RESERVE BANK OF AUSTRALIA

Submission to the Financial System Inquiry

March 2014

Contents

This Submission uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this Submission, however, are those of the author and should not be attributed to either DSS or the Melbourne Institute.

ISBN 978-0-9874673-7-9 (Online)

Foreword

The Reserve Bank of Australia has prepared this Submission for the Australian Government's Financial System Inquiry of 2014. The Terms of Reference are broad, covering aspects such as: the consequences of developments in the Australian financial system since the 1997 Wallis Inquiry and the global financial crisis; the philosophy, principles and objectives underpinning the development of a well-functioning financial system; and the emerging opportunities and challenges that are likely to drive further change in the global and domestic financial systems.

This Submission outlines developments in the Australian financial system in the 17 year period since the Wallis Inquiry, exploring in more detail those that the Reserve Bank considers have had the largest influence in shaping the system. In keeping with the Reserve Bank's responsibilities, a system-wide perspective is adopted in the Submission. Areas where the Reserve Bank was given an explicit mandate following the Wallis Inquiry, particularly the oversight of payment and settlement issues, are examined in some detail.

The scope of the financial sector addressed in this Submission includes all institutions that provide financial services in Australia, including both entities that are prudentially regulated (such as authorised deposit-taking institutions, insurers and financial market infrastructures) and those that are not, such as registered finance companies and investment funds. However, the treatment of issues throughout is largely on thematic lines, because many of the key forces and developments are not entity or market specific.

A good starting point for evaluating the Australian financial system is to consider the desired role of finance in our society. Chapter 1 provides an introductory discussion of the core functions of the sector and the characteristics that set it apart from other sectors of the economy.

The evolution of the Australian financial system since the Wallis Inquiry is covered in broad terms in Chapter 2. The global financial crisis emerged during this period, hence many of the trends are examined from the perspective of the decade or so leading up to the peak of the crisis in 2008 and then the period since. Given the significant international regulatory reform agenda that the crisis generated, a chapter is dedicated to describing these reforms, including Australia's responses (Chapter 3). Systemic risk is also explored in some detail, given the renewed focus on it as a result of the crisis (Chapter 4).

Apart from stability issues, a number of other factors have contributed to the evolution of the financial system since the Wallis Inquiry, and are likely to continue to do so in coming years. At the broadest level, changes in how the different sectors in the Australian economy fund themselves are interlinked with innovations in the financial sector which serves the economy; longer-term sectoral trends in funding are discussed in Chapter 5. Competitive forces since the Wallis Inquiry have been shaped to a significant extent by financial market conditions, with changes in risk appetite among market participants being at least as important as regulatory reform or other structural change; Chapter 6 considers these issues.

Since 1997, superannuation assets as a per cent to GDP have more than doubled to be over 100 per cent. Changes in superannuation shaped the financial system and economy in a number of important ways – including the role in household and national saving, the transfer of retirement income risk to households and the relationship with the banking sector – which are explored in Chapter 7.

The government's response to the Wallis Inquiry resulted in the Reserve Bank being assigned a number of powers and responsibilities in respect of payment and settlement systems. Many of these cover retail payments issues, where Australia has played a leading role internationally in its approach to reform; these are examined in Chapter 8 along with a discussion of innovation in the payments system. In addition, the global financial crisis also brought renewed focus on the role of financial market infrastructures (FMIs) in the financial system, resulting in a significant reform agenda and implications for the Reserve Bank's responsibilities for oversight of FMIs.

The preparation of the Submission was overseen by a small team within the Financial Stability Department, with significant contributions from many staff in that Department as well as a number of other areas of the Reserve Bank, particularly the Domestic Markets, Information and Payments Policy Departments.

Executive Summary

The Financial System Inquiry of 2014 presents an opportunity for a holistic evaluation of Australia's financial system. The evolution of financial systems tends to surprise because, as in many parts of the economy, human behaviour is unpredictable and technology evolves in unexpected ways. As a result, it is important that institutional arrangements enable the financial sector to adapt and support economic activity in the most efficient manner that is consistent with the desired level of stability in the system.

The 17 years since the Wallis Inquiry have seen many changes in the Australian financial system and systems internationally. The most striking development domestically has been the system's growth. Underpinning this expansion has been the adjustment to structural changes and technological innovation, including the deregulation of the financial sector, the opening up to foreign competition and the move to an environment of low and stable inflation. These forces have also been at work in a number of other countries since the 1980s where there have been similar, and in some cases more dramatic, expansions.

Cyclical dynamics have also shaped the growth in financial systems globally. The period since the Wallis Inquiry had distinct phases: the decade or so leading up to the onset of the global financial crisis, during which some risks were under-priced; and the period since, which has seen a reappraisal of risks generally and a renewed focus on systemic risk – that is, those risks which, if realised, would cause material damage to the economy.

The Reserve Bank's approach to financial system stability (and the public policy framework that seeks to promote it in Australia) is that the objective should not be to prevent any failure in the financial system from ever occurring, but rather to balance the cost borne by the broader economy of such a failure against the costs of reducing the probability of failure during normal times. This recognises both the benefits to society from productive risk-taking and the significant costs of an imprudent allocation of risks.

While Australia was not immune to the events surrounding the global financial crisis, the financial system and institutional framework held up well over the period compared with a number of financial systems elsewhere in the world. And while some risks in Australia were mispriced and misallocated prior to the crisis, and some public sector support was required during it, the sound prudential framework in Australia was a source of resilience. In part, the lessons learned from earlier failures were a source of strength. For instance, the substantial losses of Australian banks in the early 1990s, and the failure of HIH Insurance in 2001, promoted a greater emphasis on risk management by financial institutions and regulators as well as providing impetus to bolster supervisory and crisis management capacity. On the whole, the period since the Wallis Inquiry has been a prosperous one for Australia and the ongoing development and resilience of the financial system played a part in this.

There were, however, important lessons for Australia from the crisis. The crisis was a reminder that there are cycles in risk-taking, and that the incentives of participants are not always conducive to prudent risk management from a system-wide perspective. Globally, the events that followed the crisis demonstrated the large social and economic costs of instability in financial systems. They showed that the costs imposed by effective regulation and supervision are more than outweighed by

the costs of financial instability, even if that differential only usually becomes apparent after prolonged periods.

In the period since the crisis there has been a concerted effort internationally to address the build-up of systemic risk in financial systems that the crisis exposed. These wide-ranging reforms, given political impetus by the G20, include four core areas: building more resilient financial institutions (particularly banks); addressing the 'too big to fail' problem; addressing risks in 'shadow banking'; and making derivatives markets safer, including through enhancing the role of financial market infrastructures (FMIs). As G20 president in 2014, the Australian approach, supported by the Bank, is to focus the G20's efforts on reaching agreement and progressing implementation in the four core reform areas, and to be cautious, for the moment, in adding further reforms to the agenda. This approach has found broad acceptance.

The regulatory response to the crisis has already strengthened the resilience of the international financial system. Banks have generally increased their capital buffers and reduced their liquidity risk. Steps have also been taken to make financial markets more transparent and to reduce the scope for contagion in the event of financial institution distress, while preserving the global nature of finance. As with any reforms, however, regulators will need to closely monitor the effectiveness of the combination of new measures, including the potential for enhanced bank regulation to promote a shift in financing to the shadow banking sector.

