

Central Clearing of Repos in Australia: A Consultation Paper

March 2015

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1. Introduction

Repurchase agreements (repos) are one of the most common forms of collateralised financing in wholesale markets and play an important role in financial institutions' funding and liquidity management activities. Under a repo contract, one party sells a security to another at a price today, committing to repurchase that security at a specified future price and date; the difference between these two purchase prices reflects the interest rate paid by the securities provider.

Given its centrality and importance, it is crucial that the market for repos functions continuously and effectively, even in stressed circumstances. Consistent with developments in other core markets, such as that for over-the-counter (OTC) interest rate derivatives, central counterparty (CCP) clearing could improve market functioning and reduce systemic risk by enhancing risk and default management, increasing transparency and providing operational efficiencies. Recently, as part of a broader workstream on repos and securities lending, the Financial Stability Board (FSB) recommended that:

Authorities should evaluate, with a view to mitigating systemic risks, the costs and benefits of proposals to introduce CCPs in their inter-dealer repo markets where CCPs do not exist. Where CCPs exist, authorities should consider the pros and cons of broadening participation, in particular of important funding providers in the repo market.¹

Currently, no CCP clears transactions in the Australian repo market. Therefore, consistent with this recommendation, Australian authorities have begun work to evaluate the costs and benefits of central clearing of repos in Australia. This work is being led by the Reserve Bank. To support this evaluation, this consultation paper invites stakeholder views on how the design and operation of a repo CCP might affect the functioning of the Australian repo market and the management of risk, in both normal and stressed market conditions.

1.1 Background on Repo Clearing in Australia

While there is currently no repo CCP operating in Australia, there is some precedent for such arrangements. In the early 2000s, ASX Clear (Futures) – at that time known as SFE Clearing Corporation (SFECC) – operated a Bond and Repo Clearing (BRC) service. At that time, around 40 per cent of fixed income securities transactions were cleared through the BRC service.

However, a number of market participants did not use the service. This led to some difficulties in concluding the delivery-versus-payment (DvP) settlement of chains of transactions, where some parties in the chain were using the BRC service and others continued to clear bilaterally. To conclude a chain of settlements, one of the participants had to obtain the security to meet its delivery obligation. This was sometimes difficult due to the low level of Commonwealth Government securities (CGS) on issue at the time. Ultimately, these issues reduced the attractiveness of the BRC service, and use declined until the service was suspended in July 2004.

¹ FSB (2013), 'Strengthening Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos', August. Available at <http://www.financialstabilityboard.org/publications/r_130829b.pdf>.

With settlement practices in the fixed income market having evolved over the past decade, and CGS issuance having increased significantly, settlement issues arising from chains of trades are uncommon. Furthermore, securities can now be more easily obtained, including from the Stock Lending Facility offered by the Australian Office of Financial Management (AOFM). Consequently, settlement may be less of a concern for any future repo CCP, even if some participants do not centrally clear their repos.

1.2 Issues for Consultation

The overarching question that the Bank is seeking to answer through this consultation process is whether the capacity of the Australian repo market to safely, efficiently and continuously support the funding and liquidity needs of the Australian financial system would be improved by the availability of a repo CCP.

In making its recommendation, the FSB noted that there was significant potential for central clearing to reduce the size of credit exposures through multilateral netting as dealers often had offsetting trades with each other. Other system-wide and stability benefits from CCP clearing may arise from enhanced risk management of repos in normal conditions – including settlement of net gains and losses at least daily, and more frequently in periods of market volatility – and coordinated management of any participant default. Given their central role, CCPs can also drive operational improvements and efficiencies in a market. In other jurisdictions, ensuring the continued functioning of the repo market during a period of instability, or when there are perceived counterparty credit issues, has also been a particular motivating factor in encouraging central clearing of repos.

In its work, the FSB concluded that for interdealer repos against high-quality, liquid collateral ‘existing incentives to use CCPs in these markets seem sufficiently strong (e.g. balance sheet netting) and no further regulatory or other actions appear necessary’. Consistent with this view, if the Bank concluded that there was a net benefit to there being a repo CCP in Australia, it is likely that the Bank would rely on a provider’s commercial incentive to introduce such a service, and market participants’ private incentives to make use of the service.

A key issue in the consultation will therefore be whether market participants would indeed use a repo CCP if such a service became available in the Australian market. This will depend on each participant’s evaluation of the private benefits and costs. In particular, it will depend on each participant’s assessment of the scope to reduce its credit exposures in interdealer repos through multilateral netting, and thereby realise both collateral and regulatory capital benefits. Since not all repo market participants may choose to, or be eligible to, centrally clear, the implications for the participation structure of the repo market will need to be considered carefully.

These issues are considered further in the remainder of this consultation paper, which is set out in three main sections:

- *The Australian Repo Market.* This section provides an overview of the Australian repo market, describing the nature and scale of current activity in the market and prevailing operational and risk management practices. The section closes with a short review of the BRC service.
- *Key Features of Repo CCPs.* This section first introduces the role of a CCP and the potential costs and benefits of central clearing. It goes on to consider the particular implications of CCP clearing in the Australian repo market. The main focus is on how counterparty credit risk management might change, and how central clearing could encourage new operational efficiencies. Implications for settlement arrangements are also considered. Finally, the section provides an overview of the design of existing repo CCPs internationally.

- *Costs and Benefits of a Repo CCP – Issues for Consultation*. Drawing on the observations in the preceding sections, the paper closes with an overview of the key issues on which stakeholder feedback is sought to assist in evaluating the costs and benefits of central clearing in the Australian repo market.

While the primary focus of this consultation is the repo market, which is consistent with the scope of the FSB's recommendation, many existing repo CCPs internationally also clear outright purchases and sales of bonds. Accordingly, consultation respondents are also invited to offer views on the desirable product scope of any future repo CCP in Australia.

1.3 Next Steps

The Bank has issued this consultation paper to encourage all interested stakeholders to engage in a thorough discussion about the costs and benefits of central clearing of interdealer repo transactions in Australia. The Bank recognises that stakeholders' interests will not necessarily be aligned and also acknowledges the uncertainty arising from the absence of a concrete proposal that sets out the key design features of such a CCP and the potential scope of participation. The Bank also recognises that, since it is counterparty to around a third of the value of repos currently outstanding, its decision regarding participation will affect other market participants' evaluation of the private costs and benefits of using a repo clearing service. The Bank will consider its position in light of stakeholder feedback from this consultation.

The Bank welcomes comments on any matters discussed in this paper. As a basis for discussion, a number of questions have been suggested in Section 4, to which stakeholders might wish to respond.

Written submissions are welcome. All submissions and correspondence received (including any contact names or other personal information) will be made public on the Bank's website, unless it is specifically requested that the Bank treat the whole or any part of a submission as confidential. For further information about the Bank's collection of personal information and approach to privacy, please refer to the Personal Information Collection Notice for Website Visitors and the Bank's Privacy Policy, which are both available at <http://www.rba.gov.au/privacy/>.

The Bank requests that formal submissions and comments in response to this consultation paper be received by **17 April 2015**. Please direct all correspondence and other requests to

Email: RepoCCPConsultation@rba.gov.au

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Sydney NSW 2001
Australia

The Bank will separately hold discussions with relevant Australian Financial Markets Association (AFMA) committees in the period ahead, and will arrange bilateral meetings with AFMA members and other stakeholders on request.

2. The Australian Repo Market

This section provides an overview of the Australian repo market, describing the nature and scale of current activity in the market and prevailing operational and risk management practices. The section closes with a short review of the Bond and Repo Clearing (BRC) service that operated in the Australian fixed income market in the early 2000s.

2.1 Activity

Gross outstanding positions in the Australian repo market total more than \$110 billion (Graph 1). The size of the Australian repo market has increased by more than 40 per cent since early 2013, primarily due to larger positions held by the Bank and by foreign institutions acting as cash providers in the Australian market. Most repos are contracted for terms under 14 days.

