

2007/08 ASSESSMENT OF CLEARING AND SETTLEMENT FACILITIES IN AUSTRALIA

OCTOBER 2008

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Reserve Bank

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1. Introduction and Executive Summary

Under powers set out in the *Corporations Act 2001*, the Reserve Bank has determined a set of *Financial Stability Standards* which aim to ensure that licensed clearing and settlement facilities conduct their affairs in such a way as to promote overall stability in the Australian financial system. Under Section 823CA of the Act, the Reserve Bank is required to conduct an assessment at least once a year of whether licensed facilities have complied with the standards and done ‘all other things necessary to reduce systemic risk’, reporting its findings to the Minister with portfolio responsibility for financial markets, and to the Australian Securities and Investments Commission (ASIC). In addition, under Section 25M of the *Reserve Bank Act 1959*, the Payments System Board is required to report annually to the Minister on material developments in clearing and settlement in Australia and any changes to the *Financial Stability Standards*.

This report fulfils both reporting obligations, covering the 12 months to end June 2008. It includes the assessment for the two licensed central counterparties – Australian Clearing House (ACH) and SFE Clearing Corporation (SFECC) – and the two securities settlement facilities – ASX Settlement and Transfer Corporation (ASTC) and Austraclear – operated by the Australian Securities Exchange (ASX). The Reserve Bank welcomes the open and constructive dialogue with ASX both in preparing this report and throughout this period.

The past year has been a more challenging one for Australia’s clearing and settlement facilities than has been the case over recent years. Market volatility has increased and traded volumes and values have continued to grow in several markets, most notably in cash equities. In addition, the licensed facilities’ risk-management processes have come under increased scrutiny as a result of financial problems experienced by a small number of broker participants during the first half of 2008. Reflecting these developments, the 2007/08 assessment has paid particular attention to risk-control procedures, both in terms of ongoing monitoring of participants and the management of financial risks.

Over the past year, the two central counterparties have focused increasingly on the quantification of the risks that they face and the calibration of their risk resources, as well as enhancing and harmonising their risk-management processes. The assessment draws out a number of important developments in these areas during the period under review. These include:

- *enhancements to stress-testing capabilities*: Both ACH and SFECC have taken steps to enhance their stress-testing arrangements over recent years, with SFECC implementing a new stress-testing framework during 2007/08. Improvements to stress-testing capabilities will help the central counterparties to gauge the adequacy of their risk resources (i.e. the resources they have at their disposal to meet losses arising in the event of a participant default). This is particularly important as the value of novated trades increases over time.
- *mapping stress-test outcomes to risk resources*: During the past year, ACH completed the second of three phases of implementation of a regime whereby collateral is called from

participants to cover large exposures identified by daily stress tests. SFECC has had a similar arrangement in place for some time.

- *enhancements to margin-setting processes*: A new harmonised margining process was introduced late in the assessment period at ACH and SFECC. Under the new regime, a close-out period of the higher of one or two days is assumed and initial margins are set so as to capture three standard deviations of price moves. The new regime also takes into account qualitative factors and implied volatility in setting margins.
- *the introduction of greater flexibility to treasury investments and the management of risk resources*: Over the past year, ASX has created a new corporate entity, ASX Clearing Corporation, which will be used in the future to manage the treasury function for its two central counterparties. The new structure will also add flexibility to the central counterparties' funding and capital-management processes. The Reserve Bank is currently reviewing the form and legal robustness of potential new funding arrangements.

Overall, it is the Reserve Bank's judgement that all four licensed clearing and settlement facilities have complied with the relevant *Financial Stability Standards* over 2007/08. Importantly, however, best practice in operational and risk-management standards evolves over time in response to changes in the operating and market environment. Accordingly, the assessment identifies a number of areas for further consideration by the licensed facilities over the period ahead.

In the case of the central counterparties, the assessment draws out the following:

- *the arrangements for the ongoing monitoring of participants*: In light of the financial difficulties experienced by a small number of brokers over the past year, two of whom were clearing participants, this assessment has looked closely at arrangements for monitoring participants. As acknowledged in the market assessment report released by ASIC in August, the recent problems highlighted some gaps in the general framework for market supervision and regulation, with certain business activities, including margin lending and securities lending, falling outside of the scope of existing industry-wide arrangements.¹ In the Reserve Bank's view, this episode also suggested that ASX's participant-monitoring arrangements did not adequately capture risks to the clearing and settlement facilities arising from participants' engagement in such off-market activities. The Reserve Bank therefore welcomes the review of capital- and liquidity-monitoring policies currently underway at ASX Markets Supervision and will continue to closely monitor developments in this area over the coming year.
- *participation requirements*: ACH and SFECC have both recently announced their intention to raise minimum capital requirements for participants. The Reserve Bank supports efforts to raise the average financial standing of clearing participants, as this directly contributes to the stability of the central counterparty. It is important, however, that access criteria continue to be risk based and that the imposition of higher threshold capital requirements complements and does not substitute for rigorous ongoing monitoring of participants. This is acknowledged by ASX.

¹ The report is available at: [http://www.asic.gov.au/asic/pdflib.nsf/LookupByFileName/REP_135.pdf/\\$file/REP_135.pdf](http://www.asic.gov.au/asic/pdflib.nsf/LookupByFileName/REP_135.pdf/$file/REP_135.pdf)

- *the timing of collateral calls on participants with very large positions:* The regimes now in place at both ACH and SFECC for calling collateral to cover large exposures identified by stress testing are an important component of the central counterparties' risk-management processes and compare favourably with international best practice in this area. However, under these arrangements, calls can only be made in respect of participants' positions at the close of the previous day's trading. Hence, the central counterparties can retain uncovered exposure for more than 24 hours – and indeed up to 42 hours in the case of SFECC. While acknowledging the likely technological challenges involved and the protections afforded by other elements of the central counterparties' risk-management frameworks, the Reserve Bank sees a case for ASX to give further consideration to how these regimes might be enhanced to allow for the calling of collateral sooner after a large position has been established.
- *the monitoring of intraday positions:* In a similar vein, the 2006/07 assessment report noted the importance of planned system enhancements at ACH to allow for changes in participants' positions to be reflected in intraday margin calls. ACH is scheduled to implement these enhancements during the forthcoming period and is strongly encouraged to proceed on this basis.
- *arrangements for the settlement of ACH margin calls:* Margin calls in respect of ASX derivatives can currently be made either via Austraclear or within the daily Clearing House Electronic Sub-register System (CHES) settlement batch operated by ASTC. The disruption to CHES settlement in January, which resulted in a lengthy delay, revealed a vulnerability in using CHES to settle margin payments. The Reserve Bank and ASX see a strong case to consider whether the robustness of the system would be improved by settling margin payments via Austraclear or an alternative real-time gross settlement channel. Such a change would help ensure that timely settlement of margin payments was not dependent on completion of the cash equity settlement process. The Reserve Bank understands that ASX intends to consult with the marketplace on the operational implications of such a change, in the wider context of potential modifications to settlement arrangements in CHES.
- *treasury investment policies:* Towards the end of the assessment period, a new harmonised treasury investment policy was established for ACH and SFECC, which will form the basis for the investment mandate to be applied by ASX Clearing Corporation. The policy restricts investments to high-quality, liquid assets and, except in the case of the four largest domestic banks, sets counterparty limits within the value of capital allocated to treasury investment. While this represents an improvement over previous arrangements, the limited availability of suitably high quality and liquid Australian dollar assets means that the policy leaves open the potential for large, concentrated exposures to the four largest domestic banks. The Reserve Bank will be discussing the investment mandate further with ASX during the forthcoming period as the proposed new treasury arrangements via ASX Clearing Corporation are finalised.

The assessment also draws out some issues previously discussed in the context of the Reserve Bank's review of equity settlement practices which was conducted in the first half of 2008 in response to the delays to the settlement process in late January. In its review, the Reserve Bank made a number of recommendations, including: changes to the settlement model; enhancements

to the settlement fails regime; and transparency and disclosure of securities lending activity.² ASX has since announced amendments to the settlement fails regime and the Reserve Bank has been in dialogue with ASX and market participants in respect of the other recommendations. In this report, the Reserve Bank reiterates:

- *the need for enhancements to current settlement arrangements for cash equities:* In the review, the Reserve Bank recommended a number of changes to existing settlement processes to address the risks revealed by the disruption to settlement in late January. In particular, it concluded that a move to trade-by-trade (DVP Model 1) settlement would reduce the dependence of market-wide settlements on a single participant. However, neither ASX nor market participants are persuaded of the need to move to a new settlement model and, while the Reserve Bank continues to see a case for considering such a move over the medium term, it does not see the matter as being so pressing as to require a change through regulation. In the meantime, the Reserve Bank supports the actions already taken by ASX, particularly in relation to settlement fails, and encourages ASX to give further consideration to how the resilience of the existing settlement model might be strengthened, in particular by introducing a firm deadline for completion of the batch settlement process.
- *the need for transparency and disclosure of securities lending activity:* The events of late January were triggered by a participant's inability to settle obligations arising as a result of securities lending transactions. While securities lending is critical to the functioning of an efficient equities market, this activity lacks market-wide transparency and settlement participants are unable to gauge fully any potential risks to the settlement process arising from the inclusion of securities-lending transactions in the daily CHESST settlement batch. The Reserve Bank is considering a variation to the 'Understanding Risks' measure of the *Financial Stability Standard for Securities Settlement Facilities* to require the collection and dissemination of data on securities lending.

More generally, the Reserve Bank has examined the case for amending other measures underpinning the *Financial Stability Standards* to more directly address specific identifiable risks. The current standards and measures are largely principles based, rather than relying on prescriptive requirements. The Reserve Bank continues to favour this approach, again recognising that best practice will necessarily evolve over time. Nevertheless, the Reserve Bank would introduce more prescriptive measures if this were deemed necessary.

This report is structured as follows. Section 2 provides an overview of the clearing and settlement landscape in Australia, with Section 3 offering a summary of key developments in the clearing and settlement industry over the past year. Section 4 discusses the *Financial Stability Standards* against which the clearing and settlement facilities have been assessed, with Section 5 presenting assessments for each facility. More detailed information considered by the Reserve Bank in assessing the clearing and settlement facilities against each relevant measure is provided in the attachment to the report.

² The report is available at: http://www.rba.gov.au/PaymentsSystem/StdClearingSettlement/Pdf/review_sttlmt_prac_aus_equities_052008.pdf

2. Clearing and Settlement in Australia

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

Central Counterparties

A central counterparty interposes itself as the legal counterparty to all purchases and sales undertaken on a market via a process known as novation. This process involves the replacement of the original contract by separate contracts between the buyer and the central counterparty and between the seller and the central counterparty.³ These arrangements provide significant benefits in terms of counterparty risk management as well as greater opportunities for netting of obligations. At the same time, they necessarily result in a significant concentration of risk in the central counterparty. This risk can crystallise if a participant defaults on its obligations to the central counterparty, in which case the central counterparty must continue to meet its obligations to the defaulter's original counterparties. The central counterparty must therefore have appropriate risk controls and other measures in place to provide confidence that, in all but the most extreme circumstances, such a default can be accommodated without threatening its solvency or significantly disrupting financial markets or the financial system more generally.

The following licensed central counterparties are required to comply with the *Financial Stability Standard for Central Counterparties*:

- Australian Clearing House (ACH) – provides central counterparty services for a range of financial products traded on the ASX market, including equities, warrants and equity-related derivatives; and
- SFE Clearing Corporation (SFECC) – provides central counterparty services for derivatives traded on the Sydney Futures Exchange (SFE) market.

Securities Settlement Facilities

A securities settlement facility provides for the final settlement of transactions undertaken on securities markets. Settlement involves transfer of the title to the security and transfer of cash consideration. These functions are linked via delivery-versus-payment (DVP) arrangements established within the settlement process.

The following licensed securities settlement facilities are required to comply with the *Financial Stability Standard for Securities Settlement Facilities*:⁴

-
- 3 Typically, a central counterparty deals only with the small number of direct participants. Most buyers and sellers must appoint a participant to act on their behalf. The central counterparty will therefore have a contract with the participant acting on behalf of the buyer and the participant acting on behalf of the seller, rather than directly with the buyer and seller.
 - 4 A third securities settlement facility – operated by IMB Limited – falls outside the application of the Financial Stability Standards due to its small size and the low likelihood of it affecting the overall stability of the Australian financial system.

- ASX Settlement and Transfer Corporation (ASTC) – provides for the settlement of equities and warrants traded on the ASX market; and
- Austraclear – offers securities settlement services for over-the-counter (OTC) trades in debt securities.

With the merger of Australian Stock Exchange Limited and Sydney Futures Exchange Limited in July 2006, ACH, SFECC, ASTC and Austraclear are all part of a single corporate group, now known as Australian Securities Exchange (ASX). Each facility, however, continues to hold an individual licence.

3. Developments in the Clearing and Settlement Industry in 2007/08

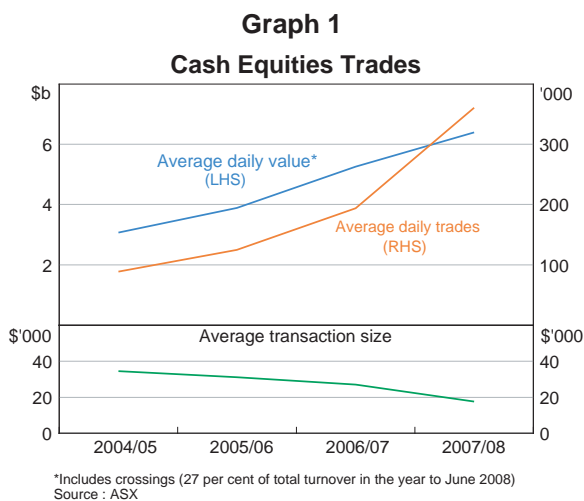
The past 12 months have seen a substantial increase in volatility and traded volumes and values in a number of markets served by Australia’s clearing and settlement facilities. There have also been financial problems with a small number of brokers, and on two occasions in January there were significant delays in the batch settlement of equities. Also during this period, three new platforms have applied for licences to operate market venues for the trading of ASX-listed equities. These applications have raised the issue of how the new platforms will link into the established clearing and settlement infrastructure, which is currently integrated with the incumbent exchange.

Activity in the Licensed CS Facilities

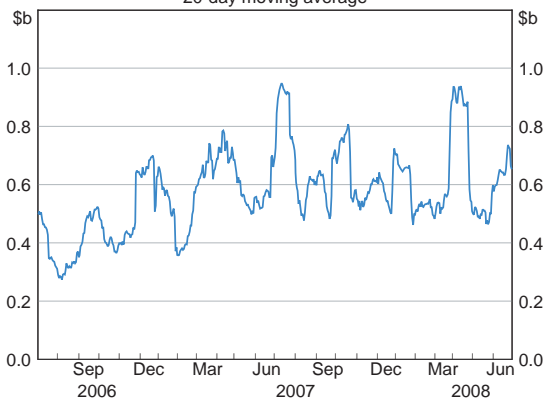
Over 2007/08, volumes and values passing through the licensed CS facilities continued to increase, though in some cases less rapidly than in the preceding period. The most notable growth was in cash equities volumes, which rose by 86 per cent, outstripping growth of 22 per cent in values traded. Reflecting the faster growth in volumes than values, the average transaction size has continued to fall (Graph 1). This is partly the result of more widespread application of automated trading strategies and other mechanisms to split large orders and release them gradually into the market.

As traded values have grown, the average settlement value on each side of the daily net CHESSE settlement batch has also increased, rising by 20 per cent over the year to approximately \$630 million (Graph 2). The peak value of settlements during the year was \$3.7 billion, on 25 September 2007.

Volumes traded on the ASX derivatives market were broadly flat over the assessment period, although the daily notional value of contracts traded expanded by 18 per cent to \$2.3 billion. Volumes and notional values traded on the much larger SFE market both expanded by around 3 per cent over the period, with daily notional value traded averaging \$152 billion. This followed

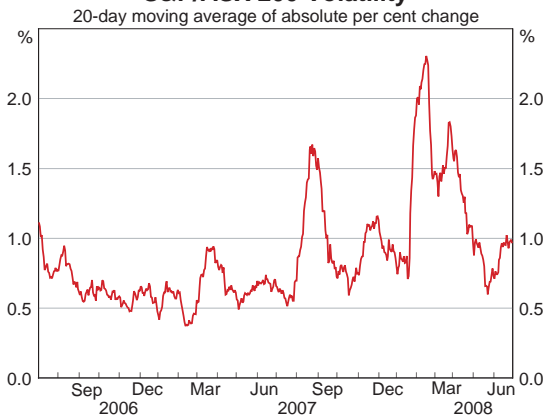


Graph 2
CHES Settlement Values
 20-day moving average



Source: RBA

Graph 3
S&P/ASX 200 Volatility
 20-day moving average of absolute per cent change



Source: Global Financial Data

a long period of sustained rapid growth, the slowdown reflecting, in part, the scaling back of traders' positions during the first half of 2008 in response to higher market volatility (Graph 3).

