

# Central Clearing of Repos in Australia: Conclusions

October 2015

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# 1. Introduction and Executive Summary

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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 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. To address financial stability risks in this area, in 2013 the Financial Stability Board (FSB) published a *Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos*.<sup>1</sup> One of the recommendations in this policy framework was 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.

In making this recommendation the FSB observed that central clearing can reduce the interconnectedness of the financial system through multilateral netting and provide more robust collateral and default management processes. However, the FSB acknowledged that the benefits and costs of central counterparties (CCPs) could vary across market segments and jurisdictions. Hence, the FSB did not recommend that repo CCPs be introduced; only that authorities evaluate the costs and benefits of their introduction.

Currently, no CCP clears transactions in the Australian repo market. Therefore, consistent with the FSB's recommendation, the Reserve Bank has evaluated the costs and benefits of central clearing of repos in Australia. To support this evaluation, the Bank conducted an industry consultation seeking stakeholder views on 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.<sup>2</sup> This paper sets out the Bank's conclusions from the consultation process.

## 1.1 Stakeholder Views

The Bank received six responses to the consultation. The most comprehensive submission received was from Australian Financial Markets Association (AFMA), which summarised the results of a survey of twelve of its members. The Bank also received submissions from ASX, LCH.Clearnet Group and Yieldbroker, as well as two confidential submissions. The Bank also met with a range of repo market participants, both individually and as part of AFMA's Repo Market Committee.

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<sup>1</sup> FSB (2013), 'Strengthening Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos', August. Available at <[www.financialstabilityboard.org/publications/r\\_130829b.pdf](http://www.financialstabilityboard.org/publications/r_130829b.pdf)>.

<sup>2</sup> The consultation paper is available at <[www.rba.gov.au/publications/consultations/201503-central-clearing-of-repos-in-australia/index.html](http://www.rba.gov.au/publications/consultations/201503-central-clearing-of-repos-in-australia/index.html)>.

A number of themes emerged from the responses:

- *Commercial viability.* Concerns were expressed that the small size of the Australian repo market could limit the viability of a domestic repo CCP. To maximise the viability of a CCP it was argued that the scope should be as broad as possible, both in terms of products and participants. It was also noted that new participants might be attracted to the repo market if they were able to trade anonymously and benefit from improved operational and settlement processes. Acknowledging the uncertain commercial viability of a domestic CCP, some stakeholders favoured the use of an overseas-based CCP.
- *Counterparty credit risk.* Counterparty credit risk is currently well managed under Global Master Repurchase Agreements (GMRAs), which provide for bilateral netting, daily settlement of net gains and losses, and in some cases haircutting of collateral. Preliminary analysis also suggests that the netting benefits of central clearing in the Australian repo market could be limited, due to the directional nature of some participants' repo market activity. The level of participation in central clearing and the scope of products offered for clearing would influence the netting benefits.
- *Operational benefits.* A repo CCP would enhance straight-through processing, particularly with respect to settlement of repos. However, it was widely acknowledged that such benefits could potentially also be achieved through increased use of centralised collateral management services.
- *Settlement arrangements.* While settlement fails are relatively rare, it was argued that this was the result of significant operational effort on the part of market participants. It was acknowledged that settlement netting and shaping by a CCP could mitigate some issues arising from settling chains of transactions. However, this also relied on participation in the CCP being sufficiently broad. In addition, to ensure smooth default management it was noted that the CCP would need access to a large reserve of securities and liquidity.

## 1.2 The Reserve Bank's Roles

The consultation paper observed that in its monetary policy implementation role the Bank was counterparty to around a third of the value of repos currently outstanding. Accordingly, the Bank acknowledged that its decision regarding participation would affect other market participants' evaluation of the private costs and benefits of using a repo clearing service. Consequently, the Bank undertook to consider its position in light of stakeholder feedback from the consultation.

While CCPs are designed primarily to mitigate counterparty credit risk, the Bank already has comprehensive procedures in place to manage the risk exposures arising from its market operations. Also, since the Bank's activity is directional – the Bank is almost always a cash provider and collateral receiver – the Bank would not itself derive netting benefits from participation. Accordingly, the private risk management benefits to the Bank from participation would be limited. The Bank is also satisfied with the current operational arrangements that support its repo market activity.

Notwithstanding that any direct benefits to the Bank might be limited, should the industry proceed with the introduction of a repo CCP and request the Bank's participation, the Bank would be willing to consider it. The Bank's participation would, however, be subject to a number of pre-conditions:

- *Continuity.* If most repos in the domestic market depended on the CCP, there would be a significant concentration of operational risk on that CCP. Given the central importance of

continuity of the repo market to the Bank's monetary policy operations, the Bank would need to be comfortable with the proposed CCP's business continuity and contingency procedures, as well as its capacity to recover and maintain operations in the event of a financial shock. As a further fallback, the Bank would need to ensure that participants maintained an ability to revert to bilateral clearing and settlement of repos executed with the Bank.

- *Location.* For similar reasons, the Bank would not be prepared to participate in a CCP that operated under a different legal regime, had its principal operations overseas and in a distant time zone, and that was subject to resolution arrangements governed by a resolution authority in another jurisdiction.
- *Design and terms of access.* Any final decision on participation would depend on the particular design of the CCP and the terms of access for the Bank.

In addition to its role as a key repo market participant, the Bank has other roles that are relevant to the consideration of central clearing of repos in Australia:

- the Bank is operator of the domestic high-value payment system, the Reserve Bank Information and Transfer System (RITS), that settles the cash leg of repo transactions. The Bank also provides liquidity for payments settlement purposes via open repos and intraday repos (i.e. via its standing facilities)
- the Bank would be a joint supervisor (along with the Australian Securities and Investments Commission (ASIC)) in respect of any potential CCP.

Should a repo CCP emerge, the Bank would examine closely its settlement arrangements to ensure that these minimised the possibility of settlement disruption that could have broader spillover implications for RITS operations. An additional operational consideration is the role of intraday and open repos as a means of extending liquidity to RITS members for payments settlement purposes. Since there is little direct interdependence between these arrangements and other repo market activity, and given their criticality for the smooth functioning of RITS, the Bank is of the view that open repos and intraday repos should continue to be executed bilaterally.

