and reallocate the collateral they post against counterparty exposures. Such efficiencies may be expected to encourage greater depth in the repo market. This service will utilise CmaX, a collateral optimisation engine developed by Clearstream Banking S.A. (Clearstream) (an international central securities depository based in Luxembourg). See Box C for more details.
- *Central clearing of over-the-counter (OTC) derivatives.* ASX is conducting a design study to gauge the feasibility of offering central clearing of Australian-denominated OTC interest rate derivatives. ASX is considering the development of this service in the context of Australia's G-20 commitment to increase the use of central clearing within the Australian OTC derivatives market. As part of this process, ASX has established a working group involving a number of large domestic and international banks that represent the majority of the activity in the Australian OTC interest rate derivatives market. Drawing on data provided by working group members, ASX is considering key elements of the design of such a service, including estimates of initial and variation margins, the potential for margin offset against exchange-traded interest rate derivatives, and the likely size of pooled risk resources. ASX is aiming to complete the design study later this year, with a delivery target for the new service of June 2013.

²⁰ The 2007/08 and 2008/09 Assessments are available at <<http://www.rba.gov.au/payments-system/clearing-settlement/compliance-reports/2007-2008/index.html>> and <<http://www.rba.gov.au/payments-system/clearing-settlement/compliance-reports/2008-2009/index.html>>, respectively.

- *Retail trading in CGS.* In 2010, the Australian Government launched an initiative to facilitate trading in CGS by retail investors. ASX is currently developing a trading, clearing and settlement service to meet this objective. Trading on the new facility will be in depository interests, each representing equitable interest in CGS held by a depository nominee and created by a market maker. It is proposed that trades in depository interests will be novated to ASX Clear and that settlement will occur on a t+3 basis in ASX Settlement, as for cash equities. This is a departure from existing arrangements for wholesale trading in CGS, which occurs on an OTC basis, with no central clearing, and with settlement in Austraclear. However, the proposal remains subject to regulatory approval. One consideration is the possibility that some wholesale activity in CGS migrates to the new trading facility – and therefore settlement migrates from Austraclear to ASX Settlement. Both the current FSSs and the proposed new standards require that settlement of high-value transactions, such as wholesale CGS, occur on a gross transaction-by-transaction basis (i.e. delivery-versus-payment (DvP) model 1). This is the model operated currently by Austraclear. Settlement in ASX Settlement, by contrast, occurs in a single multilateral net batch (i.e. DvP model 3). This would only be acceptable if the trading facility remained retail oriented.

The Bank welcomes ASX continuing the dialogue with its regulators as these plans develop to ensure that these initiatives are pursued in a manner consistent with ASX's ongoing compliance with the FSSs.

Box C

ASX Collateral

During the 2011/12 Assessment period, ASX announced its intention to develop ASX Collateral in partnership with Clearstream. Impending regulatory changes and other market developments are increasing demands on a limited pool of high-quality collateral, providing an incentive for market participants to optimise the use of their collateral. However, manually reallocating collateral entails significant operational costs. ASX's proposed service would automate the optimisation and allocation of collateral, with title remaining and settlement continuing to take place in the existing SSFs. ASX plans to commence offering this service for collateral held in Austraclear towards the end of the 2012/13 Assessment period, with plans to extend coverage in due course to collateral settled by ASX Settlement. This Box introduces the ASX Collateral and discusses some potential implications.

ASX's proposal involves creating a subsidiary (ASX Collateral Management Services Pty Limited) to act as a 'triparty' collateral management agent. This subsidiary would have full operational control of collateral-related transfers between ASX Collateral participants' dedicated securities accounts. Based on bilateral exposures and collateral eligibility criteria specified by ASX Collateral participants, it is proposed that Clearstream's CmaX system will calculate the optimal allocation of a participant's available collateral. The dynamic allocation would take into account factors such as up-to-date market prices, predefined limits on concentration risk, other potential uses of the collateral, and availability of new collateral (including the reuse of collateral received). ASX Collateral would then effect a transfer of collateral, in Austraclear or potentially ASX Settlement, between

participants to achieve this optimal allocation. As a result, the service has the potential to lower the opportunity cost of providing collateral, and improve operational efficiency through outsourcing back-office functions.

ASX Collateral, which will be closely linked to the ASX SSFs, has the potential to become a key piece of infrastructure in Australian financial markets. Furthermore, the links to the SSFs have the potential to affect the SSFs' compliance with the relevant FSSs. Accordingly, the Bank expects ASX Collateral functionality to comply with standards equivalent to those required of the licensed facilities with which it interacts. In particular:

- *Principal risk.* The Bank requires SSFs to settle on a DvP basis to eliminate principal risk. The Bank would expect that the arrangements for transfer of collateral via ASX Collateral provide an equivalent degree of protection. In particular, any substitution of collateral should occur on a DvP (or, strictly, delivery-versus-delivery) basis to ensure that the reallocation process does not result in any party being significantly over- or under-collateralised, and to prevent the creation of principal exposures through the substitution process.¹
- *Operational risk.* Given the interaction between ASX Collateral and the SSFs in which the collateral is held, the Bank expects ASX Collateral, including the systems provided by Clearstream, to provide a level of security and operational resilience equivalent to that required of the SSFs. This would include ensuring appropriate business continuity arrangements and providing appropriate operational support to both the SSFs and participants in the Australian time zone.
- *Default management arrangements.* The Bank would also need to be assured that there are effective default management procedures in place, and that the proposed arrangements do not introduce legal or other risks that could delay the timely and appropriate resolution of a default event. Consistent with FSS guidelines, there must be clear rules and procedures for these default arrangements.

The Bank is also working with ASX to clarify other aspects of ASX Collateral proposed activities that could have potential stability ramifications, including changes to CS facility rules and details of the proposed account structures.

¹ That is, the settlement of collateral provided to a collateral receiver should occur simultaneously with the settlement of collateral returned from a collateral receiver.

Summary

The Assessment highlights a number of important developments across the CS facilities during the period under review. These include:

- *CME SPAN.* ASX is in the process of introducing CME SPAN, a widely used margining system, at both CCPs. This is expected to facilitate better calibration of exposures to ASX's risk tolerance, and will consolidate the two CCPs' risk management for derivatives on a common platform.
- *Default management.* ASX's CCPs successfully handled the default of the MF Global subsidiaries in November 2011, in accordance with their DMF. ASX nevertheless continues to review and enhance its default management arrangements on an ongoing basis and has implemented some changes in response to lessons learned from this event.

- *Participant monitoring.* ASX improved its participant-monitoring processes by refining its participant watch list; in particular, arrangements were put in place to coordinate actions and information sharing between different areas within ASX. ASX also increased its face-to-face engagement with participants, and progressed a number of projects related to monitoring participants' compliance with ASX's rules.
- *Business continuity arrangements.* ASX completed the move to its new operations centre, which has improved redundancy arrangements for all four of its core systems, will facilitate rapid recovery, and provides an alternative workspace for a significant proportion of ASX staff.

The Bank welcomes these measures, which reflect a process of continual improvement of the CS facilities' risk management and operating frameworks over the Assessment period.

Further to the release of the Principles in April 2012, the Assessment also identifies a number of areas in which ASX, in consultation with the Bank, is considering the need for changes to ensure readiness to meet future regulatory requirements aligned with the Principles. Some actions are already underway, including ongoing work on cash equity margining at ASX Clear. Several other changes are under consideration, on which ASX plans to consult further with participants and other stakeholders over the coming period.

The Bank welcomes ASX's consideration of these measures and will remain in dialogue with ASX through the consultation process and subsequent policy development. ASX is also encouraged to carry out a review of its Treasury Investment policy, in consultation with the Bank.

The Assessment also identifies a number of strategic initiatives in train that are likely to be relevant to the Bank's future Assessments of the CS facilities. These include:

- *ASX Collateral.* ASX intends to introduce a new service that will assist users to more efficiently manage and reallocate the collateral they post to counterparties.
- *Central clearing of OTC derivatives.* ASX is studying the feasibility of offering central clearing of OTC derivatives.
- *Retail trading in CGS.* ASX has developed a proposal for trading, clearing and settling CGS depository interests using its existing cash market infrastructure.

The Bank welcomes ASX continuing the dialogue with its regulators as these plans develop to ensure that these initiatives are pursued in a manner consistent with ASX's ongoing compliance with the FSSs.

5.1 ASX Clear

Background

ASX Clear provides CCP services for a range of financial products traded on the ASX and Chi-X Australia Pty Ltd (Chi-X) markets, including cash equities, pooled investment products, warrants, certain debt products and equity- and commodity-related derivatives. Through a process known as novation, ASX Clear becomes counterparty to every eligible trade, managing the associated risk by applying a range of risk management tools.

The rights and obligations of ASX Clear and its participants are set out in the ASX Clear Operating Rules and Procedures. Under section 822B of the *Corporations Act 2001*, these rules constitute a contract under seal between ASX Clear and each of its participants, as well as between participants. The netting arrangements contained in the ASX Clear Operating Rules and Procedures are further protected under Part 5 of the *Payment Systems and Netting Act 1998*. This provides certainty for the netting process in the event of the insolvency of an ASX Clear participant.

ASX Clear applies three layers of risk management protections:

- *Participation requirements and ongoing monitoring.* ASX Clear Direct Participants clearing cash equities or derivatives are required to hold at least \$5 million in core capital, with a higher requirement of \$20 million for General Participants (which clear on behalf of third parties). While capital is only a proxy for the overall financial standing of a participant, minimum capital requirements offer comfort that a participant has adequate resources to withstand an unexpected shock, perhaps arising from operational or risk-control failings.
- *Margining and other collateralisation of exposures by participants.* Margins are routinely collected from participants in respect of derivatives exposures, but not currently for cash equities. Where exceptionally large or concentrated exposures in either derivatives or cash equities are identified through stress testing or exceed capital-based position limits (CBPL), calls are made under the Contributions and Additional Cover (CAC) regime. The margins and other collateral posted by a defaulting participant would be drawn on first by ASX Clear in the event of a default.
- *The maintenance of pooled risk resources.* Finally, ASX Clear has access to pooled risk resources of \$550 million to meet losses arising from a participant default in extreme but plausible market conditions. Of these additional resources, \$250 million are fully paid up and comprise \$3.5 million of own equity, \$71.5 million paid into a restricted capital reserve from the National Guarantee Fund in 2005, and subordinated loans totalling \$175 million provided by ASXCC. These pre-funded resources can be supplemented by 'emergency assessments' of up to \$300 million, which surviving clearing participants must pay within a reasonable time frame in the event of a participant default.

At the end of the Assessment period, ASX Clear had 44 participants, including 16 Australian-owned brokers, 19 subsidiaries of foreign banks and brokers, six subsidiaries of Australian-owned banks, and three specialist clearers. One participant joined, and subsequently resigned, during the period. Four other participants also resigned their membership in the Assessment period.

In the previous Assessment period, Chi-X was granted a licence by the Minister to operate as an approved market operator (AMO). In response, ASX launched a Trade Acceptance Service (TAS) that allows trades executed on an AMO's platform to be cleared and settled through ASX Clear and ASX Settlement, respectively.

On 31 October 2011, Chi-X began operating and accessing the TAS; Chi-X now offers trading in all S&P/ASX 200 stocks and ASX exchange-traded funds, with a market share by volume of around 3 per cent. Since its commencement, the TAS has generally been functioning effectively, with the exception of two operational outages on 11 November and 6 December 2011. These are discussed in more detail in Section 5.3.

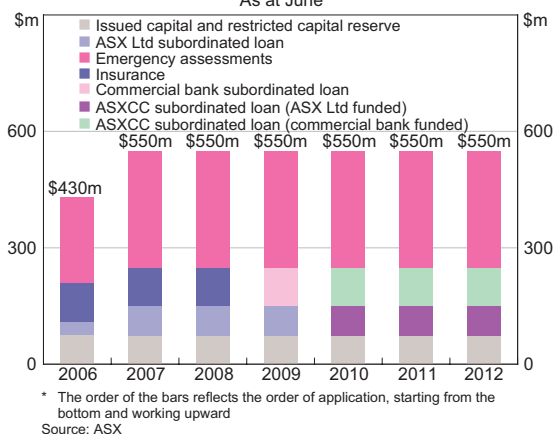
Adequacy of ASX Clear’s Total Risk Resources

The risk resources available to ASX Clear to meet losses arising in the event of participant default comprise any margin or other collateral collected from the defaulting participant, and ASX Clear’s pooled risk resources. The aggregate value of ASX Clear’s pooled risk resources has remained at \$550 million over the past six years (Graph 5). These risk resources comprise \$250 million of pre-funded resources and \$300 million of committed promissory resources.

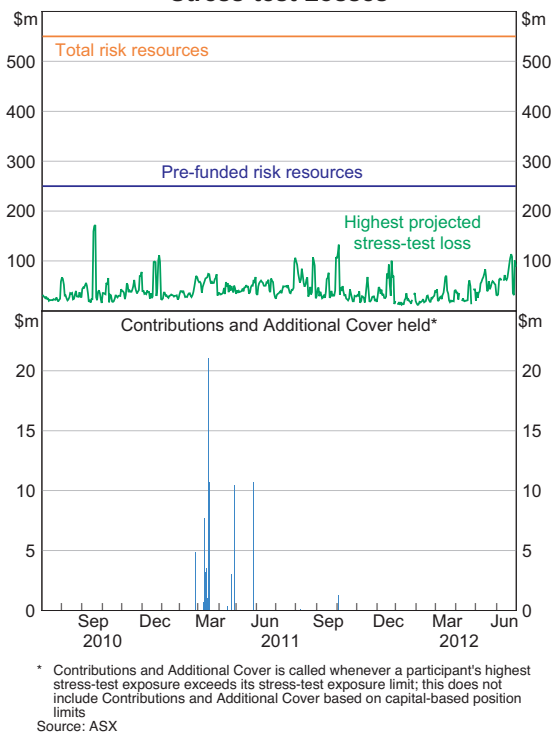
In order to assess the adequacy of its risk resources, ASX Clear compares its available pre-funded resources against the largest potential loss given the default of a participant under a range of extreme but plausible (stress-test) scenarios (Graph 6, top panel). One of these scenarios (the ‘market-up’ scenario) involves an across-the-board price increase. In August 2011, CRM raised the price risk under the market-up scenario to 12 per cent, compared with 10 per cent previously. This followed a similar rise from 7 to 10 per cent in May 2010; both changes resulted from observed persistent price declines over a number of days, which were considered to increase the probability of a subsequent rebound. On 5 December 2011 the scenario was returned to 10 per cent, following ASX Clear’s regular annual review of stress-test parameters. The review also resulted in several other minor changes to the stress-test scenarios.

ASX Clear calls for CAC whenever a participant’s potential stress-test losses on its cash equities and derivatives positions exceed a stress-test exposure limit (STEL). During the Assessment period, there were two days on which two participants’ stress-test exposures exceeded their STELs, resulting in CAC being called (Graph 6, bottom panel). STELs are linked to participants’ ICRs (as determined by ASX).

Graph 5
ASX Clear: Pooled Risk Resources*
As at June



Graph 6
ASX Clear: Highest Projected Stress-test Losses



According to the stated policy, highly rated (A-rated and B-rated) participants are eligible for discounts on the additional collateral called. Application of these discounts is dependant on current volatility of the SPI 200, as measured by its exponentially weighted moving average (EWMA), compared with its historical volatility. In April 2010, the EWMA exceeded historical volatility by a threshold amount and these discounts were suspended. They have not since been reapplied. Since B- or lower-rated participants have STELs below ASX Clear's total pre-funded risk resources, CAC can be called even when stress-test exposures do not exceed these resources.

Cash Equity Margining

In the 2011/12 Assessment period, ASX Clear continued work on the introduction of routine margining of cash equities. ASX Clear conducted a number of workshops and information sessions for market participants, industry bodies and clearing participants to finalise arrangements for implementation of the new CMM system. In July 2012, ASX Clear started calculating and reporting margin requirements to participants, with margin collections now scheduled to commence by the end of June 2013. The delayed implementation owes largely to participants' and their system vendors' requests for more time to develop the internal procedures and infrastructure needed to process margin calls and post collateral.

ASX Clear's approach to cash equity margining is to use 'futures-style' margining, involving the collection of initial margin and variation margin. Both types of margin will be routinely calculated at the end of the day and collected the following morning. Margin will be calculated and collected from clearing participants, though participants will not be required by ASX to pass through margin calls to clients. The selected methodology for initial margin calculation is largely based on historic simulation of value-at-risk (HSVaR), supplemented by flat rates for less liquid stocks (e.g. stocks outside the All Ordinaries, and warrants) and new stocks where there is insufficient historical price data. The HSVaR methodology calculates hypothetical changes in the value of a portfolio of securities, using historical price moves, and determines a margin requirement from these to achieve the desired degree of confidence. At ASX, the HSVaR calculations are based on 2 years of 1-day price moves, with a 99 per cent confidence interval. To allow for possible underestimation of future risk exposure in the HSVaR calculation, which might occur following extended periods of low volatility, ASX adds to the margin requirement using a multiple of the HSVaR calculation (1.30 for ASX 200 equities, and 1.75 for other equities in the All Ordinaries).

Cash equity transactions arising from the exercise of exchange-traded options (ETOs) will be handled differently to margin payable on traded cash market positions. Post-exercise, margin on ETOs and low exercise price options (LEPOs) will continue to be calculated using CME SPAN (so-called prolonged margining), rather than by switching to the CMM system. This will reduce the likelihood of placing liquidity strains on participants around option expiries by smoothing participants' total margin requirements.

Changes to international standards, when implemented through revised FSSs, will require that margining of cash equities is in place at ASX Clear. While, as a general matter, transitional arrangements will be considered in implementing the new FSSs, the Bank is not considering transitional relief for the application of routine margining of cash equities beyond 30 June 2013. The Bank therefore expects collection of margin to be implemented in line with ASX's revised timetable and will continue to monitor developments over the coming months.

Participation Requirements

Starting 1 January 2012, ASX Clear's minimum 'core capital' requirement for General Participants (which are permitted to act as third-party clearers) increased from \$10 million to \$20 million. The clearing participants affected by these changes increased their capital in December 2011. Ahead of the general policy change, in September 2011 ASX Clear increased the capital requirements for Penson Financial Services Pty Ltd's (Penson) – then the market's primary 'specialist' third-party clearing participant for retail brokers that are trading participants – to \$15 million, owing to concerns surrounding the financial position of its parent company. In November 2011, Penson was acquired by Pershing Securities Australia Pty Ltd (Pershing), a subsidiary of BNY Mellon.

ASX intends to increase minimum core capital for Direct Participants to \$10 million on 1 January 2014, depending on development of the third-party clearing space, which ASX will review in late 2012. ASX Clear had originally intended to further increase the minimum capital requirement for Direct Participants to \$10 million from 1 January 2012; however, due to limited development of third-party clearing services, this was deferred. While there are currently 11 General Participants that offer some form of third-party clearing, only one, Pershing, offers clearing services to retail brokers that are trading participants; Berndale Securities Limited is continuing the process of exiting from this role. The only other specialist third-party clearer is ABN Amro Clearing Sydney Pty Ltd (ABN Amro), formerly known as Fortis Clearing Sydney. While ABN Amro clears for a number of market participants, it does not offer its clearing services to retail brokers. The remaining General Participants mostly provide services to related parties.