The average daily settlement of debt securities through Austraclear, comprising outright purchases and sales of debt securities and repos, increased significantly over the year, rising by 27 per cent to \$42.2 billion.

Risk Management in the Licensed Central Counterparties

As values traded have risen, exposures faced by the central counterparties, ACH and SFECC, have grown. On average, 73 per cent of cash equities and warrants traded on the ASX market were novated to ACH during the year to June 2008. The resultant exposure faced by ACH can be captured by the sum of participants' settlement obligations to ACH in respect of their trades. Over the year, ACH's average exposure from a single day's trades increased by

36 per cent to \$610 million. Taking into account the three-day settlement cycle, ACH's total exposure rose by a similar percentage, to \$1.3 billion per day. ACH does not routinely levy margins in respect of participants' cash equity positions, but has recently introduced a regime whereby participants are required to post collateral to cover large exposures.

ACH and SFECC manage the risk associated with participants' derivatives positions partly via the imposition of initial margins. For ASX-traded derivatives, the aggregate of initial margins held during the assessment period rose by 44 per cent to an average of almost \$730 million. This reflected both the rise in notional values traded and higher market volatility, which led to an increase in margin rates. By contrast, on the SFE market, where clearing participants scaled back their open positions markedly, initial margins posted to SFECC peaked at \$4.7 billion at the end of the previous assessment period and declined through the remainder of 2007 to be within a

\$2 to \$3 billion range during most of the first half of 2008 (Graph 4). The average for 2007/08 as a whole was approximately \$3 billion, similar to the previous year.

Delay to Equity Settlement in January 2008

During the first half of 2008, a number of brokers experienced financial difficulties. Where these brokers were either clearing or settlement participants, the licensed CS facilities had to take action to manage both direct counterparty

risk exposures and potential spillovers to other participants through the clearing and settlement process. The assessments in Section 5 describe some of the measures taken.

On two days in late January 2008, the inability of one broker to meet its obligations in the daily net batch settlement process run by ASTC led to significant delays in the settlement of Australian equities. While settlement is typically completed at around noon, the batch did not settle until around 4.30pm on 29 January and around 2.30pm on 30 January. Further to these events, the Reserve Bank undertook an extensive review of settlement practices in the Australian equity market, publishing its findings in May 2008.⁵ The main findings of this review are outlined in Section 5.3.

Prospective Changes in the Clearing And Settlement Landscape

During the assessment period, ASIC launched two public consultations on the implications of competing trading platforms for ASX-listed equities.⁶ Three companies have applied for market licences to provide platforms in direct competition with the ASX market, currently the sole provider. In March 2008, ASIC gave advice to the Minister for Superannuation and Corporate Law on the regulatory framework for these new trading platforms; the Minister is currently considering that advice.

The Reserve Bank's interest is in the nature of arrangements to be put in place to enable the new trading platforms to clear and settle via ACH and ASTC. The Reserve Bank has been in close dialogue with ASX and ASIC on these matters. On 19 March 2008, ASX issued a high-level public consultation document, laying out the relevant issues to be addressed in establishing access to its CS facilities. This was followed by the publication of issues papers for industry consultation on 11 April 2008 and 24 July 2008.

Graph 4
SFECC: Initial Margins



⁵ The report is available at: http://www.rba.gov.au/PaymentsSystem/StdClearingSettlement/Pdf/review_stlmt_prac_au_equities_052008.pdf

⁶ CP86: *Competition for Market Services – trading in listed securities and related data (July 2007)* and CP95: *Competition for Market Services – response to CP86 and further consultation (November 2007)*.

In another prospective change to the clearing and settlement landscape, the US-based central counterparty, The Clearing Corporation, has announced that it will provide clearing services for derivatives products traded on a new Australian exchange, The Financial and Energy Exchange (FEX). FEX, via its subsidiary, Mercari, already operates a platform trading OTC derivatives products and intends to expand its offering to include a range of exchange-traded energy, environmental, commodity and financial derivatives.

4. The Financial Stability Standards

The Financial Stability Standards

In May 2003, the Reserve Bank determined *Financial Stability Standards* for central counterparties and securities settlement facilities. The standards are supplemented by a set of detailed measures that the Reserve Bank considers relevant for meeting each standard (see Attachment 1).

The standard for central counterparties is as follows:

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 practicable to do so.

The original standard for securities settlement facilities was varied in June 2005 to ensure that small securities settlement facilities, which are unlikely to affect the overall stability of the Australian financial system, are not subject to unnecessary regulation. The standard is as follows:

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 practicable 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 is exceeded for the first time, the provider of the facility must meet the standard by the beginning of the next financial year.

The standards are deemed to comprehensively cover matters relevant to the assessment of systemic risks arising from the activities of licensed facilities. As such, the Reserve Bank fulfils its obligation to assess whether a facility is ‘doing all other things necessary to reduce systemic risk’ also by reference to the measures underpinning the *Financial Stability Standards*.

Determination, Variation and Revocation of Financial Stability Standards

Section 25M(1)(a)-(c) of the *Reserve Bank Act* requires that the Payments System Board describe standards for CS facilities determined during the year and any variations or revocations of existing standards.

No standards for CS facilities were determined by the Reserve Bank under Section 827D(1) of the *Corporations Act* during the year to June 2008. No existing standards were varied or revoked.

The Reserve Bank is, however, considering a variation to the *Financial Stability Standard for Central Counterparties* whereby, subject to certain conditions, the standard would not apply to an overseas facility that was subject to an overseas regulatory regime deemed to

be sufficiently equivalent to that in Australia. The objective of this proposed variation is to establish a framework for regulation of overseas facilities that does not impose an unnecessary regulatory burden, while ensuring competitive neutrality. With increasing incidence of cross-border provision of clearing and settlement services, this is becoming an important issue for regulators internationally.

The Reserve Bank is also considering a variation to Measure 3 (Understanding Risks) of the *Financial Stability Standard for Securities Settlement Facilities*, to require the collection and publication of data on cash equities securities lending activity. This follows the recommendation in the Reserve Bank's *Review of Settlement Practices for Australian Equities* that transparency and disclosure of securities lending activity be improved.

More generally, the Reserve Bank examined the case for amending some of the measures underpinning the *Financial Stability Standards* to more directly address specific identifiable risks. The current standards and measures are largely principles based and there are few prescriptive requirements. The Reserve Bank continues to favour this approach, recognising that best practice will evolve over time. Nevertheless, the Reserve Bank would introduce more prescriptive measures if this were deemed necessary.

5. Assessment of CS Facilities against the Financial Stability Standards

The Reserve Bank monitors licensed CS facilities' compliance with the *Financial Stability Standards* on an ongoing basis and reports on its assessment once a year, covering the period to end-June. All four ASX licensees report financial information to the Reserve Bank quarterly, with the two central counterparties also reporting detailed risk-management information, including stress-test outcomes. These reporting requirements are supplemented by a regular dialogue with the licensees on issues relevant to compliance at both an operational and a policy level.

From this information, the Reserve Bank assesses each CS facility against each of the measures associated with the relevant standard, although the primary focus is on material changes over the assessment period.

The assessments that follow describe the key developments over the year to end-June 2008 for each facility and consider the implications of these developments for each facility's compliance with the relevant standard. Details of the information that the Reserve Bank has used to assess each facility against the relevant measures is presented in the attachment, which builds on material included in the 2006/07 Assessment.

5.1 Australian Clearing House (ACH)

Background

ACH provides central counterparty services for a range of financial products traded on the ASX market, including equities, warrants and equity-related derivatives.

ACH operates within a sound legal framework, based on its Clearing Rules. Under Section 822B of the *Corporations Act*, these rules constitute a contract under seal between ACH and each of its participants, and between participants. Among other things, the rules set out the rights and obligations of ACH and each of its participants in respect of ACH's provision of central counterparty services. The netting arrangements contained in ACH's Clearing Rules are further protected under Part 5 of the *Payment Systems and Netting Act 1998*.

Given the concentration of counterparty risk in a central counterparty, effective risk-management processes are crucial. ACH manages the risk associated with the potential for a participant default through a range of measures: risk-based participation requirements and ongoing monitoring; daily stress testing of exposures; collateralisation of exposures by participants; and the maintenance of a buffer of risk resources, including own capital.

Margins are routinely collected from participants in respect of derivatives exposures, with additional cover required for large exposures. Margins are not routinely levied on cash equities positions, although participants are required to provide collateral to cover positions which generate exceptionally large exposures for ACH. The margins and other collateral posted by a defaulting participant constitute ACH's first line of defence against losses arising in the event of a default.⁷

ACH has access to additional risk resources of \$550 million to meet losses arising in more extreme market conditions. The core component of these resources is the Risk Resource Requirement (RRR), which consists of ACH's own resources (funds paid into a restricted capital reserve from the National Guarantee Fund (NGF) in 2005 and a subordinated loan provided by ASX Limited) and is currently set at \$150 million. The RRR is invested in high-quality liquid assets and would be immediately available for use in the event of a participant default. The RRR is supplemented by default insurance of \$100 million and 'emergency assessments', of up to \$300 million, which can be levied on surviving participants in the event of a default. ACH also has a committed standby facility with a commercial bank to access liquidity at short notice.

At the end of the assessment period, ACH had 65 participants, including 35 Australian brokers, 19 broker subsidiaries of foreign banks, eight subsidiaries of Australian banks, and three specialist clearers. Three participants resigned during the period, while two new participants joined.

⁷ This is not strictly the case currently in respect of cash equities, where collateral posted in respect of large exposures ('Contributions') are currently a mutualised resource. ACH will be seeking to introduce margining powers to its Clearing Rules to allow for such Contributions to be treated as equivalent to margin and hence available only in the case that the participant posting the collateral defaults.

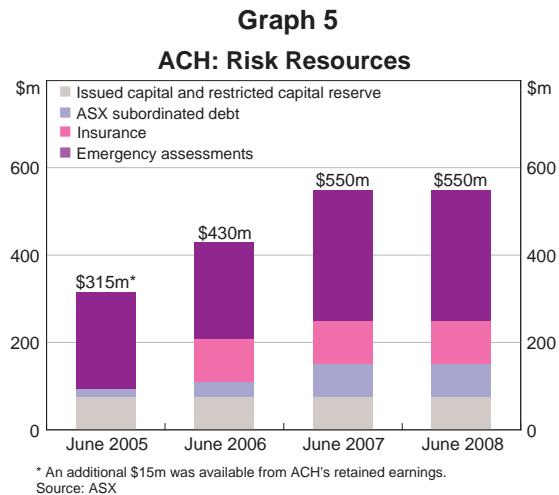
Assessment of Developments in 2007/08

During 2007/08, ACH implemented a number of changes to its stress-testing and margining practices, continuing a process which began in 2006. The financial difficulties experienced by a small number of brokers during the first half of 2008, two of whom were clearing participants, also presented some important risk-management challenges for ACH. Consequently, in this year's assessment, the Reserve Bank has looked in particular at ACH's procedures in the management of financial risks and the monitoring of participants. In addition, ACH's operational performance during the period has been examined, as have the initial steps taken in relation to the provision of clearing services to prospective new trading platforms for ASX-listed securities.

Capital stress testing and risk resources

As a result of the growth in trading activity over the year to end-June, as described in Section 3, the daily average sum of participants' outstanding cash equity settlement obligations to ACH increased by 36 per cent, to \$1.3 billion. This followed an increase of 30 per cent in the previous year. In this assessment, the Reserve Bank has considered the adequacy of ACH's risk resources in light of these increases.

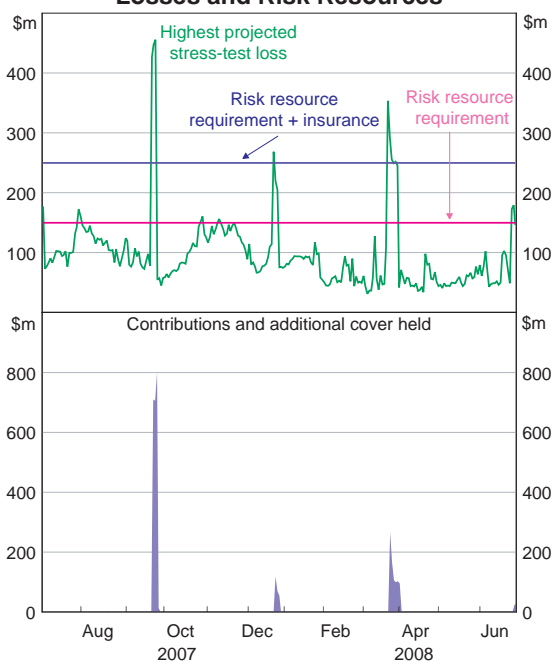
ACH does not routinely collect margins from participants in respect of cash equities positions, instead covering the risk exposures arising from these positions through its pooled risk resources (as discussed above). The aggregate of these resources has increased significantly over the past three years, rising by 74 per cent since June 2005 (Graph 5). Excluding emergency assessments, risk resources rose by 163 per cent over this period, which compares with growth of 108 per cent in cash equity traded values.



One way of assessing the adequacy of ACH's risk resources is by reference to its capital stress tests, which are run daily on the basis of participants' cash equity and derivatives positions at the close of the previous day. Comparison of projected stress-test losses with the level of available risk resources offers some guidance as to the resilience of the central counterparty to a participant default in extreme market conditions.

ACH implemented the first phase of a new capital stress-testing regime towards the end of the 2006/07 assessment period. The regime comprises 24 scenarios, combining conservative close-out assumptions with extreme price moves and volatility shifts at the market, sector and stock levels. Some refinements were made to the regime during the 2007/08 assessment period

Graph 6
ACH: Highest Projected Stress-test Losses and Risk Resources



Note: Stress-test exposures may be compared with the risk resources held by ACH to show its resilience to a participant default in extreme market conditions. ACH calls contributions and additional cover from participants where stress-test exposures exceed its RRR.

Source: ASX

and ACH plans to further expand the range of stock-specific stress scenarios by the end of 2008.⁸

During the assessment period, there were 23 instances of stress-test exposures exceeding the immediately available component of risk resources (as measured by the RRR). Eight of these also exceeded the aggregate of the RRR and default insurance, but none exceeded the total of ACH's risk resources. These excesses have tended to be concentrated at quarter ends, reflecting sizeable cash equity trades associated with the quarterly expiry of equity futures contracts.⁹ Nevertheless, although relatively infrequent, the scale of projected stress losses can be significant, exceeding \$450 million in September 2007 (Graph 6, top panel).

During the assessment period, ACH completed the second phase of implementation of a Contributions and Additional Cover (CAC) regime

to address the risks arising from these large exposures. Under this regime, individual participants are required to post collateral to cover projected stress losses in excess of the RRR on their cash equity or derivatives positions. ACH aims to notify participants of any collateral requirement under the CAC regime by 9.30am, with participants then required to post the collateral within two hours of the call. Accordingly, since the full implementation of the CAC regime in December 2007, all projected stress losses in excess of the RRR have been covered by collateral calls (Graph 6, lower panel).¹⁰

Overall, it is the Reserve Bank's assessment that ACH's capacity to manage increased risk exposures arising from participants' trading activity has been enhanced significantly by

8 Some further changes were made to the stress-testing model in August 2007. The size of the largest market-wide upside stress scenario was reduced from 10 per cent to 7 per cent. At the same time, a 'rebound' scenario was introduced in recognition of the increased potential for upside stress during turbulent market conditions. This rebound scenario was amended in January in light of experience in a particularly volatile market environment.

9 These positions are related to index arbitrage transactions. Index arbitrage is a trading strategy which seeks to profit from a difference between the actual and theoretical spread between futures prices and prices in the underlying physical market. The trading strategy involves taking either a long futures position and selling stock, or taking a short futures position and buying stock. The gains from the trading strategy are realised when the futures position expires – the futures position is liquidated and the stock is either bought (if stock had originally been sold) or sold (if the stock had originally been bought). The scale of these cash equity trades can cause spikes in ACH participants' projected stress losses.