The Bank would have a direct supervisory role in respect of any repo CCP under the *Corporations Act 2001*. While the Corporations Act provides for an overseas-based CCP to be licensed in Australia, while remaining subject to primary regulation by its home regulator, the Council of Financial Regulators (CFR) has considered the circumstances in which it would seek greater regulatory influence by requiring domestic incorporation. This would be the case where an overseas CCP was deemed to be systemically important with a strong domestic connection. It is expected that these conditions would hold for a repo CCP operating with material scale in the Australian market. Insisting on domestic incorporation would bring such a CCP within the scope of the proposed special resolution regime for FMIs, so as to ensure continuity of critical service provision to the Australian market without relying on an overseas resolution authority.

### 1.3 Assessment of Costs and Benefits

Given the significant share of repo market transactions that involves the Bank as a counterparty, and the relatively small inter-dealer market, the financial stability case for central clearing of repos in Australia is not likely to be as strong as in some other jurisdictions. While repo clearing could be a catalyst for other beneficial changes in the market infrastructure, some of these benefits could potentially be pursued by enhancing the existing market infrastructure, even without CCP clearing. A

summary assessment of the costs and benefits is set out below, based on analysis of the matters raised in consultation as described above.

- *Commercial viability.* Broad participation would be important for the viability and stability of a domestic repo clearing service. Some stakeholders argued that it might be necessary to mandate central clearing to achieve such widespread participation. In the absence of a strong public policy rationale, however, mandating central clearing of repos would not be appropriate – and anyway would require legislative changes to provide Australian regulators with such powers. An industry-driven solution would need support from a critical mass of participants and clarity of prospective fee scales. Commercial viability could depend on non-dealer participation; however, traditional indirect access models are not ideal for repo CCPs (for example, due to the capital burden involved for the clearing participant) and have presented challenges for CCPs in other markets.
- *Counterparty credit risk.* Opportunities for settlement and exposure netting from central clearing are likely to be limited, although there may be some scope for regulatory capital efficiencies. To maximise such netting benefits as were available, any repo CCP would ideally also clear outright purchases and sales. Separately, to the extent that counterparty credit risk is currently well managed under existing GMRA, and risk management arrangements are becoming more standardised via centralised collateral management services, there may be limited scope for material incremental counterparty credit risk reduction from central clearing.
- *Operational benefits.* While central clearing of repos could be a catalyst for operational and collateral efficiencies, other infrastructural solutions could potentially deliver material benefits, even in the absence of a repo CCP. Increased use of electronic trading platforms and centralised collateral management, in particular, could enhance standardisation of processing and increase automation. Subject to the design and fee structure of such services, they could encourage increased participation and activity in the repo market, potentially deepening liquidity. Linking such infrastructure to a trade repository might also be considered, with a view to enhancing transparency of repo market activity.
- *Settlement arrangements.* In the event that the industry developed a CCP solution for the repo market, close consideration would need to be given to the design of its settlement arrangements – both in terms of access to sufficient securities and access to funds liquidity. Appropriate arrangements to manage liquidity for settlements in a default scenario would be critical, including consideration by the Bank of any proposal for the Bank to have a role as backstop to such arrangements. The interaction between settlement arrangements and the breadth of participation would also need to be considered carefully in light of the experience of the SFE's Bond and Repo Clearing (BRC) service; prior to the closure of this service in 2004 difficulties were frequently observed in settling chains of transactions due to a number of key participants (including the Bank) remaining outside of the CCP.

In summary, the Bank does not believe there is a financial stability case to actively promote the introduction of a repo CCP in the Australian market. However, should the industry proceed with a proposal for introduction of such a CCP, the Bank would stand ready to engage in the debate and be willing to consider participation, subject to the stated pre-conditions on continuity, location and design and terms of access.

The remainder of this report is structured as follows. Section 2 describes stakeholders' views. Section 3 sets out the Bank's consideration of how it would be affected by the introduction of a repo CCP, including the conditions under which the Bank would be prepared to participate in a repo CCP.

Section 4 contains the Bank's assessment of the costs and benefits of introducing a repo CCP in the Australian market. Section 5 summarises the conclusions and next steps.

## 2. Stakeholders' Views

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The Bank received six responses to the consultation, including two confidential submissions.<sup>3</sup> The most comprehensive submission received was from AFMA, which summarised the results of a survey of twelve AFMA members active in the Australian repo market. Submissions were also received from ASX, LCH.Clearnet Group (LCH.C Group) and Yieldbroker. The Bank also met with a range of repo market participants, both individually and as part of AFMA's Repo Market Committee.

In general, the submissions expressed support for the principle of central clearing of repos, though concerns were expressed regarding the commercial viability of a repo CCP. To maximise the viability of any CCP it was argued that the scope should be as broad as possible, both in terms of products and participants. This would also maximise the counterparty credit risk benefits; however, these benefits were generally expected to be small. While operational benefits were noted, stakeholders identified alternative means of achieving such benefits.

### 2.1 Commercial Viability

Several submissions emphasised the importance of broad product scope and participation for the viability of any potential repo CCP. Given the relatively small scale of the existing repo market in Australia, AFMA suggested that a prospective CCP should clear both repos and outright cash positions to increase business volumes. Similarly, ASX argued that the viability of a CCP could be enhanced if its scope was as broad as possible, both in terms of products and participants. Some stakeholders argued that it might be necessary to mandate central clearing to achieve widespread participation.

However, it was acknowledged by AFMA and LCH.C Group that practical factors might limit such widespread participation. Some non-dealers might be subject to legal requirements that prevent them from participating in CCP loss-sharing arrangements. In addition, AFMA noted that smaller banks and funds might find it difficult to justify the expense associated with the set-up, resourcing and operational costs of operating as a clearing participant. This might require that they participate indirectly via an intermediary clearing participant; however, smaller entities might find it difficult to source commercially attractive client clearing arrangements due to the capital cost for the clearing participant.

AFMA noted that participation in the Australian repo market among non-dealer entities was currently low, but that such entities might be attracted to the market if they could trade anonymously and benefit from improved operational and settlement processes. Similarly, ASX suggested that achieving critical mass in centralised collateral management services and electronic trading platforms could attract new cash providers to the market. AFMA also suggested that the relaxation of credit limits could improve pricing and liquidity. AFMA members considered that such a broadening of participation and depth in the repo market would be a very positive development.