A general principle that the Reserve Bank has sought to uphold in our participation in the various international forums is that the reforms should be practically implementable in a variety of national circumstances, and should not disadvantage particular activities or business models except to the extent justified by the relative risks they pose. For example, the Reserve Bank and the Australian Prudential Regulation Authority (APRA) argued for the Basel III short-term liquidity requirement to be met in Australia via a Committed Liquidity Facility at the Reserve Bank, as banks could not otherwise meet the requirement given the relative scarcity of government debt. Tailoring to national circumstances does not, however, imply that Australia can stand apart from the global regulatory reforms: Australia's financial system is highly integrated with the global financial system; and Australian banks and other institutions participate in global markets and access foreign capital, so they need to demonstrate that they meet comparable standards to their counterparts abroad. It is, in any event, in Australia's interests to adopt high standards in supervision and regulation.

Australia is well advanced in implementing many of the reforms in response to the crisis, though there are a couple of areas where work is underway in Australia which the Reserve Bank considers should be progressed.

- The first relates to the role of FMIs in the financial system. In particular, the key recommendations from the Council of Financial Regulators (CFR) in this area should be progressed as a matter of priority. With reforms in over-the-counter (OTC) derivatives markets increasingly concentrating activity in central counterparties (CCPs), it is crucial that the relevant national authorities have the power to deal with problems in FMIs if they should arise. Further, with increased cross-border provision of FMI services, there may be circumstances in which it is desirable to bring an overseas facility under the primary regulation of the Australian Securities and Investments Commission (ASIC) and the Reserve Bank, under Australian law, and within the scope of a prospective FMI resolution regime.
- Another area of work relates to distress management of authorised deposit-taking institutions (ADIs), including the arrangements for the Financial Claims Scheme (FCS). The FCS provides protection to depositors (up to a limit) in the unlikely event of a failure of an ADI, and provides

compensation to eligible policyholders against a failed general insurer. The Bank supports the proposal recommended by the CFR in 2013 to introduce a small fee levied on ADIs for the FCS. Such a model, which is now common among depositor protection schemes internationally, would be consistent with the principle of users paying for the benefit provided.

Following the financial crisis, much attention internationally has been directed at policy frameworks to limit systemic risk and promote financial stability. In some jurisdictions this has involved reassignment or clarification of regulatory agency responsibilities for system-wide oversight, and/or creation of new bodies to perform this role. Some jurisdictions have also developed specific prudential measures to assist in managing systemic risk, sometimes referred to as 'macroprudential tools'. Several advanced countries have implemented such tools since the crisis, but it is too early to judge their effectiveness. In any case, in Australia, existing prudential powers can already be directed at system-level risk.

The Reserve Bank considers that the current arrangements in Australia for financial stability policy and regulatory coordination are working well, and does not see a case for significant change. Coordination between Australia's main financial regulatory agencies is achieved through the CFR. These arrangements stood up well to the severe test posed by the financial crisis, a performance that supports their continuation. Both APRA and the Reserve Bank have responsibilities to use their different powers for system-wide oversight and promoting financial stability. The complementary perspectives of the two agencies have reinforced their focus on their common goal of financial stability. In addition, the Bank and ASIC have joint responsibility for clearing and settlement facilities under the *Corporations Act 2001*, and have worked effectively together since the introduction of the regime.

It is the Reserve Bank's job to look at the performance of the financial system and risks to its stability. In order to do so, the Reserve Bank closely monitors issues from a system-wide perspective, including how risk can be propagated. The Australian major banks are important sources of systemic risk because of their size and interconnections with the real economy and the rest of the financial system, even though their business models are relatively low risk. Similarly, compared with other assets, housing in most countries (including Australia) is not particularly risky, but the housing market poses systemic risk because of its size, importance to the real economy, and interconnection with the financial system. While not as large, the commercial property market also poses systemic risk through its cyclicality and strong connections to the banking system; historically it has been one of the main sources of loan losses during episodes of banking distress globally.

The Reserve Bank has more formal oversight responsibilities for certain FMIs. FMIs are critical to the smooth functioning of financial markets, but they can also be a source of systemic risk because of their centrality to the system and the lack of substitutability in the markets they serve. That said, enhancements to FMI design and operation pre-crisis ensured that they remained a source of stability when the crisis hit.

The Reserve Bank has exercised the powers granted to it in 1998 following the recommendations by the Wallis Inquiry in relation to the payments system. The Bank's payments system reforms, overseen by the Payments System Board (PSB), have focused on improving competition and efficiency in payment systems, consistent with maintaining stability and effective management of risk. The approach of the PSB has been to encourage industry to undertake reform, only using its powers when cooperative solutions have not emerged. The Bank's reforms have been followed by similar reforms in many other jurisdictions.

The past decade has seen considerable customer-facing innovation in the payments system, with electronic transactions becoming faster, more convenient, more widely accepted and available via a greater range of devices. More recently, collaborative innovation – which is often hard to achieve when competing institutions must cooperate effectively – has been spurred by the PSB's *Strategic Review of Innovation in the Payments System*, with the industry now working on the New Payments Platform. This will be a new centralised industry-owned infrastructure which is expected to allow consumers and businesses to make payments with rapid funds availability on a 24/7 basis, and to facilitate innovation and competition in the payments system.

While the global financial crisis interrupted some of the trends in the Australian financial system over the past 20 years or so, many will continue to shape Australia's financial system in the years ahead. The period since the Wallis Inquiry is yet another demonstration of the procyclical nature of competition in banking. In times of optimism, competition is often more pronounced on the lending side, whereas competition for funding often intensifies following a financial crisis. The competitive landscape was transformed by the earlier deregulation of the banking sector. New entrants, or the threat of new entrants, have since shaped the markets for banking services in important ways. For example, the arrival of mortgage originators led to a marked decline in spreads on mortgages. And the entry of foreign banks in the online deposit market saw deposit rates increase relative to the cash rate. But while the regulatory framework continues to affect competition, cyclical dynamics in risk-taking among market participants have played an important role.

Since the crisis, Australians – like their counterparts overseas – are adjusting to a world where the true cost of liquidity is better recognised. Associated with this has been a reassessment of funding risk by banks, investors and regulators globally. In response, Australian banks have adjusted their funding structures and competition for deposits has intensified.

These developments increased banks' funding costs and lending rates relative to the cash rate. But banks' net interest margins have remained little changed – at roughly half the levels prevailing in the 1980s. Overall, greater competition for funding is a healthy development to the extent that it enhances market discipline on financial intermediaries to manage their risks. But it is important that asset quality remains paramount in assessing financial strength, along with the allocation of capital according to risk.

A good deal of focus has been placed on competition in the mortgage market since the crisis, and a number of reforms have supported competition there. However, the market for small business loans has more structural impediments to competition than most other lending markets, because the information asymmetries tend to be more significant. Technological advances and financial innovation can help to reduce these asymmetries. In addition, measures to improve the supporting infrastructure for capital market funding can help to provide companies with alternatives to bank loans.

Another important trend over the past 20 years was that technological advances globally aided the proliferation of cross-border investment and credit, which was facilitated by the progressive removal of restrictions on foreign capital by most developed economies during the 1980s. In Australia, this enabled households and companies to access finance from abroad (either directly or via the banking system), and hedging markets developed to help manage the risks. A key reason that Australians have benefited from financial globalisation is the willingness of foreign investors to take on the risk of lending to us in Australian dollars.

The net outcome of the myriad of saving and investment decisions by Australian households, companies and governments has often been net capital inflow and a current account deficit. In the aftermath of the crisis, some commentators questioned whether enough capital would be available to

meet the needs of Australians, given reduced foreign demand for bank debt globally. In the event, which was itself a severe stress test, the capital account adjusted, with the price and composition of funding shifting accordingly. This outcome provides contrary evidence to the hypothesis that the current account can only be funded by a single form of capital inflow such as offshore borrowing by banks.