Graph 1
Gross Market Value
of GC-eligible Repos Outstanding
Australian market; including RBA positions



In Australia, around 85 per cent of repos are contracted against what is termed 'General Collateral 1' (GC1). GC1 includes only CGS and securities issued by the states and territories (semi-government securities, or 'semis'). Most of the remaining repos in the Australian market are generally against 'General Collateral 2' (GC2), which includes debt issued by authorised deposit-taking institutions, asset-backed securities and supranational, foreign agency and government-guaranteed debt, as well as other AAA securities such as covered bonds.

Active participants in the domestic repo market include banks, securities dealers – typically large domestic and international banks that are market makers in domestic government securities – as well

as some smaller institutional non-dealer participants and the Bank.² As at November 2014, repos with the Bank accounted for around 35 per cent of outstanding repo market positions (Table 1).

Table 1: Market Value of Outstanding Repos in Australia by Counterparty Type

Based on a survey of active dealers in the Australian market; as at 12 November 2014; \$ billion^(a)

	Survey respondent as securities provider	Survey respondent as cash provider
Between survey respondents	23.9	23.5
Between survey respondents and non-surveyed onshore institutions	43.5	23.5
<i>Of which:</i>		
<i>Other banks and securities dealers</i>	<i>2.7</i>	<i>1.2</i>
<i>RBA^(b)</i>	<i>37.7</i>	<i>0</i>
<i>Other</i>	<i>3.2</i>	<i>22.3</i>
Between survey respondents and non-surveyed offshore institutions	4.0	15.0
<i>Of which:</i>		
<i>Government/central banks</i>	<i>1.1</i>	<i>1.7</i>
<i>Other</i>	<i>3.0</i>	<i>13.3</i>
<i>Memo: Non-respondents' net cash from RBA</i>	<i>5.6</i>	

(a) Survey respondents are 19 active dealers in the Australian repo market. Differences between aggregate activity as a securities provider and as a cash provider reflect discrepancies in reported figures between surveyed institutions. Totals may not sum due to rounding.

(b) Excludes banks' 'open repos' with the Bank for the purpose of meeting settlement obligations

Source: RBA

The two most significant areas of repo market activity in Australia are related to market making in government securities and the Bank's open market operations.³

- *Market making.* Dealers make a market in domestic government securities by matching buyers and sellers of the same security, or – when timing mismatches arise – buying and selling for their own account. Dealers are able to fund their inventory of securities by selling them under repo. Selling securities under repo allows dealers to raise funding while maintaining their exposure to the securities. Dealers may also use repos to obtain securities they have agreed to sell to their customers.
- *The Bank's open market operations.* Repos offer a flexible instrument for the Bank to manage the total amount of outstanding Exchange Settlement Account (ESA) balances in the banking system so as to keep the cash rate as close as possible to the target set by the Reserve Bank Board. By executing repos with its counterparties in its open market operations, principally as a cash provider, the Bank manages the aggregate of institutions' ESA balances. Consequently, the Bank is a major source of funding for the domestic repo market.

² Wakeling D and I Wilson (2010), 'The Repo Market in Australia', *RBA Bulletin*, December, pp 27–35.

³ This activity is discussed in further detail in Cheung B, M Manning and A Moore (2014), 'The Effective Supply of Collateral in Australia', *RBA Bulletin*, September, pp 53–66.

Investment funds and other non-dealer institutions are also providers of high-quality assets to dealers. These institutions typically use repos to manage their short-term funding while maintaining their exposure to these assets, and in some cases to enhance portfolio returns.

2.2 Counterparty Credit Risk

Repo transactions are generally agreed under industry standard documentation, typically the Global Master Repurchase Agreement (GMRA). The GMRA governs the transaction, establishing the rights and obligations of the contracting parties. In a repo transaction, legal title to the collateral passes to the cash provider for the duration of the repo agreement, while the economic benefits (e.g. coupon payments) are retained by the securities provider. Since legal ownership of the security is transferred, the cash provider has an automatic right to re-use the securities.

Among the matters dealt with in the GMRA are the mechanisms by which counterparties to the trade manage their counterparty credit risk to each other.

2.2.1 Collateralisation

Repos can be executed against a specific security or against a class of general collateral (e.g. GC 1). If a repo is against a class of general collateral, the securities provider may have the right to substitute collateral under certain circumstances.

The collateral provided is generally subject to a haircut. That is, the market value of collateral is reduced by a given percentage, the haircut, to reflect the potential change in value should the collateral need to be liquidated. The purpose of the haircut is therefore similar to that of initial margin in a centrally cleared transaction (see Section 3.1.1). The size of the haircut is negotiated bilaterally between the parties to the transaction. In the case of transactions with the Bank, haircuts are imposed on all securities purchased under repo. The Bank's schedule of haircuts is publicly disclosed and changes from time to time.⁴

Over the life of a repo, if the value of collateral changes significantly, additional collateral may be called or excess collateral returned; this is the equivalent of variation margin for centrally cleared transactions (described in Section 3.1.1). As part of this process, the value of the cash leg is typically adjusted to include the repo interest that has accrued to the cash provider. The daily settlement of net gains and losses may be subject to the change in value exceeding an agreed minimum transfer amount. Such thresholds are generally negotiated between parties upon establishing their GMRAs. This daily settlement process can be automated through a centralised collateral management service such as ASX Collateral (see 'Box A: ASX Collateral').

⁴ Details of the haircuts on repos with the RBA are referred to as 'margin ratios' and are provided on the Bank's website at <<http://www.rba.gov.au/mkt-operations/resources/tech-notes/eligible-securities.html>>.

Box A: ASX Collateral

On 29 July 2013, ASX launched ASX Collateral. This service has been developed in partnership with Clearstream, a Luxembourg-based financial market infrastructure provider. Key functions of the service are that it automates the optimisation and allocation of collateral, substitutes collateral as required and re-uses collateral received. Initially, ASX is offering the service for debt securities held in Austraclear, with plans to extend coverage in due course to equity securities settled by ASX Settlement. A key feature of the service is that title remains and settlement continues to take place in the relevant securities settlement facility.

In automating the collateral allocation process, ASX Collateral applies an optimisation algorithm developed and operated by Clearstream. The algorithm scans a collateral provider's portfolio to identify the securities that most efficiently meet any given collateral demand, subject to preferences established by the collateral receiver (on criteria such as issuer, security type and rating, and concentration limits). The algorithm is run regularly throughout the day, and may recommend substitutions of collateral in response to relative collateral price movements and to changes in the collateral provider's portfolio of eligible assets. ASX Collateral then effects a transfer of collateral, in Austraclear, between participants to achieve this optimal allocation.

As part of this process, ASX Collateral also revalues all open repos four times an hour, comparing the cash value with the current market value of the securities (net of the haircut). If the net difference exceeds a threshold, ASX Collateral initiates a call for additional collateral. This auto-collateralisation process can materially simplify participants' post-trade processes.

The Bank, along with five other market participants, has joined the service. The Bank settled its first repo executed via ASX Collateral in early 2014. Bank counterparties continue to have the option of using existing arrangements, which involve confirming each individual security and its value bilaterally with the Bank prior to settlement. Around 6 per cent of the Bank's currently outstanding repos were contracted in ASX Collateral.

The GMRA provides for close-out netting in the event one of the counterparties defaults. Close-out netting allows an institution to terminate and settle the net value of all contracts with a particular counterparty immediately upon the occurrence of one of a list of defined events, such as the appointment of a liquidator to that counterparty. While this accelerates the realisation of the loss or gain on the outstanding position, the surviving counterparty will typically seek to re-establish the position with another counterparty. If prices have moved adversely, this will come at a cost (i.e. replacement cost). For the cash provider, this replacement cost risk is mitigated by the haircut on the collateral that it has received.

2.2.2 Capital requirements and counterparty limits

To ensure that a prudentially regulated institution could withstand the default of a counterparty, the Australian Prudential Regulation Authority (APRA) requires that capital be held against counterparty exposures – including repo positions. Since APRA's requirements are based on the international standards developed by the Basel Committee on Banking Supervision (BCBS), it is expected that overseas participants in the Australian market are subject to similar capital requirements for repo exposures.