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<sup>3</sup> The non-confidential submissions are available at [www.rba.gov.au/payments-system/reforms/submissions/central-clearing-of-repos-in-australia/index.html](http://www.rba.gov.au/payments-system/reforms/submissions/central-clearing-of-repos-in-australia/index.html).

Submissions noted that, even with a broad product scope and wide participation, the viability of a purely domestic repo CCP could be inherently limited by the small size of the Australian repo market. Acknowledging the uncertain commercial viability of a domestic CCP, some stakeholders favoured the use of an overseas-based CCP that served multiple markets. In its submission, LCH.C Group (which currently offers repo clearing in European markets) noted the potential benefits of leveraging existing infrastructure, providing access to a wide network of clearing participants, and offering settlement in a choice of domestic or international central securities depositories (ICSDs).

## 2.2 Counterparty Credit Risk

The majority of AFMA members surveyed believed that activity in the Australian repo market was constrained at least to some extent by counterparty credit concerns. Such concerns had increased in recent years. AFMA therefore saw a potential counterparty risk management benefit from standardised, daily margining of exposures by a CCP, as well as coordinated default management. Balance sheet netting was also cited as a potential benefit.

AFMA nevertheless queried whether significant netting benefits from central clearing would be achievable in the Australian market. Preliminary analysis indicated that such benefits might be relatively small, since as much as 75 per cent of market activity was accounted for by participants with predominantly one-way transactions. This view was consistent with ASX's submission, which highlighted the prominent and one-sided role of the Reserve Bank in the Australian repo market.

AFMA's submission therefore emphasised that, so as to achieve such netting benefits as were attainable, any repo CCP should seek to maximise the level of participation in the service and offer a broad scope of products for clearing. Novation of both legs of repo trades, and extending the scope to include, for example, outright bond trades, debt securities, and equity repo and securities lending, would increase the potential for netting benefits.

In the current market, counterparty credit risk is managed under industry-standard documentation, the Global Master Repurchase Agreements (GMRAs). These agreements provide for bilateral netting, daily settlement of net gains and losses (variation margin), and in some cases haircutting of collateral.<sup>4</sup> AFMA noted that, as of three years ago, exchange of variation margin had become standard market practice in the Australian repo market. While AFMA members were generally satisfied with risk management practices under GMRA documentation, since this was a relatively new development, they saw some benefit in promoting greater uniformity of practices. This would simplify daily reconciliation processes and minimise the scope for collateral disputes. While such standardisation could be achieved through central clearing, it was noted that centralised collateral management services could also be a catalyst for greater standardisation.

## 2.3 Operational Benefits

AFMA members noted potential operational benefits from central clearing of repos (and outright bond trades), including increased straight-through processing. According to AFMA, the major banks typically had straight-through processing systems up to the point of matching trades, but manual intervention was sometimes required in the settlement process.

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<sup>4</sup> In the case of transactions with the Bank, haircuts are imposed on all securities purchased under repo. However, the Bank's understanding is that this is not standard practice for repos between other market participants.

AFMA's submission also noted the complementarity between CCPs and other components of the market infrastructure. In particular, the operational benefits associated with central clearing of repos could be enhanced by combining a CCP with infrastructure to trade, collateralise and settle repos as part of an integrated chain of infrastructure. AFMA suggested that resolving the remaining operational challenges in trading repos could attract additional liquidity providers to the market.

Some AFMA members considered that wider use of centralised collateral management services could be an alternative to central clearing. Such services offer a number of the benefits available through CCP clearing, including standardised collateralisation arrangements and operational efficiencies. ASX agreed, suggesting that greater use of collateral management services such as its own ASX Collateral, as well as electronic repo trading platforms, could deliver many of the desired benefits of straight-through processing. Indeed, ASX believed that such developments should be the first step.

With respect to ASX Collateral, AFMA members noted that the service was operationally very efficient and required significantly less manual intervention than a typical OTC repo trade. The ability to use assets held both domestically and at ICSDs was highlighted as a desirable feature of any collateral management service. AFMA members reported that commercial considerations had to date limited the uptake of the ASX Collateral service. ASX had attempted to address the commercial aspect through recent price changes. The Bank is also aware that some market participants have delayed joining ASX Collateral due to competing demands for the IT resources required to support onboarding.

## 2.4 Settlement Arrangements

AFMA's submission observed that settlement issues were occasionally observed in the bilateral repo market, particularly in relation to settlements across links to the ICSDs or following large bond redemptions. While settlement fails were rare, it was noted that this was the result of significant operational effort on the part of market participants. AFMA noted that market participants were becoming increasingly aware of the credit risk concerns associated with 'deemed' settlement of chains of transactions.<sup>5</sup> AFMA members acknowledged that settlement netting and 'shaping' (splitting large obligations into smaller parcels for sequential settlement) by a CCP could mitigate issues arising from settling chains of transactions as long as participation in the CCP was sufficiently broad. In particular, AFMA stated that unless custodians and ICSDs were able to utilise any clearing facility, the efficiency gains would be limited. However, to deal effectively with a counterparty's failure to deliver to the CCP, AFMA observed that the CCP would need to hold, or have reliable access to, a large reserve of securities.

AFMA also noted that a key rationale for central clearing was to provide for the orderly management of a participant default event. Since a repo involves full settlement of principal amounts, the CCP would also have to have reliable access to a potentially large source of contingent liquidity. AFMA expressed uncertainty as to whether a small group of direct clearing participants would be able to meet the contingent liquidity needs of a CCP in a crisis situation.

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<sup>5</sup> A circle or chain is created when a number of participants buy and sell the same face value of the same security on the same day (possibly at different prices). If no participant in the circle holds the security at settlement, participants may settle such transactions by 'deeming' transfer of securities upon payment of the cash leg. This requires that at least one participant assume principal risk until settlement of the chain has completed.

## 3. The Bank's Roles in the Repo Market

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The Bank has multiple roles that are relevant to the consideration of central clearing of repos in Australia:

- in its monetary policy implementation role, the Bank is a key repo market participant
- the Bank is operator of the domestic high-value payment system, RITS, that settles the cash leg of repo transactions. The Bank also provides liquidity for payments settlement purposes via open repos and intraday repos
- the Bank would be a joint supervisor (along with ASIC) of any potential CCP

As noted in Section 2, given the significant share of repo transactions to which the Bank is a counterparty, market participants have suggested that the Bank's participation would be essential to support the commercial viability of any repo CCP and to maximise both netting opportunities and operational efficiencies.