10 The lower panel captures the aggregate of collateral called from all participants with stress losses in excess of the RRR, rather than collateral called from only the participant with the largest projected stress loss.

the combination of measures described above. It is, however, important that an appropriate balance be struck between variable collateral calls and fixed capital resources. Indeed, should the incidence of large projected stress losses in excess of the RRR and default insurance increase materially, the Reserve Bank would expect to see an increase in the fixed component of ACH's mutualised risk resources.

Notwithstanding that it compares favourably with international best practice, one limitation of the CAC regime is that, should collateral be called under stressed market conditions, the participant may face difficulties in meeting its obligation to ACH. In extremis, this could itself precipitate a default. Furthermore, given the timing of ACH's daily stress tests, collateral can only be called in respect of the position at the close of the previous day's trading, meaning that ACH can retain uncovered exposure for more than 24 hours (and longer over weekends). While acknowledging the likely system and technological challenges, and recognising other mitigants in the broader risk-management framework, the Reserve Bank sees a case for ASX to give further consideration to how the regime might be enhanced so as to allow for calls to be made sooner after a large position is executed.

Since the end of the assessment period, ACH has announced further prospective refinements to the CAC regime. As noted above, the threshold beyond which collateral is called is currently set equal to the RRR for all participants. Going forward, ACH proposes that highly rated participants be required to post collateral only once projected stress losses have risen above a threshold – the so-called Stress-test Exposure Limit (STEL) – somewhat higher than the RRR. Low-rated participants will be required to post collateral at a lower threshold. Furthermore, in normal market conditions, highly rated counterparties will be required to cover only a proportion of the excess exposure beyond the stated threshold.¹¹ A similar 'discounting' regime was introduced recently at SFECC (see Section 5.2).

While the imposition of ratings-dependent stress-test exposure limits and discounting will reduce the level of cover provided by some participants under the CAC regime, the Reserve Bank accepts the rationale for acknowledging credit quality in the application of the CAC regime. This approach also recognises that ACH has access to additional risk resources beyond the RRR in the event of default, even though these are not immediately available.

Margin setting and settlement of margin calls

Margin-setting practices at ACH have been reviewed recently, with a common approach established across ACH and SFECC. Under the new regime, initial margins for ASX derivatives positions continue to be set on the basis of a three-standard-deviation (99.73 per cent) confidence interval for price movements, although the assumed close-out period has been amended to the higher of one or two days. Furthermore, an extended price history of 60 days is now considered in setting margin levels, with a greater emphasis placed on implied volatility and qualitative factors.¹² Going forward, margin levels are to be reviewed at least once a quarter, with *ad hoc* reviews taking place in response to market developments.¹³

11 ACH would suspend discounting if the exponentially-weighted moving average (EWMA) of SPI S&P/ASX 200 volatility was 30 per cent higher than historical volatility.

12 The new regime also allows for discretion to consider both longer and shorter time-frames in setting margin levels.

13 Reviews currently take place weekly and monthly, depending on the particular contract.

ACH also expects to proceed in the near future with implementation of systems changes to allow for intraday margin calls to be made in response to sizeable changes in participants' positions. Currently, the impact on exposures arising from changes in market prices can be reflected in margin calls intraday, but the impact from changes in positions cannot. In the absence of such changes, ACH does not have the capability to cover mark-to-market exposures in respect of new derivatives positions until the routine settlement of margin on the following morning. As is the case for calls under the CAC regime, this can lead to uncovered exposure on new positions for more than 24 hours. The proposed system changes were to have been implemented during 2007/08 and their importance was noted in the 2006/07 assessment report. ACH has plans to proceed with implementation during the forthcoming period and is encouraged to do so.

The delay to cash equity settlement in late January 2008 illustrated some potential issues with the current process for settling margin calls in respect of ASX derivatives positions. Currently, margins can be paid either via Austraclear or via ASTC's daily batch settlement process in CHESS, in which case margin obligations are netted against other cash flows arising from cash equity transactions.^{14 15} If paying via Austraclear, participants must ensure that settlement is complete by 10.30am; if paying via the CHESS batch, payments are typically authorised and settled by around noon. The delay to the CHESS settlement process in late January revealed the vulnerability of settling margin payments in this way. The Reserve Bank considers that timely settlement of margins is a critical component of ACH's risk management process and hence should not be dependent on the settlement of other transactions. Therefore, the Reserve Bank sees a strong case for considering whether the robustness of the system would be improved by settling margin payments via a Real-time Gross Settlement (RTGS) channel, thereby helping to ensure that such dependence was avoided. The Reserve Bank is in ongoing dialogue with ASX on this matter and understands that ASX intends to consult with the marketplace on the operational implications of such a change, in the wider context of potential modifications to the settlement processes in CHESS (see Section 5.3).

Treasury investments

An important development during the assessment period was the creation of a new corporate entity, ASX Clearing Corporation (ASXCC), to manage the treasury function for the two central counterparties. The corporate structure is now in place, with the new entity sitting between ASX Limited and the two central counterparties. Subject to ASIC approval of associated changes to the Clearing Rules, ASXCC will in future manage the investment of all assets held by ACH and SFECC, including margins and other participant contributions. The new structure will also add flexibility to the central counterparties' funding and capital-management processes.

The Reserve Bank has reviewed the prospective new treasury arrangements and accepts that they add flexibility to both ACH's treasury investment function and the management of its risk resources. The Reserve Bank is currently reviewing the legal robustness of the terms and conditions associated with potential market-based funding of ACH's risk resources via ASXCC.

¹⁴ The RTGS facility in CHESS is potentially another available channel, although in practice this has never been used.

¹⁵ CHESS is not available for settlement of intraday margin calls, which must be settled via Austraclear.

It is also intended that, in the short term, ACH will apply to hold an Exchange Settlement (ES) account at the Reserve Bank. Currently, obligations to and from ACH are settled across an account with a commercial bank. Although ACH's claim on funds held with its banker is final and irrevocable once interbank settlement has occurred in the Reserve Bank Information and Transfer System (RITS), ACH retains counterparty exposure to its banker. The Reserve Bank welcomes the prospective shift to settlement in central bank money, which will remove this risk from ACH's settlement arrangements. In the medium term, ASXCC may also apply to hold an ES account at the Reserve Bank.

At its May 2008 Board meeting, ASX revised – and harmonised – the central counterparties' treasury investment limits; that is, the parameters within which the central counterparties' risk resources, including margins and other cash collateral posted by participants, may be reinvested. It is intended that this harmonised policy will form the basis for the investment mandate to be applied by the new ASXCC entity. The policy restricts treasury investments to liquid assets – such as bank bills and certificates of deposit – and applies issuer investment limits scaled according to the credit standing of the issuing counterparty. With the exception of investment in instruments issued by the four largest domestic banks, the maximum exposure to any issuer is set equal to the value of ACH's capital resources: currently \$150 million. Lower exposure limits apply for lower-rated institutions and concentration limits restrict investments with any issuing counterparty to 33 per cent of the total portfolio.

Notwithstanding the application of such limits, the policy does leave open the potential for large and concentrated credit exposures to the four largest domestic banks. This in part reflects the general shortage of suitably high quality and liquid Australian dollar assets, which makes it difficult to achieve diversification in the treasury portfolio. 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 ACH's risk resources seek to provide cover. The Reserve Bank will continue to discuss these issues with ASX during the forthcoming period as new treasury arrangements via ASXCC are finalised.

Participant monitoring

Financial difficulties experienced by a small number of brokers during early 2008, two of whom were clearing participants, highlighted the importance of close monitoring of participants by ACH and the swift implementation of risk-mitigating policy actions. The Reserve Bank has therefore focused particular attention on monitoring processes in this year's assessment.

The participant-monitoring function is split between ASX Clearing Risk Operations and ASX Markets Supervision. ASX Clearing Risk Operations is responsible for stress testing and position monitoring, while ASX Markets Supervision is responsible for monitoring ACH participants' capital and liquidity requirements, as well as compliance monitoring, investigations and enforcement. A 'Supervisory Code of Conduct' and 'Commercial and Supervisory Conflict of Interest Policy' govern the flow of information between the two business units, to address potential conflicts between ASX's supervisory responsibilities and its commercial interests.

Procedures were tested in late January, when one participant was late in meeting its margin obligations and experienced difficulties in settling its cash equity positions. ASX responded with an *ad hoc* review of the participant's capital adequacy and put in place arrangements for closer ongoing monitoring. A range of additional collateral and reporting requirements were also imposed, as well as restrictions on the participant's access to clearing and settlement services. In particular, the participant faced: restrictions on trading interest-rate and warrant products; prohibitions on short selling; and restrictions on participation in the daily CHESSE settlement batch. Another broker participant was placed into administration in late March, but as all of its trades were cleared through another participant it had no outstanding obligations to ACH at the time administrators were appointed. Nevertheless, an *ad hoc* review of all participants was carried out in response to gauge the potential spillover impact of the participant's failure.

These events revealed some potential gaps in the general framework for market supervision and regulation. This supervisory gap was also acknowledged in ASIC's recent assessment of the ASX group licensees. In particular, it was observed that certain business activities, such as margin lending and securities lending, fell outside of the scope of existing industry-wide arrangements. In the Reserve Bank's view, this episode also suggested that ASX's participant-monitoring arrangements did not adequately capture risks to ACH arising from clearing participants' engagement in these off-market activities.

Further to this episode, ASX Markets Supervision has initiated a review of its participant capital and liquidity-monitoring arrangements. This will include a review of participants' business models and their product offerings, assessing these against the way in which the participant currently submits financial information to ASX. The review will be supported by an international survey of other exchanges to provide a benchmark for ASX's own procedures; this is expected to be completed by the fourth quarter of 2008.

This experience has also highlighted a number of operational and legal matters to consider in respect of the management of a participant default. In particular, ACH has been able to work towards refining procedures around data access and risk calculations; internal and external communications; and the practicalities of closing out or transferring positions. Some important policy questions were also raised for ongoing review, including the criteria for declaring a default and assessment of the potential behaviour of an administrator.

Participation requirements and internal credit ratings

Separately, ACH recently made some changes to its internal credit ratings framework and also announced plans to revise its admissions criteria. In January 2008, a new common internal credit ratings framework was introduced at both ACH and SFECC. At ACH, ratings of 'Extremely Strong' through to 'Vulnerable' were replaced with ratings of 'A' through to 'E'. Ratings are based on the external rating of the clearing participant (where available) or its parent if that parent provides a guarantee to the clearing participant.¹⁶ Otherwise, ratings are based on net tangible assets adjusted for subordinated debt. The introduction of the new methodology resulted in the downgrading of a number of participants into lower credit rating categories.

¹⁶ The parent entity's rating is also taken into account where the clearing participant shares its parent's name and hence may be subject to reputational risk.

At the end of the assessment period, one of ACH's 65 participants was rated A; a further 34 were rated B or C; and 30 were rated D or E. Going forward, ACH plans to take steps to increase the average financial strength of its participants.

Currently, ACH clearing participants must hold liquid capital in excess of a 'total risk requirement', while maintaining minimum core liquid capital of \$100 000.¹⁷ ACH intends to raise the minimum core liquid capital requirement to \$2 million by the end of 2008, increasing this further to \$10 million by the end of 2009. ACH also intends to invite bank Authorised Deposit-taking Institutions (bank ADIs) to become clearing participants. There are currently no bank ADI participants of ACH, which largely reflects legacy arrangements in respect of contributions to the NGF.¹⁸ Bank ADIs would be exempt from ACH's capital requirements, with ACH relying on the participant's compliance with APRA's prudential regime.

Participation criteria are an important determinant of the risk exposure assumed by a central counterparty and hence the Reserve Bank supports ACH's efforts to raise the average financial standing of its participants. It is important, however, that access criteria continue to be risk based and that a higher threshold for access complements and does not substitute for rigorous ongoing monitoring of participants. This is acknowledged by ASX. It is also noted that the proposed policy does not differentiate between participants clearing only for themselves and those also providing third-party clearing services. To the extent that greater concentration in direct participation may give rise to increased dependence on a small group of large third-party clearers, such differentiation may be appropriate. Indeed, new minimum capital requirements announced by SFECC will differentiate in this way (see Section 5.2).

Operational performance

ACH's core systems are the Derivatives Clearing System (DCS) and CHESS. Developments in respect of CHESS are considered in the assessment of ASTC in Section 5.3. For DCS, average capacity utilisation over the period was 22 per cent, peaking at 61 per cent. ACH carried out regular connectivity and procedural tests throughout the period with satisfactory results, and a major business-continuity test simulating loss of the primary Sydney site was carried out for DCS in August 2007, again with a satisfactory outcome. Other enhancements to operational risk-management policies were implemented during the period, including in respect of pandemic response planning, fraud control and incident management.

New market operators

In response to the application for market licences by three prospective new market operators (see Section 3), ASX launched a project to establish how new trading platforms with a need for clearing and settlement services will connect and communicate with ACH and ASTC, including consultation with clearing participants and other stakeholders. Subject to the government's

17 *The total risk requirement is based on a participant's exposures to counterparty risk, large exposure risk, position risk and operational risk. A higher minimum capital requirement – of at least \$5 million in net tangible assets – applies for two participants clearing futures only. Core liquid capital is defined as the sum of: paid-up issued share capital; non-cumulative preference shares; reserves (including revaluation reserves); and retained earnings.*

18 *ADIs have, in the past, been unable to become ACH participants because of the possibility of an unlimited levy being imposed to recapitalise the NGF. APRA's prudential standards prohibit ADIs from entering into arrangements that could result in such unlimited liability. However, following a recent amendment to relevant Corporations Act provisions in respect of the NGF, ADIs are now able to participate directly in ACH if they wish.*

decision, this is likely to be an important issue during the 2008/09 assessment period, with the Reserve Bank's interest being in the implications of the prospective new arrangements for the risk profile of ACH and the settlement arrangements at ASTC.

Summary

It is the Reserve Bank's assessment that ACH has complied with the *Financial Stability Standard for Central Counterparties* during the assessment period.

The assessment highlights a number of important developments in respect of ACH's risk-management practices. In particular:

- *refinements to the new stress-testing framework*: Some refinements were made to the new stress-testing framework introduced late in the 2006/07 assessment period. Additional stress scenarios are to be added during the remainder of 2008.
- *the continuing implementation of the new regime for Contributions and Additional Cover*: The second of three phases of implementation of the CAC regime was completed in December 2007. The direct mapping from stress-test outcomes to risk resources should help to ensure the adequacy of ACH's risk resources, even when its participants are holding large and concentrated positions. The remaining third phase, which includes the introduction of stress-test exposure limits and discounting for highly-rated participants, will proceed during the forthcoming assessment period.
- *enhancements to margin-setting processes*: A new harmonised margining process was introduced late in the assessment period at ACH and SFECC. For ACH, the new regime continues to capture three standard deviations of price moves, but amends the assumed close-out period to be the higher of one or two days and takes into account qualitative factors and implied volatility in setting margins.
- *new arrangements for the management of treasury investments and funding of risk resources*: A new corporate entity, ASXCC, has been created, which will be used in the future to manage the treasury function for ACH and SFECC. The new structure will also add flexibility to the central counterparties' funding and capital-management processes. It is also intended that ACH will apply to hold an ES account at the Reserve Bank, allowing for settlement of obligations in central bank money. This will eliminate commercial-bank risk from the settlement process.

Notwithstanding the significant improvements made to risk-management practices in the 2007/08 period, the environment in which ACH operates continues to evolve. Accordingly, the assessment identifies a number of areas for further consideration by ACH during the forthcoming period. These include:

- *the arrangements for the ongoing monitoring of participants*: In light of the financial difficulties experienced by two broker participants over the past year, this assessment has looked closely at ACH's arrangements for monitoring participants. These problems highlighted that certain business activities fall outside of the scope of existing industry-wide arrangements for market supervision and regulation. This episode also suggested that ASX's participant-monitoring arrangements did not adequately capture risks to the clearing and settlement facilities arising from participants' engagement in these off-market activities.

In this regard, the Reserve Bank welcomes the review of capital- and liquidity-monitoring policies currently underway at ASX Markets Supervision and will continue to pay close attention to developments in this area over the coming year.