In the post-Wallis period household finance became more widely available, providing greater scope to smooth consumption. Associated with this has been a rise in household indebtedness and dwelling values. The vulnerability of some households to sudden changes in financial conditions, including interest rates, has increased and Australian banks have concentrated exposures to mortgages. A corollary of this is that Australian banks have less exposure to complex securities and riskier forms of lending, such as commercial property loans.

The rise of superannuation has transformed the Australian financial system. The household sector's direct exposure to market risk increased, as was demonstrated during the financial crisis. But at the same time, the losses incurred did not threaten the stability of the system, in part because the shift in risk allocations towards households eased the build-up of concentrated risks in institutions and governments. More broadly, the growth in superannuation has been in many ways conducive to financial stability, by adding depth to financial markets, and providing a stable, more or less unleveraged, source of finance for other sectors.

While the superannuation system is often viewed as being in the asset management business, it is also increasingly in the intermediation and maturity transformation business. The sector is therefore exposed to liquidity risk, which will increase as more members draw down their superannuation savings. Superannuation funds will need to balance managing their liquidity risk with their investment profile.

Some have proposed superannuation as a potential pool of funding for infrastructure investment. In the Reserve Bank's view, it would not be appropriate to mandate superannuation funds to invest in particular assets to meet broader national objectives. Rather, investments must be managed in the best interest of the membership. It cannot be forgotten that the objective of the superannuation system is to provide income in retirement. More broadly, it is worth the Inquiry considering whether the current arrangements enable households to tailor their superannuation savings to suit their risk preferences and investment horizons at a reasonable cost.

Despite significant changes in the post-Wallis period, many key features of the financial system persist. The core functions of the system remain essentially the same, as do the sources of vulnerability. Well-functioning financial systems can help promote economic growth. However, financial activity is inherently subject to information asymmetries, risk concentration, imprudent behaviour and other sources of systemic risk. Hence effective supervision is critical, particularly during boom times.

The key lesson from the past two decades is not a new lesson at all: the financial cycle is still with us and risks need to be appropriately managed. Society's attitudes towards efficiency and risk evolve and are very much shaped by the course of history – and mainly recent history. For Australia, the resilience of the financial sector in recent decades does not imply the absence of risks. It follows that the industry, the regulators, and the supervisors must ensure that institutions are resilient to short-run shocks but are also able to adjust to longer-run trends with adequate consideration for both competition and financial system stability.

In summary, the following are eight main points the Reserve Bank considers to be worth emphasising.

- The objective of financial regulation and supervision is not to eliminate risk or prevent any failure. The goal is to strike the right balance between addressing imprudent risk allocation, and facilitating the types of productive risk-taking that are essential to economic growth.
- The financial crisis demonstrated the cyclical nature of risk-taking and the large social and economic costs of instability in financial systems. It is therefore crucial that institutions' capital be allocated according to risk, and that there is effective supervision, particularly in boom times.
- Many of the regulatory deficiencies revealed by the crisis were not observed in Australia. But the crisis did highlight some room for improvement, and it is in Australia's interests for the domestic regulatory architecture to be in line with international standards. The reforms underway domestically should be completed.
- The Bank considers that the current arrangements in Australia for financial stability policy and regulatory coordination are working well and does not see a case for significant change.
- Competition in banking has been shaped by cyclical forces and new entrants. A good deal of focus has been placed on competition in the mortgage market since the crisis. However, the market for small business loans has more structural impediments to competition than most other lending markets. The Bank considers that this market should be the focus of inquiries regarding competition in lending, rather than the mortgage market.
- The vulnerability of some Australian households to sudden changes in financial conditions, including rising interest rates, has increased in the post-Wallis period, and banks have more concentrated exposures to housing.
- Superannuation has grown strongly. This has been in many ways conducive to financial stability, by adding depth to financial markets, and providing a stable, more or less unleveraged, source of finance for other sectors.
  - The Bank would support consideration of whether the system could be improved. Areas the Inquiry could focus on include whether superannuation funds are appropriately balancing the liquidity of their liabilities and their investment profiles, and whether the fees and cost structure of managing Australians' retirement savings are reasonable.
  - The Bank does not support suggestions that investment allocations could be imposed to meet funding targets for certain sectors and/or asset classes. Superannuation assets should be managed in the best interests of their members.
- The Reserve Bank has exercised its payments system powers with a focus on improving competition and efficiency in payment systems, consistent with maintaining stability and effective management of risk. The Bank considers that these powers leave it well placed to deal with challenges arising from the likely future evolution of the payments system.

1. The Role of the Financial Sector

A good starting point for evaluating the Australian financial and payment systems is to consider the desired role of finance in our society. This Chapter provides an introductory discussion of the core functions of the financial sector, and the characteristics that set it apart from other sectors of the economy.

1.1 Core Functions of the Financial Sector

Although they are often thought of as recent phenomena, financial and payment systems have evolved over several thousand years. The manner in which transactions occur has changed remarkably over that time, but the underlying objectives have not. The economic functions performed by the first modern banks of Renaissance Italy, for instance, still apply today (Freixas and Rochet 2008).

At least four core functions can be identified.[1] The financial sector should provide the following services:

1. **Value exchange:** a way of making payments.
2. **Intermediation:** a way of transferring resources between savers and borrowers.
3. **Risk transfer:** a means for pricing and allocating certain risks.
4. **Liquidity:** a means of converting assets into cash without undue loss of value.

These are all valuable tools for a community to have. The modern economy could not have developed without the financial sector also developing these capabilities. Moreover, these core functions require the financial sector to have certain supporting capabilities, such as the ability to screen and monitor borrowers. In principle, each of these functions could be performed by individuals. But there are efficiency benefits from having institutions perform them, particularly in addressing some of the informational asymmetries that arise in financial transactions.

The provision of these core functions can overlap and interact in important ways. For example, some financial products, such as deposits, combine value exchange, intermediation, risk transfer and liquidity services. With these interactions in mind, each core function is considered in more detail below.

1.1.1 Value exchange

A safe and efficient payment system is essential to support the day-to-day business of the Australian economy. There are approximately 43 million transactions in Australia every day, including cash and non-cash payments as well as transactions in financial assets. With so many payments, even relatively

[1] The presentation of core functions of the financial sector differs within the literature, both in terms of the terminology employed and the number of functions that are identified. Merton and Bodie (1995), for example, identify six core functions. The spirit of that framework is similar to the one presented here. The main difference of presentation is that in this Chapter, the efficient allocation of resources is regarded as a by-product of a system that is performing the four core functions well, rather than as a stand-alone function. Merton and Bodie (1995) also separately list a function of governance, whereas this has been subsumed within the intermediation function in this Chapter.

small inefficiencies can have significant implications for the broader economy and the living standards of Australians.

In this regard, the payment system has progressed a long way since the early Australian colonies, where the predominant means of exchange for many years was rum (Shann 1930). Today, we enjoy access to a range of convenient payment options, including cash, card and internet transfer. While future innovations are by nature uncertain, it is possible to identify some desirable qualities of an efficient payment system. It should be:

- **Timely:** while not all transactions are urgent, the possibility of giving recipients timely access to funds is useful.
- **Accessible:** everyone who needs to make and receive payments should have ready access to the payments system.
- **Easy to integrate with other processes:** this includes the reconciliation and recording of information by the parties involved (which should also be timely and accessible).
- **Easy to use:** this is not only an issue of convenience but also of minimising errors.
- **Safe and reliable:** end users of a payments system need to be confident that the system is secure; that is, that their confidential information is protected. They also need to have confidence that the system will be available when needed.
- **Affordable and transparent:** users can make well-informed choices about payment methods according to their cost and convenience.