Respondents further suggested that use of an overseas-based CCP might enhance the viability of a repo clearing service, by leveraging international economies of scale. Clearing repos via an overseas-based CCP would, however, be ruled out, both from the perspective of the Bank as a prospective participant and, if such a CCP accumulated a material market share, also from a regulatory perspective.

This section considers how the introduction of a repo CCP would affect the Bank in each of these roles, including the conditions under which the Bank would be prepared to participate in a repo CCP and the supervisory arrangements that would apply to any such CCP. The section begins with a brief overview of governance arrangements within the Bank in respect of matters relevant to repo market activity.

### 3.1 Monetary Policy Implementation

The domestic repo market is the main channel through which the Bank implements monetary policy. The Bank has a significant presence in the inter-dealer market, with its market operations typically representing around a third of the aggregate amount of funding provided to the market. The Bank has therefore acknowledged that its participation would be likely to influence the level of netting that could be realised by participants in a repo CCP, as well as the viability of such a CCP.

Consultation respondents have argued that to maximise the exposure netting, balance sheet netting and settlement netting benefits from a repo CCP, the Bank's participation would be essential (see Section 4.2 for more detail on netting benefits). However, since the Bank's activity is almost entirely one-way, the Bank would not itself derive material netting benefits from participation.

The Bank has not independently validated respondents' claims regarding the potential implications of Bank participation for the netting of exposures, positions and settlements. Indeed, introduction of a repo CCP could encourage broader participation, and therefore any analysis based on the current profile of participation and activity might not provide an accurate indication.

The Bank, however, considered a number of implications for the Bank's monetary policy implementation and repo market activity, concluding that the Bank would only consider participating in a repo CCP if a number of pre-conditions were met.

### Counterparty credit risk management

Participation in a repo CCP would result in the Bank moving away from managing the repo exposures arising from its market operations on a bilateral basis with a broad range of counterparties towards concentrating its counterparty risk exposure to the repo CCP.

CCPs are of course designed primarily to mitigate counterparty credit risk, while also providing other operational benefits to their participants (see below). However, the Bank already has well-established and comprehensive risk control and compliance procedures to manage the various risk exposures arising from its market operations. These include policies for determining counterparty eligibility; efficient processes for collateral eligibility, valuation and management; and collateral haircuts and margin maintenance (variation margin) practices.

Accordingly, the Bank would not expect to derive material risk management benefits from participating in a repo CCP. Furthermore, since the Bank poses no counterparty credit risk to its bilateral counterparties, central clearing of transactions executed with the Bank would not provide counterparty risk management benefits to these counterparties.

### Operational implications

The Bank is satisfied with the current operational arrangements that support its repo market activity. The Bank requires that all eligible counterparties be members of RITS and as part of their membership are subject to a GMRA with the Bank. In recent years, the Bank has also gained some small further operational efficiencies as a result of its participation in ASX Collateral, the centralised collateral management service established by ASX using collateral optimisation technology developed by Clearstream Banking Luxembourg. These include reductions in the Bank's operational processing of securities settlement, collateral recalls and substitutions, as well as valuation and margin maintenance. Accordingly, the Bank would not expect to gain significant operational or legal risk reduction benefits in clearing its repos via a CCP.

Nevertheless, the Bank notes the feedback from market participants on the operational benefits that a repo CCP could bring to the broader market. These are discussed in Section 4.3. From the perspective of deepening liquidity within the repo market, one benefit a CCP could potentially bring is to encourage greater participation of cash lenders as new entrants would only have to manage their exposure to the CCP instead of having to negotiate and finalise legal agreements and operational processes with a large number of potential bilateral counterparties. A CCP's collateral valuation and management processes, including initial and variation margin, would also reduce the operational burden associated with managing a wider set of bilateral exposures. This could encourage participation by entities that may not have sufficient resources to perform these activities, but otherwise see value in lending surplus cash via repos.

### Pre-conditions for Bank participation in a repo CCP

While the direct benefits to the Bank might be limited, the Bank would be prepared to consider participating in a repo CCP should a suitable commercial initiative emerge and should market participants request the Bank's participation. Such a position would be consistent with the Bank's

approach to centralised collateral management, where the Bank's participation in ASX Collateral was regarded as a prerequisite to other industry participants joining the service.

The Bank's participation would, however, be subject to a number of pre-conditions. These include the following:

- *Continuity.* The domestic repo market plays a critical role in supporting the Bank's monetary policy implementation. Hence the smooth and continuous functioning of the repo market is of paramount concern to the Bank. If most or all repos in the domestic market depended on the repo CCP, there would be a significant concentration of operational risk on that CCP. Before considering becoming a participant in a repo CCP, therefore, the Bank would need a high level of comfort with the proposed CCP's business continuity and contingency procedures, as well as its capacity to recover and maintain operations in the event of a financial shock. As a further fallback, the Bank would seek to ensure that repo market participants maintained an ability to revert to bilateral clearing and settlement of repos executed with the Bank. This might entail periodic tests of bilateral clearing capacity, which might be assisted by continuing to manage intraday repos and open repos with the Bank on a bilateral basis (See Section 3.3 below).
- *Location.* The location of the CCP would also be an important consideration in determining whether the Bank chose to participate. Given concerns during the consultation process around the commercial viability of a domestic repo CCP, some have suggested that the industry should consider leveraging the scale and know-how of an existing overseas-based repo CCP. Given the central importance of repos in supporting the Bank's monetary policy objectives, however, the Bank would not participate in a CCP that operated under a different legal regime, had its principal operations overseas and in a distant time zone, and that was subject to resolution arrangements governed by a resolution authority in another jurisdiction.
- *Design and terms of access.* Any final decision on participation would depend on the particular design of the CCP and the terms of access for the Bank. These terms of participation should appropriately acknowledge that a central bank is not a source of counterparty credit risk to the CCP.

## 3.2 Settlement Operations

Repo transactions are settled via Austraclear, a subsidiary of the ASX Group. Austraclear settles outright purchases and sales of Australian dollar-denominated fixed income securities, as well as repo transactions, on a delivery-versus-payment 'model one' basis. That is, each individual transaction is settled individually on a gross basis. Settlement of the cash leg of each transaction occurs in central bank money in RITS, across the Exchange Settlement Accounts of Austraclear participants or their settlement agents.