Notwithstanding the limited number of specialist third-party clearers, ASX Clear's exposures to Pershing are typically a relatively small share of total participant exposures. As with all participants, ASX Clear monitors and manages the exposure to individual third-party clearers in accordance with its risk management framework, and as part of its risk-based capital requirements it also ensures that third-party clearers appropriately manage the risks posed by their clients.

ASX continues to actively encourage participation by authorised deposit-taking institutions (ADIs), and at the same time to consider rule changes that would streamline participation requirements for ADIs by placing some reliance on regulatory requirements imposed by the Australian Prudential Regulation Authority (APRA). Currently, no ADIs clear cash equities or ETOs on ASX Clear. Prior to October 2007, rules of the Securities Exchanges Guarantee Corporation (SEGC) meant that ASX Clear participants could potentially be called for unlimited levies, which was in conflict with APRA's prudential standards for ADIs. However, in October 2007 the Corporations (National Guarantee Fund Levies) Amendment Bill 2007 was passed, imposing a *per annum* cap on levies payable to SEGC and thereby removing the conflict between APRA's requirements and clearing participant obligations.

Central Clearing of OTC Equity Options

In May 2012, ASX Clear launched a central clearing service for OTC equity options. While the OTC equity options cleared through this service are similar to ASX ETOs, this service gives participants the flexibility to bilaterally agree the strike price, expiry date and exercise type (i.e. American or European). Given the similarity between these products, OTC equity options are subject to equivalent risk management practices to those that apply for ETOs; ASX interpolates the value of OTC options using the price of similar ETOs. Phase one of this service is limited to the 20 most liquid stocks, with a maximum time to expiry of one year. A second phase of this product

launch, due to be rolled out in early 2013, will cover all ETO classes with a maximum duration of four years. As the markets for these longer-duration options currently exhibit low levels of liquidity, ASX is working with market makers to ensure sufficient market depth before they become cleared.

Operational Performance

ASX Clear's core systems are the Derivatives Clearing System (DCS) and Clearing House Electronic Sub-register System (CHESS). Developments in respect of CHESS are considered in Section 5.3. DCS recorded 100 per cent system availability in 2011/12, with average capacity utilisation of 19 per cent and peak utilisation of 41 per cent. As a result, ASX met its minimum availability target of 99.8 per cent and its minimum capacity headroom target of 50 per cent of total capacity.

Summary

It is the Bank's assessment that ASX Clear complied with the *Financial Stability Standard for Central Counterparties* during the Assessment period.

The Assessment highlights a number of important developments during the period under review. These include:

- *Participation requirements.* From 1 January 2012 the minimum core capital requirement for General Participants was increased from \$10 million to \$20 million. Subject to further review in late 2012, an increase in the minimum core capital requirement for Direct Participants, from \$5 million to \$10 million, is planned for January 2014.
- *Central clearing of OTC equity options.* ASX Clear has launched a new service for central clearing of OTC equity options, with an expansion of this offering planned for next year.

The Bank also notes that ASX Clear has delayed introducing routine margining of cash equities until June 2013. While the Bank appreciates the complexities involved in implementing cash equity margining, and fully acknowledges the competing demands on participants' technology resources, this remains an important improvement to risk management at ASX Clear. Furthermore the implementation of new FSSs, aligned with the Principles, in 2013, will require that margining arrangements are in place. While as a general matter, transitional arrangements will be considered in implementing the new FSSs, the Bank is not considering transitional relief for the application of routine margining for cash equities beyond 30 June 2013. The Bank therefore expects collection of margin to be implemented in line with ASX Clear's revised timetable and will continue to monitor developments over the coming months.

5.2 ASX Clear (Futures)

Background

ASX Clear (Futures) provides CCP services for derivatives traded on the ASX 24 market.

ASX Clear (Futures) operates within a sound legal framework, based on its Operating Rules and Procedures. Under section 822B of the Corporations Act, these rules constitute a contract under seal between ASX Clear (Futures) and each of its participants, as well as between participants. Among other things, the rules set out the rights and obligations of ASX Clear (Futures) and each of its participants in respect of ASX Clear (Futures)' provision of CCP services. The netting arrangements contained in the ASX Clear (Futures) Operating Rules and Procedures are further protected under Part 5 of the Payment Systems and Netting Act. This provides certainty for the netting process in the event of the insolvency of an ASX Clear (Futures) participant.

Given the concentration of counterparty risk in a CCP, effective risk management processes are crucial. ASX Clear (Futures) manages the risk associated with the potential for a participant default through a range of measures:

- *Participation requirements and ongoing monitoring.* ASX Clear (Futures) participants are required to hold at least \$5 million in NTAs. Over time, ASX Clear (Futures) plans to implement a further increase in this NTA requirement to \$10 million, with a higher requirement for those clearing for third parties.
- *Margining and other collateralisation of exposures by participants.* ASX Clear (Futures) levies margin on all derivatives products to cover any losses potentially arising should a participant default in normal market conditions. ASX Clear (Futures) also calls for Additional Initial Margin (AIM) from participants when individually large or concentrated exposures are identified, including through stress testing.
- *The maintenance of pooled risk resources.* Should margin and other collateral collected from a defaulting participant prove insufficient to meet its obligations, ASX Clear (Futures) maintains a fixed quantity of pooled risk resources. The aggregate value of the pre-funded components is currently \$370 million, calibrated to ensure coverage in extreme but plausible market conditions. This includes \$30 million in ASX Clear (Futures)' own capital; a \$70 million subordinated loan from ASXCC, in turn funded by a subordinated loan from ASX Limited; participant commitments of \$120 million; and a further subordinated loan from ASXCC of \$150 million, funded in turn by a commercial bank loan. In addition, ASX Clear (Futures) may call on participants for up to \$30 million in promissory commitments, although the ASX Clear (Futures) rules suggest that it is unlikely that these resources would be available on a timely basis following a default.

At the end of June 2012, ASX Clear (Futures) had 17 participants, predominantly large foreign banks and their subsidiaries.

Adequacy of Initial Margin

The Bank monitors the appropriateness of ASX Clear (Futures)' initial margin rates on an ongoing basis. As discussed in Box A, combined commodity rates are calibrated to cover three standard deviations of price movements over the last 60 days, which provides a high level of confidence that coverage is adequate.

One method of analysing margin coverage at a portfolio level is to compare the daily initial and variation margin requirements for each portfolio. Variation margin, when owed to the CCP, represents the loss that the portfolio has incurred over the last day. If the participant holding that portfolio were to default, initial

margin would be used to cover this loss and any further losses incurred in the time taken to fully close out the portfolio. ASX Clear (Futures) can also make intraday margin calls, which it will generally do if markets are particularly volatile. In the current Assessment period ASX improved its intraday margining system, so that the initial margin on new positions is accounted for when calculating intraday margin calls.

During the 2011/12 Assessment period, ASX Clear (Futures)' initial margin requirements covered losses arising from price movements on at least 99.8 per cent of occasions. The largest of all initial margin shortfalls was \$14.9 million, which was one of three totalling \$34.1 million on 5 August 2011 (Table 4). On 5 August 2011, the S&P/ASX 200 fell 4 per cent following the downgrade of the US federal government; ASX Clear (Futures) made an intraday margin call totalling \$381.3 million, with the single largest call being \$177.8 million. The largest shortfall on any other day was \$0.8 million. These figures are well below ASX Clear (Futures)' pre-funded pooled risk resources of \$370 million, which would have been available to cover such excesses (and any additional losses incurred in the time taken to close out the positions) should one or more of those participants have defaulted.

Since initial margin is collected once per day, variation margin often reflects losses from new positions on which initial margin has not yet been collected. Therefore, excesses of variation margin over initial margin sometimes occur that are not indicative of margin rate adequacy, but rather the time lag between establishment of a new position and the calculation and collection of associated initial margin. To provide a coverage percentage, the analysis distinguishes, where possible, between timing-related shortfalls and shortfalls arising from price movements.

Table 4: Initial Margin Shortfalls – Ten Largest
July 2011 – June 2012

	Timing-related		Price-related ^(a)	
	Shortfall \$000s	Number of accounts	Shortfall \$000s	Number of accounts
5 Aug 2011			34 100	3
29 Sep 2011			438	1
21 Oct 2011	8	1	199	1
15 Nov 2011	100	1		
21 Nov 2011	259	1		
13 Jan 2012	91	1		
16 Jan 2012	784	1		
7 Feb 2012			291	1
9 May 2012	81	1		
1 Jun 2012	83	1		

(a) May include some timing-related shortfalls that cannot be separately identified
Sources: ASX; RBA

Adequacy of ASX Clear (Futures)' Total Risk Resources

In common with other CCPs, ASX Clear (Futures) maintains a fixed amount of pooled risk resources to protect itself should initial margin be insufficient to cover default losses. The pooled risk resources are intended to protect against tail risk arising from extreme but plausible events. The advantage of using pooled resources for such protection is that setting initial margin sufficiently high to cover more extreme price movements could

impose such a high opportunity cost on participants that it disrupts trading activity and hence market liquidity.

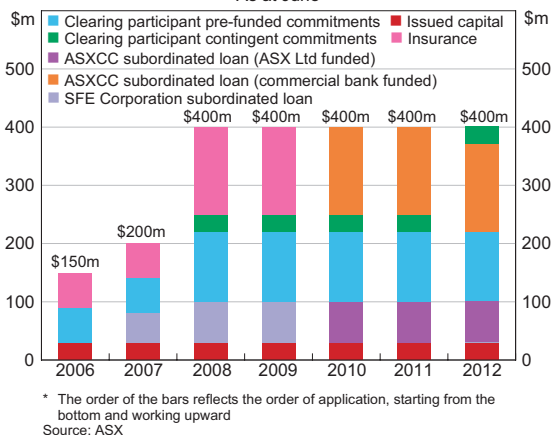
The value of ASX Clear (Futures)' pooled risk resources was unchanged throughout the Assessment period, comprising \$370 million in pre-funded resources and \$30 million in promissory participant commitments (Graph 7). In July 2011, ASX Clear (Futures) changed its rules to clarify that the promissory commitments would be called upon after the commercial bank-funded subordinated ASXCC loan in the event of a default. It also removed the promissory commitments from its STEL calculation, in recognition of the potential delay in receipt of these resources. As a result, even for A-rated clearing participants, any stress-test exposures above the level of pre-funded resources result in the collection of additional collateral.

Comparison of potential stress-test losses with the level of available risk resources offers some guidance as to the resilience of ASX Clear (Futures) to a participant default under a range of extreme but plausible (stress-test) scenarios. During 2011/12, the stress-test exposure of the participant with the highest potential loss was typically well below the value of the pre-funded component of ASX Clear (Futures)' risk resources (Graph 8, top panel). This suggests that the level of initial margin rates have been well calibrated and that the size of ASX Clear (Futures)' risk resources remained sufficient over the period to prevent undue reliance on additional collateral.

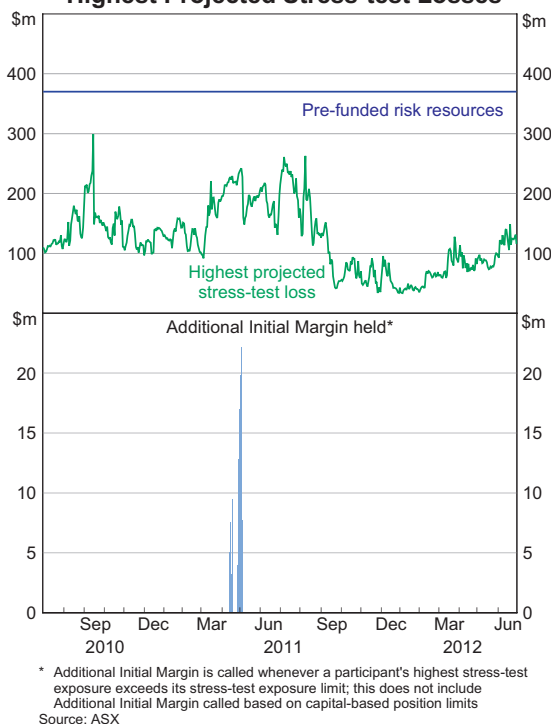
Since B-rated or lower-rated participants have STELs below ASX Clear (Futures)' total pre-funded risk resources, STEL AIMs can be called even when stress-test exposures do not exceed these resources. There were no exposures in excess of STELs in 2011/12 (Graph 8, bottom panel), although two small CBPL AIM calls were made.

One of the stress-test scenarios (the 'futures up' scenario) involves an across-the-board price rise for all futures. An increase in the futures 'up' stress-test scenario was implemented in May 2010 and remained in place during the 2011/12 Assessment period. It had initially

Graph 7
ASX Clear (Futures): Pooled Risk Resources*
As at June



Graph 8
ASX Clear (Futures): Highest Projected Stress-test Losses



been increased following an episode of declining prices over a sustained period, to allow for the possibility of a rapid rebound from such a decline. The annual review of stress-test parameters in November 2011 resulted in a number of minor parameter changes, including a decrease in the magnitude of the volatility shock for SPI 200 options under all scenarios and changes (both increases and decreases) to the futures price shocks in around half of the scenarios.

Operational Performance

ASX Clear (Futures)' core system is the SECUR system. SECUR recorded 100 per cent system availability in 2011/12, with average capacity utilisation of 18 per cent and peak utilisation of 27 per cent. As a result, ASX met its minimum availability target of 99.8 per cent and its minimum capacity headroom target of 50 per cent of total capacity.

ASX conducts business continuity tests of its core systems over two-year cycles. The most recent testing for the SECUR system was carried out in February 2012, and revealed no problems.

Summary

It is the Bank's assessment that ASX Clear (Futures) complied with the FSS for CCPs during the Assessment period. Analysis of initial margin coverage in light of the introduction of CME SPAN early in 2012 indicates that the CCP continued to achieve an adequate level of coverage over the Assessment period. There were no significant changes to the pooled risk resources available to ASX Clear (Futures) in the event of a participant default, and operational performance was consistent with targets for minimum availability and capacity headroom.

5.3 ASX Settlement

Background

ASX Settlement operates the SSF for cash equities and warrants traded on the ASX market.

ASX Settlement operates within a sound legal framework, based on its Operating Rules and Procedures. Under section 822B of the Corporations Act, these rules constitute a contract under seal between ASX Settlement and each of its participants, as well as between participants. Among other things, the rules set out the rights and obligations of ASX Settlement and each of its participants, including in the event of default or suspension. ASX Settlement's netting arrangements are approved under Part 3 of the Payment Systems and Netting Act. This provides certainty for the netting process in the event of the insolvency of an ASX Settlement participant or a Payment Provider.

ASX Settlement's securities settlement system is CHES. Settlement risk in CHES is mitigated by the use of a DvP model 3 mechanism, whereby settlement of securities transfers and associated cash payments occurs in a multilateral net batch at around noon each day (the CHES batch), with interbank cash payments made across Exchange Settlement Accounts in the Bank's real-time gross settlement (RTGS) system, the Reserve Bank Information and Transfer System (RITS). Securities title is updated upon confirmation of cash settlement from RITS.

Improvements to the Batch Settlement Model

The Bank's *Review of Settlement Practices for Australian Equities* (the Review), released in 2008, recommended a number of potential enhancements to the functioning of the batch settlement model. This review followed significant delays to the completion of settlement on two days in January 2008. In September 2009, after consultation with industry participants, ASX announced that it would implement a number of changes, including an earlier deadline for the back out of transactions scheduled for settlement in the event of the failure of a participant, or its Payment Provider, to meet its funds settlement obligation.

In August 2012, after consultation with Payment Providers, ASX agreed an earlier deadline of 2.30 pm for Payment Providers to authorise or reject payment obligations on behalf of settlement participants. This change was effective from 10 September 2012. The earlier deadline maintains a maximum payment authorisation window of 90 minutes, with ASX Settlement having brought forward its cut-off for issuing payment notifications to Payment Providers to 1.00 pm (from 1.44 pm). In addition, in the event that a Payment Provider requires longer than 60 minutes to authorise a payment, the Payment Provider must inform ASX Settlement and provide details of the participant credit concerns that are delaying their decision. Had such arrangements been in place in January 2008, decisions that ultimately resulted in the back out of a troubled participant's settlement obligations and the recalculation of the batch could have been accelerated. This would have reduced the overall length of the settlement delay, mitigating the uncertainty that ultimately affected the market at large.

Another enhancement, originally identified by ASX in its work on implementing recommendations arising from the Review, which is now close to being finalised, is so-called prolonged margining for LEPOs. Once cash equity margining is fully implemented at ASX Clear, exercised LEPOs will continue to be margined through to the settlement date of the underlying cash equity trades using the CME SPAN methodology. This will provide a permanent solution to manage the risk around LEPO expiries that results from securities delivered being

nominally valued at the \$0.01 option strike price rather than the prevailing stock price. This will replace the current temporary solution in which ASX Clear withholds all outgoing margin payments until it has been confirmed that the CHESSE batch has settled.

The Bank welcomes these refinements to the settlement model, which are consistent with the Bank's earlier recommendations.

New Settlement Services

Also during the Assessment period, two new services were developed for the CHESSE batch: a DvP settlement service for non-ASX listed securities; and the ASX Managed Funds Service (AMFS).

- From December 2011, AMOs trading securities other than those listed on the ASX have been able to opt to settle on a DvP basis in the CHESSE batch. Previously, transfer of ownership of these securities happened free of payment in CHESSE, with payment occurring separately, outside of ASX Settlement's processes. Providing DvP settlement of these trades allows participants in these markets to avoid incurring principal risk.
- AMFS is a payment and unit allocation service for managed fund units, using the CHESSE batch; this has the potential to improve the efficiency of payment arrangements in this market, which would otherwise be settled using manual or paper-based arrangements. Subject to approval from other regulators, ASX Settlement plans to launch AMFS in late 2012.

To the extent that non-novated transactions are related to novated transactions, the Bank recognises the efficiency of the current CHESSE batch process. However, as identified in the Review, where non-novated transactions are unrelated to novated market transactions, alternative settlement arrangements might, in some circumstances, be appropriate so as to mitigate the risk that any problems associated with the settlement of such transactions become a source of disruption to the entire CHESSE settlement batch.

Since AMFS payments are not related to novated settlements, ASX Settlement has accordingly developed alternative settlement arrangements to mitigate the risk that an issue with AMFS payments could disrupt the settlement of novated market trades. In particular, ASX Settlement will require that Payment Providers separately authorise payments related to AMFS settlements payments, thereby enabling settlement participants (in conjunction with their Payment Providers) to prioritise payments for novated trades.

The Bank is satisfied that the implementation of these alternative arrangements is consistent with ASX Settlement's ongoing compliance with the FSS. Nevertheless, the Bank continues to monitor the overall value of non-novated transactions (other than those related to novated market transactions) within the CHESSE batch as an indication of the potential for these transactions to disrupt the settlement of novated market transactions. Should the value of these non-novated transactions grow to become a significant component of the CHESSE batch, the Bank may encourage ASX to consider whether alternative settlement arrangements would be appropriate. Alternative arrangements could include, for instance, implementing arrangements for separate payment authorisations for other non-novated transaction classes, such as are planned for AMFS.