Of course, there can be tensions between these objectives. For instance, making a payments system fully accessible and easy to use absorbs resources that might increase its cost.

1.1.2 Intermediation

The financial sector plays an important role in the functioning of the economy through intermediation. Simply put, the financial sector sits between savers and borrowers: it takes funds from savers (for example, through deposits) and lends them to those who wish to borrow, be they households, businesses or governments.

Intermediation can take on many forms beyond the traditional banking service of taking deposits and making loans. For example, investment banks intermediate between investors and bond issuers. Brokers perform a similar function in connecting the buyers and sellers of equities. The common thread is that a financial institution stands between the counterparties to a transaction. Depending on the nature of the transaction, a number of supplementary functions may be required to intermediate between savers and borrowers, including:

- **Pooling resources:** for example, a bank can combine a number of small deposits to make a large loan.
- **Asset transformation:** financial intermediaries provide a link between the financial products that firms want to issue and the ones investors want to buy (Freixas and Rochet 2008). This includes issuing securities to savers at short maturities, while making loans to borrowers at long maturities – a process known as maturity transformation.

- **Risk assessment and information processing:** financial intermediaries have expertise in screening potential borrowers to identify profitable lending opportunities, taking into account the risks that these entail (Diamond 1984).
- **Monitoring borrowers:** financial institutions take steps to limit the misuse of savers' assets. This function is critical to the decision by savers to lend their money in the first place, and hence for facilitating investment in the economy.
- **Accurate accounting:** together with a legal system that enforces property rights, prudent measurement is vital in enabling depositors, shareholders and investors to be paid what they are entitled to.

Effective intermediation requires a number of the qualities listed above in the context of an efficient payments system; it should be accessible and reliable, for instance. If the financial system is working well, it allocates funds to their most productive use. This benefits society by expanding the productive capacity of the economy, hence raising living standards.

1.1.3 Risk transfer

A well-functioning financial system also facilitates the pricing and allocation of certain risks. As discussed in 'Box 4A: Types of Financial Risk', these risks include the possibility that a borrower will default on their obligation (credit risk), that an asset's value will fluctuate (market risk), or that an income stream will be required for longer than expected (longevity risk). Financial contracts may also alter the financial implications of physical risks, by providing insurance against flood or fire damage to property, for example (insurance risk), or against legal liability and similar costs (operational risk). Many of the subsidiary capabilities implied by the intermediation function are also necessary for effective risk pricing and allocation, particularly the ability to assess risk and monitor borrowers.

The financial sector should allow individuals to tailor their exposure to risk to suit their preferences. A younger person, for instance, may have more scope to adjust to a sharp fall in the value of their assets than an older person, who would have less time to build up assets to fund their retirement. Given this, a younger person may choose to invest in a riskier portfolio of assets, with the prospect of higher returns.

Importantly, the role of the financial sector is not to remove risk entirely. Rather, it should facilitate the transfer of risks to those best placed to manage them. It cannot remove many of the risks within the economy, which must ultimately be borne by individuals either as holders of real and financial assets, or as taxpayers (Davis 2013). Moreover, it is not the goal of the financial sector necessarily to minimise risk. The socially optimal amount of risk is almost certainly not the minimum feasible level, given the importance of risk-taking to innovation and entrepreneurship. Of course, the characteristics of the financial system can shape the extent of risk-taking in important ways.

1.1.4 Liquidity

The financial sector provides liquidity. If the financial system is working well, individuals, businesses, and governments are able to convert their assets into cash at short notice, without undue loss of value.

The provision of liquidity is useful to individuals for meeting unexpected obligations. It is also critical to society at large. Access to liquidity allows businesses to deploy their capital in ways that increase the productive capacity of the economy. Without it, households and businesses would be forced to hold larger sums of cash to protect against unforeseen events. The result would be fewer resources for investment and the provision of fewer goods and services to consume.

Given various imperfections in the financial system, it is not optimal for the private financial sector to be the sole provider of liquidity (Holmström and Tirole 1998).[2] Indeed, the central bank can also play an important role. In the Australian context, the Reserve Bank is the supplier of funds that can be lent or borrowed in the overnight market. From day to day, the Reserve Bank's goal is to manage supply to meet the system's demand for cash at the price – the interest rate – set by the Reserve Bank Board.

On occasion, there may be a sudden flight to liquid assets in response to acute uncertainty about the value of financial assets. One example of this occurred in many economies during the crisis of 2008 (although there are many others scattered throughout history). In these circumstances, the central bank's role is to supply the necessary liquidity to ensure the smooth functioning of the system. The provision of liquidity support by the central bank to an individual institution – as the lender of last resort – is a related, but separate form of intervention which central banks can make; this complex and important role has been discussed at length elsewhere (Goodhart 1988).

1.2 The Characteristics of Finance

Each of the four core functions that were introduced in the preceding section are vital to economic progress. But these functions are not generally ends in themselves. Put another way, the financial sector is an intermediate sector. Its activities are mainly directed at promoting efficiency in other sectors. This implies that the resources used in finance are a cost to society, because they cannot be used for one of the end purposes that members of society desire. It is therefore important that these financial services be provided in the most efficient way that is still consistent with the desired levels of safety and service.

The financial sector is, however, a critical link in the functioning of the economy: every economic interaction has a financial component, such as a payment. The spillovers to the real economy from dysfunction or operational failure in the financial and payments systems can be severe. Moreover, these spillovers can add to 'moral hazard', whereby financial institutions take risks under the assumption that the resulting costs would be, at least partly, borne by others (for example, their creditors or society at large). The potential for undue risk-taking is exacerbated by the problem of asymmetric information, where the party ultimately bearing the risk is not fully aware of it.

In addition, the core functions of financial intermediaries make them vulnerable to a change in customer and investor confidence, more so than for most firms. In particular:

- Because they undertake maturity transformation, financial intermediaries hold long-term assets while being subject to short-term obligations. This exposes them to the possibility of runs.
- In intermediating between savers and borrowers, financial institutions tend to be highly leveraged relative to other companies. As a consequence, depositors and other creditors have a relatively small capital buffer against unexpected losses, which can provide a strong incentive to withdraw their funds during periods of stress.

[2] The private sector could potentially provide all of its own liquidity needs. But the amount of liquid holdings required to insure against a systemic event would reduce the efficiency of the financial system in normal times. Also, limited information, coordination problems, and potentially misplaced incentives, would make it difficult to act quickly enough during a flight to liquidity. For instance, on the verge of the US banking crisis of 1907, a private sector consortium considered providing liquidity to certain troubled institutions – an act that would have almost certainly lessened the impact of the crisis. They were, however, unwilling to act in time (Bernanke 2013). The role of central banks in managing the money supply and currency, make them a natural fit to be the lender of last resort.

- The interlinkages between financial firms are greater than in most industries. This can be useful for allocating resources and risks. But it also means that shocks to one institution can be propagated across institutions and borders, often rapidly, as was demonstrated during the financial crisis.

The critical role of the financial sector and its inherent vulnerabilities suggest that it should be subject to more regulation than most other industries. (Although market discipline has a role to play, past experience has shown its limitations.) Even so, it is important to recognise the limits of what regulation can achieve. The financial sector is an information-intensive industry, so the financial system can change rapidly in response to technological change. As a result, regulations may be circumvented or become outdated very quickly, and will often produce unintended consequences. This does not remove the need for a good deal of regulation. But it does point to the importance of effective supervision – especially during the boom times – rather than reliance on inflexible rules.