- *participation requirements*: Relatedly, ACH recently announced its intention to raise minimum capital requirements for participants. The Reserve Bank supports efforts to raise the average financial standing of clearing participants, but notes the importance of continued rigorous monitoring of participants and a risk-based approach to setting access criteria. This is acknowledged by ASX.
- *the timing of collateral calls on participants with very large positions*: The new CAC regime is an important component of ACH's risk-management process, which compares favourably with international best practice in this area. However, under these arrangements, calls can only be made in respect of participants' positions at the *close* of the previous day's trading, leaving a window of uncovered exposure. While acknowledging the likely technological challenges involved, and other mitigants in ACH's risk framework, the Reserve Bank sees a case for ASX to give further consideration to how the regime might be enhanced to allow for the calling of collateral sooner after a trade giving rise to a large exposure is established.
- *the monitoring of intraday positions*: In a similar vein, the 2006/07 assessment report noted the importance of planned system enhancements at ACH to facilitate the calling of intraday margin in response to changes in participants' positions. ACH is strongly encouraged to proceed, as planned, with the implementation of these enhancements over the coming year.
- *arrangements for the settlement of ACH margin calls*: Margin calls in respect of ASX derivatives can currently be made either via Austraclear or within the daily CHESSE settlement batch operated by ASTC. The disruption to CHESSE settlement in late January revealed a vulnerability in using this channel to settle margin payments. The Reserve Bank and ASX see a strong case to consider whether the robustness of the system would be improved by settling margin payments via Austraclear or an alternative RTGS channel. Such a change would help ensure that the timely settlement of margin was not dependent on completion of the cash equity settlement process. Indeed, the Reserve Bank is in dialogue with ASX on this matter and understands that ASX intends to consult with the marketplace on the operational implications of such a change.
- *treasury investment policies*: A new harmonised treasury investment policy was established for ACH and SFECC during the assessment period, which will form the basis for the investment mandate to be applied by the new ASXCC entity. The policy restricts investments to high-quality, liquid assets and, except in the case of the four largest domestic banks, sets counterparty limits within the value of capital allocated to treasury investment. The Reserve Bank acknowledges the improvement over previous arrangements but notes that the policy leaves open the potential for large exposures to the four largest domestic banks. The Reserve Bank will be discussing the treasury investment mandate further with ASX during the forthcoming period.

5.2 SFE Clearing Corporation (SFECC)

Background

SFECC provides central counterparty services for derivatives traded on the SFE market.

SFECC operates within a sound legal framework, based on its Clearing Rules. Under Section 822B of the *Corporations Act*, these rules constitute a contract under seal between SFECC and each of its participants, and between participants. Among other things, the rules set out the rights and obligations of SFECC and each of its participants in respect of SFECC's provision of central counterparty services. The netting arrangements contained in SFECC's Clearing Rules are further protected under Part 5 of the *Payment Systems and Netting Act*.

Given the concentration of counterparty risk in a central counterparty, effective risk-management processes are crucial. SFECC manages the risk associated with the potential for a participant default through a range of measures: threshold participation requirements and ongoing monitoring; daily stress testing of exposures; collateralisation of exposures by participants; and the maintenance of a buffer of risk resources, including own capital.

SFECC levies margins on all derivative products. It also levies Additional Initial Margins (AIMs), which can be called when large exposures are identified by capital stress testing. SFECC has access to additional risk resources – the Clearing Guarantee Fund (CGF) – on which it can draw in the event of a participant failure. The aggregate value of the CGF is currently \$400 million, comprising \$100 million in SFECC's own capital (including a subordinated loan provided by SFE Corporation); participant commitments of \$150 million (of which \$120 million is paid up in advance and \$30 million is contingent); and default insurance of \$150 million.

At the end of June 2008, SFECC had 15 participants, predominantly large foreign banks and their subsidiaries. Two participants resigned during the assessment period and one joined.

Assessment of Developments in 2007/08

Since the merger of ASX and SFE in September 2006, a number of steps have been taken to enhance risk-management capabilities and harmonise practices across SFECC and ACH. In particular, during the assessment period, SFECC has made improvements to its capital stress-testing arrangements and added significantly to its risk resources. Another important focus in this assessment has been SFECC's participant-monitoring processes. While the financial difficulties experienced by a number of ASX brokers during the first half of 2008 did not have a direct impact on the SFE market, or the capacity of SFECC participants to meet their obligations to the central counterparty, the Reserve Bank has sought to establish that risks identified by the episode are effectively managed by SFECC. Changes to SFECC's margin-setting and treasury-investment arrangements are also described, as well as SFECC's operational performance.

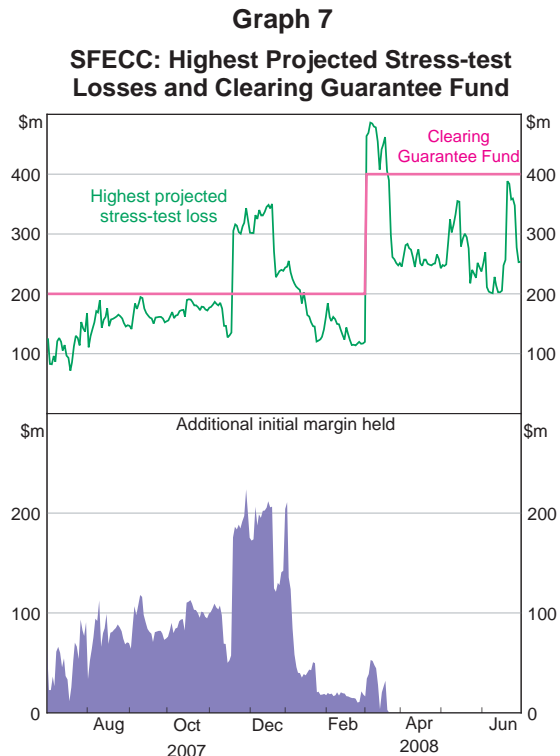
Capital stress testing and risk resources

The Reserve Bank's assessment report for the 2006/07 period noted that SFECC had been engaged for some time in developing a new capital stress-testing framework. Stress tests are applied to participants' end-of-day positions, enabling SFECC to gauge the adequacy of its pooled risk resources to meet any projected stress-test losses beyond the value of a participant's margins posted. SFECC is thereby able to identify occasions when additional collateral should be sought from participants in respect of exceptionally large positions.

A new suite of stress tests was ultimately implemented in two phases during the 2007/08 assessment period – in November 2007 and March 2008. SFECC now runs 30 stress-test scenarios daily, based on a range of individual and composite percentage price changes for the four largest contracts (SPI 200 futures; 90-day bank accepted bill futures; three-year Commonwealth Treasury Bond futures; and ten-year Commonwealth Treasury Bond futures). Activity on the SFE market is highly concentrated in these four contracts, with SPI 200 futures alone accounting for around 60 per cent of total initial margins posted to SFECC. For individual contract scenarios, stress tests aim to capture price moves with a once-in-30-years probability of occurring; multi-contract scenarios aim to capture price moves with a once-in-100-years probability.

Should stress testing reveal exceptionally large exposures, SFECC has the capacity to call for AIMS. Participants are subject to AIMS calls in the event that their positions trigger projected stress losses in excess of a pre-defined threshold – the Stress-test Exposure Limit (STEL) – which varies according to the credit standing of the participant. Highly rated participants' STELs are set at the level of the CGF; lower-rated participants' STELs are set at a level somewhat below the CGF. Participants are informed of obligations under the AIMS regime by 7am and must post additional collateral by 11am.

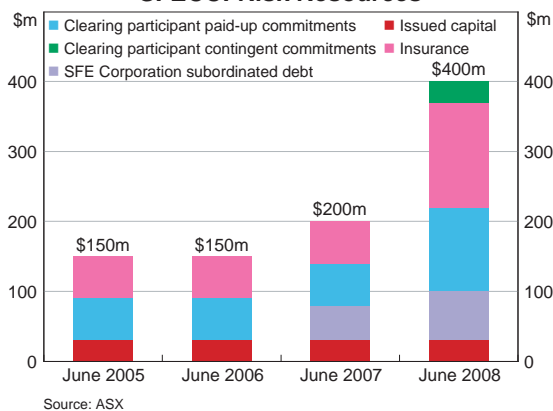
Upon implementation of the first phase of the new stress-testing regime in November 2007, there was a sharp increase in the number and size of projected stress-test losses in excess of the value of the CGF (Graph 7, upper panel). This reflected the increased strength of the stress scenarios, combined with a high level of concentration in clearing participants' open positions.



Note: Stress-test exposures may be compared with the Clearing Guarantee Fund held by SFECC to show its resilience to a participant default in extreme market conditions. SFECC calls additional initial margins from participants where exposures exceed that participant's stress-test exposure limit.

Source: ASX

Graph 8
SFECC: Risk Resources



resources – AIMs – and the fixed, mutualised component – the CGF. As a result of this review, in March 2008, SFECC increased the value of the CGF from \$200 million to \$400 million (Graph 8). This was achieved via an increase in the value of the subordinated loan from SFE Corporation (from \$50 million to \$70 million); a doubling of paid-up participant commitments (from \$60 million to \$120 million); and an increase in default insurance coverage from \$60 million to \$150 million. The pre-existing capacity to call contingent participant commitments, of up to \$30 million, in the event of a participant default was also brought into the CGF.

It is the Reserve Bank’s assessment that the new stress-testing framework represents a significant improvement over previous arrangements. Taken together with the increase in risk resources and the close link to the AIMs regime, SFECC’s capacity to withstand the default of a large participant in extreme market circumstances has been strengthened.

The Reserve Bank welcomes, in particular, the increase in the level of the CGF, which has reduced SFECC’s reliance on AIMs calls. Indeed, since early March, there have been no calls under the AIMs regime, although this also in part reflects the scaling back of clearing participants’ open positions on the SFE market. While the capacity to call additional collateral from participants to cover extraordinarily large projected stress losses is a key element of SFECC’s risk-management processes, it is important that an appropriate balance be achieved between variable collateral calls and fixed, mutualised risk resources.

One limitation of the AIMs regime is that, should collateral be called under stressed market conditions, the participant may face difficulties in meeting its obligation to SFECC. This could, in extreme circumstances, precipitate a default. Furthermore, stress testing is conducted daily on the basis of positions at the end of the day-time trading session, which may have been established up to almost 24 hours earlier during the previous night-time trading session. With settlement of AIMs calls then not completed until 11am the following day, SFECC can retain uncovered exposure to extreme price moves on new large positions for up to 42 hours (and longer at weekends). Routine initial margin calls are similarly made on the basis of positions at the end of the day-time trading session – consistent with margining practices internationally – but SFECC does have the capacity to call for variation margin intraday in the event that sizeable

In all, there were 35 occasions during the last quarter of 2007 on which projected stress-test losses exceeded the value of the CGF. These triggered a significant number of, often sizeable, AIMs calls, which peaked at \$224 million on 29 November 2007 (Graph 7, lower panel).

In conjunction with the second phase of implementation of the new stress-testing framework, SFECC also reviewed the split between the variable, participant-specific component of its additional risk

price movements erode initial margin cover, or in response to significant changes in clearing participants' positions. Clearing participants also often keep excess collateral with SFECC. These elements of SFECC's risk-management framework therefore allow for some amelioration of the risk associated with new positions until the point at which both routine initial margin and AIMs calls are settled, although SFECC currently has no means of calculating and covering projected stress exposures during this period. The Reserve Bank therefore sees a case for giving further consideration to whether the regime might be enhanced so as to allow for AIMs calls to be made sooner after a large position is established, while acknowledging both the potential technological challenges associated with implementation of such enhancements and that the regime already compares favourably with international best practice.

In March 2008, some refinements to the AIMs regime were implemented. First, new STELs became effective, reflecting participants' internal credit ratings.¹⁹ Second, a new discounting policy was introduced within the AIMs regime, whereby highly rated participants became eligible for discounts on their AIMs calls of up to 50 per cent of the projected excess stress loss (up to a maximum discount of \$500 million). SFECC applies this discounting system only under normal market conditions. In extreme market conditions – as defined by a stated measure of market volatility – discounting would be suspended and SFECC would require full collateralisation of AIMs.²⁰ While the introduction of a discounting regime for AIMs reduces the level of cover provided by some participants in normal conditions, the Reserve Bank acknowledges the rationale for recognising participant credit quality in SFECC's risk-management processes.

Margin setting

Margin-setting arrangements at both SFECC and ACH have recently been reviewed and a common approach has been established. Initial margins for SFE futures positions are now set on the basis of a three-standard-deviation (99.73 per cent) confidence interval for price movements, with an assumed close-out period of the higher of one or two days. This compares with the previous methodology of a 99 per cent confidence interval and a one-day close-out assumption for all but the four major contracts (for which the higher of one-day or two-day close-out was applied). All margin rates are to be reviewed on a quarterly cycle, with *ad hoc* reviews to take place in response to market developments.^{21 22}

Treasury investments

As discussed in the assessment of ACH (Section 5.1), an important development during the assessment period has been the creation of a new corporate entity, ASXCC, to manage the treasury function for the two central counterparties in the future. The Reserve Bank has reviewed the prospective new arrangements and accepts that they add flexibility to both SFECC's treasury

19 Previously, STELs had been based on a participant's external credit rating or its net tangible asset position.

20 SFECC would suspend discounting – thereby reverting to full collateralisation of AIMs – if exponentially-weighted moving average (EWMA) SPI volatility was 30 per cent higher than historical volatility.

21 With the exception of electricity contracts which will be subject to a monthly review.

22 Participants can satisfy their margin and AIMs obligations using cash and certain categories of high-quality, liquid non-cash collateral. Typically cash is used. SFECC previously imposed a \$700 million limit on the aggregate value of non-cash collateral posted across all participants. This limit was removed in April 2008, but participants are now required to give two days' notice if they intend to swap cash for non-cash collateral in excess of \$50 million.

investment function and the management of its risk resources. The Reserve Bank is currently reviewing the legal robustness of the terms and conditions associated with potential market-based funding of the central counterparties' risk resources via ASXCC.

Also, as noted in the ACH assessment, ASX has recently introduced a harmonised treasury investment policy for the two central counterparties, which will form the basis for the investment mandate to be applied by the new ASXCC entity. In the case of SFECC, the maximum exposure to any issuer, other than the four largest domestic banks, is \$120 million, reflecting the level of capital allocated to SFECC's treasury investment activities. The Reserve Bank will continue to discuss the new arrangements with ASX during the period ahead as the new treasury arrangements via ASXCC are finalised.

Participant monitoring and participation requirements

The financial difficulties experienced by several ASX brokers during early 2008 did not directly impact upon the SFE market and the ability of SFECC clearing participants to meet their obligations to the central counterparty. Nevertheless, these events did reveal some potential gaps both in the current industry-wide regulatory framework and in the scope of ASX's existing participant capital- and liquidity-monitoring arrangements. These are being considered by ASX in the context of a review of ASX Markets Supervision's monitoring processes. The episode also provided SFECC with some operational and legal clarity in respect of default-management procedures. The Reserve Bank will pay close attention to developments in this area over the coming year.

Although not directly related to these events, some changes were made during the period to SFECC's participant monitoring and participation requirements; others are planned in the near future.

One notable change during the year was the introduction of a new harmonised internal credit-rating framework for ACH and SFECC in January 2008. At SFECC, the internal model had previously rated participants according to the value of net tangible assets, with a distinction made between ADIs and non-ADIs. Within the new framework, participants are assigned internal ratings of 'A' through to 'E'. These ratings are based on the external rating of the clearing participant (where available) or its parent if that parent provides a guarantee to the clearing participant. Otherwise, credit ratings are based on net tangible assets adjusted for subordinated debt. A participant's credit quality, as reflected in its internal credit rating, determines its STEL and its eligibility for discounts on AIMs calls. Prior to implementation of the new regime, each participant had its own STEL, based on its net tangible assets.

At the end of the assessment period, six of SFECC's 15 participants were rated A; a further seven were rated B; and two were rated D. Six SFECC participants are ADIs. In common with plans at ACH, SFECC is planning to take steps to further improve the average financial standing of its participants. Currently, SFECC participants are required to maintain minimum net tangible assets of \$5 million. SFECC recently announced that it intends to increase the minimum requirement for non-bank ADI clearing participants to \$10 million, and to \$20 million for those clearing for third parties. The timing of this change has not yet been finalised. It is also proposed that bank ADIs will be granted an exemption from these net tangible asset requirements, with

reliance placed upon the participant's compliance with the Australian Prudential Regulation Authority's (APRA) prudential regime. While the Reserve Bank supports SFECC's efforts to further enhance the average financial standing of its participants, it is important both that the approach to setting access criteria continues to be risk based and that higher threshold participation criteria complement and do not substitute for close ongoing monitoring of participants. This is acknowledged by ASX.