Operational Performance

ASX Settlement's core system is CHESSE. CHESSE recorded 99.98 per cent system availability in 2011/12, with average capacity utilisation of 13 per cent and peak utilisation of 21 per cent. As a result, ASX met its minimum availability target of 99.8 per cent and its minimum capacity headroom target of 50 per cent of total capacity.

There were, however, two operational incidents involving CHES during the Assessment period. On 11 November 2011, at around 4.00 pm, participants lost connection to CHES for around 30 minutes and were unable to process transactions; Chi-X transactions were also affected. When CHES resumed functioning, Chi-X could not automatically reconnect; the connection was eventually restored after almost 2 hours by rebooting the Chi-X CHES gateway software. On 6 December 2011, there was a problem with the TAS, arising from a CHES outage earlier on the same day. This involved discrepancies within the CHES database, which led to Chi-X transactions being rejected. CHES was unable to send confirmation messages in respect of Chi-X trades. To avoid any delays to settlement of the CHES batch, ASX Settlement waited until after the batch had settled to rectify the discrepancy by restarting the database.

Both incidents were rectified in a timely fashion. The Bank is satisfied with both ASX Settlement's immediate responses to these incidents, as well as the follow-up action to prevent a recurrence. Since these incidents affected settlement arrangements for trades executed on both the ASX market and ChiX, ASX has, in consultation with both the Bank and ASIC, developed a multi-market communication protocol.

Separately, the ASX CS facilities have also introduced procedures for better communication with participants around clearing- and settlement-infrastructure technology upgrade releases, which will facilitate their smooth implementation. This includes classifying all releases by their potential impact on participants, providing some clarification around when releases will and will not be implemented, and establishing regular updates of planned releases for the following two years.

ASX conducts business continuity tests of its core systems over two-year cycles. Testing was conducted for CHES in March 2011, as part of the formal testing program for 2010 and 2011. This testing did not reveal any problems.

Summary

It is the Bank's assessment that ASX Settlement complied with the *Financial Stability Standard for Securities Settlement Facilities* during the Assessment period.

The Assessment highlights a number of enhancements and extensions to ASX Settlement's settlement arrangements over the period, including:

- *An earlier deadline for the back out of settlement obligations.* In the event that the batch has to be recalculated, the earlier deadline accelerates this process, reducing the overall length of the settlement delay, and mitigating the uncertainty that could affect the market at large.
- *DvP settlement of non-ASX listed securities.* Providing DvP settlement of these trades allows participants in these markets to avoid incurring principal risk.
- *AMFS payment and unit allocation service.* Settling these obligations in the CHES batch has the potential to improve the efficiency of the payment arrangements for managed fund units.

The Bank welcomes the earlier deadline for the back out of settlement obligations, which is consistent with the Bank's earlier recommendations. The Bank also welcomes the forthcoming introduction of prolonged margining of LEPOs using CME SPAN as a permanent solution to manage the risk around LEPO expiries.

While the managed funds service is subject to approval from other regulators, the Bank is satisfied that the implementation of new settlement services for AMOs and managed funds is consistent with ASX Settlement's ongoing compliance with the FSS. Nevertheless, the Bank will continue to monitor the composition of the

daily settlement batch as an indication of the potential for the settlement of novated market transactions to be disrupted by problems arising in the settlement of unrelated transactions.

ASX Settlement's core system operated soundly, meeting its availability and capacity target. While there were two incidents, which also affected Chi-X, the Bank is satisfied both with ASX Settlement's immediate response to these incidents, as well as the follow-up action to prevent recurrence.

5.4 Austraclear

Background

Austraclear operates the SSF for debt securities trades, including government bonds and repos.

Austraclear operates within a sound legal framework, based on its Regulations and Procedures. Under section 822B of the Corporations Act, these have effect as a contract under seal between Austraclear and each of its participants, as well as between participants. Among other things, the Regulations set out the rights and obligations of Austraclear and each of its participants, including in the event of default or suspension. The finality of settlements undertaken by Austraclear is reinforced by its approval as an RTGS system under Part 2 of the Payment Systems and Netting Act. This approval protects the finality of payments made through Austraclear should a participant enter external administration.

Austraclear addresses settlement risk by the use of a DvP model 1 mechanism, involving settlement of individual transactions on a gross basis. The interbank cash leg is paid through the Reserve Bank's RTGS system, RITS, with simultaneous transfer of securities title in Austraclear.

System Development

EXIGO is the core system used by Austraclear. During 2011/12, Austraclear commenced an in-sourcing project to take over EXIGO's third-level operational and software support, which is currently outsourced to NASDAQ OMX. The in-sourcing project will also include a software upgrade, primarily aimed at simplifying the system design. The project is being divided into three phases, comprising an architecture design phase, a handover phase during which the source code will be transferred to ASX, and an implementation and testing phase. Senior software developers from NASDAQ OMX will be assisting with the project.

This project will allow Austraclear to manage its own software development and reduce Austraclear's operational reliance on external suppliers. It therefore has the potential to significantly reduce operational risk by giving ASX control over future development of the system in terms of both the nature and timing of future enhancements. It should also improve the timeliness of ASX's responses to operational incidents, given the current reliance on highly technical 24-hour support across different time zones. In particular, this project has the potential to reduce the likelihood and duration of operational incidents such as those that occurred in the current Assessment period (discussed below under 'Operational Risk Management').

Notwithstanding these potential benefits, there are potential risks associated with internally resourcing the development of a major system. In particular, ASX will need to ensure that it can adequately resource third-level support for Austraclear, and do this without impacting the quality of support for other systems. The Bank will continue to review these and other risks through its regular liaison with ASX. Overall, however, the Bank recognises the significant potential benefits of the in-sourcing project and is supportive of this initiative.

During the Assessment period ASX also completed Release III of Austraclear as part of its Austraclear System Enhancement project. Release III was aimed at delivering functional improvements to Austraclear users based on feedback received by ASX via the Austraclear Help Desk, industry working groups and other stakeholders. The improvements cover trade management, trade input, corporate action reporting, market repo trade enhancements and straight-through processing. A second part of the Austraclear System Enhancement project, with a focus on internal operational enhancements, has been superseded by the in-sourcing project, which will allow ASX to undertake future enhancements as required.

Operational Risk Management

Since mid 2008, Austraclear has been responsible for first- and second-level operational support of EXIGO. This includes business continuity arrangements, and computer system support that does not involve changes to system components or underlying source code. Previously, this support was provided by NASDAQ OMX, which continues to provide third-level and software support until the completion of the in-sourcing project (described above).

The EXIGO system was available 99.9 per cent of the time in 2010/11, meeting the 99.9 per cent target stipulated in Austraclear's 'Step-in and Service Agreement' with the Bank. There were several operational incidents during the Assessment period, including a 4-hour outage on 10 October 2011 following the upgrade to Release III of Austraclear; and a disruption affecting some participants' access to the system on 13 and 14 February 2012, which followed the move to the new operations centre.

- The outage on 10 October 2011 was caused by an existing but unknown design flaw in the software that was exposed by the upgrade to Release III. This resulted in transactions submitted late in the day failing to settle; ASX was, however, able to quickly identify the problem and implement an interim solution, so that all outstanding transactions were settled before an extended end of day cut-off. A permanent solution was installed in the following month.
- The access problems in February 2012 were related to a temporary configuration of the Austraclear system adopted during the migration to ASX's new operational site. This affected participants using one of the modes of access to Austraclear (the Austraclear National Network Infrastructure (ANNI) network), but did not prevent access to Austraclear through an internet connection. As with the earlier incident in October, ASX was able to promptly analyse the nature of the problem and implement an interim solution – in this case by switching some system operations to the backup site. A follow-up investigation confirmed that the problem was particular to the temporary configuration used during migration to the new site and would not recur on the system in its final configuration.

The Bank is satisfied with both Austraclear's immediate responses and the follow-up action taken to prevent recurrence. Going forward, completion of Austraclear's in-sourcing project will facilitate the implementation of further improvements to the stability of the EXIGO system.

Average capacity utilisation of 23 per cent was within its normal range, and peak capacity utilisation was 33 per cent. As capacity utilisation peaked above 50 per cent of total capacity in the 2009/10 Assessment period, ASX retested capacity as part of the Austraclear System Enhancement Project. The test indicated that maximum capacity was adequate to meet current requirements.

Summary

It is the Bank's assessment that Austraclear complied with the FSS for SSFs during the Assessment period. There were a small number of operational incidents related to a system upgrade and the move to the new operations centre, but the Bank is satisfied with both ASX's immediate responses to the situations, as well as the follow-up action to prevent recurrence.

ASX is in the process of increasing the level of in-house development and support for EXIGO and plans to simplify the system design to facilitate maintenance and upgrades. The Bank is supportive of these plans, which when implemented will facilitate more timely responses to operational incidents and also give ASX greater control over initiatives to enhance the stability of the Austraclear system. The Bank will, however, continue to review developments to ensure that ASX can adequately resource this function, without impacting the quality of support for other systems.

Appendix A: Detailed Information Relevant to Assessment against the Financial Stability Standards

A1. Financial Stability Standard for Central Counterparties

In assessing whether a facility has met the *Financial Stability Standard for Central Counterparties*, the Reserve Bank (the Bank) considers a number of broad principles or measures. The full text of these measures and associated guidance is available on the Bank's website.²¹ The following provides summary details of the information the Bank has used to assess ASX Clear Pty Limited (ASX Clear) and ASX Clear (Futures) Pty Limited (ASX Clear (Futures)) against each of these measures. This updates the information presented in the Bank's 2010/11 Assessment for material changes in policies and procedures over 2011/12.

A1.1 ASX Clear

ASX Clear is a wholly owned subsidiary of ASX Clearing Corporation Limited (ASXCC), itself a wholly owned subsidiary of ASX Limited. It acts as the central counterparty (CCP) for cash equities, pooled investment products, warrants, certain fixed-income products and equity- and commodity-related derivatives traded on the ASX market. Under the Trade Acceptance Service, it can also act as CCP for trades on approved market operator (AMO) platforms, such as Chi-X Australia Pty Ltd (Chi-X), which began trading on 31 October 2011.

1. Legal framework

The central counterparty must have a well-founded legal basis.

The legal basis for ASX Clear's operations is set out in the ASX Clear Operating Rules and Procedures. Under section 822B of the *Corporations Act 2001*, these rules have effect as a contract under seal between ASX Clear and each of its participants, and between each participant and each other participant. Furthermore, the netting arrangements contained in the ASX Clear Operating Rules and Procedures are protected as a 'netting market' under Part 5 of the *Payment Systems and Netting Act 1998*. This provides certainty for the netting process in the event of the insolvency of a participant.

The ASX Clear Operating Rules and Procedures define the nature and scope of the CCP's obligation to provide clearing services to participants, and describe the conditions under which final and irrevocable settlement of obligations is deemed to have occurred. The Operating Rules and Procedures also set out the rights and obligations of participants, including in the event of default or suspension.

2. Participation requirements

The requirements for participation in the central counterparty must promote the safety and integrity of the central counterparty and ensure fair and open access. Participation requirements must:

²¹ Available at <<http://www.rba.gov.au/payments-system/clearing-settlement/standards/index.html>>.

(a) be based on objective and publicly disclosed criteria;

ASX Clear has objective and transparent participation requirements, which are publicly available and form part of the CCP's Operating Rules and Procedures. The Operating Rules and Procedures also provide for an appeals process should an application for participation be rejected or a participant's access be terminated.

At the end of June 2012, ASX Clear had 44 participants – 11 of these were General Participants that offer third-party clearing services.

(b) ensure that participants in the central counterparty are of a sufficient financial standing such that the central counterparty is not exposed to unacceptable credit risks;

ASX Clear's participation requirements are designed to promote the safety and integrity of the CCP. They cover minimum capital and financial obligations; business and managerial requirements; operational resources; business continuity arrangements; and risk- and liquidity-management arrangements.

Participants clearing cash equities or options are required to comply with a risk-based capital regime under which participants must hold liquid capital in excess of a 'total risk requirement'. This reflects counterparty risk, large-exposure risk, position risk and operational risk. Brokers that do not have a need to undertake their own clearing, or choose not to hold the required amount of capital, may use the services of General Participants. Currently, Direct Participants must maintain a minimum of \$5 million in 'core capital'. Subject to a review in late 2012, ASX Clear intends to increase this requirement to \$10 million from 1 January 2014. ASX Clear requires that General Participants maintain a higher level of capital, and increased core capital requirements for these participants from \$10 million to \$20 million, effective 1 January 2012. Participants that only clear futures may elect to be covered by an alternative capital regime, based either on a net tangible asset (NTA) requirement or compliance with the regime of a prudential supervisor. At the end of the Assessment period all but three of ASX Clear's 44 participants were subject to the risk-based regime; two were subject to NTA requirements and one was subject to the regime of a prudential supervisor.

Monitoring of clearing participants is conducted predominantly by the Clearing Risk Management (CRM) unit, which covers both CCPs and reports to the Chief Risk Officer (CRO). CRM monitors day-to-day developments regarding, among other things, financial requirements, risk profiles, open positions and settlement obligations to the CCPs. Within CRM, Counterparty Risk Assessment (previously Capital Monitoring) is responsible for monitoring, assessing and investigating matters relating to financial requirements, including monitoring participants' monthly financial statements for any matters of concern. These returns may be a trigger for follow-up enquiries, for example, if the ratio of liquid capital to the total risk requirement falls below 1.7; there are sustained losses on outstanding positions; or there is a significant fall in liquid capital held.²² More stringent reporting requirements apply where a participant's capital falls below certain stated thresholds. CRM also carries out a range of participant monitoring spot checks and other initiatives designed to validate the accuracy of the financial and operational information that participants submit to ASX Clear. Current initiatives are discussed in more detail in Section 5.

CRM is also responsible for determining and reviewing participants' internal credit ratings (ICRs), drawing in part on information provided by participants in their regular financial returns to ASX. A participant's ICR is based on its external credit rating, if available, or that of its parent if either that parent provides a formal guarantee to the

²² Liquid capital is defined as the sum of core capital, cumulative preference shares, approved subordinated debt and revaluation reserves other than financial asset revaluation reserves, less excluded assets and excluded liabilities.

CCP or the participant carries the parental corporate name. Otherwise, the rating is based on the participant's capital position (or that of its parent where that parent is unrated but provides a formal guarantee to the CCP).

CRM also coordinates a 'watch list' of participants deemed to warrant more intensive monitoring. During the current Assessment period, the watch list regime was consolidated within CRM, whereas previously different teams within ASX (including CRM) had maintained separate watch lists with different triggers. The result is a more comprehensive and accessible picture of the factors affecting the risks participants bring to the CCPs. This facilitates appropriate and coordinated responses to those risks.

Inclusion on the watch list is based on a range of factors, such as: concerns emerging from a specific event or media report; significant changes in a participant's own share price, bond yield or credit default swap price; ICR downgrades; calls for additional initial margin; operational issues; compliance issues; or issues arising from ASX's routine review of financial returns. Participants on the watch list may be subject to a more stringent intraday margin call regime, and CRM will typically also carry out a detailed credit review. During the current Assessment period, the CCP Risk, Operations and Compliance Committee, which involves senior members drawn from the CRO office (including the CRM unit), ASX Compliance Pty Limited (ASX Compliance) and the Operations Division, was established in order to provide a comprehensive assessment of watch list factors monitored by all three areas. Based on such an assessment, ASX Clear may decide to place restrictions on a participant's trading, clearing and settlement activities.

(c) require that participants have the operational capacity to settle their obligations with the central counterparty in a timely manner; and

Under the Operating Rules and Procedures, the ASX Clear Board (one of the Clearing and Settlement (CS) Boards) must be satisfied that a participant has (or will have) managerial, operational, financial and appropriate complementary business continuity arrangements in place to enable it to meet its ongoing obligations, and that it is in a position to make an immediate transfer of funds to meet its obligations.

(d) allow the CS facility licensee as operator of the central counterparty to suspend or cancel the participation of an institution which breaches the applicable participation or other risk-control requirements.

ASX Clear has wide-ranging powers to sanction its participants in order to preserve the integrity of the CCP. ASX Clear may suspend or terminate a participant's authority to clear all, or any category of, market transactions in the event of a default, or in the event of a breach of the Operating Rules and Procedures that may have an adverse impact on the CCP. The action taken in the event of a breach will depend on a number of factors, including the participant's history of compliance and whether the breach implies negligence, incompetence or dishonesty. Where a breach has been identified and the participant has taken appropriate steps to rectify it, ASX Clear will typically continue to monitor the participant closely for a period of time. Breaches are also referred to the Australian Securities and Investments Commission (ASIC) and, in most cases, are investigated by the Executive Office of ASX Compliance. Disciplinary action relating to rule breaches is brought before the ASX Compliance Officer. During the 2011/12 Assessment period, ASX Clear suspended two participants, which were subsidiaries of MF Global Holdings Limited (MF Global), following an event of default. These suspensions remain in place, having been renewed each month since the event of default.

3. Understanding risks

The central counterparty's rules and procedures must enable each participant to understand the central counterparty's impact on each of the financial risks the participant incurs through participation in the central counterparty.

The ASX Clear Operating Rules and Procedures are comprehensive and are publicly available on the ASX website. The Operating Rules and Procedures explain the role and responsibilities of each category of participant and ASX Clear. Background information on ASX Clear's operations and risk management is also available on the ASX website.

ASX Clear must lodge any changes to its Operating Rules with ASIC. Under section 822E of the Corporations Act, the Minister for Financial Services and Superannuation (the Minister) has 28 days to consider, and potentially disallow, any rule changes made by a licensed CS facility. ASX Clear consults with its participants on important rule changes, and notifies participants of all changes to the Operating Rules and Procedures.

4. Novation

The rules and procedures governing the central counterparty must clearly identify:

(a) the nature and scope of novation; and

The nature and scope of novation is set out in the ASX Clear Operating Rules and Procedures. Through the process of novation, ASX Clear takes on the financial obligations of the seller to the buyer, and the buyer to the seller. The obligations of ASX Clear are to each clearing participant as principal, irrespective of whether that participant is acting on behalf of a client.

(b) the point in the clearing process at which trades are novated.

The point at which trades are novated is set out in the Operating Rules and Procedures. These specify that a broker-to-broker transaction on the ASX or Chi-X markets is novated to ASX Clear upon the acceptance and registration of the details of that market transaction within the clearing system. For cash equity market transactions, novation occurs with effect from the matching of the trade on the market. In the case of derivatives transactions, novation takes place at the time of registration (which is when the contract has been properly designated to the accounts of both participants). For both cash equities and derivatives, novation can occur no later than the evening of the day of the trade.

5. Settlement

Settlement arrangements must ensure that the central counterparty's exposures are clearly and irrevocably extinguished on settlement. This requires that:

(a) where settlement involves the exchange of one asset for another, it must be done on an appropriate delivery-versus-payment basis; and

(b) where payments, including net payments, are made to extinguish other obligations, payment must be made by real-time gross settlement.

Settlement of obligations between a CCP and its participants can involve two processes:

- The exchange of one asset for another, such as cash equities. In this case, ASX Clear utilises the settlement facility provided by ASX Settlement Pty Limited (ASX Settlement).

- Payments to or from the CCP, including margin payments relating to derivatives positions. In this instance, the ASX Clear Operating Rules and Procedures specify that the facility provided by Austraclear Limited (Austraclear) must be used.