As an additional safeguard, the BCBS has developed a large exposure framework.⁵ Under this framework, the sum of all the exposure values of a bank to a single counterparty or to a group of connected counterparties must not be higher than 25 per cent of the bank's available eligible capital base at all times. On a broader level, the BCBS leverage ratio framework also requires banks to hold capital against total exposures, which includes repo exposures.⁶

In addition to regulatory constraints on counterparty exposures, institutions' internal risk management frameworks generally incorporate counterparty limits. These limits often vary with the perceived creditworthiness of a counterparty, and can therefore create funding pressures if the risk appetite of an institution declines or there are perceived issues with a particular counterparty.

2.3 Operational Efficiencies

Repo markets vary in the degree of automation in trading, clearing and settlement processes. Repos in the Australian market are generally traded over the phone or using Bloomberg or Reuters messages; although there are some interdealer broker platforms available. These trades are then managed separately by each counterparty using internal systems. When a leg of a repo transaction or net gains or losses are due for settlement, instructions are sent to the debt securities settlement facility, Austraclear.

In contrast, some markets support a high level of automation and straight-through processing. In Switzerland, for instance, while repos are not centrally cleared, the market uses an integrated trading and settlement system. This system also incorporates an automated collateral management system (see 'Box B: The Swiss Value Chain').

⁵ BCBS (2014), *Supervisory Framework for Measuring and Controlling Large Exposures*, April. Available at <<http://www.bis.org/publ/bcbs283.pdf>>.

⁶ BCBS (2014), *Basel III Leverage Ratio Framework and Disclosure Requirements*, January. Available at <<http://www.bis.org/publ/bcbs270.pdf>>.

Box B: The Swiss Value Chain

In Switzerland, Swiss franc repos are traded and settled via the ‘Swiss Value Chain’ – an integrated and automated chain of infrastructures that cover the trading, clearing and settlement of the securities and cash obligations.¹ Trades are executed bilaterally on SIX Repo Ltd’s trading platform, SIX Repo. This platform passes trades to the securities settlement system – SIX SIS Ltd’s Settlement Communication System – in real time.

On the value date, the securities settlement system SIX SIS Ltd automatically processes scheduled repo settlements. The transfer of the securities occurs across accounts at SIX SIS Ltd, while the cash payment is settled across the books of the Swiss National Bank through the SIX Interbank Clearing (SIC) payment system. When the transaction matures, the reverse settlement (including the repo interest) is initiated and settled using the same process. Both legs of the repo are settled on a DvP basis.

SIX SIS Ltd is also a centralised collateral management system. It values all open repos between two counterparties twice a day, comparing the cash value (including accrued repo interest) with the latest value of the securities. If the net difference exceeds a unilaterally defined tolerance limit, SIX SIS Ltd automatically generates a corresponding value adjustment. This adjustment can be settled using securities or, if necessary, a cash transfer via the SIC payment system.

¹ For further background on the Swiss Value Chain see Kraenzlin S (2007), ‘The Characteristics and Development of the Swiss Franc Repurchase Agreement Market’, *Financial Markets and Portfolio Management*, June, 21(2), pp 241–261.

2.4 Settlement Arrangements

In Australia, repos are generally settled on a DvP model 1 (DvP 1) basis in Austraclear. That is, settlements occur on a trade-by-trade basis, with the transfer of cash and securities obligations between the buyer and seller occurring simultaneously. Austraclear is a licensed clearing and settlement facility that provides securities settlement facility services for trades in debt securities, including outright CGS transactions and repos.⁷

Counterparties to a repo may nevertheless choose to settle on a non-DvP basis. However, in doing so, the institution that settles its obligation first is exposed to principal risk as its counterparty could default prior to settling its linked obligation. In the past, counterparties sometimes chose to do this when they were part of a chain of participants buying and selling the same face value of the same security on the same day (possibly at different prices). Settlement of chains on a DvP 1 basis requires that at least one participant in the chain owns the security and can initiate the chain of settlements. However, in a market where securities are scarce, a chain could develop in which no participant owns the security and therefore settlement cannot occur on a DvP 1 basis. In the early 2000s, the market practice in Australia was to settle such chains by ‘deeming’ that securities had been transferred upon payment of the cash leg. This practice meant that the participant making the first payment in the chain faced principal risk until settlement of the chain was completed.

Such chains are now uncommon, particularly with CGS issuance having increased markedly since the early 2000s. Furthermore, there is greater access to securities lending facilities to support settlement.

⁷ For further information on Austraclear, including its management of risks, see the Bank’s *2013/14 Assessment of ASX Clearing and Settlement Facilities*.

For instance, a participant that is short a security may obtain it from a stock lending facility such as that offered by the AOFM (see 'Box C: AOFM Stock Lending Facility'). The AOFM does not charge interest intraday. Use of such a service may, however, involve a cost if an institution retains the security overnight.

Box C: AOFM Stock Lending Facility

To facilitate an active CGS market, and to ensure that market participants are always able to source CGS for their settlements, the AOFM offers a lending facility for CGS. Under this facility, which is operated by the Bank, financial institutions can obtain specific lines of CGS via a repo with the Bank. This can enhance settlement efficiency and assist in dealing with settlement chains, at least in respect of repos executed against CGS.

While there is no interest charge for securities returned before the end of the day, a significant penalty (usually 300 basis points) applies to all overnight transactions executed under the facility. The overnight repo rate on securities obtained through the facility is set 300 basis points below the cash rate or at 25 basis points, whichever is the greater. At the same time, the Bank contracts an offsetting repo in other CGS or government-related securities, where the repo rate is equal to the cash rate. This ensures that the securities lending transaction has a neutral effect on system liquidity.

The amount of CGS that are available via the lending facility is \$5 billion. Securities available through this facility have been issued expressly for this purpose and, accordingly, are not counted as part of the stock of CGS outstanding. When not under repo, these securities are held outside of Austraclear in the name of the government.

2.5 Central Clearing of Repos in Australia

While there is currently no repo CCP in Australia, between September 2001 and July 2004 ASX Clear (Futures) (at that time known as SFECC) operated the BRC service.

The design of BRC was similar to other repo CCPs operating at that time (Table 2).⁸ Trades were executed bilaterally over the phone; repos or outright bond transactions were registered with BRC and novated within 30 minutes of the trade being matched in Austraclear. Repos against all CGS and most semi-government securities (or 'semis') were eligible for clearing through BRC. For settlement, trades were netted by settlement date and line of security. Figures provided to the Bank in 2004 suggest that at that time around 40 per cent of debt securities transactions were cleared through the BRC service.

However, a number of market participants did not use the service and, when combined with the low level of CGS on issue at the time, this led to difficulties settling chains when a participant in the chain was short the relevant security. Trades cleared through BRC were required to be settled on a DvP basis to ensure that BRC was not exposed to principal risk. Consequently, in the event that some of the parties in the chain remained outside of the CCP, one of the participants would have needed to obtain the security so that settlement could occur on a DvP basis. This reduced the attractiveness of

⁸ Note that the design features described in Table 2 predate the introduction of more detailed international standards in this area.

the BRC service. Use declined until ASX eventually suspended the service as it was no longer commercially viable.

Table 2: Bond and Repo Clear

Criteria	Description	Notes
Transaction types	Outright bond purchases/sales and repos	
Client clearing offered	No	
Securities accepted for repos	Government and most semi-government bonds	
General collateral service	Specific collateral only	Some CCPs clear repos contracted by participants against classes of securities, while others only clear repos contracted against specific securities
Participation requirements	Minimum net tangible assets requirement	
Variation margin	At least daily	Collected by the CCP to cover changes in observed market prices
Initial margin	Greater than both the 6 month 99 per cent confidence interval and the 60-day rolling average (three standard deviations) for prices	Collected by the CCP to cover exposure to potential future changes in prices
Default fund/waterfall	CCP capital, participant contributions and insurance	Held to protect against losses exceeding the defaulted participant's initial margin
Settlement instruction frequency	Daily	
Settlement mode	DvP 1	DvP 1 involves the simultaneous exchange of securities and funds on a trade-by-trade basis
Settlement asset	Central bank money	
Securities settlement facilities	Austraclear	
Auto-collateralisation through a centralised collateral management system	No	Auto-collateralisation allows participants to contract repos within a collateral class and have securities automatically allocated from an account at a central securities depository to collateralise the repo
Trading	Bilateral	

Source: RBA

With settlement practices in the fixed income market having evolved over the past decade, and CGS issuance having increased significantly, settlement issues arising from chains of trades are uncommon. Since securities can now also be more easily obtained, including from the AOFM, settlement may be less of a concern for any future repo CCP, even if some participants remained outside of the CCP.