New products

ASX introduced a new type of derivative contract, known as a *contract for difference* (CFD), in November 2007. Until then, CFDs had only been available in Australia in the OTC market. ASX CFDs are traded on the SFE market and novated to SFECC. CFD positions are subject to the same risk-management framework as other derivatives traded through SFE. At present, participants' positions in CFDs constitute a very small proportion of SFECC's aggregate risk exposure – on average, initial margins levied on CFD positions account for less than half of one per cent of aggregate initial margins. Should this segment of the market grow substantially, it may become appropriate to submit CFD positions to stress testing.

Operational performance

In April 2008, SFECC brought in-house some of the operational support for its key SECUR system, which had previously been provided by OMX.²³ SFECC is now responsible for all first- and second-level computer system support and business-continuity arrangements. First-level support provides users with a first point of contact; someone with a general working knowledge of the relevant computer systems. Second-level support offers more specific expert assistance to users. OMX will continue to provide third-level support; this is the support provided by the product's suppliers (manufacturers, software developers etc).

SECUR achieved a very high level of operational reliability during the period with no reported outages. Capacity utilisation averaged 27 per cent during the assessment period, peaking at 42 per cent. SFECC carried out regular connectivity and procedural tests throughout the period, with satisfactory results. A major business-continuity test simulating loss of the primary Sydney site was carried out for SECUR in November 2007. Other enhancements to operational risk-management policies were implemented during the period, including in respect of pandemic response planning, fraud control and incident management.

Summary

It is the Reserve Bank's assessment that SFECC has complied with the *Financial Stability Standard for Central Counterparties* during the assessment period.

The assessment highlights a number of important developments in respect of SFECC's risk-management practices:

- *enhancements to the stress-testing framework*: The new stress-testing framework, which was introduced in two phases during the period – in November 2007 and March 2008 – has significantly improved SFECC's capacity to gauge the adequacy of its risk resources.

²³ Similar new 'in-sourcing' arrangements were introduced for Austraclear's principal system, EXIGO.

- *an increase in risk resources:* SFECC doubled the size of its risk resources – the CGF – from \$200 million to \$400 million, reducing its reliance on collateral calls on participants under the AIMs regime.
- *enhancements to margin-setting processes:* A new harmonised margining process was introduced late in the assessment period at ACH and SFECC. For SFECC, the new regime aims to capture three standard deviations (99.73 per cent) of price moves, up from 99 per cent, and amends the assumed close-out period to be the higher of one or two days.
- *new arrangements for the management of treasury investments and funding of risk resources:* A new corporate entity, ASXCC, has been created, which will be used in the future to manage the treasury function for ACH and SFECC. The new structure will also add flexibility to the central counterparties' funding and capital-management processes.

Notwithstanding the improvements to SFECC's risk-management practices over the past year, the environment in which SFECC operates continues to evolve. Accordingly, the assessment identifies a number of areas for further consideration by SFECC during the forthcoming period. These include:

- *the arrangements for the ongoing monitoring of participants:* The financial difficulties experienced by a small number of ASX brokers during the first half of 2008 did not have a direct impact on SFECC. Nevertheless, the Reserve Bank welcomes the ongoing review of capital- and liquidity-monitoring policies by ASX Markets Supervision, which should further strengthen arrangements. The Reserve Bank will continue to pay close attention to developments in this area over the coming year.
- *participation requirements:* SFECC recently announced its intention to raise minimum capital requirements for participants. The Reserve Bank supports efforts to raise the average financial standing of clearing participants, but notes the importance of continued detailed monitoring of participants and a risk-based approach to setting access criteria. This is acknowledged by ASX.
- *the timing of collateral calls on participants with very large positions:* The AIMs regime is an important component of SFECC's risk-management processes, which compares favourably with international best practice in this area. However, under this regime, calls can only be made in respect of participants' positions at the *close* of the previous day-time trading session, leaving a window of uncovered exposure. While acknowledging the likely technological challenges, and other protections afforded by SFECC's risk-management processes, the Reserve Bank sees a case for ASX to give further consideration to how the regime might be enhanced to allow for the calling of AIMs sooner after a trade giving rise to a large exposure is established.
- *treasury investment policies:* A new harmonised treasury investment policy was established for ACH and SFECC during the assessment period. It is intended that this harmonised policy will form the basis for the investment mandate to be applied by the new ASXCC entity. The policy restricts investments to high-quality, liquid assets and, except in the case of the four largest domestic banks, sets counterparty limits within the value of capital allocated to treasury investment. The Reserve Bank acknowledges the improvement over the previous regime, but notes that it still leaves open the potential for large and concentrated investment exposures to the four largest domestic banks. The Reserve Bank will discuss the policy further with ASX during the forthcoming period.

5.3 ASX Settlement and Transfer Corporation (ASTC)

Background

ASTC operates within a sound legal framework, based on its Settlement Rules which under Section 822B of the *Corporations Act* have effect as a contract under seal between ASTC and each of its participants, and between participants. Among other things, the rules set out the rights and obligations of ASTC and each of its participants, including in the event of default or suspension. During the 2006/07 assessment period, ASTC's netting arrangements were 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 ASTC participant or a payment provider.

ASTC's securities settlement system is CHESS. Settlement risk in CHESS is mitigated by the use of a Model 3 DVP mechanism, whereby settlement of securities transfers and associated cash payments occurs in a multilateral net batch at around noon each day, with interbank payments made across ES accounts at the Reserve Bank. Securities title is updated upon notification of funds settlement.

Assessment of Developments in 2007/08

In light of the financial difficulties experienced by a small number of ASX broker participants during the first half of 2008, the Reserve Bank has paid particular attention in this year's assessment to ASTC's participation requirements, ongoing monitoring processes, and settlement procedures.

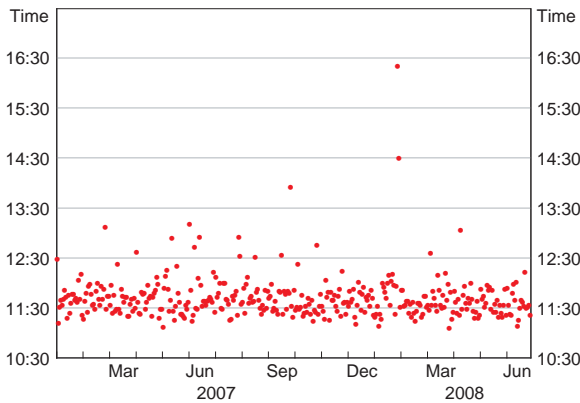
Participant monitoring and settlement procedures

ASTC's participation requirements address financial and business integrity issues, as well as operational and technical matters. Performance bonds must be lodged with ASTC where an ASTC settlement participant is not also an ASX market participant or an ACH clearing participant, or is not subject to prudential supervision as an ADI. ASTC Settlement Rules also permit ASTC to impose restrictions on a participant's access to the CHESS system, perhaps in conjunction with sanctions applied at the trading or clearing level. ASTC also reserves the right to conduct onsite reviews where operational issues are detected.

The participant-monitoring function is split between ASX Clearing and Settlement Operations and ASX Markets Supervision. ASX Clearing and Settlement Operations monitors participants' activity within the system, including operational performance and timeliness of settlement, while ASX Markets Supervision is responsible for prudential risk management, compliance monitoring, investigations and enforcement.

Procedures were tested by the events of early 2008. The most significant of these for ASTC was the failure of one participant to meet its settlement obligations on 29 January. Although

Graph 9
CHES Batch Settlement Times
 Jan 2007 - Jun 2008



Source: RBA

this was not strictly a default, the participant's difficulties triggered a market-wide delay in settlement until late in the afternoon. Batch settlement is typically completed at around noon each day, but on 29 January it was not completed until almost 4.30pm (i.e. 16:30 in Graph 9). Settlement was also delayed on 30 January, although not by as long as on the previous day. In addition to sanctions at the trading and clearing levels, ASTC imposed restrictions on the participant's inclusion in the daily CHES settlement batch.

In response to the problems experienced in the settlement system, the Reserve Bank carried out a *Review of Settlement Practices for Australian Equities*, publishing its findings in May 2008.²⁴ The Reserve Bank is now working closely with ASX and market participants to examine how some of the recommendations in the review might be taken forward.

While the current batch arrangements in CHES are operationally efficient and minimise participants' liquidity requirements, the events of late January illustrated how one participant's difficulties could delay settlement across the market as a whole. The review highlighted several features of current arrangements which warrant attention. In particular, although batch settlement typically takes place at around noon each day, there is no fixed time by which settlement must be completed and an apparent lack of clarity over timelines and decision points.

Also, the settlement delays were in part related to difficulties arising from the troubled participant's obligations in respect of securities lending transactions. These transactions are not novated to the central counterparty, ACH, but settle together with novated trades in the batch.²⁵ While securities lending is a critical feature of a well functioning equities market, these events revealed a lack of transparency around the extent of securities lending activity and its potential implications for the smooth functioning of the settlement process.

The Reserve Bank's review considered several possible modifications to settlement arrangements that might address the risks exposed by the events of late January.

First, the Reserve Bank examined the settlement model, concluding that a move to trade-by-trade (Model 1) DVP settlement would reduce the dependence of market-wide settlements on a single participant. However, neither ASX nor market participants are persuaded of the need

²⁴ The report is available at: http://www.rba.gov.au/PaymentsSystem/StdClearingSettlement/Pdf/review_sttlmt_prac_au_equities_052008.pdf

²⁵ The average daily net value of non-novated securities transactions settled in ASTC during the 2007/08 assessment period was approximately \$9 billion. The average daily net value of novated securities transactions settled was \$4.5 billion (capturing settlement obligations both to and from ACH). The majority of non-novated transactions are related to the priming of clearing participants' accounts to meet novated settlement obligations (i.e. the transfer of securities to a clearing participant's account to facilitate settlement).

to move to a new settlement model, citing in particular the high cost of transition. While the Reserve Bank acknowledges these costs, it continues to see a case for considering such a move over the medium term, although it does not see the matter as being so pressing as to require a change through regulation.

Second, the Reserve Bank suggested some possible modifications to existing batch settlement arrangements to increase their robustness. One such modification was the introduction of an explicit window for completion of settlement. If appropriately enforced, this would accelerate the back-out of a participant unable to meet its obligations at the specified time, thereby enabling other participants to proceed with settlement. By reducing the interdependence of individual participants' settlements, this would introduce some characteristics of Model 1 arrangements to the existing model. Other refinements for consideration included: the clarification of lines of communication and deadlines for decisions, including by settlement banks; and an amendment to the cut-off time for new settlement instructions, so as to allow more time prior to the batch for participants to ensure that securities and funds are in place. These, among other options, are currently under review by ASX and the Reserve Bank remains in close dialogue with ASX during this process.

Third, the Reserve Bank examined potential changes to arrangements for dealing with settlement fails. In particular, it was noted that a single failed settlement had the potential to trigger a chain of failures, which in the extreme could undermine the integrity of the market and potentially lead to instability. ASX was, in parallel, considering changes to the settlement fails regime administered by ASTC and published a media release on 26 May with details of prospective new arrangements.²⁶ These included the following:

- an increase in the minimum and maximum penalties applied in respect of failed trades, with the floor increasing from \$50 to \$100; and the cap increasing from \$2 000 to \$5 000. These changes took effect from 1 September; and
- ASTC is pursuing rule amendments that will require that any position remaining unsettled two days after the scheduled settlement date (i.e. on the fifth day after trade date) be closed out (i.e. the seller failing to deliver will be required to close out the position in the market).²⁷

Separately, ASTC has also introduced a new benchmarking regime, under which participants' compliance units are provided with peer-group rankings of settlement fails performance. Early indications from ASX are that the combination of new measures is already leading to a reduction in the incidence of settlement fails.

Finally, given the circumstances leading to the events of late January, securities lending was an important focus in the Reserve Bank's review. In particular, the Reserve Bank concluded that the disclosure of outstanding securities lending positions would improve general understanding of potential settlement risks and ensure that all participants had access to relevant data, rather than just those directly involved in such transactions. The Reserve Bank is currently in dialogue with ASX, other regulators, and market participants to establish how best to capture information

²⁶ http://www.asx.com.au/about/pdf/mr260508_settlementrisk_new_measures.pdf

²⁷ *Having gauged the views of market participants, such a decentralised buy-in policy was preferred to an ASTC-operated borrowing or buy-in regime.*

on securities lending activity within the settlement system. It is also considering a variation to the measures underpinning the *Financial Stability Standard* to require such disclosure.

Operational performance

ASTC's key system, CHESS, achieved a high level of operational reliability during the period, with just one short outage reported in August 2007. Capacity utilisation averaged 33 per cent during the assessment period, peaking at 62 per cent. Prior to early March 2008, the maximum daily trade count capacity in CHESS was 999 999; this has since been increased to 1.1 million trades. Appropriate testing was undertaken prior to implementation of the system enhancement. In addition, monthly connectivity and procedural tests were carried out throughout the period, with satisfactory results. A major business-continuity test simulating loss of the primary Sydney site was carried out for CHESS in November 2007. This also had a satisfactory outcome. Other enhancements to operational risk-management policies were implemented during the period, including in respect of pandemic response planning, fraud control and incident management.

New market operators

As noted in the assessment of ACH (Section 5.1), ASX has launched a project to establish how three prospective new trading platforms for ASX-listed securities will connect to ACH and ASTC. This is likely to be an important issue during the 2008/09 assessment period, with the Reserve Bank continuing to assess the implications of any new arrangements for the risk profile of ACH and settlement processes at ASTC.

Summary

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

The events of late January have, however, highlighted how system-wide settlement can be severely disrupted by the failure of one participant to meet its obligations. In its *Review of Settlement Practices for Australian Equities*, the Reserve Bank considered a number of possible changes to strengthen the resilience of current settlement arrangements. These included:

- *modifications to improve the functioning of the existing batch settlement model*: The Reserve Bank recommended that ASX consider addressing the risks revealed by the events of late January by moving to DVP Model 1 settlement over the medium term. However, neither ASX nor market participants are persuaded of the need to change the settlement model and, while it continues to see a case for such a move over the medium term, the Reserve Bank does not see a pressing need to force the change through regulation. In the meantime, the Reserve Bank encourages ASX to give further consideration to how the resilience of the existing settlement model might be strengthened, and in particular to the introduction of a firm deadline for completion of the batch settlement process. The Reserve Bank remains in close dialogue with ASX on this matter.
- *improving the transparency of securities lending activity*: These events also highlighted the lack of transparency regarding securities lending. Given the interdependence of novated and non-novated trades in the batch settlement process, it is important that participants have

access to information that would assist them in gauging potential settlement risks emanating from activity in the securities lending market. The Reserve Bank has been discussing with industry participants ways of improving disclosure of securities lending activity and is considering a variation to the 'Understanding Risks' measure of the *Financial Stability Standard for Securities Settlement Facilities* to require the collection and dissemination of these data.

5.4 Austraclear

Background

Austraclear operates within a sound legal framework, based on its Regulations which under Section 822B of the *Corporations Act* have effect as a contract under seal between Austraclear and each of its participants, and between participants. Among other things, the rules 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 in the event of a participant's entering external administration.

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

Assessment of Developments in 2007/08

In light of operational problems following the implementation of EXIGO in August 2006, particular attention has been paid in this assessment to operational performance.

Operational performance

In April 2008, Austraclear brought in-house some of the support for its key EXIGO system, which had previously been provided by OMX.²⁸ Austraclear is now responsible for all first- and second-level computer system support and business-continuity arrangements. OMX will continue to provide third-level support, i.e. support provided by the product's suppliers (manufacturers, software developers etc).