In each case, ASX Clear calculates bilateral net positions between itself and each of its clearing participants. These positions reflect both cash payment and securities obligations. The relevant netting arrangements are outlined in the ASX Clear Operating Rules and Procedures and are protected as a netting market under Part 5 of the Payment Systems and Netting Act.

ASX Settlement's settlement process involves the use of a delivery-versus-payment (DvP) model 3 mechanism, whereby cash payments and securities transfers are settled simultaneously in a single daily multilateral net batch. As the outcome of this process, ASX Settlement participants face a net cash settlement obligation to or from ASX Settlement and a net securities settlement obligation in respect of each line of stock. Once participants' net obligations have been calculated, ASX Settlement confirms that sufficient securities are available in each participant's securities account in the Clearing House Electronic Sub-register System (CHES). The transfer of securities within the system is then restricted until the settlement process has been completed. Net cash payment obligations are forwarded for settlement in the Reserve Bank Information and Transfer System (RITS) across Payment Providers' Exchange Settlement Account (ESAs). Once cash settlement has been confirmed, ASX Settlement effects the net transfer of securities within CHES. The delivery of wool is via commodity warehouses, with ASX Clear retaining title documentation until payment has been made.

Participants settle routine margin payments in respect of ASX derivatives positions via cash transfers in Austraclear, which settle in real time via RITS. Payments transactions reflecting margin-related funds movements and treasury investments for both CCPs are settled using ASXCC's ESA.

Settlement in both ASX Settlement and Austraclear is final and irrevocable. In the case of ASX Settlement, finality is supported both by its Operating Rules and Procedures and ASX Settlement's approval under Part 3 of the Payment Systems and Netting Act. Settlement according to Austraclear's Regulations and Procedures is also final and irrevocable by virtue of its approval under Part 2 of the Payment Systems and Netting Act. Any interbank transactions arising from these settlements are settled in real time across ESAs held with the Bank. Payments within this system are also final and irrevocable; this is again supported by the approval of RITS under Part 2 of the Payment Systems and Netting Act.

6. Default arrangements

The CS facility licensee as operator of the central counterparty must ensure that it has clear rules and procedures to deal with the possibility of a participant being unable to fulfil its obligations to the central counterparty. The arrangements for dealing with a default must ensure that in this scenario timely action is taken by the central counterparty and the participants in the central counterparty, and that risks to the central counterparty and its participants are minimised. In meeting this requirement, the CS facility licensee as operator of the central counterparty must:

- (a) **require its participants to inform it immediately if they:**
 - (i) **become subject to external administration, or have reasonable grounds for suspecting that they will become subject to external administration; or**
 - (ii) **have breached, or are likely to breach, a risk-control requirement of the central counterparty;**
- and**

The ASX Clear Operating Rules and Procedures require that participants inform ASX Clear immediately in the event of a default, or if there is a reasonable expectation of such an event. The Operating Rules and Procedures envisage a number of possible events of default. These include becoming subject to external administration; being unable to meet obligations relating to open contracts; default of the clearing participant at another CCP or exchange; and being in breach of the CCP's risk-control requirements, such as failing to fulfil margin or other payment obligations to the CCP.

(b) have the ability to close out, or otherwise deal with a participant's open contracts in order to appropriately control risk if a participant:

(i) becomes subject to external administration; or

(ii) breaches a risk-control requirement of the central counterparty.

The Operating Rules and Procedures provide ASX Clear with the authority and flexibility to deal with a participant default using a variety of methods to manage their exposure. For equities, ASX Clear is able to reschedule any settlements involving the failed participant, or those affected by its failure. ASX Clear may also enter into market transactions to sell or purchase securities to facilitate the settlement of novated transactions. For derivatives, ASX Clear has the ability to close out any open contracts, to exercise or terminate open contracts, or to seek to transfer client positions. The specific close-out method will depend on market conditions and the products in question.

These formal rules are supplemented by an internal 'default management framework' (DMF), applicable to both ASX Clear and ASX Clear (Futures), to assist in the management of a clearing participant default. The DMF is based on high-level principles regarding the management of a default that have been approved by the CS Boards. In particular, these principles specify that the key aim in handling a default is to minimise the impact of the event on the ASX CCPs, clearing participants and the market.

The DMF covers each stage of a default, from the identification of a default event, to the management of the defaulter's position, real-time monitoring of financial insolvency, and financial offset and reconciliation. It is intended to be flexible, rather than prescriptive, and can be developed and adapted as needed. The DMF is reviewed on an annual basis, or more frequently as needed, and is regularly tested by in-house default management 'fire drills'. In the current Assessment period, the DMF was updated to incorporate refinements from the most recent fire drills as well as lessons from the default of MF Global (see Box B in Section 5).

The DMF and the Operating Rules and Procedures allow ASX Clear to employ a variety of methods to close out or otherwise manage the positions of a defaulting participant. These include transfer, on- or off-market liquidation, expiry, exercise, compulsory settlement (generally considered to be a 'last-resort' method of closing out) and hedging. As there are advantages and disadvantages to each close-out method, the specific method used in practice will depend on market conditions and the products in question. For example, the account structure used by the CCP is a factor in determining the ease with which client positions can be transferred following a default event. This may, subject to other legal and practical impediments, be a possibility for client derivatives positions at ASX Clear, as ASX Clear offers individually segregated client accounts for options and individually segregated client accounts with an optional omnibus client account for futures.

7. Risk controls

The CS facility licensee as operator of a central counterparty must have comprehensive risk-control arrangements in place. These arrangements must provide the operator of the central counterparty with a high degree of confidence that, in the event of extreme volatility in relevant markets, the

central counterparty will be able to settle all of its obligations in a timely manner. As a minimum, the risk-control arrangements must provide the CS facility licensee as operator of the central counterparty with a high degree of confidence that the central counterparty will be able to settle its obligations in the event that the participant with the largest settlement obligations cannot meet them. In all but the most extreme circumstances, a central counterparty must be able to settle its obligations using liquid assets as defined in this standard.

The CS facility licensee as operator of a central counterparty must:

- (a) ensure that its risk-control measures, typically a combination of its own capital, margins, guarantee funds and predetermined loss-sharing arrangements, provide sufficient coverage and liquidity; and**
- (b) undertake regular and rigorous stress testing to ensure the adequacy of its risk controls.**

The adequacy of risk-control measures must be approved by the board of the central counterparty, or an appropriate body as delegated by the board.

The risk controls of a CCP are crucial in providing a high degree of confidence that it would be able to meet its obligations in the event of a participant failure. The inability of a CCP to meet its obligations could be extremely disruptive to the financial system. The focus of the Bank in this area is ensuring that the combination of risk controls implies a very low probability of failure of the CCP.

ASX Clear's financial resources are at the core of its risk controls. These comprise margin and other collateral calls based on participants' positions; and pooled financial resources of \$550 million (of which \$250 million is fully paid up and invested in high-quality liquid assets). Stress testing is carried out daily to gauge the adequacy of financial resources and to monitor the risks associated with individual participants' positions. Where large or concentrated exposures are identified by stress testing, additional collateral calls are made on participants. These risk controls are supplemented by ASX Clear's participation requirements and participant-monitoring arrangements (Measure 2).

i. Margins

ASX Clear levies margins on derivatives products, and is in the process of implementing cash equity margining (see Section 5.1). Initial (risk) margin provides cover in the event that a participant defaults and an adverse price change occurs before the CCP can close out the participant's positions. Initial margin is calibrated so as to cover three standard deviations of the 60-day historical distribution of price movements, assuming a close-out period of either one or two days. ASX Clear also levies so called 'premium' margin on short exchange-traded option positions, updating this daily to reflect mark-to-market changes in the close-out price, and levies variation (mark-to-market) margin on both long and short low exercise price options, and all futures positions. All margin rates are reviewed on a three-monthly cycle, supplemented with ad hoc reviews during especially volatile market conditions.

ASX Clear calculates total initial margin requirements across each participant's portfolio using a margining engine based on the Theoretical Intermarket Margin System methodology, developed by the Options Clearing Corporation. The calculation of margin (using this methodology) is performed by ASX Clear's in-house Derivatives Clearing System (DCS). In the next Assessment period this methodology will be replaced with CME SPAN. This upgrade is expected to facilitate better calibration of exposures to ASX Clear's risk tolerance (see Box A in Section 5 for more detail).

Margin requirements are calculated overnight, with variation margins based on closing contract prices each day, and are notified to participants the next morning. All margin obligations are settled via Austraclear and regular calls must be met by 10.30 am. In the event of sharp intraday price movements, ASX Clear may also call margin intraday. This must be met by participants within two hours of notification. Intraday margin calls reflect changes in participants' positions and price movements.

Both variation and intraday margin obligations must be settled in cash, while participants may use cash or non-cash collateral to meet initial and premium margin obligations. Securities are eligible to be used as collateral only if strict criteria set by ASX Clear are met, and are subject to a haircut. In general, acceptable collateral includes S&P/ASX 200 index constituent stocks; exchange-traded funds that ASX deems are mature and liquid and where issuer risk is considered low (currently only the SPDR S&P/ASX 200 Fund); and stocks lodged as specific cover for a call option on that stock. The list of acceptable collateral is reviewed at least quarterly, in order to reflect changes to the S&P/ASX 200 constituent list. ASX Clear restricts the use of participant or related entity issued stocks to manage the potential risk of correlated default of a participant and the collateral issuer. ASX Clear also accepts guarantees from banks with a short-term S&P credit rating of at least A-1+ as collateral, as long as the bank is not a related entity of the participant.

Under ASX Clear's Contributions and Additional Cover (CAC) methodology, a participant is also required to post additional collateral should stress-test outcomes reveal that the potential loss arising from its positions, as at the close of the previous day, exceeds a predetermined stress-test exposure limit (STEL). Comparison of potential stress-test losses with the STEL offers some guidance as to the resilience of the CCP to a participant default in extreme market conditions. STELs are linked to participants' ICRs. In normal market conditions, highly-rated (i.e. A- and B-rated) participants are eligible for discounts on the additional collateral called. However, these discounts have not applied since April 2010 because ASX has not considered market conditions to be normal.

In addition, ASX Clear may call capital-based position limit (CBPL) CAC from participants with large portfolios (proxied by initial margin requirements) relative to their capital. CAC calls are typically made on participants by 9.30 am and must be settled within two hours, either via the transfer of cash in Austraclear, or through the provision of a bank guarantee from an approved authorised deposit-taking institution (ADI). ASX Clear may also call CAC from participants where it has counterparty credit risk concerns.

The CAC regime provides additional cover against non-systematic spikes in participants' exposures; it is not a substitute for holding sufficient pooled risk resources. There are potential shortcomings to relying too heavily on variable calls related to stress-test exposures, particularly given lags in the calculation and settlement of such calls. In deciding whether a CCP has sufficient pooled risk resources, ASX considers the size, frequency, duration and distribution of the additional collateral calls across participants. This process is documented in guidance on the circumstances in which ASX would consider increasing ASX Clear's pooled risk resources.

ii. Guarantee fund

ASX Clear maintains additional pooled financial resources to protect against losses in excess of margin and other collateral assets posted by a defaulting participant. ASX Clear holds pre-funded financial resources of \$250 million, which consist of own equity (\$3.5 million); funds held in a restricted capital reserve (\$71.5 million); and fully-drawn subordinated loans from ASXCC (totalling \$175 million), which are ultimately funded by a commercial bank loan facility (\$100 million) and a subordinated loan from ASX Limited (\$75 million). ASX Clear also has the right under its Operating Rules and Procedures to levy its participants up to \$300 million collectively in 'Emergency Assessments' should a loss caused by a participant's default exceed its other resources.

ASX Clear uses daily capital stress tests to monitor risk exposures to individual participants and the adequacy of the CCP's financial resources. These are the same stress tests used in the CAC regime, described above. Stress tests are based on 99 scenarios, each calibrated to a one-in-30-year event, and are reviewed annually. The scenarios cover extreme price moves and volatility shifts at the market-wide, sector and individual-stock levels. During 2011/12, several changes to stress-test parameters were made. The annual review of stress-test parameters occurred in November 2011 and resulted in some amendments to both sectoral and individual-stock scenarios. The implied volatility change for no price change scenarios was also increased from 200 per cent to 250 per cent for all individual stock scenarios. In August 2011, CRM raised the across-the-board 'market up' stress-test scenario to 12 per cent, compared with 10 per cent previously. This followed a similar rise from 7 to 10 per cent in May 2010. Both changes resulted from observed persistent price declines over a number of days, which were considered to increase the probability of a subsequent rebound. On 5 December 2011 the scenario was returned to 10 per cent.

ASXCC is the controlling entity for ASX Clear's treasury investments, which are conducted through ASXCC's ESA. In respect of both cash margin collected and pooled risk resources, ASXCC invests funds in accordance with a defined Treasury Investment policy, endorsed by the CS Boards of both CCPs. This policy is designed to ensure that risk resources can be reliably accessed on a timely basis. The performance of the investment portfolio in relation to this policy is closely monitored by ASXCC, with trigger points being set to automatically escalate potential issues to the CRO before actual limits are reached.

The policy restricts treasury investments to high-quality liquid assets, such as Commonwealth Government Securities (CGS), bank bills and certificates of deposit. Limits are set for maximum instrument maturity, weighted average maturity, maximum share of liquid assets that can be held in safe custody bank bills, and maximum maturity for foreign exchange instruments. The Treasury Investment policy also sets a 5-day 'Earnings-at-Risk' limit based on a defined share of the portfolio at a 99 per cent confidence interval.

The Treasury Investment policy defines investment counterparty eligibility criteria and sets investment limits in order to control counterparty investment risk. Investment counterparties must be Australian Prudential Regulation Authority (APRA) approved ADIs that are licensed banks in Australia under the *Banking Act 1959* that are not clearing participants. They must also have a Standard and Poor's short-term credit rating of A1 or above. As well as restricting the proportion of the portfolio that can be invested with a single counterparty to 33 per cent, the policy sets an absolute limit on ASXCC's exposure to an individual counterparty. For all counterparties, with the exception of the four largest domestic banks, this limit is set with regard to the resources ASXCC has available to cover an investment counterparty default. Notwithstanding the application of such limits, the policy leaves open the potential for large and concentrated credit exposures to the four largest domestic banks. A further issue arising from investment in bank-issued assets is that, where an entity related to the issuer counterparty is also a clearing participant, the performance of investments in the portfolio may be correlated with the very default event against which the CCP's risk resources seek to provide cover.

The policy also sets upper limits for the average maturity of investments and an overarching liquidity requirement based on assumed 'ordinary' liquidity needs (e.g. for the return of margin to participants, based on the maximum required over the previous year); liquidity needs in the event of a default (i.e. the Default Liquidity Requirement (DLR)); and the value of cash margin posted by the largest clearing participant. These liquidity resources must be available within two hours; and must comprise cash, or securities eligible for repurchase transactions with the Bank.

ASX Clear uses a liquidity stress-testing model to assess the adequacy of its liquidity arrangements. The model, which is based on ASX Clear's capital stress tests (described above) and is similar to that used by ASX Clear (Futures), calculates the maximum liquid funds that ASX Clear would need to access in order to be able to meet obligations arising in the event of a clearing participant default, acknowledging that ASX Settlement currently has the flexibility to reschedule ASX Clear settlements. The liquidity stress tests assume that a default occurs just prior to receipt of the previous day's variation margin payments, if owed by the defaulter, or just after any variation margin payments have been paid, if owed to the defaulter. The stress tests thereby maximise the potential liquidity required under each stress-test scenario. The results of the liquidity stress tests (the DLRs) are compared to the CCP's Available Financial Resources (AFR). For ASX Clear, the AFR is currently set at \$300 million and is met by liquid assets held in respect of ASX Clear's pre-funded risk resources of \$250 million, and a further \$50 million available under a committed standby liquidity facility. A stress-test result above the AFR for three consecutive trading days is considered a breach of the AFR and triggers a review of the adequacy of the AFR. Such a review takes into account the outcome of the capital stress tests, as any CAC calls will provide extra liquidity.

iii. Loss sharing

This section of the Measure applies to arrangements where participants commit to meet any settlement shortfall. It does not require that a facility has loss-sharing arrangements in place, but where they exist they should be documented, legally enforceable and acknowledged by all participants in the CCP. One element of ASX Clear default resources is a promissory component up to a fixed amount (the Emergency Assessments referred to in the previous section of this Measure). This is not an open-ended commitment and does not constitute a loss-sharing arrangement as contemplated by Measure 7(iii).

8. Governance

The central counterparty must have effective, accountable and transparent governance arrangements.

Ultimate responsibility for the control of the financial risks faced by ASX Clear lies with the ASX Limited Board and the ASX Clear Board. The ASX Limited Board, which is accountable to ASX Group (ASX) shareholders, is responsible for overseeing the processes for identifying significant risks to ASX and ensuring that appropriate and adequate control, monitoring and reporting mechanisms are in place. In addition, the ASX Limited Board assigns certain responsibilities to the ASX Clear Board (as specified in the ASX Limited Board Charter), including the management of ASX Clear's clearing and settlement risk, and oversight of its compliance with the *Financial Stability Standards* (FSSs).

The ASX Limited Board Charter also places requirements on the Board structure, including that the majority of members and the Chair of the ASX Limited Board be independent (defined as being free of business or other relationships that could interfere with independent exercise of judgement). There are currently eight members of the ASX Limited Board, comprising the ASX Chief Executive Officer (CEO) and seven independent, non-executive directors. The ASX Limited Board appoints the members of the ASX Clear Board, with independent directors selected based on relevant skills and expertise. Currently, the ASX Clear Board comprises one executive director (the ASX CEO) and six non-executive directors. Four of the non-executive directors are also members of the ASX Limited Board, while the remaining two, including the Chairman, are external directors appointed for their expertise in clearing and settlement matters. The other CS boards – ASX Clear (Futures), ASX Settlement and Austraclear – have the same directors and Chairman as the ASX Clear Board. The ASX Limited Board Charter and the profiles of all board members are publicly available online.

The ASX Clear Board meets between six and eight times each year, and receives detailed reports on ASX Clear's business and operations, risk management and financial performance. It is responsible for approving capital, liquidity and stress-testing arrangements.

Within ASX's management structure, reporting lines for those units primarily responsible for financial risk management are segregated from other business units, reporting to the CRO, who in turn reports directly to the CEO. There are five functional areas within ASX with at least some responsibility for CCP financial risk management: the Clearing Risk Policy unit; the CRM unit; the Enterprise Risk unit; the Internal Audit unit; and the Portfolio Risk Manager. The CRO is not responsible for any other functions, and none of the units within the CRO's portfolio have a revenue or profit objective. In addition, ASX maintains a number of executive committees that have some responsibility for financial risk management.

9. Operational risk

The CS facility licensee as operator of a central counterparty must identify sources of operational risk and minimise these through the development of appropriate systems, controls and procedures.

ASX Clear's key operating systems are DCS and CHESS. Operational risk in the CHESS system is dealt with in the discussion of ASX Settlement (see Appendix A2.1, below).

i. Security and operational reliability

The security of DCS is supported by access controls, restricting access both physically and virtually. The process to request access to systems is documented, monitored and formally audited. ASX Clear regularly performs external-penetration and vulnerability testing on DCS. Technology-security policy is considered by external auditors twice a year. ASX's Internal Audit unit routinely monitors compliance with policy, reporting to the Audit and Risk Committee on a quarterly basis.