Given the interdependence between Austraclear and RITS in respect of the settlement of these transactions, the Bank has a close operational interest in the clearing and settlement arrangements for repos that extends beyond the criticality of these arrangements for the Bank's monetary policy implementation. Should a repo CCP emerge, the Bank would, prior to its commencing operations, examine closely its settlement arrangements to ensure that these minimised the possibility of settlement disruption that could have broader spillover implications for RITS operations.

An additional operational consideration is the role of intraday and open repos as a means of extending liquidity to RITS members for payments settlement purposes. The smooth functioning of RITS is

dependent on members having sufficient liquidity to submit their transactions for settlement on a timely basis intraday. One way to facilitate this is for the Bank to extend liquidity for payments settlement purposes, allowing participants effectively to manage intraday timing mismatches between the payment and receipt of funds in respect of their gross-settled transactions. The Bank does this via two mechanisms: ‘open’ repos, whereby the Bank extends liquidity against eligible collateral with no fixed end date, allowing members to maintain a balance of liquidity in their Exchange Settlement Accounts indefinitely to support payments settlements in RITS (including out-of-hours settlements of direct entry transactions); and ‘intraday’ repos, whereby the Bank extends liquidity against eligible collateral under a repurchase agreement that reverses by the end of the RITS day. Since there is little direct interdependence between these arrangements and other repo market activity, and given their criticality for the smooth functioning of RITS, the Bank would expect to continue to execute open repos and intraday repos bilaterally even if a repo CCP emerged and the Bank became a participant.

### 3.3 Supervisory Arrangements

As noted, the Bank also has regulatory responsibilities in respect of CS facilities under the Corporations Act, and would therefore have a direct supervisory role in the event that a repo CCP emerged.

#### The regulatory regime

The Bank and ASIC (collectively, the regulators) work closely together in regulating CCPs and advising the Minister on applications for CS facility licences and changes to operating rules. The regulators’ respective roles are clearly defined in the Corporations Act.

- The Bank is responsible for ensuring that CCPs comply with the relevant Financial Stability Standards (FSS) and that facilities take any other necessary steps to reduce systemic risk. The FSS are aligned with requirements in the relevant international standards, the *Principles for Financial Market Infrastructures*, that relate to financial stability.<sup>6</sup>
- ASIC is responsible for ensuring that CCPs comply with all other obligations under the Corporations Act, including: to the extent reasonably practicable, to ensure that the facility’s services are provided in a fair and effective way; compliance with licence conditions; and maintenance of sufficient resources and adequate arrangements for supervising and operating the facility. ASIC provides regulatory guidance to regulated entities to explain specific issues already covered by legislation.

The Corporations Act provides for an alternative licensing route for overseas-based CCPs. It is available only where the regulatory regime in the licence applicant’s home jurisdiction is deemed to be ‘sufficiently equivalent’ to that in Australia. A CCP licensed under the alternative route remains subject to primary regulation by its home regulator, but it also faces licence obligations in Australia. In particular, an overseas licensee must comply with the applicable FSS. However, the Bank will, subject to certain conditions, place reliance on reports and information from the overseas licensee’s home regulator.

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<sup>6</sup> The Financial Stability Standards are available at <[www.rba.gov.au/payments-system/clearing-settlement/standards/index.html](http://www.rba.gov.au/payments-system/clearing-settlement/standards/index.html)>.

## Regulatory Influence

To further ensure that Australian regulators retain appropriate influence where a facility operates on a cross-border basis, the CFR has developed a framework for imposing additional regulatory measures depending on the importance of the facility for the Australian economy and financial system (the Regulatory Influence Framework).<sup>7</sup> In particular, the Regulatory Influence Framework imposes additional requirements on cross-border CS facilities proportional to the materiality of domestic participation, their systemic importance to Australia, and the strength of their connection to the domestic financial system or real economy. In response to a desire for further clarity from existing and prospective CS facility licensees the CFR released a paper in March 2014 setting out how the regulators would expect to apply the Regulatory Influence Framework in various alternative scenarios.<sup>8</sup> The policy is flexible and allows triggers for particular measures to be set on a case-by-case basis.

Additional requirements would apply where a facility was not only systemically important, but also had a strong domestic connection. Such a facility would be required to incorporate locally and hold a domestic licence, such that:

- ASIC and the Bank would be the primary regulators
- the activities of the facility – including the location and administration of collateral – would be under Australian law, which may be particularly important for participants with largely domestic activities
- the facility would fall within the scope of the proposed special resolution regime for financial market infrastructures (FMIs) in Australia.

## Application to a repo CCP

The Bank and ASIC have considered the application of the Regulatory Influence Framework to a prospective repo clearing service. Once such a service had accumulated a material market share it would be likely to be:

- integral to the Bank's monetary operations
- central to the functioning of a core domestic funding market and liquidity risk management in the financial system
- closely linked to the market for Australian government securities and the broader domestic interest rate market.

Accordingly, any CCP operating with material scale in this market would be likely to be considered both systemically important and strongly connected to the domestic financial system. Domestic licensing and incorporation of a repo CCP would therefore be likely to be necessary at a relatively low

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<sup>7</sup> CFR (2012), 'Ensuring Appropriate Influence for Australian Regulators over Cross-border Clearing and Settlement Facilities', July. Available at < [www.treasury.gov.au/ConsultationsandReviews/Consultations/2012/cross-border-clearing](http://www.treasury.gov.au/ConsultationsandReviews/Consultations/2012/cross-border-clearing)>.

<sup>8</sup> CFR (2014), 'Application of the Regulatory Influence Framework for Cross-border Central Counterparties', March. Available at <[www.cfr.gov.au/publications/cfr-publications/2014/application-of-the-regulatory-influence-framework-for-cross-border-central-counterparties/](http://www.cfr.gov.au/publications/cfr-publications/2014/application-of-the-regulatory-influence-framework-for-cross-border-central-counterparties/)>.

threshold market share. The principal driver of this policy stance would be to ensure that such a facility fell within the scope of the proposed special resolution regime for FMIs, so as to ensure continuity of critical service provision to the Australian market without relying on the actions of an overseas resolution authority. Accordingly, the Bank would insist on domestic licensing and incorporation not only from the perspective of its participation, but also from the perspective of the Regulatory Influence Framework.