3. Key Features of Repo CCPs

This section first introduces the role of a CCP and the potential costs and benefits of central clearing. It goes on to consider the particular implications of CCP clearing in the Australian repo market. The main focus is on how counterparty credit risk management might change, and how central clearing could encourage new operational efficiencies. Implications for settlement arrangements are also considered. Finally, the section provides an overview of the design of existing repo CCPs internationally.

3.1 An Introduction to CCPs

Central clearing can be a highly effective way to enhance the efficiency, integrity and stability of financial markets. A CCP uses standardised risk management tools that, provided a product meets the preconditions for clearing, enable it to clear a product safely and reliably. However, there are costs and benefits of central clearing, and the net benefit or cost will be a function of the existing participation structure of the market and prevailing market practices.

3.1.1 The design of a CCP

A CCP stands between the counterparties to a financial market trade and performs the obligations that each has to the other under the terms of that trade. This occurs through a legal process known as novation, where the CCP becomes the buyer to every seller, and the seller to every buyer. Through novation, a market participant's numerous bilateral exposures are substituted for a single exposure to the CCP.

The CCP manages this exposure using three layers of risk controls:

- *Participation requirements and position limits.* These are *ex ante* controls that limit the counterparties to which a CCP is willing to have an exposure and the size of those exposures. CCPs' participation requirements typically take the form of minimum capital requirements and evidence of operational capability to meet obligations as a clearing participant.
- *Defaulter-pays protections.* These are financial resources provided by each participant to manage the risk it brings to the CCP. Typically, these take the form of variation and initial margin, although there can also be a range of additional margins to cover specific risks.
 - Variation margin is usually collected at least daily and is designed to cover exposure arising from observed changes in market prices. It is collected from participants with a decline in portfolio value since the last variation margin call, and passed through to those with an increase in portfolio value. In this way, the CCP's exposure is reset to zero after each call.
 - Initial margin is designed to cover potential future exposures. The *Principles for Financial Market Infrastructures* (PFMIs) require that initial margin is calibrated to cover at least

99 per cent of potential future price moves over an assumed close-out period.⁹ This close-out period is set based on the time between the last variation margin call and when a CCP can realistically close out or hedge its exposure to a defaulted participant.

- *Mutualised financial resources.* In the event of a participant default in more extreme market conditions, initial margin provided by the defaulted participant may not be sufficient to fully cover any losses arising. To cover this risk, a CCP maintains a pool of additional financial resources, which usually take the form of a prefunded default fund made up of contributions by the CCP and its participants. The PFMIs require that these resources, combined with initial margin, be calibrated to cover at least the default of the largest (or in some cases the two largest) participants and their affiliates in extreme but plausible scenarios.

3.1.2 The suitability of a product for central clearing

There are a number of preconditions that a product must satisfy in order for a CCP to clear that product safely and reliably. Specifically:

- the product must have a robust valuation methodology so that the CCP can confidently determine margin and default fund requirements
- there must be sufficient liquidity in the market to allow for close out and/or hedging of outstanding positions in a default scenario
- there must be sufficient transaction activity and participation so that the fixed and variable costs of clearing the transaction are covered
- there must be some standardisation of contracts to facilitate the CCP's trade processing arrangements.

Since a number of CCPs overseas currently clear repos (and there used to be such a CCP in Australia), these preconditions are likely to be met for repos against high-quality, liquid collateral (see Section 3.5 for further details of overseas repo CCPs).

3.1.3 The costs and benefits of central clearing

When assessing the relative costs and benefits of central clearing, it is important to consider the market structure (in terms of the number and type of participants), the nature of participants' activity, and existing practices and infrastructure. Australian authorities have previously considered the costs and benefits of central clearing in a number of different markets, including OTC derivatives

⁹ The *Principles for Financial Market Infrastructures* developed by the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) are the international standards for CCPs and other financial market infrastructure. The Australian Securities and Investments Commission and the Bank have implemented these as part of their regulation of CCPs that operate in Australia. In particular, the Bank has determined Financial Stability Standards for CCPs, with which all clearing and settlement facility licensees that operate CCPs must comply. These Financial Stability Standards include requirements around margin and credit risk and are available at <http://www.rba.gov.au/payments-system/clearing-settlement/standards/central-counterparties/2012/index.html>.

and the foreign exchange market.¹⁰ Based on this previous work, CCP clearing may be expected to contribute to reduced systemic risk and increased operational efficiency by:

- lowering counterparty risk exposures through multilateral netting
- enhancing (and standardising) risk management
- coordinating default management
- encouraging operational improvements and efficiencies (e.g. settlement cycles, payment flows, margin and valuation calculations)
- facilitating anonymous trading on exchange
- delivering greater transparency
- providing a focal point for regulation and oversight.

However, there are also costs that need to be considered, such as:

- the set up and ongoing cost of maintaining a CCP
- concentration of risk in the CCP
- operational dependence on the CCP.

Costs associated with risk concentration and operational dependence would be expected to be mitigated by strong regulation and supervision of licensed CCPs against domestic standards that align with the PFMI.

3.2 Counterparty Credit Risk

The emergence of a CCP in the Australian repo market will change how counterparty credit risk is managed in this market. A CCP's *ex ante* controls may affect activity in the repo market, and how institutions participate in the repo market. While both non-centrally cleared and centrally cleared repos involve exchanging cash in return for collateral, the arrangements are slightly different and therefore the level of protection and the cost of collateralisation will differ.

3.2.1 *Ex ante* risk controls

Participation requirements and position limits are a CCP's first layer of risk controls. These requirements condition the terms of access to clearing for repo market participants.

For some participants that are unable to meet a CCP's participation requirements, or for which direct participation would be uneconomical, access to a repo CCP as a client of a clearing participant may be the only option. However, this brings with it other risk considerations associated with the dependence on a clearing agent. Furthermore, even where an institution is willing to accept such risks it may have difficulty securing the services of a clearing participant. As a result of these issues around access to client clearing, some existing CCPs are reportedly in the process of considering alternative participation models to allow non-dealers to access the CCP without using a clearing participant.

¹⁰ See for example, CFR (2011), *Central Clearing of OTC Derivatives in Australia*, June, available at <<http://www.rba.gov.au/publications/consultations/201106-otc-derivatives/index.html>> and Manning M, A Heath and J Whitelaw (2010), 'The Foreign Exchange Market and Central Counterparties', *RBA Bulletin*, March, pp 49–58.

Access to the repo market could also be restricted by any position limits imposed by the CCP.

3.2.2 Multilateral netting

Where a trade passes a CCP's *ex ante* controls, the CCP will novate the trade. As a result, the numerous bilateral exposures are substituted for a single exposure to the CCP. Depending on the profile of participants in a market, multilateral netting has the potential to substantially reduce the size of outstanding obligations relative to bilateral arrangements. Netting occurs at two levels – outstanding exposures and settlement:

- *Exposure netting.* Novation allows multiple offsetting trades to be reduced to a single net exposure vis-a-vis the CCP. In the extreme, after novation, the net exposure of a participant with exactly offsetting trades with different counterparties nets to zero. However, even if trades are not exactly offsetting – for example, there are different terms, different repo rates, different collateral – the trades are risk managed on a portfolio basis, which recognises the reduction in market/interest rate exposure due to these partial offsets.
- *Settlement netting.* When calculating settlement obligations, the CCP nets trades by line of security and settlement date, resulting in a single net long or short position for each participant in each line of security and at each settlement date.