ASX Clear has a number of arrangements in place to ensure DCS is operationally reliable:

- operational processes are documented and supported by internal procedures
- the design and effectiveness of control procedures supporting the core operational and systems processes are subject to regular independent external and internal audits
- critical information technology (IT) infrastructure is designed to ensure resilience against component failure, including full redundancy at the primary site
- availability targets are documented and defined formally for critical services.

Notwithstanding these arrangements, should an infrastructure failure occur at the primary site, ASX Clear policy requires that failover to the backup site should occur within one hour for all systems, or two hours in the event that there is also an application and/or data problem. ASX Clear views these failover targets as conservative. Actual failover times will vary according to the system component affected and the nature of the problem.

Over the 2010/11 Assessment period, DCS was available 100 per cent of the time. The availability target for DCS is 99.8 per cent.

DCS capacity is monitored on an ongoing basis, with monthly reviews of current and projected capacity requirements. ASX Clear ensures that it has sufficient technical and human resource capacity to operate DCS during peak periods, including in the event of operational incidents or system failure. Average capacity utilisation of DCS over the Assessment period was 19 per cent, while peak utilisation was 41 per cent. ASX

continues to monitor the capacity of DCS to ensure peak utilisation does not exceed its minimum capacity headroom target of 50 per cent of total capacity.

ASX Clear has arrangements in place to ensure that changes to DCS and supporting infrastructure do not disrupt its normal operations. ASX Clear operates a separate test environment for DCS and has a formal, documented change-management process. It also follows defined procedures for communicating with participants and vendors around technology-upgrade releases, which include regular notices to participants of upcoming changes. These procedures were reviewed and updated in the 2011/12 Assessment period.

ASX Clear also has arrangements in place to ensure it has well-trained and competent personnel operating DCS. Staff are provided with relevant policies and guidelines from commencement of employment, with weekly communications thereafter. Staff are evaluated with reference to each defined operational process. ASX Clear has a formal succession-planning and management process in place.

ii. Business continuity procedures

ASX Clear maintains extensive contingency plans detailing the appropriate operational response to a CS facility disruption, including coverage of the various lines of authority, means of communication, and failover procedures. These plans are updated periodically. The risk that an operational incident at the main site disrupts DCS is mitigated through maintenance of a backup site. In early 2012, ASX completed the migration of all core systems to its new operations centre, which is now its primary site for IT infrastructure (ASX's Bridge St office in Sydney remains its primary site for staff).

ASX Clear employs a variety of technologies to ensure a high degree of redundancy in its systems – both across sites and within a single site. All core systems employ multiple servers with spare capacity. Front-end servers handling communications with participants are configured to provide automatic failover within each site. Failover of the more critical data servers will generally take place within an hour under the control of management; however, the disruption to participants in such a case is reduced due to the high degree of redundancy in the front-end system components, which in most circumstances will maintain communications with external systems and queue transactions until the data servers are reactivated. The integrity of transactions is ensured by queuing messages until they can be processed; storing all transactions in the database with unique identifiers, thereby preventing the loss or duplication of transactions; and synchronised replication of database records across both sites. Furthermore, in the event that a significant part of a system or an operational site fails, ASX Clear has contingency arrangements to activate an additional tier of redundancy arrangements (either by converting test systems into production systems or rebuilding systems from readily available hardware) within 24 hours to meet the contingency of any further service interruption.

To facilitate rapid recovery in the event of an operational disruption, ASX Clear is gradually increasing the number of operational staff based at the operations centre (which is the backup site for staff), and plans to have around 30 per cent of operational staff located there by early 2013. In case of a disruption to staffing arrangements at the Bridge St office, the operations centre has capacity to house 65 per cent of all operational staff.

ASX Clear regularly tests its business continuity arrangements. Connectivity and procedural testing of the backup site are performed monthly by representatives from ASX Clear. Live tests (i.e. where market and clearing and settlement services are provided in real time from the backup site) are conducted on a two-year cycle. Test results are formally documented and reported to ASX senior management and are also made available

to internal and external auditors. The adequacy of ASX Clear's business continuity procedures is reviewed regularly, as part of broader reviews of ASX Clear's operational-risk policy.

ASX Clear's Operating Rules and Procedures require participants to maintain adequate business continuity arrangements to allow the recovery of usual operations within one to two hours following a contingency event. If a participant fails to do so, ASX Clear may impose sanctions. Spot checks of participants' business continuity management are triggered if a participant has been experiencing operational problems. These include examination of governance and processes.

In the current Assessment period, ASX developed a 'multi-market communication protocol' for communicating information to participants and stakeholders should any disruption to market, clearing or settlement services eventuate. Development of this protocol follows engagement with ASIC, the Bank and Chi-X. In particular, ASX and ASIC have been working on defining high-level communication points and areas of responsibility, with ASX assuming responsibility for communicating with participants and ASIC assuming responsibility for communicating with the clients of participants.

iii. Outsourcing

All ASX Clear operational functions are performed within ASX. However, external suppliers are used for various services, such as utilities, hardware maintenance, operating system and product maintenance, and certain security-related specialist independent services.

iv. External administration of a related body

Within the ASX structure, most operational resources are provided by ASX Operations Pty Limited (ASX Operations), a subsidiary of ASX Limited. In the event that ASX Operations became subject to external administration and this particular event did not impact upon the capacity of ASX Clear to continue operating, ASX Clear would be able to retain use of resources under provisions within the written support agreement between it and ASX Operations (to the extent permissible by law).

10. Regulatory reporting

ASX Clear, as a CS facility licensee, is required to meet certain reporting obligations to the Bank under the FSS for CCPs. These obligations include the reporting of breaches of the FSS; the failure of a participant to fulfil the CCP's risk-control requirements; and the CCP's failure to enforce its own risk-control requirements. There are also obligations to report financial and stress-testing results on a quarterly basis. ASX Clear satisfied all reporting obligations during the Assessment period.

A1.2 ASX Clear (Futures)

ASX Clear (Futures) is a wholly owned subsidiary of ASXCC, itself a wholly owned subsidiary of ASX Limited. ASX Clear (Futures) acts as the CCP for all futures and options products that are traded on the ASX 24 market.

1. Legal framework

The central counterparty must have a well-founded legal basis.

The legal basis for ASX Clear (Futures)' operations is set out in the ASX Clear (Futures) Operating Rules and Procedures. Under section 822B of the Corporations Act, these rules have effect as a contract under seal between ASX Clear (Futures) and each of its participants, and between each participant and each other

participant. Furthermore, the netting arrangements contained in ASX Clear (Futures)' Operating Rules and Procedures are protected as a netting market under Part 5 of the Payment Systems and Netting Act. This provides certainty for the netting process in the event of the insolvency of a participant.

ASX Clear (Futures)' Operating Rules and Procedures define the nature and scope of its obligation to provide clearing services to participants, and describe the conditions under which final and irrevocable settlement of obligations is deemed to have occurred. The Operating Rules and Procedures also set out the rights and obligations of participants, including in the event of default or suspension.

2. Participation requirements

The requirements for participation in the central counterparty must promote the safety and integrity of the central counterparty and ensure fair and open access. Participation requirements must:

(a) be based on objective and publicly disclosed criteria;

ASX Clear (Futures) has objective and transparent participation requirements, which are publicly available and form part of its Operating Rules and Procedures. The Operating Rules and Procedures also provide for an appeals process should an application for participation be rejected or a participant's access be terminated.

At the end of June 2012, ASX Clear (Futures) had 17 participants, predominantly large foreign banks and their subsidiaries.

(b) ensure that participants in the central counterparty are of a sufficient financial standing such that the central counterparty is not exposed to unacceptable credit risks;

ASX Clear (Futures)' participation requirements are designed to promote the safety and integrity of the CCP. They cover minimum capital and financial obligations; business and managerial requirements; operational resources; business continuity arrangements; and risk- and liquidity-management arrangements.

Participants are subject to a minimum NTA requirement of \$5 million. ASX management has discretion to impose a higher requirement. Over time, ASX Clear (Futures) plans to implement a further increase in this NTA requirement to \$10 million, with a higher requirement for those participants clearing for third parties. The Operating Rules and Procedures also allow ASX Clear (Futures) to impose requirements for net liquid assets, which must at a minimum be greater than zero.

Monitoring of clearing participants is conducted predominantly by the CRM unit, which covers both CCPs and reports to the CRO. CRM monitors day-to-day developments regarding, among other things, financial requirements, risk profiles, open positions and settlement obligations to the CCPs. Within CRM, Counterparty Risk Assessment (previously Capital Monitoring) is responsible for monitoring, assessing and investigating matters relating to financial requirements, including monitoring participants' monthly financial statements for any matters of concern. CRM also carries out a range of participant monitoring spot checks and other initiatives designed to validate the accuracy of the financial and operational information that participants submit to ASX Clear (Futures). Current projects are discussed in more detail in Section 5.

CRM is also responsible for determining and reviewing participants' ICRs, drawing in part on information provided by participants in their regular financial returns to ASX. A participant's ICR is based on its external credit rating, if available or that of its parent if either that parent provides a formal guarantee to the CCP or the participant carries the parental corporate name. Otherwise, the rating is based on the participant's capital position (or that of its parent where that parent is unrated but provides a formal guarantee to the CCP).

CRM also coordinates a watch list of participants deemed to warrant more intensive monitoring. During the current Assessment period, the watch list regime was consolidated within CRM, whereas previously different teams within ASX (including CRM) had maintained separate watch lists with different triggers. The result is a more comprehensive and accessible picture of the factors affecting the risks participants bring to the CCPs. This facilitates appropriate and coordinated responses to those risks.

Inclusion on the watch list is based on a range of factors, such as concerns emerging from a specific event or media report; significant changes in a participant's own share price, bond yield or credit default swap price; ICR downgrades; calls for additional initial margin; operational issues; compliance issues; or issues arising from ASX's routine review of financial returns. Participants on the watch list may be subject to a more stringent intraday margin call regime, and CRM will typically also carry out a detailed credit review. During the current Assessment period, the CCP Risk, Operations and Compliance Committee, which involves senior members drawn from the CRO office (including the CRM unit), ASX Compliance and the Operations Division, was established in order to provide a comprehensive assessment of watch list factors monitored by all three areas. Based on this assessment, ASX Clear (Futures) may decide to place restrictions on the participant's trading, clearing and settlement activities.

(c) require that participants have the operational capacity to settle their obligations with the central counterparty in a timely manner; and

Under the Operating Rules and Procedures, the ASX Clear (Futures) Board (one of the CS Boards) must be satisfied that a potential participant has (or will have) managerial, operational, financial and appropriate complementary business continuity arrangements in place to enable it to meet its ongoing obligations, and that it is in a position to make an immediate transfer of funds to meet its obligations.

(d) allow the CS facility licensee as operator of the central counterparty to suspend or cancel the participation of an institution which breaches the applicable participation or other risk-control requirements.

ASX Clear (Futures) has wide-ranging powers to sanction its participants in order to preserve the integrity of the CCP. ASX Clear (Futures) may suspend or terminate a participant's authority to clear all market transactions in the event of a default, or in the event of a breach of the Operating Rules and Procedures that may have an adverse impact on the CCP. The action taken in the event of a breach will depend on a number of factors, including the participant's history of compliance and whether the breach implies negligence, incompetence or dishonesty. Where a breach has been identified and the participant has taken appropriate steps to rectify it, ASX Clear (Futures) will typically continue to monitor the participant closely for a period of time. Breaches are also referred to ASIC and, in most cases, are investigated by the Executive Office of ASX Compliance. Disciplinary action relating to rule breaches is brought before the ASX Compliance Officer. During the 2011/12 Assessment period, ASX Clear (Futures) suspended two participants, which were subsidiaries of MF Global, following an event of default. These suspensions remain in place, having been renewed each month since the event of default.

3. Understanding risks

The central counterparty's rules and procedures must enable each participant to understand the central counterparty's impact on each of the financial risks the participant incurs through participation in the central counterparty.

The ASX Clear (Futures) Operating Rules and Procedures are comprehensive and publicly available on the ASX website. The Operating Rules and Procedures explain the role and responsibilities of participants and ASX Clear (Futures). Background information on ASX Clear (Futures)' operations and risk management is also available on the ASX website.

ASX Clear (Futures) must lodge any changes to its Operating Rules with ASIC. Under section 822E of the Corporations Act, the Minister has 28 days to consider, and potentially disallow, any rule changes made by a licensed CS facility. ASX Clear (Futures) consults with its participants on important rule changes, and notifies participants of all changes to the Operating Rules and Procedures.

4. Novation

The rules and procedures governing the central counterparty must clearly identify:

(a) the nature and scope of novation; and

The nature and scope of novation is set out in the ASX Clear (Futures) Operating Rules and Procedures. Through the process of novation, ASX Clear (Futures) takes on the financial obligations of the seller to the buyer, and the buyer to the seller. The obligations of ASX Clear (Futures) are to each participant as principal, irrespective of whether that participant is acting on behalf of a client.

(b) the point in the clearing process at which trades are novated.

The point at which trades are novated is set out in the Operating Rules and Procedures. These specify that a transaction on the ASX 24 market is novated to ASX Clear (Futures) upon the registration of a matched trade by the market, which occurs in ASX 24's SYCOM system. Non-market trades are novated once their details have been approved and registered by ASX Clear (Futures).

5. Settlement

Settlement arrangements must ensure that the central counterparty's exposures are clearly and irrevocably extinguished on settlement. This requires that:

(a) where settlement involves the exchange of one asset for another, it must be done on an appropriate delivery-versus-payment basis; and

(b) where payments, including net payments, are made to extinguish other obligations, payment must be made by real-time gross settlement.

The vast majority of ASX Clear (Futures) settlements involve cash payments to or from the CCP. These include margin payments and the settlement of cash-settled derivatives contracts. Settlement of payments generally occurs on a net basis. Each day, ASX Clear (Futures) calculates the net obligations of each of its participants. ASX Clear (Futures) participants with a net obligation to the CCP are required to make payments to ASX Clear (Futures) by 11.00 am, for both AUD- and NZD-denominated contracts. Once these payments have been received, ASX Clear (Futures) makes payments to those participants with a net obligation from the CCP.

AUD settlements occur via Austraclear, with interbank obligations settled on a real-time gross settlement (RTGS) basis across ESAs at the Reserve Bank of Australia, via RITS. ASX Clear (Futures) uses ASXCC's ESA to settle its obligations in RITS. NZD settlements occur via NZClear (an SSF owned by the Reserve Bank of New Zealand, of which ASXCC is a participant), with the interbank obligations settled on an RTGS basis across accounts at the Reserve Bank of New Zealand, via the Exchange Settlement Account System (ESAS). To access ESAS, ASXCC is represented by a private bank with an ESAS account, and transfers are effected between this account and participants' (or their representative banks') ESAS accounts.

In some cases, the settlement of derivatives contracts cleared by ASX Clear (Futures) involves the transfer of a security or physical asset, with a corresponding transfer of cash. For each type of security or asset, ASX Clear (Futures)' arrangements ensure that delivery occurs if, and only if, payment occurs. For 90-day bank bill futures, ASX Clear (Futures) utilises the standard settlement process in Austraclear. The delivery of grain and wool is via commodity warehouses, with ASX Clear (Futures) retaining title documentation until payment has been made.

ASX Clear (Futures) also accepts some collateral denominated in AUD, NZD and a small number of other currencies as initial margin. ASX Clear (Futures) has accounts at Austraclear and NZClear for settling AUD- and NZD-denominated securities, respectively. Collateral denominated in other currencies is settled indirectly via relationships with private banks.

The settlement of obligations is final and irrevocable according to the terms of ASX Clear (Futures)' and ASX 24's Operating Rules and Procedures, which set out contract specifications, including the means of settlement. For payments and securities obligations settled through Austraclear, finality is reinforced by Austraclear's Regulations and Procedures and its approval under Part 2 of the Payment Systems and Netting Act. Any interbank transactions arising from these settlements are settled in real time across ESAs held with the Bank. Payments within this system are also final and irrevocable; this is again supported by the approval of RITS under Part 2 of the Payment Systems and Netting Act.

6. Default arrangements

The CS facility licensee as operator of the central counterparty must ensure that it has clear rules and procedures to deal with the possibility of a participant being unable to fulfil its obligations to the central counterparty. The arrangements for dealing with a default must ensure that in this scenario timely action is taken by the central counterparty and the participants in the central counterparty, and that risks to the central counterparty and its participants are minimised. In meeting this requirement, the CS facility licensee as operator of the central counterparty must:

- (a) require its participants to inform it immediately if they:**
 - (i) become subject to external administration, or have reasonable grounds for suspecting that they will become subject to external administration; or**
 - (ii) have breached, or are likely to breach, a risk-control requirement of the central counterparty; and**

The ASX Clear (Futures) Operating Rules and Procedures require that participants inform ASX Clear (Futures) immediately in the event of a default, or if there is a reasonable expectation of such an event. The Operating Rules and Procedures envisage a number of possible events of default. These include becoming subject to external administration; being unable to meet obligations relating to open contracts; default of the clearing participant at another CCP or exchange; and being in breach of the CCP's risk-control requirements, such as failing to fulfil margin or other payment obligations to the CCP.

- (b) have the ability to close out, or otherwise deal with a participant's open contracts in order to appropriately control risk if a participant:**
 - (i) becomes subject to external administration; or**
 - (ii) breaches a risk-control requirement of the central counterparty.**

The Operating Rules and Procedures provide ASX Clear (Futures) with the authority and flexibility to deal with a participant default using a variety of methods to manage their exposure. ASX Clear (Futures) has the ability to close out any open contracts, to exercise or terminate open contracts, or to seek to transfer client positions. The specific close-out method will depend on market conditions and the products in question.

These formal rules are supplemented by an internal DMF, applicable to both ASX Clear and ASX Clear (Futures), to assist in the management of a clearing participant default. The DMF is based on high-level principles regarding the management of a default that have been approved by the CS Boards. In particular, these principles specify that the key aim in handling a default is to minimise the impact of the event on the ASX CCPs, clearing participants and the market.

The DMF covers each stage of a default, from the identification of a default event, to the management of the defaulter's position, real-time monitoring of financial insolvency, and financial offset and reconciliation. It is intended to be flexible, rather than prescriptive, and can be developed and adapted as needed. The DMF is reviewed on an annual basis, or more frequently as needed, and is regularly tested by in-house default management fire drills. In the current Assessment period, the DMF was updated to incorporate lessons learnt from the default of MF Global (see Box B in Section 5).

The DMF and the Operating Rules and Procedures allow ASX Clear (Futures) to employ a variety of methods to close out or otherwise manage the positions of a defaulting participant. These include transfer, on- or off-market liquidation, expiry, exercise, compulsory settlement (generally considered to be a last-resort method of closing out) and hedging. As there are advantages and disadvantages to each close-out method, the specific method used in practice will depend on market conditions and the products in question. For example, subject to other legal and practical impediments, the account structure used by the CCP is a factor in determining the ease with which client positions can be transferred following a default event. As ASX Clear (Futures) offers omnibus client account with net margining, transfer of individual client positions in a default event can be difficult due to possible undercollateralisation.