One additional matter that has been raised is whether there might be perceived to be conflicts of interest for the Bank in the event that it was both a participant in a repo CCP and a supervisor. In the Bank's view, the governance and separation of these activities within the Bank are sufficient to ensure that any such conflicts would not arise. In particular, the Bank's activities as a repo market participant are the responsibility of the Assistance Governor (Financial Markets) and implemented by the Bank's Domestic Markets Department. Supervision of CCPs is the responsibility of the Bank's Payments Policy Department, which reports to the Assistance Governor (Financial System), and is carried out within the policy framework set by the Payments System Board.

## 4. Assessment of Costs and Benefits

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The Bank has considered the feedback from stakeholders. Given the significant share of repo market transactions that involves the Bank as a counterparty, and the relatively small inter-dealer market, the benefits from counterparty credit risk reduction and multilateral netting may be relatively limited. Accordingly, the financial stability case for the Bank to actively promote the introduction of a repo CCP is not as strong in Australia as perhaps it is in other markets.

Other benefits have been cited. For instance, some respondents emphasised the potential role of repo clearing as a catalyst for other beneficial changes in the market infrastructure and the depth of participation. However, it may be that some of these benefits could be pursued by enhancing the existing market infrastructure, even without CCP clearing.

This section sets out the Bank's assessment of the costs and benefits of repo clearing, based on analysis of the matters raised in the consultation.

### 4.1 Commercial Viability

Consistent with the views expressed by a number of stakeholders, both the commercial viability and the stability of any repo CCP would be likely to depend on the breadth of participation. As noted in Section 3, the Bank's participation decision would be important in this regard. Concerns were expressed in the consultation around how to ensure a critical mass of participants in any CCP. Some argued that it might be necessary to mandate central clearing to achieve this, fearing that coordination problems might otherwise slow progress. The take-up of centralised collateral management in Australia has, for instance, been slower than expected, in part due to the initial cost of the service, and in part due to difficulties faced by some participants in securing IT resources to support their onboarding to the service.

A domestic repo CCP that focused only on the inter-dealer market may not be economically viable. To enhance its viability and to maximise netting opportunities, it may be that such a CCP would have to extend its participation scope to include non-bank financial institutions, including institutional investors. In Canada for instance, developing access arrangements for non-dealers is a current priority for the repo CCP service operated by CDCC.<sup>9</sup> Extended participation would also maximise multilateral netting opportunities, support coordinated default management, increase transparency, and mitigate some of the risks of settlement problems arising (see below).

Extending participation beyond the dealer community may not be straightforward. First, a number of respondents to the consultation queried whether their clients would have an appetite to establish repo clearing arrangements. Second, non-dealer access models for repo clearing are still evolving internationally. Arrangements that involve traditional indirect access via a clearing participant are often not ideal for either the non-dealer or the clearing participant – for a non-dealer, such

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<sup>9</sup> Cote, A. (2013), 'Toward a Stronger Financial Market Infrastructure for Canada: Taking Stock', Speech at the Association for Financial Professionals of Canada (Montreal Chapter), Montréal, Quebec, 26 March. Available at <<http://www.bankofcanada.ca/wp-content/uploads/2013/03/remarks-260313.pdf>>.

arrangements introduce financial risks and interdependencies vis-a-vis its clearing agent; for dealers, the provision of client clearing may not be capital efficient under Basel III.

Some CCPs are therefore considering access arrangements to enable non-dealers to participate directly via special membership arrangements. Since non-dealers are often unable or unwilling to engage in risk mutualisation with other participants (they may, for instance, be legally prohibited from doing so), these access arrangements aim to protect the CCP via means other than mutualisation. The Fixed Income Clearing Corporation, for instance, is initially restricting direct non-dealer access to registered investment companies (RICs) – including money-market mutual funds – where the RIC is a cash lender in a repo transaction and the securities it receives are not re-used, since in such circumstances the RIC brings no direct risk to the CCP.<sup>10</sup>

## Summary assessment

The Bank agrees that broad participation is likely to be important for the viability and stability of any domestic repo clearing service. In the absence of a strong public policy rationale, mandating central clearing of repos would not be appropriate – and indeed would require legislative changes to provide Australian regulators with such powers. An industry-driven solution would need support from a critical mass of participants, with those participants committing to appropriate prioritisation within their respective organisations and the provider offering clarity of fee scales. Given the importance of non-dealer involvement, it may be advisable to take a measured approach, learning from the evolving international experience with alternative non-dealer access models.

## 4.2 Counterparty Credit Risk

The aggregate value of outstanding repos against government related securities in Australia as at end-June 2015 was around \$115 billion. About a third of these repos were with the Bank as cash provider, and around a quarter between dealers. While in recent years, market turnover has declined, values outstanding have increased. This is in part due to market participants extending the average term of their exposures, and also larger positions held by the Reserve Bank. In its market operations, the Bank's preferred dealing terms are generally between one week and six months, making the Bank the most significant provider of term funding for the repo market.

While the interdealer repo market brings together both lenders and borrowers of cash, it remains highly concentrated, particularly on the cash lending side. This reflects the structure of the market where most participants are positioned as securities providers looking to finance their inventories of mainly Government-related securities. This activity is very integrated with that of fixed income dealers and highlights the role played by the repo market not only as a source of securities financing but also lending of particular securities to support liquidity in the secondary fixed income markets.

While some participants are active on both sides of the repo market, ultimately the main sources of cash remain the Reserve Bank and the treasury units of large banks. Transactions with the treasury desks tend to be for shorter terms and are also skewed to Government-related bonds. However, treasury desks can substantially vary the amount of lending they provide to the repo market depending on seasonal factors such as month and quarter-end, but also depending on other

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<sup>10</sup> DTCC (2015), 'SEC Approves Minimum Financial Requirements for Registered Investment Companies to Become Members of DTCC's Government Securities Division', Press Release 15 January. Available at <[www.dtcc.com/news/2014/january/15/ric-gsd-membership.aspx](http://www.dtcc.com/news/2014/january/15/ric-gsd-membership.aspx)>.

competing liquidity requirements arising from other parts of their institutions. As a general rule, repo desks are expected to be self-funding and operate without reliance on back-up financing from their internal treasury desks. Other entities that are traditionally cash lenders, such as asset management firms and investment funds, have tended not to participate actively in the repo market.