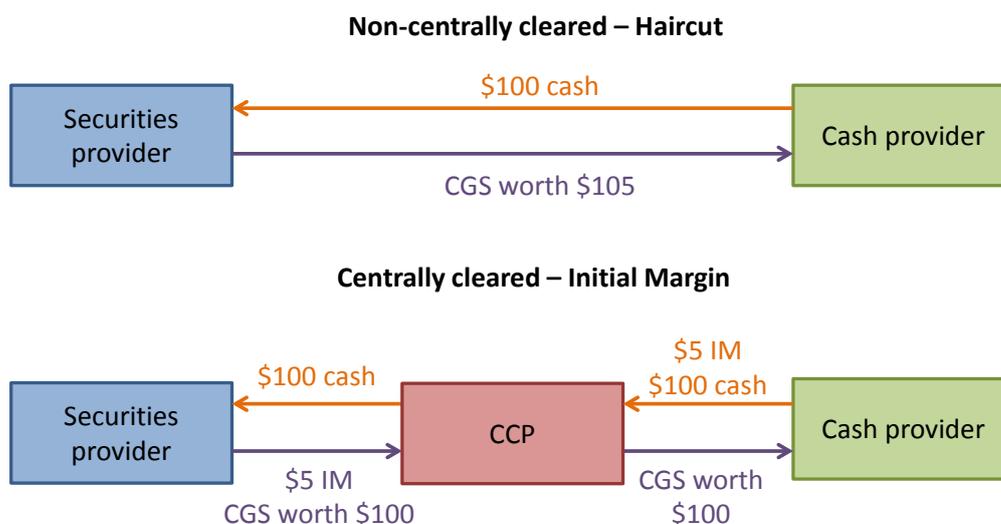
3.2.3 Collateralisation

A CCP then collateralises these potentially smaller multilateral net exposures. As in the bilateral market, the exchange of cash for securities in a DvP settlement process protects against principal risk. However, as noted, CCP clearing can enhance arrangements for the management of replacement cost risk.

A CCP standardises the settlement of net gains and losses in the value of the collateral and the repo interest accrued by collecting and passing through variation margin on at least a daily basis. If the repos are auto-collateralised through a centralised collateral management system (e.g. ASX Collateral; see 'Box A: ASX Collateral'), the exchange of variation margin is replaced by adjustments to collateral to ensure that the value of the collateral remains equal to the value of the cash leg of the repo. If there are significant price moves, a CCP will typically also collect variation margin intraday. This potentially lowers replacement cost risk relative to the non-centrally cleared alternative.

Unlike non-centrally cleared repos, the collateral provided under repo is not subject to a haircut. Instead, the CCP collects initial margin from both the securities provider and the cash provider. This difference is illustrated in the example below (Figure 1). In the top panel, CGS with a value of \$105 have been provided to collateralise a \$100 non-centrally cleared repo. In the event of the default of the securities provider, this protects the cash provider from the risk that the value of the securities has fallen since the net gain or loss was last settled. In the event that the cash provider defaults, however, the securities provider is not protected against the replacement cost risk associated with an increase in the value of the securities and could incur a loss in re-establishing its repo position. In contrast, in the bottom panel of the example, the CCP collects and retains initial margin from both the securities provider and the cash provider. In the event that one of the counterparties defaulted, the CCP would use the initial margin provided by the defaulted participant to cover any replacement cost loss.

Figure 1: Protection Against Replacement Cost Risk



As noted in Section 3.2.2, CCPs generally manage the risk associated with cleared repo trades on a portfolio basis. This is reflected in the calculation of initial margin. Consequently, if a counterparty has partially offsetting trades (e.g. it is a cash provider in one repo and a securities provider in another repo) margin requirements will be lower than if replacement cost risk was calculated on a trade-by-trade basis.

Initial margin is calibrated to manage the replacement cost risk, which reflects the potential future exposure due to changes in prices between the last variation margin call and the time a CCP could realistically close out or hedge its exposure to a defaulted participant. For repo transactions, the potential future replacement cost will be a function of repo rates, bond prices and discount rates.

- If a CCP novates a repo prior to the settlement of the first leg and a counterparty defaults before this settlement occurs, the CCP will need to enter the market to execute a repo contract that offsets its obligation to the surviving counterparty. In such circumstances, the replacement cost risk is entirely a function of repo rates and discount rates.
- If a default occurs after the first leg has settled, the CCP will not only have to execute an offsetting repo, it will also need to cover the security or cash that was provided to the defaulted participant under repo by selling the defaulted participant's collateral. Consequently, the potential exposure from a change in bond prices is relevant to replacement cost risk.

In both cases, the net present value of the obligations at the time of the default will also depend on the current discount rate.

In addition to variation and initial margin, CCPs may levy a range of other additional margin requirements to protect the CCP against specific risks. For example, a CCP may levy margin to cover its exposure to:

- concentrated positions that may be difficult to liquidate in the event of a default
- large positions, typically where the stress-test loss on such a position is large relative to the default fund
- sovereign credit risk, where there are concerns about the creditworthiness of the government issuing the collateral

- wrong-way risk, where the value of collateral posted by a counterparty may be negatively correlated with the probability of the counterparty's default
- a particular counterparty (i.e. a counterparty multiplier)
- repos against bonds trading 'special'.¹¹

CCPs may also charge margin to cover risks that arise in the settlement process. In particular, centrally cleared repos typically settle on a DvP 1 basis in a securities settlement facility. Since initial margin is usually calculated on a portfolio basis, but settlement occurs on a line-by-line basis, there is potential for 'un-netting' if a default occurs during the settlement process. This is due to the fact that the CCP typically does not control the order in which settlement occurs. One way for the CCP to ensure that it is covered against such a situation is to collect additional margin on trades that are settling the next day to cover the worst possible case in terms of the settlement order and the point of default. In simple terms, this would mean that repos due to settle the next day were margined on a trade-by-trade basis for that day, with all other repos continuing to be margined on a portfolio basis.¹²

3.2.4 Default management

Unlike non-centrally cleared repos, in the event of a participant default, all of the surviving participants' positions are maintained, rather than terminated. However, the CCP must enter offsetting transactions to close out its exposure to the defaulted participant. For repos this is generally achieved through a default auction to surviving participants. Since multilateral netting may have decreased the overall exposure to the defaulted participant, and the CCP can coordinate the close out of exposures to the defaulted participant, the CCP is likely to face a lower replacement cost than participants in aggregate would face in the bilateral market. The CCP also has access to prefunded default resources, in the form of the defaulted participant's initial margin and a mutualised default fund.

Nevertheless, since repos are a deliverable product, the CCP may face liquidity risk in excess of replacement cost risk. For example, if the CCP needs to purchase a security to cover the defaulted participant's obligation it will need to buy the security before it settles with the surviving participants. In such circumstances, the liquidity risk would be the price of the security. The replacement cost risk, on the other hand, is the difference between the cash received in the settlement with the surviving participants and the cash paid to purchase the security.

As a safeguard, Australian-licensed CCPs are eligible to hold an ESA at the Bank, which gives them access to Australian dollar liquidity from the Bank against eligible collateral. There is a close relationship between the collateral held against repos and collateral that is eligible for the Bank's

¹¹ 'Specials' are securities that are in high demand by market participants. The difference between the repo rate on general collateral and the rate on a particular bond gives an indication of the level of demand for that bond.

¹² Alternatively, this risk could be addressed if settlement occurred on a portfolio or multilateral net basis. However, under the Bank's Financial Stability Standards, where individual trade values are large a securities settlement facility would be expected to settle linked obligations using trade-by-trade (or line-by-line) settlement on a real-time basis (i.e. DvP 1). This is because a participant default that triggered recalculation of multilateral net obligations within a net settlement batch could, if obligations were sufficiently large, cause survivors to face significant liquidity pressures on a short horizon. Furthermore, even where a participant default did not give rise to sizeable swings in liquidity requirements for participants, the dependencies between participants in a net batch settlement model are such that problems with a single participant could nevertheless cause delays and uncertainty for all participants.

liquidity facilities. Accordingly, a repo CCP would be eligible to access the Bank's liquidity facilities to support its liquidity management in the event that market sources were unavailable.