7. Risk controls

The CS facility licensee as operator of a central counterparty must have comprehensive risk-control arrangements in place. These arrangements must provide the operator of the central counterparty with a high degree of confidence that, in the event of extreme volatility in relevant markets, the central counterparty will be able to settle all of its obligations in a timely manner. As a minimum, the risk-control arrangements must provide the CS facility licensee as operator of the central counterparty with a high degree of confidence that the central counterparty will be able to settle its obligations in the event that the participant with the largest settlement obligations cannot meet them. In all but the most extreme circumstances, a central counterparty must be able to settle its obligations using liquid assets as defined in this standard.

The CS facility licensee as operator of a central counterparty must:

- (a) ensure that its risk-control measures, typically a combination of its own capital, margins, guarantee funds and predetermined loss-sharing arrangements, provide sufficient coverage and liquidity; and
- (b) undertake regular and rigorous stress testing to ensure the adequacy of its risk controls.

The adequacy of risk-control measures must be approved by the board of the central counterparty, or an appropriate body as delegated by the board.

The risk controls of a CCP are crucial in providing a high degree of confidence that it would be able to meet its obligations in the event of a participant failure. The inability of a CCP to meet its obligations could be extremely disruptive to the financial system. The focus of the Bank in this area is ensuring that the combination of risk controls implies a very low probability of failure of the CCP.

ASX Clear (Futures)' financial resources are at the core of its risk controls. These comprise margin and other collateral lodged in accordance with participants' positions; and pooled financial resources of \$400 million (of which \$30 million is promissory). Stress testing is carried out daily to gauge the adequacy of financial resources and to monitor the risks associated with individual participants' positions. Where large or concentrated exposures are identified by stress testing, additional collateral calls are made on participants. These risk controls are supplemented by ASX Clear (Futures)' participation requirements and participant-monitoring arrangements (Measure 2).

i. Margins

ASX Clear (Futures) levies initial and variation margin on the derivatives products it clears. Initial margin provides cover in the event that a participant defaults and an adverse price change occurs before the CCP can close out the participant's positions. Initial margin is calibrated so as to cover three standard deviations of the 60-day historical distribution of price movements, considering both one- and two-day price movements. All margin rates are reviewed on a three-monthly cycle, with the possibility of more frequent ad hoc reviews in times of greater market volatility.

ASX Clear (Futures) calculates total initial margin requirements across each participant's portfolio using the CME SPAN version of the internationally accepted Standard Portfolio Analysis of Risk (SPAN) methodology. CME SPAN, which is widely used, replaced the OMX RIVA version of SPAN at ASX Clear (Futures) in the first quarter of 2012. This upgrade is expected to facilitate better calibration of exposures to ASX Clear (Futures)' risk tolerance (See Box A in Section 5 for more detail).

Participants generally meet their initial margin obligations using cash, although they may also use high-quality liquid non-cash collateral, such as eligible debt securities and foreign-currency deposits. Acceptable collateral is reviewed annually, and haircuts are applied in respect of all non-cash collateral posted and all cash collateral that is not in the same currency as the product being covered.

ASX Clear (Futures) also levies variation margin on derivatives positions to cover gains or losses arising from price movements over the preceding day. Variation margin must be settled in cash. ASX Clear (Futures) transfers variation margin to participants that have made gains only after receiving all payments from participants that have made losses.

Initial and variation margin requirements are calculated overnight based on each day's closing contract prices, and are notified to participants by 6.00 am the next day. Obligations must be met via Austraclear, or, for NZ-denominated payments, NZClear, by 11.00 am Australian Eastern Standard Time. Breaches of any margin payment deadline are escalated to ASX Compliance and may attract a financial penalty.

Should ASX Clear (Futures)' exposures change significantly within the day, initial and variation margin can be called intraday. ASX Clear (Futures) recalculates its exposures to participants twice each day (in addition to the overnight calculations), and also after large price movements. In the event that its exposure to any participant has risen beyond a certain threshold, relative to the initial margin posted by that participant, intraday margin is called. Intraday margin calls reflect changes in participants' positions and price movements.

Under ASX Clear (Futures)' STEL Additional Initial Margin (AIM) methodology, a participant is also required to post additional collateral should stress-test outcomes reveal that the potential loss arising from its positions, as at the close of the previous day, exceeds a predetermined STEL. STELs are linked to the value of ASX Clear (Futures)' pre-funded risk resources and vary according to the credit quality of participants. ASX Clear (Futures) does not include the \$30 million promissory risk resources in its STELs, recognising the potential for a significant delay in receipt of these resources. Accordingly, the maximum STEL is \$370 million for participants with the highest credit rating, equivalent to the value of pre-funded financial resources available to ASX Clear (Futures). In normal market conditions, highly-rated (i.e. A- and B-rated) participants are eligible for discounts on their STEL AIM calls. However, these discounts have not applied since April 2010 because ASX has not considered market conditions to be normal.

The STEL AIM regime provides additional comfort against non-systematic spikes in participant exposure; it is not a substitute for holding sufficient pooled risk resources. There are potential shortcomings to relying too heavily on variable calls related to stress-test exposures, particularly given lags in the calculation and settlement of such calls. In deciding whether a CCP has sufficient pooled risk resources, ASX considers the size, frequency, duration and distribution of STEL AIM calls across participants. This process is documented in guidance on the circumstances in which ASX would consider increasing the ASX Clear (Futures)' pooled risk resources.

Like other margins, STEL AIMS are calculated overnight, notified to participants by 6.00 am the next day, and must be met by 11.00 am. Participants may meet these obligations using cash or non-cash collateral, including Australian Government securities and bank bills or letters of credit from ADIs. ASX Clear (Futures) does not accept collateral issued by a clearing participant or associated entity, in order to reduce the possibility that it might face the default of both a clearing participant and a collateral issuer.

In addition, ASX Clear (Futures) may call CBPL AIMS from participants with large portfolios (proxied by initial margin requirements) relative to their NTAs. ASX Clear (Futures) may also call AIM from participants where it has counterparty credit risk concerns. As with STEL AIMS, these other AIMS are calculated overnight and called the next day, but they are separately processed and called by the CRM unit. Participants are required to settle CBPL AIMS within two hours of the call.

ii. Guarantee fund

ASX Clear (Futures) maintains additional pooled financial resources to protect against losses in excess of margin and other collateral assets posted by a defaulting participant. ASX Clear (Futures)' holds pre-funded financial resources of \$370 million, which consist of own equity (\$30 million); participant commitments (\$120 million) and fully-drawn subordinated loans from ASXCC (totalling \$220 million), which is ultimately funded by a commercial bank loan facility (\$150 million) and a subordinated loan from ASX Limited (\$70 million). These pre-funded resources are relevant in assessing coverage of stress-test exposures. In addition, ASX Clear (Futures) may call on participants for up to \$30 million in promissory commitments. These are not immediately callable; indeed, the rules explicitly allow for payment a significant time after a participant default. ASX Clear (Futures)' Operating Rules and Procedures state that the ASX Clear (Futures) Board shall be entitled to apply the pooled financial resources upon default by a clearing participant. The rules stipulate the order in which the resources will be applied (which is as listed above), and make it clear that the contributions of all participants, not just those in default, may be called upon in the event of a default.

ASX Clear (Futures) uses daily stress tests of its four major contracts and the options on these contracts to monitor the risks undertaken by individual participants and the adequacy of the CCP's risk resources. These are the same stress tests used in the STEL AIM system, described above. They comprise a suite of portfolio

and single-contract stress-test scenarios based on statistical analysis of historical market movements. The stress scenarios provide consistent tests across contract types and are tailored to ASX Clear (Futures)' risk tolerance, as defined by its Board. They aim to capture one-in-30-year events for single asset scenarios and one-in-100-year events for multi-asset scenarios, and are reviewed annually. During 2011/12, several changes to stress-test parameters were made. The annual review of parameters in November 2011 resulted in a number of minor parameter changes, including a decrease in the magnitude of volatility shock for SPI 200 options under all scenarios and changes to the futures price shocks (both increases and decreases) in around half of the scenarios. The increase in the futures 'up' stress-test scenario, implemented in May 2010, remained in place during the 2011/12 Assessment period. Following an episode of declining prices over a period of 10 days, CRM considered it prudent to increase this stress-test scenario – from an across-the-board 9.5 per cent price increase, to a 14.5 per cent price increase – to allow for the possibility of a more substantial rise in prices given the potential for the market to rapidly bounce back from such a decline.

ASXCC is the controlling entity for ASX Clear (Futures)' treasury investments, which are settled across ASXCC's ESA. In respect of both cash margin collected and pooled risk resources, ASXCC invests funds in accordance with a defined Treasury Investment policy, endorsed by the CS Boards of both CCPs. This policy is designed to ensure that risk resources can be reliably accessed on a timely basis. The performance of the investment portfolio in relation to this policy is closely monitored by ASXCC, with trigger points being set to automatically escalate potential issues to the CRO before actual limits are reached.

The policy restricts treasury investments to high-quality liquid assets, such as CGS, bank bills and certificates of deposit. Limits are set for maximum instrument maturity, weighted-average maturity, maximum share of liquid assets that can be held in safe custody bank bills, and maximum maturity for foreign exchange instruments. The Treasury Investment policy also sets a 5-day 'Earnings-at-Risk' limit based on a defined share of the portfolio at a 99 per cent confidence interval.

The Treasury Investment policy defines investment counterparty eligibility criteria and sets investment limits in order to control counterparty investment risk. Counterparties must be APRA-approved ADIs that are licensed banks in Australia under the Banking Act that are not clearing participants. They must also have a Standard and Poor's short-term credit rating of A1 or above. As well as restricting the proportion of the portfolio that can be invested with a single counterparty to 33 per cent, the policy sets a limit on ASXCC's exposure to an individual counterparty. For all counterparties with the exception of the four largest domestic banks, this limit is set with regard to the resources ASXCC has available to cover an investment counterparty default. Notwithstanding the application of such limits, the policy leaves open the potential for large and concentrated credit exposures to the four largest domestic banks. A further issue arising from investment in bank-issued assets is that, where an entity related to the issuer counterparty is also a clearing participant, the performance of investments in the portfolio may be correlated with the very default event against which the CCP's risk resources seek to provide cover.

The policy also sets upper limits for the average maturity of investments and an overarching liquidity requirement based on assumed ordinary liquidity needs (e.g. for the return of margin to participants, based on the maximum required over the previous year); liquidity needs in the event of a default (i.e. the DLR); and the value of cash margin posted by the largest clearing participant. These liquidity resources must be available within two hours; and must comprise cash, or securities eligible for repurchase transactions with the Bank.

ASX Clear (Futures) uses a liquidity stress-testing model to assess the adequacy of its liquidity arrangements. The model, which is based on ASX Clear (Futures)' capital stress tests (described above) and is similar to that

used by ASX Clear, calculates the maximum liquid funds that ASX Clear (Futures) would need to access in order to meet obligations arising in the event of a clearing participant default. The liquidity stress tests assume that a default occurs just prior to receipt of the previous day's variation margin payments, if owed by the defaulter, or just after any variation margin payments have been paid, if owed to the defaulter. The stress tests thereby maximise the potential liquidity required under each stress-test scenario. The results of the liquidity stress tests (the DLRs) are compared to the CCP's AFR. For ASX Clear (Futures), the AFR is currently set at \$370 million and is met by liquid assets held in respect of ASX Clear (Futures)' pre-funded risk resources. A stress-test result above the AFR for three consecutive trading days is considered a breach of the AFR and triggers a review of the adequacy of the AFR. Such a review takes into account the outcome of the capital stress tests, as any AIM calls will provide extra liquidity.

iii. Loss sharing

This section of the Measure applies to arrangements where participants commit to meet any settlement shortfall. It does not require that a facility has loss-sharing arrangements in place, but where they exist they should be documented, legally enforceable and acknowledged by all participants in the CCP. One element of ASX Clear (Futures)' default resources is a promissory component up to a fixed amount (the promissory participant commitments referred to in the previous section of this Measure). This is not an open-ended commitment and therefore does not constitute a loss-sharing arrangement as contemplated by Measure 7(iii).

8. Governance

The central counterparty must have effective, accountable and transparent governance arrangements.

Ultimate responsibility for the control of the financial risks faced by ASX Clear (Futures) lies with the ASX Limited Board and the ASX Clear (Futures) Board. The ASX Limited Board, which is accountable to ASX shareholders, is responsible for overseeing the processes for identifying significant risks to ASX and ensuring that appropriate and adequate control, monitoring and reporting mechanisms are in place. In addition, the ASX Limited Board assigns certain responsibilities to the ASX Clear (Futures) Board (as specified in the ASX Limited Board Charter), including the management of ASX Clear (Futures)' clearing and settlement risk, and its compliance with the FSS.

The ASX Limited Board Charter also places requirements on the Board structure, including that the majority of members and the Chair of the ASX Limited Board be independent (defined as being free of business or other relationships that could interfere with independent exercise of judgement). There are currently eight members of the ASX Limited Board, comprising the ASX CEO and seven independent, non-executive directors. The ASX Limited Board appoints the members of the ASX Clear (Futures) Board, with independent directors selected based on relevant skill and expertise. Currently, the ASX Clear (Futures) Board comprises one executive director (the ASX CEO) and six non-executive directors. Four of the non-executive directors are also members of the ASX Limited Board, while the remaining two, including the Chairman, are external directors appointed for their expertise in clearing and settlement matters. The other CS boards – ASX Clear, ASX Settlement and Austraclear – have the same directors and Chairman as the ASX Clear (Futures) Board. The ASX Limited Board Charter and the profiles of all board members are publicly available online.

The ASX Clear (Futures) Board meets between six and eight times each year, and receives detailed reports on ASX Clear (Futures)' business and operations, risk management and financial performance. It is responsible for approving capital, liquidity and stress-testing arrangements.

Within ASX's management structure, reporting lines for those units primarily responsible for financial risk management are segregated from other business units, reporting to the CRO, who in turn reports directly to the CEO. There are five functional areas within ASX with at least some responsibility for CCP financial risk management: the Clearing Risk Policy unit; the CRM unit; the Enterprise Risk unit; the Internal Audit unit; and the Portfolio Risk Manager. The CRO is not responsible for any other functions, and none of the units within the CRO's portfolio have a revenue or profit objective. In addition, ASX maintains a number of executive committees that have some responsibility for financial risk management.

9. Operational risk

The CS facility licensee as operator of a central counterparty must identify sources of operational risk and minimise these through the development of appropriate systems, controls and procedures.

ASX Clear (Futures)' key operating system is SECUR.

i. Security and operational reliability

The security of SECUR is supported by access controls, restricting access both physically and virtually. The process to request access to systems is documented, monitored and formally audited. ASX Clear (Futures) regularly performs external-penetration and vulnerability testing on SECUR. Technology-security policy is considered by external auditors twice a year. ASX's Internal Audit unit routinely monitors compliance with policy, reporting to the Audit and Risk Committee on a quarterly basis.

ASX Clear (Futures) has a number of arrangements in place to ensure SECUR is operationally reliable:

- operational processes are documented and supported by internal procedures
- the design and effectiveness of control procedures supporting the core operational and systems processes are subject to regular independent external and internal audits
- critical IT infrastructure is designed to ensure resilience against component failure, including full redundancy at the primary site
- availability targets are documented and defined formally for critical services.

Notwithstanding these arrangements, should an infrastructure failure occur at the primary site, ASX Clear (Futures) policy requires that failover to the backup site should occur within one hour for all systems, or two hours in the event that there is also an application and/or data problem. ASX Clear (Futures) views these failover targets as conservative. Actual failover times will vary according to the system component affected and the nature of the problem; for example, the front-end servers that communicate with participants' systems run in active-active mode and are designed to fail over automatically.

Over the 2011/12 Assessment period, SECUR was available 100 per cent of the time. The availability target for SECUR is 99.8 per cent of the time.

SECUR capacity is monitored on an ongoing basis, with monthly reviews of current and projected capacity requirements. ASX Clear (Futures) requires that it has sufficient technical and human resources to operate SECUR during peak periods, including in the event of operational incidents or system failure. Average capacity utilisation of SECUR over the Assessment period was 18 per cent, while peak utilisation was 27 per cent. ASX continues to monitor the capacity of SECUR to ensure peak utilisation does not exceed its minimum capacity headroom target of 50 per cent of total capacity. In the 2011/12 Assessment period, ASX increased the capacity of the SECUR system.

ASX Clear (Futures) has arrangements in place to ensure that changes to SECUR and supporting infrastructure do not disrupt its normal operations. ASX Clear (Futures) operates a separate test environment for SECUR and has a formal, documented change-management process. It also follows defined procedures for communicating with participants and vendors around technology-upgrade releases, which includes regular notices to participants of upcoming changes. These procedures were reviewed and updated in the 2011/12 Assessment period.

ASX Clear (Futures) also has arrangements in place to ensure that it has well-trained and competent personnel operating SECUR. Staff are provided with relevant policies and guidelines from commencement of employment, with weekly communications thereafter. Staff are evaluated with reference to each defined operational process. ASX Clear (Futures) has a formal succession-planning and management process in place.

ii. Business continuity procedures

ASX Clear (Futures) maintains extensive contingency plans detailing the appropriate operational response to a CS facility disruption, including coverage of the various lines of authority, means of communication, and failover procedures. These plans are updated periodically. The risk that an operational incident at the main site disrupts SECUR is mitigated through maintenance of a backup site. In early 2012, ASX completed the migration of all core systems to its new operations centre, which is now its primary site for IT infrastructure (ASX's Bridge St office remains its primary site for staff).

ASX Clear (Futures) employs a variety of technologies to ensure a high degree of redundancy in its systems – both across sites and within a single site. All core systems employ multiple servers with spare capacity. Front-end servers handling communications with participants are configured to provide automatic failover across sites. Failover of the more critical data servers will generally take place within an hour under the control of management; however, the disruption to participants in such a case is reduced due to the high degree of redundancy in the front-end system components, which in most circumstances will maintain communications with external systems and queue transactions until the data servers are reactivated. The integrity of transactions is ensured by queuing messages until they can be processed; storing all transactions in the database with unique identifiers, thereby preventing the loss or duplication of transactions; and synchronised replication of database records across both sites. Furthermore, in the event that a significant part of a system or an operational site fails, ASX Clear (Futures) has contingency arrangements to activate an additional tier of redundancy arrangements (either by converting test systems into production systems or rebuilding systems from readily available hardware) within 24 hours to meet the contingency of any further service interruption.

To facilitate rapid recovery in the event of an operational disruption, ASX Clear (Futures) is gradually increasing the number of operational staff based at the operations centre (which is the backup site for staff), and plans to have around 30 per cent of operational staff located there by early 2013. In case of a disruption to staffing arrangements at the Bridge St office, the operations centre has capacity to house 65 per cent of all operational staff.

ASX Clear (Futures) regularly tests business continuity arrangements. Connectivity and procedural testing of the backup site are performed monthly by representatives from ASX Clear (Futures). Live tests (i.e. where market and clearing and settlement services are provided in real time from the backup site) are conducted on a two-year cycle. Test results are formally documented and reported to ASX senior management and are also made available to internal and external auditors. The adequacy of ASX Clear (Futures)' business continuity procedures is reviewed regularly, as part of broader reviews of ASX Clear (Futures)' operational-risk policy.