References

Bernanke BS (2013), 'The Crisis as a Classic Financial Panic', Speech at the Fourteenth Jacques Polak Annual Research Conference, Washington, DC, 8 November.

Davis K (2013), 'Funding Australia's Future: From Where Do We Begin?', Paper 1, Stage One of the *Funding Australia's Future* project, Australian Centre for Financial Studies.

Diamond DW (1984), 'Financial Intermediation and Delegated Monitoring', *The Review of Economic Studies*, 51(3), pp 393–414.

Freixas X and JC Rochet (2008), *Microeconomics of Banking*, 2nd edn, MIT Press, Cambridge, Massachusetts.

Goodhart C (1988), *The Evolution of Central Banks*, MIT Press, Cambridge, Massachusetts.

Holmström B and J Tirole (1998), 'Private and Public Supply of Liquidity', *Journal of Political Economy*, 106(1), pp 1–40.

Merton RC and Z Bodie (1995), 'A Conceptual Framework for Analyzing the Financial Environment', in DB Crane *et al* (eds), *The Global Financial System: A Functional Perspective*, Harvard Business School Press, Boston.

Shann EOG (1930), *An Economic History of Australia,* Cambridge University Press, Cambridge.

2. Key Financial Developments Since the Wallis Inquiry

This Chapter provides an overview of some important developments in the Australian financial system since the Wallis Inquiry was completed in 1997. It focuses on trends in the size, growth and performance of the system and the impact of the global financial crisis on these trends.

2.1 Introduction

The Australian financial system has grown rapidly since the Wallis Inquiry and, in certain respects, as is typical of finance, in ways that were not anticipated. New technologies have changed the way that services are delivered and risks are managed. The scope of choice for end users has increased, and with it the complexity of the system.

Underpinning these developments has been the protracted adjustment of the financial sector to a system where credit availability is essentially market determined, and to an environment of low and stable inflation. These forces have interacted with a range of other factors – including favourable macroeconomic conditions, increased globalisation of finance and changing demographics – to produce a number of important results. For example:

- household finance has become more widely available, which has been associated with a rise in household indebtedness and dwelling values
- the value of financial assets has risen markedly, increasing household wealth. Superannuation holdings have risen particularly strongly, which has increased households' exposure to market risk.

Although these shifts were underway around the time of the Wallis Inquiry, the extent of the adjustments turned out to be larger and more protracted than many had anticipated.

While the provision of financial services has also changed considerably, the traditional model of intermediation via the banking system has remained dominant in Australia. In the mid 1990s, there was a growing sense that financial markets would displace banks in providing the core functions of the financial system (Financial System Inquiry 1997, p 172). In the event, some new technologies and products, such as complex securities, were misused and their risk mitigation properties overestimated – particularly overseas. Domestically, the capacity for banks to expand and acquire other businesses (wealth management firms, for instance) was perhaps underestimated.

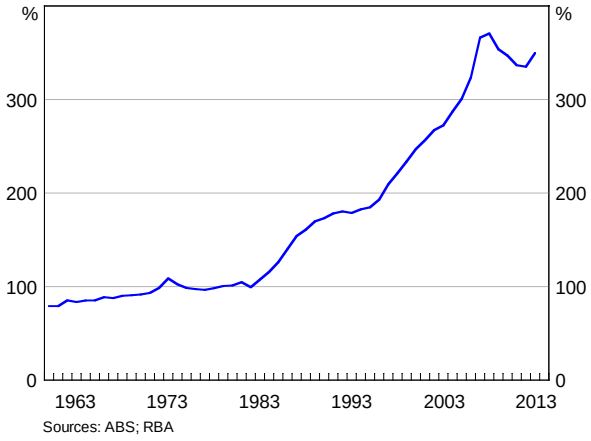
The remainder of this Chapter considers these and other key developments in the Australian financial system. As the title of this Chapter suggests, the primary point of reference is the completion of the Wallis Inquiry in 1997. However, in some cases it will be important to delve further back into history to provide the context in which the system has evolved. In addition, the period since the Wallis Inquiry had two distinct phases: the decade or so leading up to the global financial crisis, during which many risks were underpriced; and the period since, which has seen a renewed focus on systemic risk.

2.2 Growth in the Financial System and Some Key Influences

The most striking development in the Australian financial system in recent decades is its growth. A few summary measures illustrate the extent of the expansion that took place from the early 1980s until the onset of the financial crisis:

- Total credit rose from around 50 per cent to 160 per cent of GDP.
- Total assets of financial institutions increased from around 100 per cent to 370 per cent of GDP (Graph 2.1).
- Measures of financial market *turnover* increased even more dramatically. To give just one example, turnover in Australian equities increased more than 70-fold from the mid 1980s to 2007 (compared with a sixfold increase in the size of the nominal economy).[1]

Graph 2.1
Financial Sector Assets
Per cent of nominal GDP



Sources: ABS; RBA

As it turns out, then, the Wallis Inquiry of 1997 occurred in the midst of a profound period of growth in the Australian financial system. What caused this spectacular growth? And why has it slowed in recent years?

Simply itemising causal factors ignores the complex ways that the various elements of a financial system interact. Nonetheless, one starting point is the observation that rapid growth in the financial system since the early 1980s is not unique to Australia. Most developed economies experienced similarly large, or even larger, expansions. And, in most countries, that period of rapid growth has ceased. This suggests the importance of some common, once-off factors, including:

- the deregulation of the financial sector
- the move to a low-inflation environment.[2]

---

1 Part of the increase in turnover is due to the privatisation of previously public entities and the demutualisation of some member-owned organisations.

2 The timing of these changes differed across countries. For instance, the decline in inflation in Australia occurred later than in many other countries.

2.2.1 Deregulation

Financial deregulation in Australia began in the early 1970s and culminated in many important changes to the financial landscape in the 1980s, including:

- the floating of the Australian dollar and the removal of many of the restrictions on foreign borrowing and lending
- the removal of most restrictions on banks' interest rates and liability structures
- the removal of constraints on foreign bank entry (which were further eased in 1992).

There is not space to chronicle these processes here; they have been extensively covered elsewhere (Macfarlane (1991) and Davis (2007), for example). But, fundamentally, the result was a shift from a situation where credit was price-controlled and quantity-rationed, to one where credit availability is market determined. The behaviour of credit providers changed accordingly as they adapted to a more competitive environment. Taken together, the easing of regulatory constraints had the predictable effect, at least in a qualitative sense, of allowing a once-off expansion of the financial sector relative to its historical trend.

2.2.2 Low-inflation environment

Alongside the adjustment to deregulation, Australia's shift from being a high-inflation country to a low-inflation country had profound implications for the domestic financial system. Prior to the 1990s, Australia had one of the highest inflation rates among developed economies. However, the spare capacity in the economy from the early 1990s recession saw inflation decline, and the introduction of inflation targeting helped to entrench that reduction. Nominal interest rates eventually fell in line with the lower inflation compensation required.

These dynamics were already in place prior to the Wallis Inquiry, but it was in the years around and subsequent to that Inquiry that the effects were most apparent. Nominal interest rates on housing loans did not fall as quickly as inflation in the early part of the 1990s. However, competition from new entrants to the mortgage market during the late 1990s helped to bring mortgage interest rates down in line with the structural decline in inflation.

These developments had important consequences for household balance sheets. Because a borrower's ability to repay is uncertain, lenders impose various constraints on the amount that they will lend to particular borrowers. One reasonable approximation of these constraints is that the debt repayment must be no more than a certain percentage of the borrower's income. As nominal interest rates fall, borrowers can service a larger loan with the same repayment.[3] This is a permanent shift in serviceable debt loads (provided the reduction in inflation is permanent). A corollary of this is a permanent increase in the size of the financial system relative to the real economy.