Liquidity risk can also be reduced, at least in part, through 'shaping'. Shaping is a process of splitting large settlement obligations into smaller parcels that can then be settled sequentially. When managing a participant default, sequential settlement allows the CCP to use the funds from settling part of the defaulted participant's obligations to settle the remainder of the defaulted participant's obligations.

3.2.5 Capital requirements and counterparty credit limits

To the extent that a participant's positions with different counterparties are offsetting, multilateral netting through novation will result in lower overall exposure. In addition, prudential regulators are expected to treat exposures to 'qualifying' CCPs (QCCPs) differently to bilateral exposures.¹³ In April 2014, the BCBS finalised the capital requirements for bank exposures to CCPs, which is intended to create an incentive to centrally clear by imposing lower capital requirements.¹⁴ Exposures to qualifying CCPs are also currently exempt from the BCBS large exposure limit.

Similarly, the calculation of repo exposures in the BCBS leverage ratio framework is more favourable for exposures to qualifying CCPs; bilateral exposures are measured with no recognition of accounting netting, while repos cleared through QCCPs are recognised as a single contractual exposure to the CCP.

It is also expected that institutions' internal risk management frameworks will treat centrally cleared repo exposures differently. Once a trade is novated to the CCP, participants are no longer directly exposed to their original counterparty. This is why central clearing can facilitate anonymous trading on an electronic platform. Even if trades are not executed on an anonymous basis, it is expected that institutions' internal risk management frameworks will not subject centrally cleared trades to equivalent counterparty credit limits to those that apply for non-centrally cleared exposures. Instead they are expected to consider the lower risk exposure to the CCP, reflecting its status as a highly regulated single-purpose entity.

3.3 Operational Efficiencies

As the discussion of the Swiss Value Chain in Box B reveals, central clearing is not essential to achieve straight-through processing of repo transactions. However, due to its central role a CCP can coordinate such operational improvements and efficiencies where they do not otherwise exist.

Centrally clearing trades may encourage execution on an electronic trading platform, as a CCP needs trades to be matched and confirmed electronically prior to novation. From the point of novation, the CCP manages the trade; it values and margins positions and generates settlement instructions as necessary. In comparison, current operational processes in the Australian repo market tend to be more dispersed and require counterparties to communicate bilaterally and agree on how to manage the trade. These arrangements may also involve considerable manual intervention.

¹³ A qualifying CCP is a CCP that is licensed to centrally clear a product, where the relevant home regulator/overseer has established, and publicly indicated, that it applies to the CCP on an ongoing basis – domestic rules and regulations that are consistent with the CPMI-IOSCO *Principles for Financial Market Infrastructures*.

¹⁴ BCBS (2014), *Capital Requirements for Bank Exposures to Central Counterparties*, April. Available at <<http://www.bis.org/publ/bcbs282.pdf>>.

The management of a repo can be further streamlined if the CCP uses a centralised collateral management system to auto-collateralise (i.e. margin) repos (see 'Box A: ASX Collateral'). Generally, repo CCPs use a centralised collateral management system when clearing repos against a class of general collateral. In these circumstances, the centralised collateral management system can also facilitate the recall and substitution of collateral. Re-use and substitution within a centralised collateral management system makes it easier to ensure that collateral that has been re-used can be returned in a timely manner.

3.4 Settlement Arrangements

As discussed in Section 3.2.2, the CCP calculates a single net long or short settlement position per participant, per line of security and per settlement date. As changes in the value of the collateral and the accrued interest have been settled daily, the cash and securities settled in the second leg generally have a very similar value.¹⁵ To smooth the settlement process, if a particular participant's net obligation in a line of security exceeds a given amount, the CCP will shape the settlement instruction into smaller parcels.

The CCP then submits these settlement instructions to the securities settlement facility. Settlement instructions will be submitted as a batch, generally once or twice a day. Each of these batches is then settled in separate settlement runs, typically on a trade-by-trade (DvP 1) basis. In the case of an Australian repo CCP, Austraclear would be the relevant securities settlement facility. Since Austraclear settles on a DvP 1 basis, in order to initiate the settlement process the CCP will need to maintain, or have ready access to, a buffer of cash or securities to settle the first transaction. The proceeds of that settlement can then be used to settle further obligations, with the CCP in normal circumstances ending the day with the same assets that it started with. As discussed in Section 3.2.4, in the event of a participant default the CCP would still need to settle the obligations of the defaulted participant to the surviving participants and therefore would have a net open position until it could execute offsetting trades to extinguish its exposure.

3.5 Overview of Repo CCPs Internationally

Repo CCPs already exist in a number of overseas markets, and in some cases have been operational for many years. While these CCPs share a number of common features, there is some variability in the specifics of their design and operation (Table 3). Many of these differences in the design of repo CCPs reflect differences in the operating environment and prevailing market practices in the markets they serve.

The product scope of these CCPs varies – some clear both outright bond transactions and repos; some only clear repos against government debt; while others clear repos against a broader range of debt securities. In the case of FICC, typically only the second leg of a repo is centrally cleared.

Some CCPs only clear repo contracts that specify the line of securities to be provided, while others clear repos that specify a class of general collateral. Where a repo CCP clears repos against a class of general collateral, the service is often linked to a centralised collateral management system. Most

¹⁵ An exception to this is repos cleared through LCH.Clearnet Ltd's RepoClear service. In line with repo and bond market convention in the United Kingdom, repos cleared through LCH.Clearnet Ltd settle the second leg using the collateral price as at the time the repo was transacted rather than at the prevailing market price.

repo CCPs send settlement instructions to the relevant securities settlement system no more than twice a day, and therefore are unlikely to be suitable for intraday repos.

**Table 3: Existing Repo CCPs
Features of repo clearing services**

	Canadian Derivatives Clearing Corporation	Eurex Clearing AG	Fixed Income Clearing Corporation	LCH.Clearnet Ltd	LCH.Clearnet SA
Location	Canada	Germany	US	UK	France
Name of service/product	Canadian Derivatives Clearing Service	Euro Repo and GC Pooling	Government Securities Division – DVP Repo and GCF Repo	RepoClear – 'standard', Sterling GC, Term £GC and €GC	Bonds & Repo and €GC Plus
Transaction types	Outrights and repos	Repos (separate service for outrights)	Outrights and repos (typically 2nd leg only)	Outrights and repos	Outrights and repos
Client clearing offered	No ^(a)	Yes	Yes ^(b)	No ^(a)	No ^(a)
Securities accepted for repos	Canadian national and provincial government debt	Sovereign, supranational and agency debt, covered bonds, bank bonds, corporate bonds, equities ^(c)	US government and agency debt, mortgage- backed securities	European sovereign, supranational and agency debt	European sovereign, supranational and agency debt, corporate bonds ^{(c), (d)}
General collateral service	Specific collateral only	Specific or general collateral	Specific or general collateral	Specific or general collateral	Specific or general collateral
Participation requirements	Minimum capital: CAD \$100m/ CAD\$200m for clearing own/client business ^(a)	Minimum capital: €50m/€200m for clearing own/client business	For bank members, equity capital of at least US\$100m For dealer members, net worth of at least US\$25m and excess net capital of at least US\$10m	Minimum net capital: €100m/€400m for clearing own/client business ^(a)	Minimum net capital: €100m/€400m for clearing own/client business ^(a)
Variation margin	At least daily	At least daily	Twice a day	At least daily	At least daily
Initial margin	Segregated	Segregated	Mutualised	Segregated	Segregated
Default fund/waterfall	CCP capital and participant contributions	CCP capital and participant contributions	CCP capital and surviving participants' initial margin ^(e)	CCP capital and participant contributions	CCP capital and participant contributions
Settlement instruction frequency	Daily	Multiple runs each day	Daily	Daily; two runs each day for non-auto- collateralised repos	Daily; two runs each day for non-auto- collateralised repos