## Netting benefits

This market structure has implications for the scope for netting benefits. As discussed in the consultation paper, there are two relevant netting concepts for CCP risk management: exposure netting, which arises from the multilateral netting of offsetting exposures across all repo trades novated to the CCP; and settlement netting, by which the CCP reduces a portfolio of upcoming settlements to a single net long or short for each participant in each line of security and at each settlement date. To the extent that the two-way inter-dealer market is a relatively small share of the market, many market participants – including the Reserve Bank – are directional, the scope for netting of both exposures and settlements is therefore expected to be limited.

Another relevant netting concept is balance sheet netting. This is important in the context of capital requirements under the leverage ratio. The leverage ratio is a non-risk-based measure designed to complement the Basel III risk-based capital framework as a ‘backstop’. Consequently, the leverage ratio applies a capital requirement against all of a bank’s exposures with no recognition of the relative risks of those exposures. A repo transaction is effectively recorded in the leverage ratio as a receipt of cash, thus increasing a bank’s exposure measure, but with no recognition of the reduction in exposure arising from the ‘sale’ of securities under the transaction. Accordingly, some banks anticipate having to reduce their repo market activity to meet the leverage ratio. However, subject to certain conditions, repos with the same counterparty can be netted. Consequently, multilateral netting against a CCP could potentially decrease the exposure measure recorded by a bank in the leverage ratio.

Broad participation that extends beyond dealers would, as discussed above, be one means of maximising what might be limited opportunities for multilateral netting. Another would be to extend the product scope of the service beyond repos backed by government collateral to also include repos backed by a range of non-government securities, as well as outright purchases and sales of debt securities. Depending on the CCP provider, consideration could also be given to margin offsets with relevant interest rate derivatives, although any such arrangements would be subject to detailed due diligence by the Bank and ASIC as CCP supervisors.

## Risk management practices

Another potential benefit of a repo CCP is standardisation of risk management practices. Many market participants noted in the consultation that they already operated under GMRA, although such documentation is by no means universal. These legal agreements promote a certain degree of standardisation in risk management practices, including regular settlement of net gains and losses (variation margin) and, potentially, haircuts. Centralised collateral management was cited as a further catalyst for standardisation in such practices.

To the extent that many positions are either with the Bank as counterparty, are short dated, or are with a small and concentrated group of counterparties, the incremental reduction in counterparty credit risk arising from repo clearing is likely to be small.

Finally, another important potential benefit of CCP clearing is centralised and coordinated default management and the availability of an additional pool of funds beyond collateral haircuts to deal with losses in the default management process. However, again, with a relatively concentrated market, the incremental benefit may be less than in some other repo markets internationally.

### Summary assessment

Given the prevailing market structure, opportunities for settlement and exposure netting may be relatively limited, although there may be some scope for regulatory capital efficiencies. To maximise such netting benefits as are available, there may be a case for any repo CCP to clear outright purchases and sales as well as repo transactions. Furthermore, to the extent that counterparty credit risk is currently well managed under existing GMRA, and risk management arrangements are becoming more standardised, including via use of centralised collateral management services, there may be limited scope for material incremental counterparty credit risk reduction from central clearing.

## 4.3 Operational Benefits

One clear message from the consultation process was that central clearing could deliver operational benefits to the repo market, including improved management of operational risk, by enforcing timely reconciliation of repo trades and straight-through processing. For instance, CCP clearing of repo was seen as complementary to existing services, such as centralised collateral management, and a potential catalyst for electronic trading of repos. Several participants – particularly those with extensive activities in overseas markets – saw considerable scope for enhancements to existing operational arrangements, with central clearing of repos potentially an important catalyst.

### Broader participation

Depending on the cost of service provision, the product scope and the scale achieved, operational efficiency could also be a driver of increased participation in the market. This could have benefits for the depth and liquidity of the market, particularly if additional cash lenders were attracted into the market. A potential driver here is standardisation of processing, which could increase automation and encourage the emergence of new vendor services. A CCP could also streamline access by new participants, since they would need only to establish documentation with the CCP rather than with a network of bilateral counterparties.

### Operational efficiencies

The Bank agrees that standardisation of processing and operational efficiencies could, over time, help to deepen the market. The question, however, is whether CCP clearing is necessary to drive such standardisation. A good example of a repo market that has developed a streamlined straight-through infrastructure without a CCP is the Swiss market (described in Box B of the consultation paper). The Swiss market successfully links trading, record-keeping, risk and collateral management, and settlement, within a highly automated chain of infrastructure.

Drawing on the Swiss experience, if the industry did not pursue a CCP clearing solution there could still be opportunities for other infrastructural enhancements to encourage greater standardisation, automation and transparency:

- *Electronic trading.* Greater use of electronic platforms to support repo trading could alone encourage greater standardisation of processing, increase transparency of market activity and create opportunities for increased automation and back-office efficiencies, including by automating trade affirmation and work-flow management. The integration of trading platforms with other vendor services could also support broader market access and deeper activity.
- *Centralised collateral management.* As collateral demands increase, the efficient use and mobilisation of collateral-eligible assets will become more important. Centralised collateral management facilitates collateral optimisation, allocation, repricing and substitution, with minimal manual intervention. With effective links to trading and settlement services, including the international central securities depositories (ICSDs), broader participation in and greater use of centralised collateral management services across the market could be a catalyst for important operational efficiencies in the repo market.

The FSB has encouraged improved disclosure and transparency around repo market activity.<sup>11</sup> Use of a trade repository, perhaps linked to an electronic trading platform, trade affirmation service or centralised collateral management service, could facilitate the collection of such data. This would provide transparency to regulators, and perhaps also to market participants, around repo market activity. An important focus would be collateral re-use activity.

## Summary assessment

Particularly as collateral demands increase, greater efficiency in the use and mobilisation of collateral-eligible assets – including via the repo market – is extremely important. While central clearing of repos could be a catalyst for such efficiencies, the Bank believes that other infrastructural solutions could deliver substantial benefits even in the absence of a repo CCP. Increased use of electronic trading platforms and centralised collateral management, in particular, could enhance standardisation of processing and increase automation. Subject to the design and fee structure of such services, they could encourage increased participation and activity in the repo market, potentially deepening liquidity and improving market functioning. Linking such infrastructure to a trade repository might also be considered, with a view to enhancing transparency of repo market activity for both regulators and market participants.