2.2.3 Long-run forces

The adjustment of the financial system to these once-off factors has been shaped by a number of long-run forces that reflect trends in incomes, technology, demographics, and so on. For instance, one phenomenon that has been observed is a tendency for financial systems to grow, relative to GDP, as real income levels increase (Goldsmith 1985).

---

[3] As a simple illustrative calculation, assuming a debt-servicing ratio of 30 per cent on a 25-year mortgage, a household's borrowing capacity would have risen from around two times annual income in the late 1980s to roughly four times by the mid 2000s.

It is difficult to disentangle the effect of higher incomes from the once-off adjustments to deregulation and lower inflation that were considered above. But it does seem plausible that as household income increases, a larger share of it can be spent on asset purchases and debt servicing, as proportionately less needs to be spent on necessities. Associated with this, the relative value of scarce assets (including well-located housing) might be expected to rise over time.[4] If sustained, this would imply that growth in the financial sector could outpace the real economy for extended periods (though not indefinitely) without necessarily reflecting an undue build-up of risk.

2.2.3.1 Technological change

Alongside income growth, technological change has exerted substantial influence on the Australian financial system in recent decades. Finance is an information-intensive industry. Its key outputs depend on the capacity to store, analyse and transmit information securely. Given this, the advances in information technology in recent decades are likely to have generated growth in finance industry productivity relative to that in less information-intensive sectors. For instance, the use of computer databases in place of paper-based filing systems has improved the efficiency of storing and retrieving customer information.

Measuring the real value of financial outputs is difficult because of the complexity of the financial system and the special characteristics of the financial intermediation process (Burgess 2011). The result is that measurement of productivity in the financial sector is imprecise, partly because distinguishing between genuine improvements in productivity and changes in the price of risk is difficult.[5] Bearing these caveats in mind, the available estimates suggest that labour productivity growth in the financial sector outpaced that of the broader economy over the past couple of decades. The share of gross value added – the value of goods and services produced – attributed to financial services nearly doubled over the quarter-century to 2013, whereas the financial sector's share of employment was little changed.

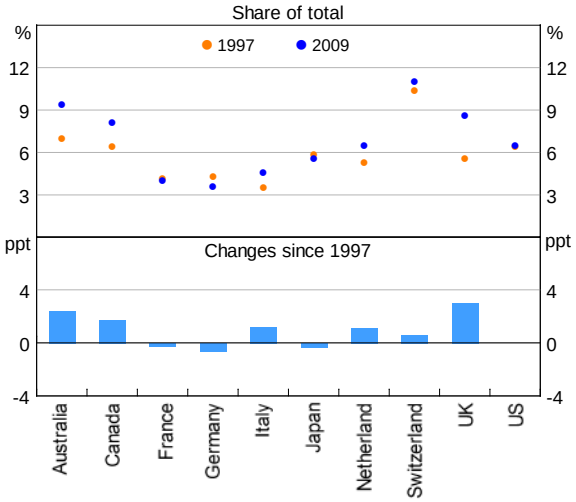
The rise in the share of value added by the financial sector in Australia is towards the upper end of the range of international experience since the Wallis Inquiry (Graph 2.2). This may reflect the larger role for traditional intermediation within the Australian financial sector, as well as the size and structure of Australia's superannuation industry. It also reflects the resilience of the Australian economy and financial system in recent years. Credit continued to expand in Australia over this period, unlike the experiences in the United States and a number of European countries.

---

4 CGFS (2006) and Kent, Ossolinski and Willard (2007) discuss some of the institutional differences across countries that may influence these adjustments in the context of housing.

5 Part of the revenue earned by financial intermediaries is derived from implicit fees, embodied in the spread between their lending rates and funding costs. For national accounts purposes, estimates of these implicit fees are obtained via a construct known as FISIM – financial intermediation services indirectly measured (United Nations *et al* 2008). Simply put, FISIM combines observed lending and deposit rates with the stock of outstanding loans and deposits to provide a measure of output. As a consequence, it is difficult to discern between changes in prices due to productivity improvements and shifts in the price of risk. For example, if a bank increases its lending rates due to a perceived higher risk of default, the FISIM concept will record an increase in financial sector output.

Graph 2.2
Financial Services Value Added*



* Recent years estimated for Canada, France, Switzerland and the UK; US data from the Bureau of Economic Analysis to accommodate recent revisions

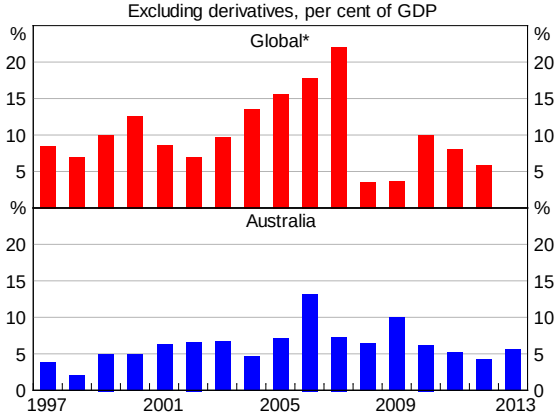
Sources: ABS; BEA; OECD; RBA

2.2.3.2 Internationalisation

Associated with the advances in technology has been a lowering of the cost of transacting across borders. This aided the proliferation of cross-border investment and credit, which was facilitated by the progressive removal of restrictions on foreign capital by many developed economies during the 1980s. In Australia, this afforded households and companies greater access to finance from abroad (either directly or via the banking system), and hedging markets developed to help manage the risks. As Chapter 5 explains, a key reason that Australians have benefited from financial globalisation is the willingness of foreign investors to take on the risk of lending to us in Australian dollars.

Capital flows across borders rose rapidly from the early 2000s in an environment of low interest rates and solid economic growth globally (Graph 2.3). During the financial crisis, a number of these flows reversed, as lenders repatriated their foreign holdings and home bias reasserted itself, especially in Europe. These dynamics were less pronounced in Australia, reflecting the comparatively favourable conditions in the banking system and the broader economy.

Graph 2.3
Gross Capital Outflows
Excluding derivatives, per cent of GDP



* Sum of capital outflows from reporting regions
Sources: ABS; IMF

2.2.3.3 Demographics

The demographic transition that is occurring throughout the world has important implications for the financial system, including through its influence on labour supply, saving behaviour, capital accumulation, international capital flows and the relative demand for different assets (IMF 2004; Kent, Park and Rees 2006). Populations are ageing at the same time as fertility rates are declining, although the extent and speed of these changes differs significantly across countries.

In Australia's case, a striking development since the Wallis Inquiry is the marked growth in superannuation assets. Since 1997, superannuation assets as a per cent to GDP have more than doubled to be over 100 per cent. The increase in superannuation has had important structural implications. For instance, many banks acquired wealth management businesses, which have helped to support their profitability. And households have increased their exposure to market-linked investments. Chapter 7 explores developments in superannuation.

2.2.4 Cyclical dynamics

A further category of forces that have shaped the growth in the financial system are those associated with the cyclical dynamics of credit and asset prices (Borio and Lowe 2002; Bean 2003). The financial sector has a well-documented capacity to engage in bouts of overexpansion, driven by self-reinforcing expectations, followed by periods of readjustment and consolidation (Kindleberger and Aliber 2005); this is sometimes called procylicality. Business cycles can be unpredictable in duration, and the associated credit cycles can vary in amplitude.