After some operational problems experienced during the period shortly after implementation of the EXIGO system in August 2006, Austraclear achieved a high level of operational reliability during the 2007/08 assessment period. System availability was 99.95 per cent, with three outages reported, two of which extended beyond one hour. Relevant code changes have been implemented in respect of two of the three problems identified; a long-term solution in respect of the third is under investigation. Capacity utilisation averaged 32 per cent during the assessment period, peaking at 57 per cent. Monthly connectivity and procedural tests were carried out throughout the period with satisfactory results. No business-continuity test simulating loss of the primary Sydney site was carried out for EXIGO during the assessment period as operational problems during 2007 had necessitated a 'live' fail-back of production to the business-recovery site. This had been satisfactorily achieved.

²⁸ Similar new 'in-sourcing' arrangements were introduced for SFECC's principal system, SECUR.

Austraclear undertook an audit of EXIGO's security in April 2008, the purpose of which was to assess the effectiveness of business and system controls in the EXIGO system. While no significant issues were identified by the audit, Austraclear is taking steps to address some administrative issues highlighted.

New activities

ASIC approved the variation of Austraclear's CS facility licence with effect from 14 September 2007 to include a broader range of financial products. In particular, the licence was amended to include a range of 'hybrid' securities, thereby providing legal certainty to Austraclear participants that such securities can be deposited and settled within the Austraclear system.

Austraclear also introduced a new Electronic Conveyancing (EC) Settlement Facility. However, the EC Settlement Facility is not part of the operations of the licensed CS facility because the EC Settlement Facility does not involve 'financial products' as defined in the *Corporations Act*. Nonetheless, Austraclear has made amendments to its Regulations to incorporate arrangements covering the EC Settlement Facility, and these Regulations have effect as a contract between Austraclear participants. Settlement of the financial component of EC transactions occurs through the RITS batch settlement facility. Austraclear was approved as a Batch Administrator in the RITS batch settlement facility during the assessment period.

Assessment

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

Attachment 1: Detailed Information Relevant to Assessment against the Financial Stability Standards

A1. Financial Stability Standard for Central Counterparties

There are ten measures that the Reserve Bank considers relevant in determining whether a facility has met the *Financial Stability Standard for Central Counterparties*. The full text of the measures and associated guidance is available on the Reserve Bank's website. The following provides summary details of the information the Reserve Bank has used to assess ACH and SFECC against each of the relevant measures. This report updates the information presented in the Reserve Bank's 2006/07 assessment report, highlighting material changes in policies and procedures over the past year.

A1.1 Australian Clearing House (ACH)

1. Legal framework

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

ACH Pty Limited is a wholly owned subsidiary of ASX Limited. It acts as the central counterparty for equities, equity derivatives, certain interest rate products and warrants traded on the ASX market.

The legal basis for ACH's operations is set out in its Clearing Rules. Under Section 822B of the *Corporations Act*, these rules have effect as a contract under seal between ACH and each of its participants, and between each participant and each other participant. Furthermore, the netting arrangements contained in ACH's Clearing Rules 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.

ACH's Clearing Rules define the nature and scope of its obligation to provide clearing support to participants, and describe the conditions under which final and irrevocable settlement of obligations is deemed to have occurred. The Clearing Rules 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.

At the end of June 2008, ACH had 65 participants. Of these 62 were also participants of ASX markets, while three provided specialist third-party clearing services.

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

ACH's participation requirements are designed to promote the safety and integrity of the central counterparty. Participants clearing cash equities or options are required to comply with a risk-based capital regime under which, subject to maintaining a minimum of \$100 000 in core liquid capital, they must hold liquid capital in excess of a 'total risk requirement', which reflects counterparty risk, large exposure risk, position risk and operational risk. Work on an additional risk category, underwriting risk, is nearing completion. Participants with 'non-standard' exposures, including those arising from dealings in margin lending, credit derivatives and OTC contracts for difference, are subject to an additional risk-capital requirement. Those participants clearing futures only may elect to be covered by an alternative capital regime, based either on a net tangible asset requirement or compliance with the regime of another prudential supervisor.²⁹ At the end of the assessment period all but two of ACH's 65 participants were subject to the risk-based regime; the remaining two were subject to a net tangible asset requirement. ACH has announced its intention to increase the minimum capital requirement for participants operating under the risk-based regime. By end 2008, participants will be required to hold a minimum of \$2 million in core liquid capital, with this rising to \$10 million by end 2009.

Participants are subject to ongoing monitoring by ACH. As part of this process, participants are assigned an internal credit rating which, following the implementation of a new ratings framework in January 2008, is based on the participant's external credit rating (if available) or that of its parent, if that parent provides a guarantee to the participant. Otherwise, the rating is based on the participant's capital position, which must be reported on at least a monthly basis. More stringent reporting requirements apply where a participant's capital falls below certain stated thresholds. The monitoring, assessment and investigation of matters relating to financial requirements is dealt with by the capital- and liquidity-monitoring unit of ASX Markets Supervision, a separate subsidiary within the ASX group with its own board. The information flow between ASX Markets Supervision and ASX Clearing and Settlement Operations is governed by a 'Supervisory Code of Conduct' and a 'Commercial and Supervisory Conflict of Interest Policy', which together aim to address potential conflicts between ASX's supervisory responsibilities and its commercial interests. ASX Markets Supervision uses a number of triggers for follow-up enquiries upon submission of risk-based returns, including: a fall to below 1.7 in the ratio of liquid capital to the total risk requirement; sustained losses on outstanding positions; and a significant fall in liquid capital held.

ACH participants are also subject to requirements regarding business and management integrity that aim to ensure compliance with the ACH Clearing Rules. Standards for technical and operational capacity, including business continuity, also apply.

ACH has wide-ranging powers to sanction its participants in order to preserve the integrity of the central counterparty. ACH may 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

²⁹ Under the net tangible asset regime, participants must hold a minimum of \$5 million in net tangible assets.

Clearing Rules which may have an adverse impact on the central counterparty. 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 is suggestive of negligence, incompetence or dishonesty. Where a breach has been identified and the participant has taken appropriate steps to rectify it, ACH will typically continue to monitor the participant closely for a period of time. Breaches are also referred to ASIC and, in most cases, to ASX Markets Supervision Investigations.

Some amendments were made to ACH's disciplinary processes in March 2008, with a new single Disciplinary Processes and Appeals Rulebook introduced for all four licensed CS facilities in the ASX group. Furthermore, the ACH and ASTC Disciplinary Tribunals were integrated with SFECC's Business Conduct and Market Practices Committees and Austraclear's disciplinary framework to form a single 'peer review' disciplinary tribunal. Changes were also made to financial penalties applied in the event of a breach.

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.

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

ACH must lodge any changes to its Clearing 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. ACH consults with its participants on important rule changes, and notifies participants of all changes to the Clearing Rules or Procedures.

In late 2007, ASX established a Clearing Participant Strategic Forum as a vehicle to provide information to participants on relevant changes to central counterparty policies and procedures and obtain feedback. A particular focus has been on efforts towards harmonisation of practices across ACH and SFECC.

4. Novation

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

- (a) the nature and scope of novation; and**
- (b) the point in the clearing process at which trades are novated.**

The nature and scope of novation is set out in ACH's Clearing Rules. Through the process of novation, ACH takes on the financial obligations of the seller to the buyer, and of the buyer to the seller. The obligations of ACH are to each clearing participant as principal, irrespective of whether that participant is acting for itself or as an agent on behalf of a client.

The point at which trades are novated is set out in the Clearing Rules. These specify that a broker-to-broker transaction on the ASX market is novated to ACH upon the acceptance and registration of the details of that market transaction within the clearing system. For physical

equities transactions, novation occurs almost immediately after the matching of the trade on the market. In the case of derivatives transactions, novation takes place on the evening of the day of the trade, when trade details are allocated to participants' accounts.

5. Settlement

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

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

- the exchange of one asset for another – mainly physical equities transactions. In this case, ACH utilises the settlement facility provided by ASTC; or
- payments to or from the central counterparty, including margin payments relating to derivatives positions. In this instance, the facilities provided by either ASTC or Austraclear may be used.

In each case, ACH calculates bilateral net positions between itself and each of its clearing participants. These positions reflect both cash payment and securities obligations. These netting arrangements are outlined in ACH's Clearing Rules and are protected as a 'netting market' under Part 5 of the *Payment Systems and Netting Act*.

ASTC's settlement process involves the use of a Model 3 DVP mechanism, whereby cash payments and securities transfers are settled simultaneously in a single daily multilateral net batch. An ASTC settlement participant's obligations in the batch may relate to cash equity and derivatives transactions involving ACH as central counterparty, including margin payments, as well as cash equity transactions not novated to ACH. As the outcome of this process, ASTC participants face a net cash settlement obligation to or from ASTC and a net securities settlement obligation in respect of each line of stock.

Once participants' net obligations have been calculated, ASTC confirms that sufficient securities are available in each participant's securities account in CHESSE. 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 RITS across payment providers' ES accounts. Once cash settlement has been confirmed, ASTC effects the net transfer of securities within CHESSE.

Where a participant elects to settle cash derivatives obligations using Austraclear, settlements are made via cash transfers. These settle in real time across ES accounts, again via RITS.

Settlement in ASTC or Austraclear is final and irrevocable. In the case of ASTC, this is supported both by its Settlement Rules and ASTC's approval under Part 3 of the *Payment Systems and Netting Act*. Settlement according to Austraclear's Regulations is also final and irrevocable by virtue of its approval under Part 2 of the *Payment Systems and Netting Act*.³⁰

ASTC holds an ES account for the purposes of effecting batch settlement. While ACH does not currently hold an ES account, it is intended that it will apply for an account in the near future. Obligations to and from ACH are currently settled across an account with a commercial bank.

³⁰ As noted, interbank transactions arising from settlements in ASTC and Austraclear are settled in RITS across ES accounts held with the Reserve Bank. RITS is also approved under Part 2 of the *Payment Systems and Netting Act*.

ACH also clears grain and wool futures. These instruments may be physically settled through commodity warehouses, with ACH transferring title to the buyer only once payment is received from the seller.

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.

ACH's Clearing Rules set out notification requirements that participants must meet in relation to a default. A participant is required to inform ACH should it default under the Clearing Rules. A range of default events are set out in the Clearing Rules, including: the appointment of an external administrator (or a reasonable expectation that one will be appointed); a breach of ACH's capital requirements; or a failure to meet payment or settlement obligations to ACH.

The Clearing Rules provide ACH with the authority and flexibility to deal with a participant default and to ensure that settlement of novated positions occurs. For equities, ACH is able to reschedule any settlements involving the failed participant, or those affected by its failure. ACH may also enter into market transactions to sell or purchase securities to facilitate the settlement of novated transactions. For derivatives, ACH has the ability to close out a defaulted participant's positions, or to seek to transfer the client positions of the defaulted participant to a surviving participant. These rules are supplemented by an internal default management plan.

ACH also has a range of financial resources available to enable it to act on the default powers set out above and to meet its obligations as central counterparty.

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 pre-determined 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 central counterparty 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 central counterparty to meet its obligations could be extremely disruptive to the financial system. The focus of the Reserve Bank in this area is not on specifying which risk controls a central counterparty should use, but rather on ensuring that the combination of risk controls achieves a very low probability of failure of the central counterparty.

The tools used by ACH to control risks operate at three broad levels: calling collateral based on participants' positions; pooled financial resources to cover the failure of a participant; and stress testing aimed at assessing the adequacy of financial resources overall and monitoring the risks associated with individual participants' positions. These risk controls are supplemented by ACH's participation requirements (Measure 2) and monitoring and supervisory arrangements.

ACH levies margins on equity derivatives products, but does not do so for cash equity products. Initial (risk) margins are calculated for each derivative instrument so as to cover three standard deviations of the distribution of price movements until a position can be closed out. Under a new harmonised margin-setting methodology recently introduced at ACH and SFECC, the higher of a one or two-day close-out period is applied. ACH calculates total initial margin requirements across each participant's portfolio using the internationally accepted Theoretical Inter-market Margining System (TIMS) methodology, developed by the Options Clearing Corporation. Margins are calculated overnight based on closing contract prices each day, and are notified to participants the next morning. If settled via Austraclear, margin obligations are required to be met by 10.30am; if settled via ASTC's CHES batch process, obligations are typically met by around noon. Participants generally meet their margin obligations using cash, although they may also use non-cash collateral. ACH has recently communicated new collateral eligibility criteria, with a view to implementing these in the near future. These new criteria place greater emphasis on credit quality and liquidity. As such, some previously eligible equities have been removed from the eligible collateral list due to their low liquidity: only the top 200 equities will be accepted under the new rules (unless these are being posted as specific cover for an options position).

ACH also levies mark-to-market (variation) margins on derivatives positions to cover gains or losses arising from price movements on the preceding day. In the event of sharp price movements intraday, ACH may also call mark-to-market margins intraday. These must be met by participants within two hours of notification. In order to facilitate timely settlement of intraday margin calls, ACH has imposed a requirement that these be settled via Austraclear. While at present ACH is only able to calculate intraday margin calls on the basis of price movements, planned system enhancements will enable calls to be made on the basis of changes in participants' positions also.

ACH has recently strengthened its robustness to the failure of a participant carrying large exposures in either cash equities or derivatives via the implementation of a Contributions and Additional Cover (CAC) regime. Two of three phases of implementation of this regime have been completed – in March 2007 and December 2007. The regime is closely linked to ACH's capital stress-testing arrangements. Should stress-test outcomes reveal that the projected stress loss arising from a participant's positions as at the close of the previous day will exceed the

aggregate of ACH's immediately available risk resources – the Risk Resource Requirement (RRR) – that participant is required to post collateral to cover the excess projected stress loss. Calls are typically made on participants by 9.30am and must be settled within two hours, either via a transfer of cash across the Austraclear system, via the provision of a guarantee from an approved bank, or via the posting of Commonwealth Government bonds.³¹

ACH recently announced further intended changes to the CAC regime. In order to reflect differences in participants' credit quality, ACH plans to introduce a regime of Stress-test Exposure Limits (STELs). A participant's STEL will define the threshold beyond which projected stress losses will attract a call under the CAC regime. Highly rated participants will have a STEL somewhat above the RRR and will be required to post collateral only when stress-test outcomes exceed that threshold; low-rated participants will have STELS below the RRR and hence be required to post collateral at a lower threshold. Furthermore, in normal market conditions, highly rated counterparties will be required to cover only a proportion of the excess exposure beyond the stated threshold.³² Such a regime is already in place at SFECC (see A2, below).

ACH maintains additional pooled financial resources to protect against losses in excess of margins and other collateral assets directly attributable to a defaulting participant. ACH's core financial resources – the RRR – consist of funds paid into a restricted capital reserve from the NGF in 2005 and other ACH capital, including a subordinated loan provided by ASX Limited. The RRR is currently \$150 million and is held in the form of liquid assets – primarily bank bills and certificates of deposit. In addition, ACH holds default insurance of \$100 million and has the ability through its Clearing Rules 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.

In addition to its capital resources, ACH needs to have access to sufficient liquidity to allow cash market settlement to proceed in the event of a participant default. Currently, in addition to the liquid assets held in respect of the RRR of \$150 million, ACH has access to a further \$150 million under a committed standby facility from a commercial bank.

ACH uses daily capital stress tests to monitor the risks undertaken by individual participants and the adequacy of the central counterparty's financial resources. In June 2007, ACH implemented a new range of stress-test scenarios which significantly increased the information it has to undertake this analysis. Stress tests are based on 24 scenarios, each calibrated to a once-in-30-years probability of occurring. The scenarios cover extreme price moves and volatility shifts at the market-wide, sector, and individual stock levels. ACH plans to further expand the range of stock-specific stress scenarios by the end of 2008.

ACH also implemented a liquidity stress-test regime in June 2007. This regime is based on a subset of the capital stress-test scenarios and is designed to assess the adequacy of its liquid resources.

31 *Recent procedural changes were announced by ACH whereby a participant wishing to withdraw a bank guarantee lodged as collateral will be unable to do so until alternate cover has been lodged with ACH. Also, all bank guarantees are now required to be withdrawn at least one business day prior to their specified expiry date.*

32 *ACH would suspend discounting if the exponentially-weighted moving average (EWMA) of SPI volatility was 30 per cent higher than historical volatility. ACH uses seven years of daily SPI movements for both volatility measures.*

8. Governance

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

The ACH Board is responsible for oversight of the operation of the central counterparty. It meets between six and eight times each year, and receives detailed reports on ACH's business and operations, risk management and financial performance. It is responsible for approving capital, liquidity and stress-testing arrangements.