	Canadian Derivatives Clearing Corporation	Eurex Clearing AG	Fixed Income Clearing Corporation	LCH.Clearnet Ltd	LCH.Clearnet SA
Settlement mode	DvP 1	DvP 1	DvP 1	DvP 1	DvP 1
Securities settlement facilities	CDSX	Clearstream Frankfurt Clearstream Luxembourg Euroclear Bank ^(f)	JP Morgan Chase The Bank of New York Mellon	Clearstream International Clearstream Frankfurt Euroclear Bank Euroclear UK & Ireland National Bank of Belgium	Euroclear France Iberclear Monte Titoli Euroclear Bank ^(g)
Settlement asset	Central bank money	Primarily central bank money ^(h)	Commercial bank money ⁽ⁱ⁾	Central bank and commercial bank money	Central bank money
Auto-collateralisation through a centralised collateral management system	na	For euro, Swiss franc and US dollar general collateral repos through GC Pooling	For the GCF Repo service	For sterling and euro, general collateral repos through Sterling GC, Term £GC and €GC	For euro, general collateral repos through €GC Plus
Trading	Bilateral and anonymous through interdealer brokers	Primarily anonymous on electronic platforms	Anonymous on electronic platforms, with bilateral through direct or voice brokers also available for the DVP repo service	Anonymous on electronic platforms or bilateral through direct or voice brokers	Anonymous on electronic platforms or bilateral through direct or voice brokers

(a) Client clearing for repos not currently operational/under development

(b) Certain institutions that do not meet the relevant direct membership criteria can be sponsored for the DVP Repo service by an approved Sponsoring Member

(c) The focus is on collateral eligible at relevant central banks

(d) Corporate bonds are only accepted when cleared as part of a GC basket

(e) The pool of initial margin (the 'Clearing Fund') also acts as FICC's default fund

(f) Only for some Euro Repo trades

(g) For €GC Plus

(h) Some use of commercial bank money for Euro Repo

(i) Cash obligations between clearing banks are settled in central bank money

Sources: CCP websites; RBA

Typically, each participant's margin is segregated, and can therefore only be used to cover the default of that participant. Any margin in excess of the actual replacement cost risk is returned to the defaulted participant (or its liquidator). However, FICC is an exception, as initial margin is mutualised. While FICC uses the defaulted participant's margin and other defaulter-pays resources first, followed by a portion of the CCP's own capital, the initial margin of other participants can be used to cover any additional loss faced by the CCP in the same way as a CCP's mutualised default fund.

Unlike other repo CCPs, repos cleared through FICC settle across the books of its two clearing banks rather than the relevant securities settlement system. This is because the net repo settlement obligations are settled outside of the operating hours of the Fedwire Securities Service, which is the securities settlement system for US government and agency debt securities. Further, as FICC does not have direct access to the central-bank owned payment system, the Fedwire Funds Service, it settles the cash leg of repos via its clearing banks.

4. Costs and Benefits of a Repo CCP – Issues for Consultation

The foregoing discussion has set out some of the key considerations for the Bank in assessing the costs and benefits of central clearing in the Australian repo market. This section draws together observations in the preceding sections and summarises the key issues on which stakeholder feedback is sought, including some specific questions. The overarching question is:

whether the capacity of the Australian repo market to safely, efficiently and continuously support the funding and liquidity needs of the Australian financial system would be improved by the availability of a repo CCP.

In seeking to answer this question, the Bank invites stakeholders to offer feedback on both the ‘benefit’ and the ‘cost’ sides of the equation.

- In terms of benefits, the Bank’s focus is on the scope for central clearing of repos to deliver material systemic risk reduction and market functioning benefits through multilateral netting, enhanced risk management, coordinated default management and operational efficiencies. The Bank will be particularly interested in stakeholders’ perspectives on the potential magnitude of these benefits, given the prevailing participation structure of the market, and existing risk management and operational practices.
- At the same time, the Bank is keen to understand whether there would be material impediments to the safe and efficient operation of a CCP in this market in Australia. In considering this, it will be important to understand whether particular design features of existing repo CCPs internationally could present difficulties or introduce risks in the Australian context. The Bank also acknowledges that ‘the starting point matters’ and welcomes views on whether there are prevailing market practices that would make the transition to CCP clearing costly or challenging.

While the primary focus of this consultation is the repo market, which is consistent with the scope of the FSB’s recommendation, many existing repo CCPs internationally also clear outright purchases and sales of bonds. Accordingly, consultation respondents are also invited to offer views on the desirable product scope of any future repo CCP in Australia.

4.1 Overview

In making its recommendation, the FSB noted that there was significant potential for central clearing to reduce the size of credit exposures through multilateral netting as dealers often had offsetting trades with each other. Other system-wide and stability benefits from CCP clearing may arise from enhanced risk management of repos – including settlement of net gains and losses at least daily, and more frequently in periods of market volatility – and coordinated management of participant default. Given their central role, CCPs can also coordinate operational improvements and efficiencies in a market. In other jurisdictions, ensuring the continued functioning of the repo market during a period

of instability, or when there are perceived counterparty credit issues, has also been a particular motivating factor in encouraging central clearing of repos.

In its work, the FSB concluded that for interdealer repos against high-quality, liquid collateral ‘existing incentives to use CCPs in these markets seem sufficiently strong (e.g. balance sheet netting) and no further regulatory or other actions appear necessary’. Consistent with this view, if the Bank concluded that there was a net benefit to there being a repo CCP in Australia, it is likely that the Bank would rely on a provider’s commercial incentive to introduce such a service, and market participants’ private incentives to make use of the service.

A key issue in the consultation will therefore be whether market participants would indeed use a repo CCP if such a service became available in the Australian market. This will depend on each participant’s evaluation of the private benefits and costs. In particular, it will depend on each participant’s assessment of the scope to reduce its credit exposures in interdealer repos through multilateral netting, and thereby realise both collateral and regulatory capital benefits. Since not all repo market participants may choose to, or be eligible to, centrally clear, the implications for the participation structure of the repo market will need to be considered carefully.

Since a significant share of repo market activity involves the Bank as cash provider, the Bank recognises that its decision regarding participation will affect other market participants’ evaluation of the private costs and benefits of using a repo clearing service. The Bank will consider its position in light of stakeholder feedback from this consultation.

Relatedly, it would need to be commercially viable for a CCP to offer such a service. Repos that involve Australian dollar cash and high-quality liquid securities play an important role in funding and liquidity management activities in Australian financial markets. From a regulatory standpoint, therefore, any CCP that cleared even a relatively small share of this market would be considered to be both systemically important and strongly connected to the domestic financial system. Consequently, in order to ensure that such a CCP fell under the primary regulation of the Australian Securities and Investments Commission and the Bank, that its activities were governed by Australian law, and that it would fall within the scope of the proposed special resolution regime for financial market infrastructure, domestic licensing and incorporation of such a CCP would be likely to be necessary at a relatively low threshold market share.¹⁶

Before exploring some more detailed matters in the remainder of this section, stakeholders’ views are invited on the following high-level questions.

Consultation Questions – Overview

- Q1. Do you believe the availability of a repo CCP in Australia could improve the functioning of the Australian repo market and its capacity to safely, efficiently and continuously support the funding and liquidity needs of the Australian financial system? Why/Why not?
- Q2. Would you use a repo CCP if there was such a CCP in the Australian market? Why/why not?

¹⁶ For more information on the Regulatory Influence Framework for Cross-border CCPs, see CFR (2012), *Application of the Regulatory Influence Framework for Cross-border Central Counterparties*, April. Available at <<http://www.cfr.gov.au/publications/cfr-publications/2014/application-of-the-regulatory-influence-framework-for-cross-border-central-counterparties/>>.