Cyclical dynamics help to explain the spectacular growth in the financial sector in a number of countries during the 2000s, amid an environment of low interest rates globally, and the subsequent reversals. In Australia, the macroeconomic environment from the early 1990s was particularly conducive to expansion in the financial system. There was a marked reduction in the level and volatility of the unemployment rate, for instance (Table 2.1). And Australians experienced virtually uninterrupted economic growth for a long period, which is likely to have influenced the extent to which households and businesses took risks.

The robust economic growth was to some extent self-reinforcing, as strong employment growth and rising wages drove income growth, which contributed to rapid housing price growth. This, in turn, further spurred spending, putting more upward pressure on housing prices. The strong growth in housing prices abated in late 2003, owing in part to policy initiatives (Kearns and Lowe 2011). From the mid 2000s, the household saving ratio increased – in part, because of a return to more prudent saving behaviour by the household sector.

Table 2.1: Australian Economic Indicators

Quarterly

		1980s	1990s	2000s
GDP Growth	Mean	0.8	0.8	0.8
	Standard deviation	1.0	0.8	0.5
Unemployment rate	Mean	7.6	8.8	5.5
	Standard deviation	1.4	1.4	0.8

Source: ABS

2.2.5 Implications of growth in the financial system

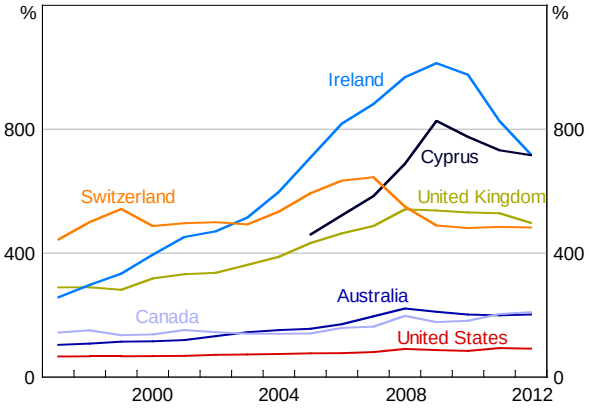
The expansion of the financial system that followed deregulation and disinflation was more protracted than many had expected. Nonetheless, this was by its nature a once-off adjustment, and one that seems to have run its course. Regulatory developments in recent years have continued to shape the financial system, but not to the same extent as the paradigm shift that occurred over the 1970s and 1980s.

That still leaves the long-run forces. The financial sector could keep growing as long as those trends continue, with implications for the broader economy.

There is considerable debate about the relationship between the size of a country's financial system (relative to its GDP) and its economic prosperity. The linkages are complex and hence very difficult to measure, so it is not surprising that scholars have come up with different findings (Law and Singh 2014). Most early studies find a positive link between the size of the financial sector and economic outcomes (King and Levine 1993). However, more recent work has suggested that there is a threshold beyond which further expansion in financial activity no longer benefits the broader economy (Santomero and Seater 2000; Levine 2005; Cecchetti and Kharroubi 2012; Greenwood and Scharfstein 2012).

Clearly, the financial system expanded to the detriment of the economy in a number of countries – Cyprus and Ireland, to name a couple (Graph 2.4). But crucial to those episodes was the *manner* in which they expanded. Essentially, there was a build-up of poorly chosen investments alongside an accumulation of risk by those not well placed to bear it. In many cases, banks rapidly expanded abroad without incorporating the different institutional and cultural environments into their risk management practices.

Graph 2.4
Banking System Assets*
Per cent of nominal GDP



* Banking system assets are subject to definitional differences
Sources: RBA; Thomson Reuters; national sources

Rather than size, per se, the focus ought to be on whether the financial system is efficient in performing its core functions with a desired level of safety (Cochrane 2013). That assessment should incorporate its size to the extent that it influences the potential for bouts of optimism to result in a misallocation of resources and a build-up of vulnerabilities (Greenwood and Scharfstein 2012). But size should not be the only consideration.

In assessing the expansion of the Australian financial system, it is useful to examine the evolution of the system around the four core functions that were outlined in Chapter 1:

- **Value exchange:** a way of making payments.
- **Intermediation:** a way of transferring resources between savers and borrowers.
- **Risk transfer:** a means for pricing and allocating certain risks.
- **Liquidity:** a means of converting assets into cash without undue loss of value.

The first of these functions – value exchange – is considered in Chapter 8. The others are considered below. An assessment of how changes in the financial system have shaped systemic risk is provided in Chapter 4.

2.3 Intermediation

The Wallis Inquiry took place in an atmosphere of expectation for change regarding the intermediation process. New technologies had enabled a number of new entrants to compete with banks for individual product lines. And great store was placed in the ability of product innovations to efficiently allocate risk.

As it turns out, the traditional model of bank intermediation has remained dominant. While some have been surprised by the constancy of the *providers* of intermediation, credit has become more widely available and at lower cost, as was widely expected.

2.3.1 Servicing households

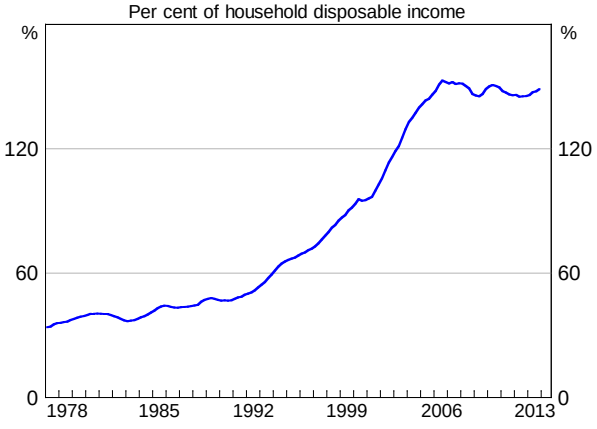
The extent of intermediation services provided to households has increased markedly over the past two decades. Household balance sheets were transformed, of which two aspects stand out in the context of intermediation. The first is the substantial increase in household indebtedness. The second is the increasing tendency for household savings to be channelled through superannuation funds.

2.3.1.1 Households' borrowing

The pace of borrowing by Australian households was especially rapid from the early 1990s until the mid 2000s (Graph 2.5). The reasons for this have been discussed elsewhere and were outlined earlier in this chapter (Ellis 2006; Productivity Commission 2004). Briefly, on the demand side, the most important structural factor was the shift to a low inflation, low interest rate environment. The increase in borrowing capacity was accommodated by the removal of controls on banks' provision of credit (RBA and APRA 2007). New product innovations also increased borrower flexibility and access to finance. Moreover, the demand for credit by investors increased over this period, supported by longstanding aspects of the tax treatment of residential property investments (including negative gearing, capital gains tax concessions and depreciation allowances).

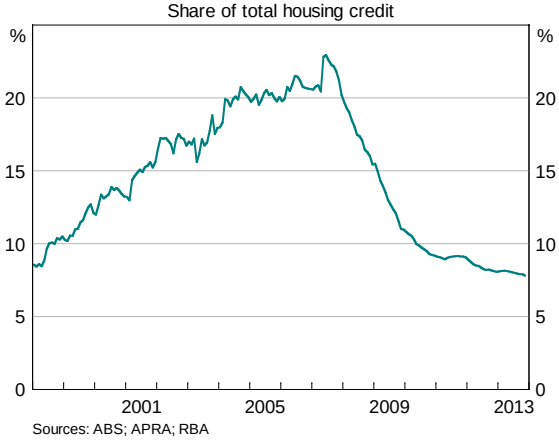
Integral to these developments was greater competition for mortgage lending from the mid 1990s (Chapter 6). New participants, known as mortgage originators, entered the market and gained considerable market share throughout the late 1990s and early to mid 2000s. These mortgage originators relied on the securitisation market to fund their lending.[6] Banks also began to use securitisation as a source of funding, given its relatively low cost and potentially broader investor base. As a result, by mid 2007, securitisation accounted for over 20 per cent of housing loans outstanding (Graph 2.6). This marked a significant shift in the provision of intermediation services, towards greater use of capital markets and away from the full-service banking model.