The ACH Board consists of ten directors. These include four members of ASX management (including the CEO and CFO), four ASX directors, and two external directors (one of whom chairs the Board). The ten directors filling these positions are also on the Boards of SFECC, ASTC and Austraclear. ACH and ASTC share a common chair, as do SFECC and Austraclear.

As a result of post-merger reorganisation within ASX, the risk policy and risk operations areas have been separated, with each having separate functions and reporting lines to the ACH Board. In addition, an internal Capital and Liquidity Committee has been established in order to provide greater focus to capital and liquidity issues across the ASX group.

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.

ACH's key systems are the Derivatives Clearing System (DCS) and CHESS. Operational risk in the CHESS system is dealt with in the discussion of ASTC (see A3, below).

DCS has been highly reliable, with the system available for 100 per cent of the time over the period of this assessment. On an average day, around 22 per cent of DCS's available capacity is used. Peak utilisation in 2007/08 was 61 per cent of system capacity.

The security of the DCS system is supported by access controls which are subject to external audit. The audit report for the assessment period was satisfactory. External penetration testing of DCS is also conducted regularly. ACH also has a fraud control policy in place which seeks to minimise the risk of fraud occurring within ACH, as well as providing procedures for its timely identification and appropriate responses should it occur.

ACH has arrangements in place to allow the timely recovery of its usual operations in the event of a contingency. It maintains an unmanned remote back-up facility which replicates the systems at the primary site. ACH has detailed contingency procedures that focus on the potential effects of a disruptive event. These contingency procedures are set out in ACH's Incident Management Plan.

A test is completed annually to demonstrate that normal functions can be carried out using systems located at the back-up site. ACH also regularly tests its ability to operate its primary systems from its back-up site. A more extensive test, involving utilisation of back-up systems as the production environment for a day, took place in November 2007. Through its Clearing Rules, ACH also requires its participants to have appropriate disaster-recovery arrangements.

ASX Operations, a subsidiary of ASX Limited, is responsible for supplying ACH and other ASX group companies with personnel and technological resources. ACH 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.

10. Regulatory reporting

CS facility licensees are required to meet certain reporting obligations to the Reserve Bank under the *Financial Stability Standards*. These obligations include the reporting of: breaches of the relevant standard; the failure of a participant to fulfil the central counterparty's risk-control requirements; and the central counterparty's failure to enforce its own risk-control requirements. There are also obligations to report financial and stress-testing results on a quarterly basis. ACH satisfied all reporting obligations during the assessment period.

A1.2 SFE Clearing Corporation (SFECC)

1. Legal framework

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

SFE Clearing Corporation Pty Limited is a wholly owned subsidiary of ASX Limited. It acts as the central counterparty for the SFE market.

The legal basis for SFECC's operations is set out in its Clearing Rules. Under Section 822B of the *Corporations Act*, these rules have effect as a contract under seal between SFECC and each of its participants, and between each participant and each other participant. Furthermore, the netting arrangements contained in SFECC's Clearing Rules 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.

SFECC's Clearing Rules define the nature and scope of its obligation to provide clearing support to participants, and describe the conditions under which final and irrevocable settlement of obligations is deemed to have occurred. The Clearing Rules 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.

At the end of June 2008, SFECC had 15 participants. Of these, 13 were also participants of the Sydney Futures Exchange, while two provided specialist clearing and settlement services.

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

SFECC's participation requirements are designed to promote the safety and integrity of the central counterparty. 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 net tangible asset requirement of \$5 million, with management discretion to impose a higher requirement. SFECC has announced that this minimum will be raised to \$10 million for clearing participants that are not ADIs, and to \$20 million for those clearing for third parties. The timing of this change has not yet been finalised. Participants are obliged to lodge a detailed financial report with the capital- and liquidity-monitoring unit of ASX Markets Supervision on a monthly basis, or more frequently in the event that their net tangible assets fall below a certain threshold.

Participants are subject to ongoing monitoring by SFECC. As part of this process, participants are assigned an internal credit rating which, following the implementation of a new ratings framework in January 2008, is based on the participant's external credit rating (if available) or that of its parent, if that parent provides a guarantee to the participant. Otherwise, the rating is based on the participant's capital position. A participant's credit rating is a key determinant of its stress-test exposure limit (see Measure 7 below). A participant's capital position also determines its capital-based position limit, which restricts the size of its market exposures.

SFECC has developed policies that allow for relevant information to flow between ASX Markets Supervision and ASX Clearing and Settlement Operations. These are embodied in a 'Supervisory Code of Conduct' and 'Commercial and Supervisory Conflict of Interest Policy', which together aim to address potential conflicts between ASX's supervisory responsibilities and its commercial interests.

Under the Clearing Rules, a clearing participant may be automatically suspended under a number of circumstances, including the participant's default, the appointment of external management, or the breach of financial requirements. The SFECC Board can also suspend a clearing participant for misconduct, breaches of the Clearing Rules, or if it ceases to satisfy the admission requirements. The Clearing Rules require SFECC to provide notice of a suspension, and detail on appeal procedures for participants.

Some amendments were made to SFECC's disciplinary processes in March 2008, with a new single Disciplinary Processes and Appeals Rulebook introduced for all four licensed CS facilities in the ASX group. Furthermore, SFECC's Business Conduct and Market Practices Committees were integrated with the ACH and ASTC Disciplinary Tribunals and Austraclear's disciplinary framework to form a single 'peer review' disciplinary tribunal. Changes were also made to financial penalties applied in the event of a breach.

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.

SFECC's Clearing Rules and Procedures are comprehensive and publicly available. The Rules and Procedures explain the roles and responsibilities of participants and SFECC. Substantial background information on SFECC's operations and risk management is also available on the ASX website.

SFECC must lodge any changes to its Clearing 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. SFECC consults with its participants on important rule changes. Announcements affecting participants are issued as ‘SFE Notices’.

In late 2007, ASX established a Clearing Participant Strategic Forum as a vehicle to provide information to participants on relevant changes to central counterparty policies and procedures and obtain feedback. A particular focus has been on efforts towards harmonisation of practices across ACH and SFECC.

4. Novation

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

- (a) the nature and scope of novation; and**
- (b) the point in the clearing process at which trades are novated.**

The nature and scope of novation is set out in SFECC’s Clearing Rules. Through the process of novation, SFECC takes on the financial obligations of the seller to the buyer, and of the buyer to the seller. The obligations of SFECC are to each participant as principal, irrespective of whether that participant is acting for itself or as an agent on behalf of a client.

The point at which trades are novated is set out in the Clearing Rules. These specify that a transaction on the SFE market is novated to SFECC upon the registering of a matched trade by the market. Non-market trades are novated once their details have been approved and registered by SFECC.

5. Settlement

Settlement arrangements must ensure that the central counterparty’s exposures are clearly and irrevocably extinguished on settlement.

The vast majority of SFECC settlements involve cash payments to or from the central counterparty. These include margin payments and the settlement of cash-settled derivative contracts. Settlement of payments generally occurs on a net basis. Each day, SFECC calculates the net obligations of each of its participants. SFECC participants calculated to have a net obligation to the central counterparty are required to make payments to SFECC in Austraclear by 11.00am each morning. Once these payments have been received, SFECC makes payments to those participants with a net obligation from the central counterparty. Interbank settlement of these payments occurs between participants’ appointed bankers across ES accounts at the Reserve Bank. SFECC is an ES account holder.

In some cases, the settlement of derivatives contracts cleared by SFECC involves the transfer of a security or physical asset, with a corresponding transfer of cash. For each type of security or asset, SFECC’s arrangements ensure that delivery occurs if, and only if, payment occurs and vice versa.

For 90-day bank bill futures, SFECC utilises the standard settlement process in Austraclear. For the settlement of deliverable equity futures, SFECC makes use of the ASTC settlement system, CHESS. In this case, the buyer makes payment to SFECC’s Austraclear account and the

payment is only released to the seller when both the buyer and the seller have confirmed the transfer of securities. Similar procedures exist for the delivery of New Zealand equities, with the transfer of securities occurring in the New Zealand Stock Exchange's settlement system. The delivery of greasy wool is via a warehouse, with SFECC retaining title documentation until payment has been made.

The settlement of obligations is final and irrevocable according to the terms of SFECC's Clearing Rules and SFE's Market Rules – 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 its approval under Part 2 of the *Payment Systems and Netting Act*. Any interbank transactions arising from these settlements are settled across ES accounts held with the Reserve Bank. Payments within this system are also final and irrevocable, and are supported by the approval of RITS under Part 2 of the *Payment Systems and Netting Act*. The settlement of equities in ASTC is also final and irrevocable according to the terms of ASTC's Settlement Rules, which are supported by the facility's approval under 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.

SFECC's Clearing Rules require that participants inform SFECC immediately in the event of a default, or if there is a reasonable expectation of such an event. The Clearing Rules envisage a number of possible events of default. These include: becoming subject to external administration; being unable to meet obligations relating to open contracts; and being in breach of the central counterparty's risk-control requirements, such as failing to fulfil margin or other payment obligations to the central counterparty.

The Clearing Rules provide SFECC with the authority and flexibility to deal with a participant default. SFECC has the ability to close out any open contracts, to exercise or terminate open contracts, or to transfer client positions along with related margin payments. These formal rules are supplemented by an internal default management plan.

SFECC also has a range of financial resources available to enable it to act on the default powers set out above and to meet its obligations as central counterparty (see Measure 7).

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 pre-determined 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 central counterparty are crucial in providing a high degree of confidence that it is able to meet its obligations in the event of a participant failure. The inability of a central counterparty to meet these obligations could be extremely disruptive to the financial system. The focus of the Reserve Bank in this area is not on specifying which risk controls a central counterparty should use, but rather on ensuring that the combination of risk controls achieves a very low probability of failure of the central counterparty.

The tools used by SFECC to control risks operate at three broad levels: calling collateral based on participants' positions; pooled financial resources to cover the failure of a participant; and stress testing aimed at both assessing the adequacy of financial resources overall and monitoring the risks being undertaken by individual participants. These risk controls are supplemented by SFECC's participation requirements (Measure 2) and monitoring and supervisory arrangements.

SFECC levies margins on the derivatives products it clears. Following a review of margin-setting arrangements at SFECC and ACH, a common approach has now been established. Initial margins for SFE futures positions are now set on the basis of a three standard deviation confidence interval for price movements, with an assumed close-out period of the higher of one or two days. This compares with the previous methodology of a 99 per cent confidence interval and a one-day close-out assumption for all but the four major contracts (for which the higher of one-day or two-day close-out was applied). All margin rates will be reviewed on a quarterly cycle.³³

SFECC calculates total initial margin requirements across each participant's portfolio using the internationally accepted Standard Portfolio Analysis of Risk (SPAN) methodology, developed by the Chicago Mercantile Exchange. Margins are calculated overnight based on closing contract prices each day, and are notified to participants by 7am the next morning. Margin obligations must be met by 11am. Participants generally meet these obligations using cash, although they may also use non-cash collateral, such as eligible debt securities and equities, and foreign currency deposits. Haircuts are applied to all non-cash collateral posted. SFECC has announced that it intends to change the list of eligible criteria to exclude parental/self guarantees, to reduce the possibility of SFECC facing a simultaneous default of a clearing participant and a

³³ With the exception of electricity contracts which will be subject to a monthly review.

collateral issuer. It will also remove New Zealand stocks and Hong Kong Dollars from the list of eligible criteria due to the limited use of these types of collateral.

SFECC also levies variation (mark-to-market) margins on derivatives positions to cover gains or losses arising from price movements over the preceding day. Should conditions warrant, SFECC is also able to call variation margins intraday, based on movements in either positions or prices. Participants are required to meet an intraday margin call within two hours of notification. Both variation and intraday margin obligations must be settled in cash.

SFECC also uses a system of additional initial margins (AIMs), based on participants' exposures in SFE's four largest contracts. AIMs are intended to cover potential losses from very large positions with the central counterparty in extreme market conditions. SFECC calculates potential exposures using a system of stress tests and makes AIMs calls to cover projected stress losses in excess of a stated threshold – the participant's STEL – which is linked to the value of SFECC's risk resources. STELs vary according to the credit quality of the participant, rising from 50 per cent of the value of the CGF for low-rated participants, to 100 per cent of the CGF for highly rated participants. Further to changes to the regime implemented in March 2008, highly rated participants are eligible for discounts on their AIMs calls of up to 50 per cent of the projected stress loss in normal market conditions (up to a maximum discount of \$500 million).³⁴

This system is designed to provide a high degree of confidence that the central counterparty will be able to meet its obligations, even when losses from a participant default exceed SFECC's pooled risk resources. Like other margins, AIMs are calculated overnight, notified to participants at 7am the next day, and must be met by 11am. Participants may meet these obligations using cash or non-cash collateral, including Commonwealth Government securities and bank bills or letters of credit from ADIs.

SFECC maintains a buffer of financial resources to protect against losses arising in the event of a default that exceed the value of margins and other collateral assets contributed by the defaulting participant. The value of SFECC's CGF was increased from \$200 million to \$400 million in March 2008, comprising an increase in the value of the subordinated loan from ASX Limited (from \$50 million to \$70 million); a doubling of first-level participant commitments (from \$60 million to \$120 million); and an increase in insurance coverage from \$60 million to \$150 million. Pre-existing second-level participant commitments of \$30 million were also brought into the Fund.

SFECC uses daily stress tests of its four major contracts to monitor the risks undertaken by individual participants and the adequacy of the CGF. SFECC has recently developed a new suite of portfolio and single-contract stress-test scenarios based on statistical analysis of historical market movements. These provide consistent tests across contract types and are tailored to SFECC's risk tolerance, as defined by its Board. The stress scenarios aim to capture once-in-30-years events for single asset scenarios and once-in-100-years events for multi-asset scenarios. Stresses applied to equity index contracts, in particular, are significantly stronger than

³⁴ SFECC applies discounts only under normal market conditions. It will suspend discounting – thereby reverting to full collateralisation of AIMs – if exponentially-weighted moving average (EWMA) volatility is 30 per cent higher than historical volatility. SFECC uses seven years of daily SPI movements for both volatility measures.

under the previous framework. SFECC implemented the new framework in two phases – in November 2007 and March 2008 – in conjunction with the increase in its financial resources and amendment to the AIMs regime.

8. Governance

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

The SFECC Board typically meets seven times each year. At each meeting it receives reports on participant activity, management of treasury and risk functions, financial position, and operational performance. It is responsible for approving capital, liquidity and stress-testing arrangements.

The SFECC Board consists of ten directors. These include four members of ASX management (including the CEO and CFO), four ASX directors, and two external directors (one of whom chairs the Board). The ten directors filling these positions are also on the Boards of ACH, ASTC and Austraclear. ACH and ASTC share a common chair, as do SFECC and Austraclear.

As a result of post-merger reorganisation within ASX, the risk policy and risk operations areas have been separated, with each having separate functions and reporting lines to the SFECC Board. In addition, an internal Capital and Liquidity Committee has been established in order to provide greater focus to capital and liquidity issues across the ASX group.

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.

SFECC's key system is SECUR. In April 2008, SFECC assumed responsibility for all first- and second-level computer system support and business continuity arrangements in respect of the SECUR system. Only the support provided by OMX's system developers remains outsourced.

SECUR has been available for 100 per cent of the time over the period of this assessment. The average number of trades processed per day was around 27 per cent of system capacity, with a peak number of daily trades at around 42 per cent of capacity.

The security of SECUR is supported by access controls which are subject to external audit. External penetration testing of systems is also conducted regularly. SFECC also has a fraud control policy in place which seeks to minimise the risk of fraud occurring within SFECC, as well as providing procedures for its timely identification and appropriate responses should it occur.

SFECC has arrangements in place to allow the timely recovery of its usual operations in the event of a contingency. ASX consolidated SFE's back-up facilities (including SFECC's back-up facilities) to ASX's back-up site during the assessment period. SFECC has detailed contingency procedures which focus on the potential effects of a disruptive event. These contingency procedures are set down in SFECC's Incident Management Plan.

Critical areas regularly test their ability to operate from the back-up site using systems at the primary site. Back-up systems also successfully operated as the production environment for a

day in November 2007. Through its Clearing Rules, SFECC also requires its participants to have appropriate disaster recovery arrangements.

ASX Operations, a subsidiary of ASX Limited, is responsible for supplying SFECC and other ASX group companies with personnel and technological resources. SFECC 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.