- Q3. If a repo CCP is desirable, what should be its instrument scope? For example, clearing of repos against general collateral only; or both general collateral and specific collateral? And should it also clear outright purchases/sales of debt securities?
- Q4. If a repo CCP is desirable, what additional services should it provide in order to maximise the net benefits of central clearing? For example, auto-collateralisation through a centralised collateral management service, substitution or re-use of collateral, novation of both legs of the repo, (anonymous) trading on an electronic platform?
- Q5. To what extent is non-centrally cleared repo trading constrained by counterparty credit concerns? Have such concerns increased in recent years? Is activity typically more constrained during periods of high market volatility?
- Q6. Do you believe that it would be commercially viable for a CCP to offer a repo clearing service in Australia? Why/why not?
- Q7. Are there alternatives to CCP clearing that would improve the functioning of the Australian repo market and its capacity to safely, efficiently and continuously support the funding and liquidity needs of the Australian financial system? If so, please explain.
- Q8. Would there be any material impediments to the safe and efficient operation of a repo CCP in Australia? Are there likely to be aspects of a CCP's design that could not readily accommodate Australian repo market practices? Would there be likely to be material challenges in transition to a centrally cleared environment?

4.2 Access

The FSB's recommendation focuses on central clearing of interdealer repos, noting that small institutions are less likely to have offsetting transactions and also that 'small institutions are likely to find central clearing costly given the need to pay clearing fees or margins'. This is consistent with the observed low level of central clearing through client clearing services in overseas markets.

As described in Section 3.2.1, a CCP's participation requirements condition the terms of access to clearing for repo market participants. Participation requirements and access arrangements for indirect participants will therefore necessarily have implications for the network of counterparties within the CCP, and in turn the scope for netting. If much of the market moved to central clearing, the CCP's terms of access could influence more broadly the participation structure of the repo market. Consequently, the implications of central clearing for access to the repo market need to be considered carefully.

Access to the repo market may also be restricted by other aspects of a CCP's risk framework, such as position limits.

Consultation Questions – Access

- Q9. To what extent would you expect a repo CCP's participation requirements to affect some participants' access to clearing? Are there particular types of repo market participant that you believe would have difficulties in accessing central clearing, either as a direct participant or as a client?

- Q10. If there were a repo CCP in Australia, would you expect there to be demand from buy-side clients to centrally clear their repo transactions with dealers? Why/why not?
- Q11. Are there alternative models for access to CCPs that you believe would address concerns about smaller institutions' access to central clearing?
- Q12. To what extent would you expect a CCP's position limits to restrict activity in the Australian repo market?

4.3 Counterparty Credit Risk

One of the rationales for the FSB's recommendation that consideration be given to the case for centrally clearing interdealer repos is that dealers often have offsetting trades with each other. There is, therefore, likely to be significant potential to reduce the size of credit exposures through multilateral netting. There are also incentives, such as lower capital requirements, for dealers to centrally clear repos. In the dealer-to-client repo market, by contrast, the netting potential is understood to be more limited as transactions are more often 'one-way'.

Section 3.2 considered the various ways in which central clearing might be expected to strengthen the risk management of repos. For instance, net gains and losses on centrally cleared repos are settled at least daily, and more frequently in periods of market volatility. Furthermore, in a centrally cleared repo both parties are protected against replacement cost risk. In the bilateral market, by contrast, only the cash provider has additional collateral (the haircut).

In contrast to haircuts on non-centrally cleared repos, initial margin is generally calculated on a portfolio basis. Therefore, to the extent that risks in a participant's outstanding positions are offsetting, there may be collateral efficiencies. That said, since initial margin is collected from both the cash provider and the securities provider, and since participants are typically also required to contribute to a mutualised default fund, there may be an offsetting additional demand for collateral for some participants.

A CCP also offers the benefit of coordinated close out in the event of a participant default. This could contribute to more orderly market conditions in the event of a participant default, with less price impact and therefore potentially lower replacement costs than participants in aggregate would face in the bilateral market. Furthermore, since the CCP takes on the obligations of the defaulted participant, surviving participants are not only protected against replacement cost risk, but also do not have to incur the liquidity cost of closing out and re-establishing their positions. They are therefore also protected against liquidity risk.

There may nevertheless be design features of a CCP that do not suit all market participants or that may not readily accommodate all market practices. It is important that these are identified and alternative arrangements considered where appropriate.

Consultation Questions – Counterparty Credit Risk

- Q13. To what extent is there scope to reduce the size of counterparty credit exposures in Australian interdealer repos through multilateral netting? What proportion of market activity is contributed by participant types with primarily one-way transactions?

- Q14. To what extent would clearing interdealer repos reduce the regulatory capital banks are required to hold against such exposures, including under the proposed leverage ratio? And in the absence of central clearing, to what extent would you expect some participants' repo market activity to be affected by the BCBS large exposures framework?
- Q15. To what extent would a CCP strengthen processes for margining and collateral valuation in the interdealer repo market, relative to existing bilateral arrangements?
- Q16. Overall, to what extent would you expect central clearing to deliver collateral efficiencies?
- Q17. Would you perceive a significant benefit from a CCP coordinating the management of the default of a repo market participant? Why/why not?

4.4 Operational Efficiencies

As discussed in Section 3.3, given their central role CCPs can assist in coordinating operational improvements and efficiencies in a market. The Bank is keen to understand whether market participants believe that a CCP could encourage material operational enhancements in the Australian context, or whether alternative mechanisms, such as increased use of centralised collateral management services, would be equally effective in encouraging such enhancements. The Swiss Value Chain, for instance, demonstrates how operational efficiencies can be achieved without a CCP (see 'Box B: The Swiss Value Chain').

Consultation Questions – Operational Efficiencies

- Q18. To what extent are repo trades processed in a straight-through manner? Are there particular aspects of processing repos that require material manual intervention?
- Q19. Would central clearing of such trades encourage more trading on electronic platforms? Why/why not?
- Q20. To what extent do you see benefit in auto-collateralisation of repos through a centralised collateral management service such as ASX Collateral? How would you expect central clearing of repos to affect the use of such a service?
- Q21. Overall, to what extent would you expect central clearing of repos to encourage greater automation and operational efficiencies in the Australian repo market? Are there other mechanisms that might be equally effective in encouraging such efficiencies?

4.5 Settlement Arrangements

The suspension of ASX Clear (Futures)' BRC service in 2004 was largely due to issues around settlement. With settlement practices in the fixed income market having evolved over the past decade, and CGS issuance having increased significantly, settlement issues arising from chains of trades are uncommon. Furthermore, securities can now be more easily obtained from the AOFM Stock Lending Facility. Consequently, settlement may be less of a concern for any future repo CCP, even if some participants remained outside of the CCP.

Nevertheless, the design of a CCP's settlement arrangements are fundamental to the efficiencies it is able to provide to the market. It is also crucial for the safety of the CCP that its risk management framework – and in particular its calibration of initial margin requirements – takes appropriate account of the settlement model and in particular un-netting in the settlement process.

Consultation Questions – Settlement Arrangements

- Q22. Do you agree that settlement issues arising from chains of trades are unlikely to cause problems in the current market? And do you agree that settlement issues would not be an impediment to the effective functioning of a repo CCP? If not, why not?
- Q23. Do you see benefit in settlement netting by line of security? Do you believe that 'shaping' of settlement obligations would be beneficial in the settlement of repos in Australia? Why/why not?

Abbreviations

AFMA	Australian Financial Markets Association	FICC	Fixed Income Clearing Corporation
AOFM	Australian Office of Financial Management	FSB	Financial Stability Board
APRA	Australian Prudential Regulation Authority	FSS	Financial Stability Standards
BCBS	Basel Committee on Banking Supervision	GMRA	Global Master Repurchase Agreement
BRC	Bond and Repo Clearing	IM	initial margin
CCP	central counterparty	IOSCO	International Organization of Securities Commissions
CFR	Council of Financial Regulators	OTC	over-the-counter
CGS	Commonwealth Government securities	PFMIs	<i>Principles for Financial Market Infrastructures</i>
CPMI	Committee on Payments and Market Infrastructures	QCCPs	qualifying central counterparties
ESA	Exchange Settlement Account	SFECC	SFE Clearing Corporation