ASX Clear (Futures)' Operating Rules and Procedures require participants to maintain adequate business continuity arrangements to allow the recovery of usual operations within one to two hours following a contingency event. If a participant fails to do so, ASX Clear (Futures) may impose sanctions. Spot checks of participants' business continuity management are triggered if a participant has been experiencing operational problems. These include examination of governance and processes.

iii. Outsourcing

All ASX Clear (Futures) operational functions are performed within ASX. However, external suppliers are used for various services, such as utilities, hardware maintenance, operating system and product maintenance, and certain security-related specialist independent services. Since mid 2008, ASX Clear (Futures) has been responsible for first- and second-level operational support of SECUR. This includes business continuity arrangements and computer-system support not involving changes to system components or underlying source code. Previously, these high-levels of support were provided by NASDAQ OMX, which continues to provide third-level and software support under an agreement that extends beyond 2013.

iv. External administration of a related body

Within the ASX structure, most operational resources are provided by ASX Operations, a subsidiary of ASX Limited. In the event that ASX Operations became subject to external administration, and this particular event did not impact upon the capacity of ASX Clear (Futures) to continue operating, ASX Clear (Futures) would be able to retain use of resources under provisions within the written support agreement between it and ASX Operations (to the extent permissible by law).

10. Regulatory reporting

ASX Clear (Futures), as a CS facility licensee, is required to meet certain reporting obligations to the Bank under the FSS for CCPs. These obligations include the reporting of breaches of the FSS; the failure of a participant to fulfil the CCP's risk-control requirements; and the CCP's failure to enforce its own risk-control requirements. There are also obligations to report financial and stress-testing results on a quarterly basis. ASX Clear (Futures) satisfied all reporting obligations during the Assessment period.

A2. Financial Stability Standard for Securities Settlement Facilities

In assessing whether a facility has met the *Financial Stability Standard for Securities Settlement Facilities* the Bank considers a number of measures. The full text of these measures and associated guidance is available on the Bank's website. The following provides a summary of the information the Bank has used to assess ASX Settlement and Austraclear against each of these measures. This updates the information presented in the Bank's 2010/11 Assessment for material changes in policies and procedures over 2011/12.

A2.1 ASX Settlement

ASX Settlement is a wholly owned subsidiary of ASX Settlement Corporations Limited, itself a wholly owned subsidiary of ASX Limited. It is a securities settlement facility (SSF) that provides settlement services for the ASX market and for AMOs, such as Chi-X, which began trading on 31 October 2011. Over the Assessment period, ASX Settlement implemented a DvP service for a small number of transactions undertaken on other markets that provide a platform for trading securities that are not listed on the ASX market. This service is an alternative to the transfer service previously offered to these AMOs. The National Stock Exchange of Australia now settles its transactions through this DvP service.

1. Legal framework

The securities settlement facility must have a well-founded legal basis.

The legal basis for ASX Settlement's operations is set out in the ASX Settlement Operating Rules and Procedures. Under section 822B of the Corporations Act, these rules have effect as a contract under seal between ASX Settlement and each of its participants, as well as between each of the participants. The Operating Rules and Procedures set out the rights and obligations of participants and ASX Settlement, including in the event of default or suspension.

The netting undertaken by ASX Settlement with respect to its participants' obligations has approval as a netting arrangement under Part 3 of the Payment Systems and Netting Act. This provides certainty for the netting process in the event of the insolvency of an ASX Settlement participant or a Payment Provider.

2. Participation requirements

The requirements for participation in the securities settlement facility must promote the safety and integrity of the securities settlement facility and ensure fair and open access. Participation requirements must:

(a) be based on objective and publicly disclosed criteria;

ASX Settlement has objective and transparent participation requirements, which are publicly available and form part of its Operating Rules and Procedures. The Operating Rules and Procedures also provide for an appeals process should an application for participation be rejected or a participant's access be terminated. ASX Settlement had 136 participants as at end June 2012.

(b) require that participants have the operational capacity and financial standing to settle their obligations through the securities settlement facility in a timely manner; and

ASX Settlement's participation requirements address financial and business integrity issues, as well as operational and technical matters. ASX monitors participants' operational processing performance. The monitoring, assessment and investigation of matters relating to financial requirements is dealt with by ASX Compliance, a separate subsidiary within ASX, which has its own Board.

A settlement participant must post a settlement bond of \$500 000, unless: it is subject to prudential supervision as an ADI; is an approved clearing facility or an AMO under ASX Settlement Operating Rules and Procedures; is a CS facility that complies with the FSSs; or only acts as a Participant Bidder in a takeover. In addition, a sponsoring participant (i.e. a participant that also acts in ASX Settlement on behalf of non-participants) that is not covered by the National Guarantee Fund compensation arrangements (under the Corporations Act) must post a sponsorship bond of \$500 000.

Performance and sponsorship bonds must be issued by an Australian bank or appropriately regulated insurance company. Funds held under a performance bond would be drawn upon by ASX Settlement in the event that the participant breached ASX Settlement rules. In a similar vein, funds held under a sponsorship bond would be drawn upon to meet any losses suffered by ASX Settlement, an issuer, or a holder sponsored by an ASX Settlement participant arising from a breach of the rules or other offence committed by the participant.

(c) allow the CS facility licensee as operator of the securities settlement facility to suspend or cancel the participation of an institution which breaches the applicable participation or other risk-control requirements.

The ASX Settlement Operating Rules and Procedures allow it to suspend or terminate a participant from its facility in the event of a failure to comply with the Operating Rules and Procedures, or where a Payment Provider fails to authorise a participant's payment for interbank settlement. During the 2011/12 Assessment period, ASX Settlement suspended one participant following an event of default.

ASX Settlement also levies fees on a participant that fails to meet its settlement obligations on a timely basis. The fee is 0.1 per cent of the value of the settlement obligation, but with a minimum and maximum fee of \$100 and \$5 000, respectively. Participants are also required to close out any positions remaining unsettled on the fifth day after the trade date (i.e. two days after the scheduled settlement date). ASX Settlement also routinely benchmarks participants' settlement performance. Under this regime, a participant's compliance unit receives a ranking of its settlement performance (based on the value of its trades that have failed to settle) against its market group peers.

3. Understanding risks

The securities settlement facility must make sufficient information publicly available, via its rules and procedures and the provision of relevant information on settlement activity, such that each participant is able to understand the securities settlement facility's impact on each of the financial risks the participant incurs through participation in the facility.

The ASX Settlement Operating Rules and Procedures are comprehensive and publicly available on the ASX website. The Operating Rules and Procedures explain the role and responsibilities of each category of participant and ASX Settlement. Background information on ASX Settlement's operations and risk management is also available on the ASX website.

ASX Settlement must lodge any changes to its Operating Rules with ASIC. Under section 822E of the Corporations Act, the Minister has 28 days to consider, and potentially disallow, any rule changes made by a licensed CS facility. ASX Settlement consults with its participants on important rule changes, and notifies participants of all changes to the Operating Rules and Procedures.

A variation to this measure of the Standard in February 2009 requires a licensed CS facility as operator of a SSF to make publicly available any relevant information on settlement activity. Since November 2009, settlement participants 'tag' securities-lending-related settlement instructions submitted to CHESS and, from December 2009, participants disclose outstanding positions, both borrowed and lent. ASX publishes aggregate data on its website daily.

4. Certainty of title

The CS facility licensee as operator of the securities settlement facility must ensure that under the facility's rules and procedures, participants, or where relevant, their clients, have a clear and unambiguous title to, or interest in, securities held, deposited or registered on their behalf, including in circumstances where the solvency of the operator of a securities settlement facility is in doubt. This requires that its rules and procedures:

- (a) **clearly identify the type of title or interest held by participants for particular securities, to the extent such title or interest is recognised by the facility's rules or procedures;**

Securities are dematerialised (electronic) and held in CHESS. Title is held in the name of clients of ASX Settlement participants. The system does not record any details of encumbrances, other than collateral lodged in favour of ASX Clear.

A CHES sub-register forms part of the issuer's securities register. Maintenance and reconciliation of the complete register is the responsibility of the issuer or its appointed agent. Most ASX Settlement participants settle across a centralised settlement account and subsequently allocate securities to end-clients in the CHES sub-register. As part of its end-of-day processes, CHES reports net movements on each sub-register to the holder of the issuer's complete register. Settlement participants utilise the centralised account under 'trust' provisions and are obliged to give irrevocable legal title to an end-client as long as that client has met all relevant conditions in respect of the settlement.

(b) clearly identify the way in which the transfer of (or any other forms of dealing with) securities and related payments can be effected through the facility; and

The transfer of title to securities in CHES is given effect by electronic book entry. Settlement occurs via a DvP model 3 process in a daily scheduled batch settlement cycle (see Measure 5). The ASX Settlement Operating Rules and Procedures also provide for the transfer of securities free-of-payment, where required.

(c) ensure that, to the extent permissible by law, the creditors of the operator of the securities settlement facility have no claim over securities or other assets held, deposited or registered by participants in the facility.

In the event of ASX Settlement's insolvency, the rules and arrangements for title within ASX Settlement provide a high degree of assurance that participants' securities will be immune from claims by ASX Settlement's creditors. ASX Settlement is not the legal owner of any participant or client assets; these assets are recorded in CHES in the name of the participant or sponsored client.

5. Settlement

The CS facility licensee as operator of a securities settlement facility must ensure that its operations do not expose its participants, or the financial system more broadly, to unacceptable levels of risk. The operator of a securities settlement facility must pay particular attention to ensuring settlement finality and the use of high-quality settlement assets in payment for securities.

- (a) The operation of a securities settlement facility must eliminate principal risk between its participants and ensure that settlements, once completed, are final and irrevocable.**
- (b) The assets used to settle the payment obligations in respect of a transaction in the securities settlement facility must carry little or no credit or liquidity risk.**
- (c) Exposures between providers of cash settlement assets must be settled finally and irrevocably.**

Settlement of securities transactions in ASX Settlement occurs on a DvP model 3 basis. This involves the simultaneous transfer of net payment and net securities obligations between buyers and sellers at the end of the settlement cycle. The ASX Settlement Operating Rules and Procedures establish that settlement according to the terms of those rules is final and irrevocable. This is reinforced through legislation (see Measure 1).

Once a trade has been executed on either the ASX or Chi-X markets, a trade-related instruction is sent to CHES. At T+1, CHES generates a single net batch instruction reflecting the net position of each participant's novated trades in each line of stock. Between T+1 and T+3, participants can also instruct CHES to include additional non-novated (off-market) transactions in the batch at T+3. During 2011/12, an average of around 80 per cent of the value of net securities settled in the final batch was in respect of non-novated transactions. The majority of these transactions were related to the 'priming' of clearing participants' accounts to facilitate settlement of

novated trades (i.e. the transfer of securities to a clearing participant's securities account to ensure that they can be delivered in accordance with scheduled obligations).

On the evening before settlement, ASX Settlement notifies each participant of its projected net cash and securities settlement obligations. Participants have until 10.30 am to negotiate any additional non-novated transfers necessary to 'prime' their accounts for settlement. After the cut-off for new instructions, transfer of securities positions is stopped in CHESS and participants' Payment Providers are requested to fund the net cash obligations of settlement participants. Payment Providers hold ESAs at the Bank and act on behalf of settlement participants. There were 14 Payment Providers operating in ASX Settlement as at 30 June 2012. Payment obligations are settled between Payment Providers in RITS as a single daily multilateral net batch. Immediately upon confirmation from RITS that the funds transfers have been settled, ASX Settlement completes the net securities transfers in CHESS, thus ensuring DvP settlement. This typically occurs at around noon.

The finality of ASX Settlement's settlement process is ensured by its approval under Part 3 of the Payment Systems and Netting Act. In addition, the payments between Payment Providers as part of the multilateral net batch are protected by virtue of the approval of RITS as an RTGS system under Part 2 of the Payment Systems and Netting Act. This approval protects payments from being voided in the case of a Payments Provider entering external administration.

If, due to a shortfall of either securities or funds, a participant is unable to settle its scheduled obligations in the batch, ASX Settlement's rules allow for all or some of the transactions of the affected participant to be 'backed out'. These transactions are then rescheduled for settlement on the next settlement day. The precise parameters of the back-out process depend upon whether or not the failing participant is in default (i.e. has a shortfall of funds). If the participant is in default, ASX Clear may assume an obligation for novated settlements in accordance with its default management arrangements. ASX Settlement's back-out algorithm seeks to remove as few transactions from the batch as possible, maximising settlement values and volumes, while minimising the spillover to other participants. Transactions unrelated to novated settlement obligations are typically backed out first.

In August 2012, ASX agreed an earlier deadline of 2.30 pm for Payment Providers to authorise or reject payment obligations on behalf of settlement participants. This change is effective from 10 September 2012. The earlier deadline maintains a maximum payment authorisation window of 90 minutes, with ASX Settlement having its cut-off for issuing payment notifications to Payment Providers brought forward to 1.00 pm (from 1.44 pm). In addition, a Payment Provider must inform ASX Settlement if it requires longer than 60 minutes to authorise a payment, providing details of the participant credit concerns that are delaying their decision. This improvement to the batch settlement process forms part of ASX's response to the Bank's *Review of Settlement Practices for Australian Equities*, which followed the significant delays to the completion of settlement in January 2008. Had such arrangements been in place in January 2008, decisions that ultimately resulted in the back out of the troubled participant's settlement obligations and the recalculation of the batch could have been accelerated, reducing the overall length of the settlement delay, and mitigating the uncertainty that affected the market at large.

As discussed in Section 5.3, during the Assessment period, ASX Settlement also developed two new services, which will settle in the CHESS batch: a DvP settlement service for non-ASX listed securities; and the ASX Managed Funds Service.

6. External administration

The rules and procedures for the securities settlement facility must contain mechanisms to deal with the external administration of a participant, or a provider of cash settlement assets, in such a way as to limit the operational and financial impact on both the securities settlement facility and its participants. This requires that the CS facility licensee as operator of the securities settlement facility must:

- (a) allow for the cancellation or suspension of a participant or a provider of cash settlement assets from the security settlement facility:
 - (i) if the participant or provider of cash settlement assets is in external administration; or
 - (ii) if there is a reasonable suspicion of external administration; and

The ASX Settlement Operating Rules and Procedures allow for the cancellation or suspension of a participant or a Payment Provider in the event that it becomes subject to external administration, or if ASX Settlement reasonably suspects that this may occur. Participants and Payment Providers are required to notify ASX Settlement if they, or any other participant or Payment Provider, become subject to external administration or if they reasonably suspect that this may occur.

- (b) allow participant users of a cash settlement provider which becomes subject to external administration, or which is reasonably likely to become subject to external administration, to quickly nominate a new provider.

The ASX Settlement Operating Rules and Procedures allow a participant to nominate a new Payment Provider if its current provider is subject to, or is reasonably likely to become subject to, external administration.

The ASX Settlement Operating Rules and Procedures provide for the removal of transactions from batch settlement under certain circumstances, including where a participant is subject to external administration. ASX Settlement has procedures and mechanisms in place to allow it to recast a batch, ensuring that settlement can be carried out in a timely manner (see Measure 5).

7. Operational risk

The CS facility licensee as operator of a securities settlement facility must identify sources of operational risk and minimise these through the development of appropriate systems, controls and procedures.

ASX Settlement's key operating system is CHES.

i. Security and operational reliability

The security of the CHES system is supported by access controls, restricting both physical and virtual access. The process to request access to systems is documented, monitored and formally audited. ASX Settlement performs external-penetration and vulnerability testing on CHES. Technology-security policy is considered by external auditors twice a year. ASX's Internal Audit unit routinely monitors compliance with policy, reporting to the Audit and Risk Committee on a quarterly basis.

ASX Settlement has a number of arrangements in place to ensure that CHES is operationally reliable:

- operational processes are documented and supported by internal procedures
- the design and effectiveness of control procedures supporting the core operational and systems processes are subject to regular independent external and internal audit

- critical IT infrastructure is designed to ensure resilience against component failure, including full redundancy at the primary site
- availability targets are documented and defined formally for critical services.

Notwithstanding these arrangements, should an infrastructure failure occur at the primary site, ASX Settlement policy requires that failover to the backup site should occur within one hour for all systems, or two hours in the event that there is also an application and/or data problem. ASX Settlement views these failover targets as conservative. Actual failover times will vary according to the system component affected and the nature of the problem; for example, the front-end servers that communicate with participants' systems run in active-active mode and are designed to fail over automatically.

Over the 2011/12 Assessment period, CHESSE exceeded its operational reliability target of 99.8 per cent. CHESSE was available 99.98 per cent of the time, with two operational incidents occurring in the December 2011 quarter, although only one resulted in an outage for CHESSE (see Section 5.3 for details).

CHESSE capacity is monitored on an ongoing basis, with monthly reviews of current and projected capacity requirements. ASX Settlement requires that it has sufficient technical and human resources to operate the settlement system during peak periods, including in the event of operational incidents or system failure. Average capacity utilisation of CHESSE over the Assessment period was 13 per cent, while peak utilisation was 21 per cent. ASX continues to monitor the capacity of CHESSE to ensure peak utilisation does not exceed its minimum capacity headroom target of 50 per cent of total capacity.

ASX Settlement has arrangements in place to ensure that changes to CHESSE and supporting infrastructure do not disrupt its normal operations. ASX Settlement operates a separate test environment for CHESSE and has a formal, documented change-management process. It also follows defined procedures for communicating with participants and vendors around technology-upgrade releases, which includes regular notices to participants of upcoming changes. These procedures were reviewed and updated in the 2011/12 Assessment period.

ASX Settlement also has arrangements in place to ensure it has well-trained and competent personnel operating CHESSE. Staff are provided with relevant policies and guidelines from commencement of employment, with weekly communications thereafter. Staff are evaluated with reference to each defined operational process. ASX Settlement has a formal succession-planning and management process in place.

ii. Business continuity procedures

ASX Settlement maintains extensive contingency plans detailing the appropriate operational response to a CS facility disruption, including coverage of the various lines of authority, means of communication, and procedures to respond to failures. These plans are updated periodically. The risk that an operational incident at the main site disrupts CHESSE is mitigated through maintenance of a backup site. In early 2012, ASX completed the migration of all core systems to its new operations centre, which is now its primary site for IT infrastructure (ASX's Bridge St office remains its primary site for staff).

ASX Settlement employs a variety of technologies to ensure a high degree of redundancy in its systems – both across sites and within a single site. All core systems employ multiple servers with spare capacity. Front-end servers handling communications with participants are configured to provide automatic failover across sites. Failover of the more critical data servers will generally take place within an hour under the control of management; however, the disruption to participants in such a case is reduced due to the high degree of redundancy in the front-end system components, which in most circumstances will maintain communications with external systems and queue transactions until the data servers are reactivated. The integrity of

transactions is ensured by queuing messages until they can be processed; storing all transactions in the database with unique identifiers, thereby preventing the loss or duplication of transactions; and synchronised replication of database records across both sites. Furthermore, in the event that a significant part of a system or an operational site fails, ASX Settlement has contingency arrangements to activate an additional tier of redundancy arrangements (either by converting test systems into production systems or rebuilding systems from readily available hardware) within 24 hours to meet the contingency of any further service interruption.

To facilitate rapid recovery in the event of an operational disruption, ASX Settlement is gradually increasing the number of operational staff based at the operations centre (which is the backup site for staff), and plans to have around 30 per cent of operational staff located there by early 2013. In case of a disruption to staffing arrangements at the Bridge St office, the operations centre has capacity to house 65 per cent of all operational staff.