10. Regulatory reporting

CS facility licensees are required to meet certain reporting obligations to the Reserve Bank under the *Financial Stability Standards*. These obligations include the reporting of: breaches of the relevant standard; the failure of a participant to fulfil the central counterparty's risk-control requirements; and the central counterparty's failure to enforce its own risk-control requirements. There are also obligations to report financial and stress-testing results on a quarterly basis. SFECC satisfied all reporting obligations during the assessment period.

A2. Financial Stability Standard for Securities Settlement Facilities

There are eight measures that the Reserve Bank considers relevant in determining whether a facility has met the *Financial Stability Standard for Securities Settlement Facilities*. The full text of the measures and associated guidance is available on the Reserve Bank's website. The following provides summary details of the information the Reserve Bank has used to assess ASTC and Austraclear against each of the relevant measures. This report updates the information presented in the Reserve Bank's 2006/07 assessment report, highlighting material changes in policies and procedures during 2007/08.

A2.1 ASX Settlement and Transfer Corporation (ASTC)

1. Legal framework

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

ASTC Pty Limited is a wholly owned subsidiary of ASX Limited. It provides settlement services for ASX markets, as well as for a small number of transactions undertaken on the National Stock Exchange (NSX).

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

The netting arrangements undertaken by ASTC with respect to its participants' obligations have 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 ASTC participant or a payments 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.

ASTC had 112 participants as at end June 2008. ASTC has objective and transparent participation requirements, which are publicly available and form part of the Settlement Rules and Procedures. The Settlement Rules also provide for an appeals process should an application for participation be rejected or a participant's access be terminated. Participation requirements address financial and business integrity issues, as well as operational and technical matters.

A participant who is not subject to prudential supervision (either as an ADI or as a clearing or market participant under ACH Clearing Rules or ASX Market Rules) must post a performance bond of \$500 000. In addition, sponsorship bonds, also with a value of \$500 000, must be lodged by sponsoring participants – i.e. those also acting in ASTC on behalf of non-participants – if they are not subject to prudential supervision and are not covered by the NGF compensation arrangements provided under the *Corporations Act*.

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 ASTC in the event that a loss was incurred due to that participant's breach of ASTC Settlement Rules. In a similar vein, funds held under a sponsorship bond would be drawn upon to meet any losses suffered by an issuer, participant-sponsored holder, or ASTC, arising from a rule contravention or offence. The monitoring, assessment and investigation of matters relating to financial requirements is dealt with by the capital- and liquidity-monitoring unit of ASX Markets Supervision, a separate subsidiary within the ASX group with its own board.

ASTC's Settlement Rules allow it to suspend or terminate a participant from its facility in the event of a failure to comply with the Settlement Rules, or where a payments provider fails to authorise a participant's payment for interbank settlement.

Some amendments were made to ASTC's disciplinary processes in March 2008, with a new single Disciplinary Processes and Appeals Rulebook introduced for all four licensed CS facilities in the ASX group. Furthermore, the ACH and ASTC Disciplinary Tribunals were integrated with SFECC's Business Conduct and Market Practices Committees and Austraclear's disciplinary framework to form a single 'peer review' disciplinary tribunal. Changes were also made to financial penalties applied in the event of a breach.

ASTC also levies fail fees on a participant that does not meet its settlement obligations on a timely basis. In its review of settlement practices, published in May 2008, the Reserve Bank recommended that ASTC strengthen its settlement fails regime. ASX was in parallel reviewing ASTC's regime for dealing with failed settlements and, with effect from 1 September 2008, announced an increase in the minimum and maximum fees applied in respect of fails, with the floor set at \$100 and the cap at \$5 000 (maintaining an *ad valorem* fee of 0.1 per cent). ASX also announced plans to require that participants close out any positions remaining unsettled on the fifth day after trade date (i.e. two days after the scheduled settlement date).

ASTC has also introduced a new benchmarking regime for settlement fail performance. The new regime makes use of peer-group benchmarking and provides a participant's compliance

unit with a ranking of its settlement fails performance (based on the value of its trades which have failed to settle) against its market group peers. Additionally, the benchmarking reporting includes figures on total fail fees levied.

3. Understanding risks

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

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

ASTC must lodge any changes to its Settlement 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. ASTC consults with its participants on important rule changes, and notifies participants of all changes to the Settlement Rules or procedures.

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.

All securities held by ASTC are dematerialised and held in CHESS. Title is held in the name of clients of ASTC participants. The system does not record any details of encumbrances, other than collateral lodged in favour of ACH.

A CHESS 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 ASTC participants settle across a centralised settlement account and subsequently allocate securities to end-clients in the CHESS sub-register. CHESS reports net movements on each CHESS sub-register to the holder of the issuer's complete register as part of its end-of-day process. 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.

The transfer of title to securities in CHESS is effected by book entry, with ownership details updated electronically. Settlement occurs through a DVP process which is effected via a daily scheduled batch settlement cycle. ASTC's Settlement Rules also provide for transferring securities without payment, where required.

In the event of ASTC's insolvency, the rules and arrangements for title within ASTC provide a high degree of assurance that participants' securities will be immune from claims by ASTC's creditors. ASTC is not the legal owner of any participant or client assets, with these assets recorded in CHESS 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:

- (i) The operation of a securities settlement facility must eliminate principal risk between its participants and ensure that settlements, once completed, are final and irrevocable.
- (ii) 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.
- (iii) Exposures between providers of cash settlement assets must be settled finally and irrevocably.

Settlement of securities transactions in ASTC occurs on a Model 3 DVP basis.³⁵ This involves the simultaneous transfer of net payment and net securities obligations between buyers and sellers together at the end of the processing cycle. ASTC also provides for the settlement of cash obligations in relation to derivatives, which are also settled on a net basis. ASTC's Settlement Rules 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 the ASX market, a trade-related instruction is sent to CHESS. On T+1, CHESS 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 CHESS to include additional non-novated (off-market) transactions in the batch at T+3. During 2007/08, an average of around 67 per cent (by value) of net securities settled in the final batch were 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).

By 8am on the settlement day, ASTC notifies each participant of its net cash and securities settlement obligations. Participants have until 10.30am to negotiate any additional non-novated trades necessary to 'prime' their accounts for settlement. After the cut-off for new instructions, transfer of securities positions is restricted in CHESS and participants' settlement banks are requested to authorise net funding demands.³⁶ Once all cash authorisations have been received, the resulting interbank obligations are settled in RITS, typically by around noon. Securities positions are then updated at ASTC and participants are notified that the DVP transfer has been completed.

The finality of ASTC's settlement process is reinforced 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

³⁵ There is provision for DVP to occur on a trade-by-trade basis using CHESS RTGS, but this option has yet to be used.

³⁶ 'Payment providers' hold ES accounts at the Reserve Bank and act on behalf of ASTC settlement participants. There were 12 payment providers operating in ASTC as at 30 June 2008.

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, ASTC's settlement rules allow for 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. If the participant is in default, ACH may assume obligation for novated settlements as part of its default management process. ASTC's back-out algorithm seeks to remove as few transactions from the batch as possible, maximising settlement values and volumes, while minimising spillovers to other participants and minimising the potential injection of liquidity from ACH required in a default scenario. Non-novated trades are typically backed out first.

There was a delay to the settlement process in late January 2008 caused by a participant's inability to settle its obligations on time. In light of this disruption, the Reserve Bank undertook a review of equity settlement practices in May 2008. The Reserve Bank identified some possible modifications to the batch arrangements which might minimise the risk of one participant's settlement failure impacting settlement of the batch as a whole. These are discussed in Section 5.3.

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.

ASTC's Settlement Rules 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 it reasonably suspects that this may occur. Participants and payment providers are required to notify ASTC if they, or any other participant or payment provider, become subject to external administration or where they reasonably suspect that this may occur.

ASTC's Settlement Rules allow participants to nominate a new payment provider if their current provider is subject to, or is reasonably likely to become subject to, external administration.

ASTC's Settlement Rules allow it to remove transactions from batch settlement under certain circumstances, including where a participant is subject to external administration. ASTC 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.

ASTC's key system is the Clearing House Electronic Sub-register System (CHES).

CHES has been highly reliable, with the system available for 99.99 per cent of the time over the period of this assessment. There was only one outage during the assessment period, with the system unavailable for a period of around 15 minutes. The system capacity of CHES was upgraded in March 2008 to accommodate up to 1.1 million transactions per day. Average system utilisation during the assessment period was 33 per cent, with usage peaking at 62 per cent of capacity.

The security of the CHES system is supported by access controls which are subject to external audit. The audit report for the assessment period was satisfactory. External penetration testing of CHES is also conducted periodically. ASTC also has a fraud control policy in place which seeks to minimise the risk of fraud occurring within ASTC, as well as providing procedures for its timely identification and appropriate responses should it occur.

ASTC has arrangements in place to allow the timely recovery of its usual operations in the event of a contingency. It maintains an unmanned remote back-up facility which replicates the systems at the primary site. ASTC has detailed contingency procedures, which focus on the potential effects of a disruptive event. These contingency procedures are set down in ASTC's Incident Management Plan.

A test is completed annually to demonstrate that normal functions can be operated using systems located at the back-up site. ASTC also tests its ability to operate its primary systems from its back-up site monthly. A more extensive test, involving utilisation of back-up systems as the production environment for a day, took place in November 2007. Through its Settlement Rules, ASTC also requires its participants to have appropriate disaster recovery arrangements.

ASX Operations, a subsidiary of ASX Limited, is responsible for supplying ASTC and other ASX group companies with personnel and technological resources. ASTC 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

CS facility licensees are required to meet certain reporting obligations to the Reserve Bank under the *Financial Stability Standards*. These obligations include the reporting of: breaches of the relevant standard; breaches of risk-control requirements; and quarterly financial results. ASTC satisfied all reporting obligations during the assessment period.

A2.2 Austraclear

1. Legal framework

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

Austraclear Limited is a wholly owned subsidiary of ASX Limited. It provides settlement services for the OTC debt market and for derivatives traded on the SFE and ASX markets.

The legal basis for Austraclear's operations is set out in its Regulations. Under Section 822B of the *Corporations Act*, these regulations have effect as a contract under seal between Austraclear and each of its participants, and between each participant and each other participant.

The Regulations 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 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 in the event that a participant enters external administration.

Austraclear introduced an Electronic Conveyancing (EC) Settlement Facility during the assessment period. The EC Settlement Facility is not part of the operation of the licensed CS facility, but the Austraclear Regulations have been amended to incorporate these new arrangements. These Regulations therefore have effect as a contract between Austraclear participants. Settlement of the financial component of EC transactions occurs through the RITS Batch Facility. Austraclear has been approved as a Batch Administrator in the RITS Batch Facility.

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.

Austraclear had 735 participants as at end June 2008. Austraclear has objective and transparent participation requirements, which are publicly available and form part of the 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. Its participation requirements address financial and operational issues, such as capital adequacy, business integrity and business continuity arrangements.

Austraclear's Regulations allow it to suspend or terminate a participant from its facility in the event of a breach of its Regulations. Clearing and Settlement Operations monitors participants' operational processing performance.

Some amendments were made to Austraclear's disciplinary processes in March 2008, with a new single Disciplinary Processes and Appeals Rulebook introduced for all four licensed CS facilities in the ASX group. Furthermore, Austraclear's disciplinary framework was integrated with SFECC's Business Conduct and Market Practices Committees and the ACH and ASTC Disciplinary Tribunals to form a single 'peer review' disciplinary tribunal. Changes were also made to financial penalties applied in the event of a breach.

3. Understanding risks

The securities settlement facility's rules and procedures must enable each participant 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. The Regulations and Procedures explain the roles 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 Clearing 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. Austraclear consults with its participants on important rule changes. Announcements affecting participants are issued as ‘SFE 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.

Austraclear’s Regulations identify title for three different classes of securities: paper securities, non-paper securities 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* are electronic securities which are not registered within the Austraclear system. They include Commonwealth Government securities, registrable state and semi-government securities and corporate debt. In each of the registries, Austraclear holds legal title for the participant as nominee. The participant retains beneficial title. *Dematerialised securities* are electronic securities which 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’.³⁷ This legal structure imposes rights and obligations which replicate the rights and obligations of a negotiable instrument.

The transfer of title to securities in the Austraclear system is effected by book entry. Paper securities are transferred through updates to participants’ security records. Austraclear also uses ‘allonges’ which maintain the negotiability of paper securities.³⁸ 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.

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

³⁷ A legal right to intangible property. It allows the holder (in this case, the relevant Austraclear participant) to direct Austraclear to deliver to it securities of a specified description and number.

³⁸ ‘Allonges’ are separate sheets of paper attached to a bill of exchange for the purpose of documenting endorsements. As a bill of exchange is transferable through endorsement, the allonge attached to the bill acts as a legal extension of the document.

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:

- (i) The operation of a securities settlement facility must eliminate principal risk between its participants and ensure that settlements, once completed, are final and irrevocable.
- (ii) 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.
- (iii) Exposures between providers of cash settlement assets must be settled finally and irrevocably.

Settlement of securities transactions in Austraclear occurs on a Model 1 DVP basis. This involves the simultaneous transfer of payment and securities obligations between the buyer and seller on an item-by-item basis through the settlement cycle. Austraclear also provides for one-way cash transfers between participants, which are also settled on an item-by-item basis. Austraclear's Regulations establish the basis for settlement of transactions entered into the system. By volume, DVP settlements account for around 43 per cent of total settlements and one-way cash transfers around 57 per cent. There is also a small volume of free-of-payment securities transfers (less than 0.5 per cent). By value, however, DVP payments predominate, accounting for 76 per cent of total transfers.

'Participating banks' hold ES accounts at the Reserve Bank and act on behalf of other Austraclear participants. 56 participating banks were operating in Austraclear as at 30 June 2008. Settlement of payment obligations occurs between participating banks across ES accounts on a RTGS basis. As such, settlement occurs in central bank money. Austraclear is notified immediately upon settlement of the payment leg of a securities trade, allowing for the immediate transfer of securities title so as to ensure DVP settlement.

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

Austraclear's Regulations 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 on a participant changing its participating bank, including where that entity is insolvent.

As a facility supporting bilateral agreements negotiated on an OTC basis, without the presence of a central counterparty, Austraclear does not have centralised arrangements for dealing with

the unsettled transactions of its participants. Consequently, replacement risk for any trade left unsettled due to the insolvency of a participant is borne directly by trade counterparties. By virtue of the application of a Model 1 DVP arrangement, unsettled trades do not give rise to principal risk.

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 system is EXIGO. In April 2008, Austraclear assumed responsibility for all first- and second-level computer system support and business continuity arrangements in respect of the EXIGO system. Only the support provided by OMX's system developers remains outsourced.

During the assessment period EXIGO was available for 99.95 per cent of the required time. Austraclear's availability target for EXIGO is 99.8 per cent. There were three outages during the assessment period, for a total of 147 minutes. The first two outages occurred in late 2007: trades were matching successfully, but not settling. A short-term workaround was established on both occasions. A more permanent solution was affected in February 2008 by amending the relevant computer code. The third outage occurred in May 2008: live series were incorrectly deleted in SECUR, causing an outage in EXIGO. ASX updated its operational procedures to address the problem and has asked OMX to amend the relevant computer code.

Average capacity utilisation for EXIGO was 32 per cent during the assessment period, and peak capacity utilisation was 57 per cent.

The security of the EXIGO system is supported by access controls which were subject to external audit in April 2008. In response, Austraclear is taking steps to address some administrative issues highlighted. Austraclear also has a fraud control policy in place which seeks to minimise the risk of fraud occurring within Austraclear, as well as providing procedures for its timely identification and appropriate responses should it occur.

Austraclear has arrangements in place to allow for the timely recovery of its usual operations in the event of a contingency. These contingency procedures are set down in Austraclear's Incident Management Plan. ASX consolidated SFE's back-up facilities (including Austraclear's back-up facilities) to its group back-up site during the assessment period.

Austraclear tests back-up arrangements quarterly and carries out connectivity and procedural testing on a monthly basis. Austraclear utilised its back-up systems as part of the production environment several times during 2007. Through its Regulations, Austraclear also requires that its participants have appropriate disaster recovery arrangements.

8. Regulatory reporting

CS facility licensees are required to meet certain reporting obligations to the Reserve Bank under the *Financial Stability Standards*. These obligations include the reporting of: breaches of the relevant standard; breaches of risk-control requirements; and quarterly financial results. Austraclear satisfied all reporting obligations during the assessment period.