## 4.4 Settlement Arrangements

An important consideration is whether settlement arrangements for the market have evolved sufficiently to deal with the issues that ultimately led to the closure of the Bond and Repo Clear service i.e. settlement difficulties arising from chains of trades.

The consultation paper sought views on the extent to which the ability to borrow government securities from the Australian Office of Financial Management (AOFM) had largely dealt with such difficulties. Respondents noted that, notwithstanding the availability of the AOFM's lending facility, settlement issues were still observed from time to time. One important dependency identified was

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<sup>11</sup> See recommendation 1 in FSB (2013), 'Strengthening Oversight and Regulation of Shadow Banking: Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos', August. Available at <[www.financialstabilityboard.org/publications/r\\_130829b.pdf](http://www.financialstabilityboard.org/publications/r_130829b.pdf)>.

that on custodians and the ICSDs. These parties were critical to the settlement process, particularly given the extensive reliance on their timely delivery of securities for settlement.

In order for a CCP to operate effectively, therefore, any residual challenges in settlement arrangements would need to be addressed. Once again, to avoid a situation in which some participants in a chain of deliveries were 'inside' the CCP and others 'outside', broad participation would be very important – extending to critical custodians and the ICSDs. In addition, should the product scope of a repo CCP's service extend beyond government securities, and therefore beyond the set of securities covered by the AOFM lending facility, other arrangements to deal with settlement failures would need to be put in place.

Given the crucial role played by repo and debt markets in financial institutions' liquidity management, it is vital that a CCP operating in these markets not only manages replacement cost risk effectively, but also that it can meet its settlement funding obligations as they fall due (including in the event of a participant default). The regulatory requirement here is that a CCP must be able to demonstrate that it would be able to access reliably sufficient liquidity to be able to meet its obligations on the intended settlement date, even in the event that its two largest participants failed in extreme but plausible market conditions. Optimal sequencing of settlements could help manage such liquidity needs, particularly if the CCP could settle debt securities transactions on a same-day basis. The Bank would, however, have to consider its own role in providing a backstop to such liquidity arrangements.

### Summary assessment

In the event that the industry developed a CCP solution for the repo market, close consideration would need to be given to the design of its settlement arrangements – both from the perspective of ensuring the CCP's access to sufficient funds liquidity, and from the perspective of ensuring access to sufficient securities. Appropriate arrangements to manage liquidity for settlements in a default scenario would be critical, including consideration by Bank of any proposal for the Bank to have role as backstop to such arrangements in respect of settlement of Bank-eligible securities. As for the other matters discussed in this section, broad participation would be an important consideration, to mitigate potential issues associated with chains of settlements.

## 5. Conclusions and Next Steps

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The Bank has a strong interest in the capacity of the Australian repo market to safely, efficiently and continuously support the funding and liquidity needs of the Australian financial system. As discussed, the Bank has multiple roles that are relevant to the consideration of central clearing of repos in Australia. In particular, the Bank relies on the smooth functioning and continuous availability of the repo market to support its implementation of monetary policy, and also has a close interest in the safety and effectiveness of the infrastructure that supports the repo market from both an operational and a supervisory perspective. Through this consultation process, the Bank has engaged extensively with repo market participants and listened carefully to their views.

The Bank does not believe there is a financial stability case to actively promote the introduction of a repo CCP in the Australian market. Given the participation structure of the market and existing risk management practices – and in particular the significant role of the Bank as a cash provider – the case for a repo CCP is not as strong in Australia as perhaps it is in other markets.

Nevertheless, the Bank recognises the in-principle support for a repo CCP among market participants. The Bank also sees the potential scope for a CCP to be a catalyst for other operational and infrastructural enhancements that could deepen the repo market and improve its functioning. Therefore, should the industry proceed with a proposal for introduction of such a CCP, the Bank would engage actively in the debate and be willing to consider participation. Such a position is consistent with the Bank's approach to centralised collateral management, where the Bank's participation in ASX Collateral was regarded as a prerequisite to other industry participants joining the service.

The Bank's participation in any repo CCP would, as previously noted, be subject to a number of pre-conditions:

- *Continuity.* Before considering participation, the Bank would need to be comfortable with the proposed CCP's business continuity and contingency procedures, as well as its capacity to recover and maintain operations in the event of a financial shock. As a further fallback, the Bank would need to ensure that participants maintained an ability to revert to bilateral clearing and settlement of repos executed with the Bank.
- *Location.* The Bank would not participate in a CCP that operated under a different legal regime, had its principal operations overseas and in a distant time zone, and that was subject to resolution arrangements governed by a resolution authority in another jurisdiction.
- *Design and terms of access.* Any final decision on participation would depend on the particular design of the CCP and the terms of access for the Bank.

Domestic licensing and incorporation would anyway be required from a supervisory perspective should a repo CCP accumulate a material market share.

A strong message during the consultation process has been that a domestic repo CCP may not be commercially viable. There have also been concerns that even if a repo CCP emerged, it might be difficult for the CCP to attract a critical mass of participants. These are matters for industry and

prospective providers to explore. However, if the industry decided not to proceed with development of a repo CCP, some of the potential benefits of CCP clearing could nevertheless be pursued via other enhancements to the infrastructure supporting the repo market and refinements to existing market practices – including, for instance, centralised collateral management, electronic trading and reporting/transparency.

The Bank stands ready to engage further with the industry as the dialogue progresses.

# Abbreviations

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AFMA	Australian Financial Markets Association	FMI	Financial Market Infrastructure
AOFM	Australian Office of Financial Management	FSB	Financial Stability Board
APRA	Australian Prudential Regulation Authority	FSS	Financial Stability Standards
ASIC	Australian Securities and Investments Commission	GMRA	Global Master Repurchase Agreement
BRC	Bond and Repo Clearing	ICSD	international centralised securities depository
CCP	central counterparty	RIC	registered investment company
CFR	Council of Financial Regulators	RITS	Reserve Bank Information and Transfer System
CS	clearing and settlement		