ASX Settlement regularly tests business continuity arrangements. Connectivity and procedural testing of the backup site are performed monthly by representatives from ASX Settlement. Live tests (i.e. where market and clearing and settlement services are provided in real time from the backup site) are conducted on a two-year cycle. Test results are formally documented and reported to ASX senior management and are also made available to internal and external auditors. The adequacy of ASX Settlement's business continuity procedures is reviewed regularly, as part of broader reviews of ASX Settlement's operational-risk policy.

ASX Settlement's Operating Rules and Procedures require participants to maintain adequate business continuity arrangements to allow the recovery of usual operations within approximately one to two hours following a contingency event. If a participant fails to do so, ASX Settlement may impose sanctions. Spot checks of participants' business continuity management are triggered if a participant has been experiencing operational problems. These include examination of governance and processes.

iii. Outsourcing

All operational functions are performed within ASX. However, external suppliers are used for various services, such as utilities, hardware maintenance, operating system and product maintenance, and certain security-related specialist independent services. ASX Settlement is also reliant on interactions with the Society for Worldwide Interbank Financial Telecommunication (SWIFT), and would revert to manual processing of SWIFT payments in the event of a SWIFT failure.

iv. External administration of a related body

Within the ASX structure, most operational resources are provided by ASX Operations, a subsidiary of ASX Limited. In the event that ASX Operations became subject to external administration and this particular event did not impact upon the capacity of ASX Settlement to continue operating, ASX Settlement would be able to retain use of resources under provisions within the written support agreement between it and ASX Operations (to the extent permissible by law).

8. Regulatory reporting

CS facility licensees are required to meet certain reporting obligations to the Bank under the FSS for SSFs. These obligations include: the reporting of breaches of the FSS; breaches of risk-control requirements; and quarterly financial results. ASX Settlement satisfied all reporting obligations during the Assessment period.

A2.2 Austraclear

Austraclear is a wholly owned subsidiary of ASX Settlement Corporations Limited, itself a wholly owned subsidiary of ASX Limited. It provides settlement services for debt securities and for derivatives traded on the ASX 24 and ASX markets.

1. Legal framework

The securities settlement facility must have a well-founded legal basis.

The legal basis for Austraclear's operations is set out in the Austraclear Regulations and Procedures. Under section 822B of the Corporations Act, these rules have effect as a contract under seal between Austraclear and each of its participants, as well as between each of the participants. The Regulations and Procedures set out the rights and obligations of participants and Austraclear, including in the event of default or suspension.

The finality of settlements undertaken by Austraclear is ensured by its approval as an RTGS system under Part 2 of the Payment Systems and Netting Act. This approval protects the finality of payments made through Austraclear in the event of a participant entering external administration.

2. Participation requirements

The requirements for participation in the securities settlement facility must promote the safety and integrity of the securities settlement facility and ensure fair and open access. Participation requirements must:

(a) be based on objective and publicly disclosed criteria;

Austraclear has objective and transparent participation requirements, which are publicly available and form part of its Regulations and Procedures. The Regulations also provide for an appeals process should an application for participation be rejected or a participant's access be terminated. Austraclear had 747 participants as at end June 2012.

(b) require that participants have the operational capacity and financial standing to settle their obligations through the securities settlement facility in a timely manner; and

Austraclear's participation requirements address issues such as financial standing, business integrity and business continuity arrangements. ASX monitors participants' operational processing performance. The monitoring, assessment and investigation of matters relating to financial requirements is dealt with by ASX Compliance, a separate subsidiary within ASX, which has its own board.

(c) allow the CS facility licensee as operator of the securities settlement facility to suspend or cancel the participation of an institution which breaches the applicable participation or other risk-control requirements.

Austraclear's Regulations and Procedures allow it to suspend or terminate a participant from its facility in the event of a breach of its Regulations. Austraclear suspended seven members during the Assessment period; at the end of June 2012, four participants remained on suspension, including the three MF Global subsidiaries.

3. Understanding risks

The securities settlement facility must make sufficient information publicly available, via its rules and procedures and the provision of relevant information on settlement activity, such that each participant is able to understand the securities settlement facility's impact on each of the financial risks the participant incurs through participation in the facility.

Austraclear's Regulations and Procedures are comprehensive and publicly available on the ASX website. The Regulations and Procedures explain the role and responsibilities of each category of participant and Austraclear. Background information on Austraclear's operations, technical arrangements and risk management is also available on ASX's website.

Austraclear must lodge any changes to its Regulations with ASIC. Under section 822E of the Corporations Act, the Minister has 28 days to consider, and potentially disallow, any rule changes made by a licensed CS facility. Austraclear consults with its participants on important rule changes. Announcements affecting participants are issued as ASX 24 Notices, which are targeted to participants and market users.

4. Certainty of title

The CS facility licensee as operator of the securities settlement facility must ensure that under the facility's rules and procedures, participants, or where relevant, their clients, have a clear and unambiguous title to, or interest in, securities held, deposited or registered on their behalf, including in circumstances where the solvency of the operator of a securities settlement facility is in doubt. This requires that its rules and procedures:

- (a) clearly identify the type of title or interest held by participants for particular securities, to the extent such title or interest is recognised by the facility's rules or procedures;**

Austraclear's Regulations and Procedures identify title for three different classes of securities: paper securities; non-paper securities and euroentitlements; and dematerialised securities.

Paper securities are negotiable instruments and include some certificates of deposit, promissory notes and bills of exchange. Austraclear holds these securities for the participant as bailee. The participant retains legal and beneficial title.

Non-paper securities and euroentitlements are electronic securities that are not registered within the Austraclear system. Non-paper securities include Commonwealth Government Securities, registrable state and semi-government securities, and corporate debt. Euroentitlements are claims to investment-grade AUD-denominated European securities that are deemed acceptable by Austraclear and are deposited in Austraclear's account at Clearstream Banking S.A. In the case of non-paper securities and euroentitlements, Austraclear holds title for the participant as nominee, while the participant retains beneficial title.

Dematerialised securities are electronic securities that are registered in the Austraclear system rather than externally. They include electronic certificates of deposit, electronic promissory notes and electronic bank-accepted bills of exchange. A dematerialised security is held by a participant as a 'chose in action'. This legal structure imposes rights and obligations that replicate the rights and obligations of a negotiable instrument.

- (b) clearly identify the way in which the transfer of (or any other forms of dealing with) securities and related payments can be effected through the facility; and**

The transfer of title to securities in the Austraclear system is effected by electronic book entry. Paper securities are transferred through updates to participants' security records. Austraclear also uses 'allonges' which maintain the negotiability of paper securities. Non-paper securities are transferred through the passing of beneficial title from the seller to the buyer. Austraclear retains legal title in the relevant registry. Transfers of dematerialised securities are transfers of contractual rights within the Austraclear system. Settlement occurs via a DvP process in real time (see Measure 5). The Austraclear Regulations and Procedures also provide for the transfer of securities free-of-payment, where required.

- (c) ensure that, to the extent permissible by law, the creditors of the operator of the securities settlement facility have no claim over securities or other assets held, deposited or registered by participants in the facility.**

In the event of Austraclear's insolvency, the rules and arrangements for title within Austraclear provide a high degree of assurance that participants' securities will be immune from claims by Austraclear's creditors. Austraclear is not counterparty to any transactions settled in its system.

5. Settlement

The CS facility licensee as operator of a securities settlement facility must ensure that its operations do not expose its participants, or the financial system more broadly, to unacceptable levels of risk. The operator of a securities settlement facility must pay particular attention to ensuring settlement finality and the use of high-quality settlement assets in payment for securities.

- (a) The operation of a securities settlement facility must eliminate principal risk between its participants and ensure that settlements, once completed, are final and irrevocable.**

Settlement of securities transactions in Austraclear occurs on a DvP model 1 basis. This involves the simultaneous transfer of cash and securities obligations between the buyer and seller on an item-by-item basis through the settlement cycle. Austraclear additionally provides for one-way cash transfers between participants, which are also settled on an item-by-item basis. Austraclear's Regulations and Procedures establish the basis for settlement of transactions entered into the system. By volume, DvP settlements accounted for around 54 per cent of total settlements during the Assessment period, and one-way cash transfers account for around 46 per cent. There was also a small number of free-of-payment securities transfers – less than 1 per cent of total volumes. By value, however, DvP payments predominate, accounting for 76 per cent of total transfers in the year to end June 2012.

- (b) The assets used to settle the payment obligations in respect of a transaction in the securities settlement facility must carry little or no credit or liquidity risk.**

Austraclear settlement participants must either be a Participating Bank or appoint a Participating Bank to meet payment obligations in central bank money. 60 Participating Banks were operating in Austraclear and held ESAs at the Bank as at 30 June 2012. Settlement of payment obligations occurs between Participating Banks across ESAs on an RTGS basis without credit risk. Simultaneously, DvP settlement between settlement participants of cash and securities obligations occurs within Austraclear.

- (c) Exposures between providers of cash settlement assets must be settled finally and irrevocably.**

The finality of Austraclear's settlement process is ensured by its approval under Part 2 of the Payment Systems and Netting Act. In addition, the payments between Participating Banks are also protected by virtue of the approval of RITS as an RTGS system under Part 2 of the Payment Systems and Netting Act.

6. External administration

The rules and procedures for the securities settlement facility must contain mechanisms to deal with the external administration of a participant, or a provider of cash settlement assets, in such a way as to limit the operational and financial impact on both the securities settlement facility and its participants. This requires that the CS facility licensee as operator of the securities settlement facility must:

- (a) allow for the cancellation or suspension of a participant or a provider of cash settlement assets from the security settlement facility:
 - (i) if the participant or provider of cash settlement assets is in external administration; or
 - (ii) if there is a reasonable suspicion of external administration; and
- (b) allow participant users of a cash settlement provider which becomes subject to external administration, or which is reasonably likely to become subject to external administration, to quickly nominate a new provider.

Austraclear's Regulations and Procedures allow it to cancel or suspend a participant or a Participating Bank that becomes subject to external administration, or if it reasonably suspects that this may occur. A participant or a Participating Bank is also required to notify Austraclear if it becomes subject to external administration or where it reasonably suspects that this may occur.

There is no restriction within the Austraclear Regulations and Procedures on a participant changing its Participating Bank, including the case where that participant bank is insolvent.

7. Operational risk

The CS facility licensee as operator of a securities settlement facility must identify sources of operational risk and minimise these through the development of appropriate systems, controls and procedures.

Austraclear's key operating system is EXIGO. As a feeder system to Australia's RTGS system, RITS, and as a systemically important system, Austraclear's system architecture is required to be equivalently operationally robust to that of RITS.

i. Security and operational reliability

The security of the EXIGO system is supported by access controls, restricting both physical and virtual access. The process to request access to systems is documented, monitored and formally audited. Austraclear performs external-penetration and vulnerability testing on EXIGO. Technology-security policy is considered by external auditors twice a year. ASX's Internal Audit unit routinely monitors compliance with policy, reporting to the Audit and Risk Committee on a quarterly basis.

Austraclear has a number of arrangements in place to ensure that EXIGO is operationally reliable:

- operational processes are documented and supported by internal procedures
- the design and effectiveness of control procedures supporting the core operational and systems processes are subject to regular independent external and internal audit
- critical IT infrastructure is designed to ensure resilience against component failure, including full redundancy at the primary site
- availability targets are documented and defined formally for critical services.

Notwithstanding these arrangements, should an infrastructure failure occur at the primary site, Austraclear policy requires that failover to the backup site should occur within one hour for all systems, or two hours in the event that there is also an application and/or data problem. Austraclear views these failover targets as conservative. Actual failover times will vary according to the system component affected and the nature of the problem; for example, the front-end servers that communicate with participants' systems run in active-active mode and are designed to fail over automatically.

During the Assessment period, EXIGO was available for 99.9 per cent of the required time. This met the availability target stipulated in Austraclear's 'Step-in and Service Agreement' with the Bank. As outlined in Section 5.4 of this Assessment, there were several operational incidents during the Assessment period, including a 4-hour outage on 10 October 2011 following the upgrade to Release III of Austraclear; and a disruption affecting access to the system for some participants on 13 and 14 February 2012, which followed the system move to the new primary site. In the latter incident, participants were for a short time unable to access Austraclear through the Austraclear National Network Infrastructure, but participants connecting through the internet were unaffected; a temporary fix was established and there was no need to extend the settlement session. In relation to these incidents, the Bank is satisfied with both Austraclear's immediate responses and the follow-up action taken to prevent recurrence. In particular, Austraclear's project to take over software development of EXIGO will allow it to make improvements, in the longer term, to the stability of the EXIGO system.

Since mid 2008 Austraclear has been responsible for first- and second-level operational support of EXIGO. This includes business continuity arrangements and computer-system support not involving changes to system components or underlying source code. Previously this support was provided by NASDAQ OMX, which continues to provide third-level and software support but is no longer developing new versions of the software. In 2011/12, Austraclear launched a project to take over all software support for EXIGO, including future software development. The project will be undertaken with the assistance of NASDAQ OMX. This project will reduce Austraclear's operational reliance on external suppliers and also allow Austraclear to undertake development to simplify the system architecture – enhancing the robustness of the EXIGO software. Accordingly, the Bank sees this work as an important improvement in security and operational reliability. In 2011/12, Austraclear also installed Release III of EXIGO, which introduced additional user functionality, including support for additional SWIFT message types and new reports.

Average capacity utilisation for EXIGO was 23 per cent during the Assessment period, and peak capacity utilisation was 33 per cent. ASX continues to monitor the capacity of EXIGO to ensure peak utilisation does not exceed its minimum capacity headroom target of 50 per cent of total capacity. In the 2011/12 Assessment period, ASX successfully tested EXIGO capacity headroom as part of the Release III upgrade.

Austraclear has arrangements in place to ensure that changes to EXIGO and supporting infrastructure do not disrupt its normal operations. Austraclear operates a separate test environment for EXIGO and has a formal, documented change-management process. It also follows defined procedures for communicating with participants and vendors around technology-upgrade releases, which includes regular notices to participants of upcoming changes. These procedures were reviewed and updated in the 2011/12 Assessment period.

ii. Business continuity procedures

Austraclear maintains extensive contingency plans detailing the appropriate operational response to a CS facility disruption, including coverage of the various lines of authority, means of communication, and procedures to respond to failures. These plans are updated periodically. The risk that an operational incident at the main site disrupts Austraclear is mitigated through maintenance of a backup site. In early 2012, ASX

completed the migration of all core systems to its new operations centre, which is now its primary site for IT infrastructure (ASX's Bridge St office remains its primary site for staff).

Austraclear employs a variety of technologies to ensure a high degree of redundancy in its systems – both across sites and within a single site. All core systems employ multiple servers with spare capacity. Front-end servers handling communications with participants are configured to provide automatic failover across sites. Failover of the more critical data servers will generally take place within an hour under the control of management; however, the disruption to participants in such a case is reduced due to the high degree of redundancy in the front-end system components, which in most circumstances will maintain communications with external systems and queue transactions until the data servers are reactivated. The integrity of transactions is ensured by queuing messages until they can be processed; storing all transactions in the database with unique identifiers, thereby preventing the loss or duplication of transactions; and synchronised replication of database records across both sites. Furthermore, in the event that a significant part of a system or an operational site fails, Austraclear has contingency arrangements to activate an additional tier of redundancy arrangements (either by converting test systems into production systems or rebuilding systems from readily available hardware) within 24 hours to meet the contingency of any further service interruption.

To facilitate rapid recovery in the event of an operational disruption, Austraclear is gradually increasing the number of operational staff based at the operations centre (which is the backup site for staff), and plans to have around 30 per cent of operational staff located there by early 2013. In case of a disruption to staffing arrangements at the Bridge St office, the operations centre has capacity to house 65 per cent of all operational staff.

Austraclear regularly tests business continuity arrangements. Connectivity and procedural testing of the backup site are performed monthly by representatives from Austraclear. Live tests (i.e. where market and clearing and settlement services are provided in real time from the backup site) are conducted on a two-year cycle; the most recent live test of EXIGO occurred in February and March 2012. Test results are formally documented and reported to ASX senior management and are also made available to internal and external auditors. The adequacy of Austraclear's business continuity procedures is reviewed regularly, as part of broader reviews of Austraclear's operational-risk policy.

Austraclear's Operating Rules and Procedures require participants to maintain adequate business continuity arrangements to allow the recovery of usual operations within approximately one to two hours following a contingency event. If a participant fails to do so, Austraclear may impose sanctions. Spot checks of participants' business continuity management are triggered if a participant has been experiencing operational problems. These include examination of governance and processes.

iii. Outsourcing

All operational functions are performed by ASX. However, external suppliers are used for various services, such as utilities, hardware maintenance, operating system and product maintenance, and certain security-related specialist independent services. As noted above, NASDAQ OMX provides third-level and software support to EXIGO.

Austraclear is reliant on interactions with SWIFT, and would revert to manual processing of SWIFT payments in the event of a SWIFT failure. The failure of RITS would potentially prevent settlement in EXIGO, although ASX has prepared business plans to consider the potential for EXIGO to continue operating independently.

iv. External administration of a related body

ASX Operations, a subsidiary of ASX Limited, is responsible for supplying Austraclear and other ASX companies with personnel and technological resources. Austraclear has a written support agreement with ASX Operations, which helps to ensure its access to these resources in the event of the external administration of ASX Operations, to the extent permissible by law.

8. Regulatory reporting

Austraclear, as a CS facility licensee, is required to meet certain reporting obligations to the Bank under the FSS for SSFs. These obligations include: the reporting of breaches of the FSS; breaches of risk-control requirements; and quarterly financial results. Austraclear satisfied all reporting obligations during the Assessment period.

Glossary

ADI	Authorised deposit-taking institution	ETO	Exchange-traded option
AIM	Additional Initial Margin	EWMA	Exponentially-weighted moving average
AMO	Approved market operator	FEX	Financial and Energy Exchange
APRA	Australian Prudential Regulation Authority	FMI	Financial market infrastructure
ASIC	Australian Securities and Investments Commission	FSS	Financial Stability Standard
CAC	Contributions and Additional Cover	HSVaR	Historic simulation of value-at-risk
CBPL	Capital-based position limit	ICR	Internal credit rating
CCP	Central counterparty	IOSCO	International Organization of Securities Commissions
CGS	Commonwealth Government Securities	IT	Information technology
CEO	Chief Executive Officer	LEPO	Low exercise price option
CHESS	Clearing House Electronic Sub-register System	NTA	Net tangible asset
CME	Chicago Mercantile Exchange	OTC	Over-the-counter
CMM	Cash Market margining	PSR	Price scanning range
CPSS	Committee on Payment and Settlement Systems	RITS	Reserve Bank Information and Transfer System
CRM	Clearing Risk Management	RTGS	Real-time gross settlement
CRO	Chief Risk Officer	SPAN	Standard Portfolio Analysis of Risk
CS	Clearing and settlement	SSF	Securities settlement facility
DCS	Derivatives Clearing System	STEL	Stress-test exposure limit
DLR	Default liquidity requirement	SWIFT	Society for Worldwide Interbank Financial Telecommunication
DMC	Default Management Committee	TAS	Trade Acceptance Service
DMF	Default management framework	TIMS	Theoretical Intermarket Margin System
DvP	Delivery-versus-payment	VSR	Volatility scanning range
ESA	Exchange Settlement Account		