Graph 2.5
Household Debt
Per cent of household disposable income



Sources: ABS; APRA; RBA

Graph 2.6
Securitised Housing Loans
Share of total housing credit



Sources: ABS; APRA; RBA

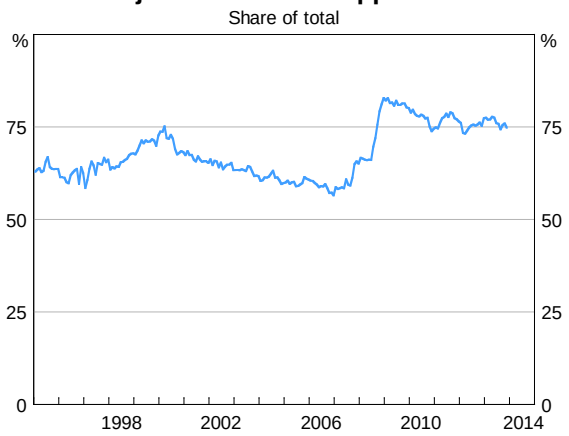
[6] Simply put, securitisation involves consolidating a pool of debt, such as residential or commercial real estate loans, and issuing securities that provide cash flows to the purchasers. The cash flows at various points in time are typically tied to the performance of the underlying pool.

The trend towards securitisation was reversed, however, following the onset of the US subprime crisis. Despite the continued strong credit performance and transparency of Australian residential mortgage-backed securities (RMBS), demand for these securities was affected by the brand damage to securitisation globally. Conditions in the RMBS market have since improved, with a number of issuers returning to the market after a hiatus of several years (Aylmer 2013). So although a return to pre-crisis levels of activity is unlikely in the near future, the RMBS market will continue to play an important role in the provision of housing credit in Australia.

Viewed in aggregate, the most visible change in the mortgage market since the financial crisis has been the increase in the major banks' market share (Graph 2.7). However, in terms of the outcomes for end users, many of the changes that were initiated by the arrival of mortgage originators have endured:

- The variety of mortgage products available to customers remains much greater than it was in the mid 1990s.
- The average size of discounts relative to the major banks' standard variable rates – and the share of borrowers receiving them – are around their historical highs.
- Fees paid by borrowers have declined in recent years, in absolute terms as well as relative to the value of outstanding loans (Pratten 2013).[7]
- The supply of housing credit has remained adequate. Although credit standards were tightened following the financial crisis, this only partially retraced the easing that occurred over the previous couple of decades.

Graph 2.7
Major Banks' Loan Approvals*



* Housing loans; excludes refinances and investor loans; includes BankWest from December 2008; seasonally adjusted
Sources: ABS; APRA

[7] An update will be provided in the Reserve Bank's next survey of bank fees, which will be published in the June 2014 issue of the RBA *Bulletin*.

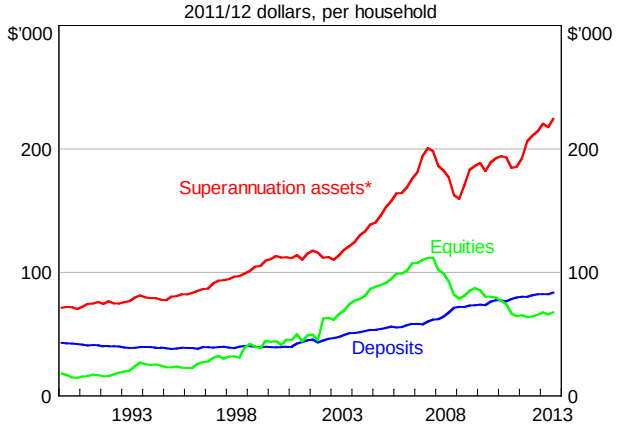
2.3.1.2 Managing household wealth

Households' assets rose alongside the increase in their indebtedness. Within households' financial assets, one important development since the Wallis Inquiry is the increased extent to which household savings have been channelled through superannuation funds (Graph 2.8).

The increase in assets held with superannuation funds reflects a number of government initiatives to boost retirement incomes and increase the private provision of superannuation in Australia. Among these initiatives were the introduction of compulsory employer superannuation contributions and various tax incentives to encourage voluntary retirement savings (Chapter 7).

For the purposes of this Chapter, it is sufficient to note that the greater prominence of superannuation funds has increased their importance to the intermediation process. The growth in superannuation assets has also changed the structure of intermediation among institutions. For example, banking groups have played an increasing role in wealth management following a number of acquisitions over the past decade. Life insurers also began to source more of their income from fund management and less from traditional life insurance products.

Graph 2.8
Household Financial Assets
2011/12 dollars, per household



* Includes life offices, pension funds and unfunded superannuation claims
Sources: ABS; RBA

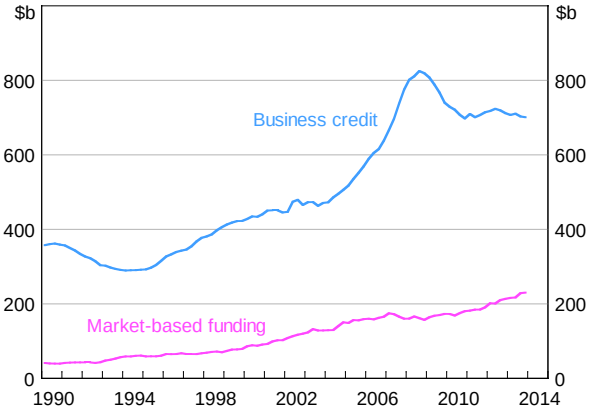
2.3.2 Corporate finance

In contrast to the household sector, the business sector did not – in aggregate – significantly increase its gearing in response to lower interest rates and the stable macroeconomic environment from the early 1990s. This initially reflected the need to repair balance sheets after the early 1990s recession. Since the early 2000s, corporate gearing has generally remained low compared with some other countries, although it did rise in the lead-up to the financial crisis and directly afterwards. One contributing factor to relatively lower corporate gearing is Australia's dividend imputation tax system, which has the effect of lowering the cost of equity relative to debt.

Australian companies have traditionally borrowed from financial intermediaries such as banks and finance companies. In the period since the Wallis Inquiry, large companies have increasingly borrowed via market instruments (Graph 2.9). However, Australian companies still make relatively little use of bond funding compared with some other developed economies. The stock of bonds on issue by Australian companies grew rapidly from the late 1990s until the financial crisis. The pace of issuance has quickened again in recent years as resource companies have increased their investment in the

Australian economy. Resource companies tend to borrow directly from capital markets for their external financing needs (Arsov, Shanahan and Williams 2013).[8]

Graph 2.9
Business Debt
2011/12 dollars



Sources: ABS; APRA; Austraclear; RBA

An increasing number of Australian companies have accessed offshore funding markets. Over the past two decades, around three-quarters of corporate bond issuance has been conducted offshore. Most of the offshore issuance has been denominated in US dollars, reflecting the size and depth of the US bond market. For a number of Australian companies, US dollar issuance also provides an opportunity to match the currency of their revenues with that of their interest payments. Offshore markets have also allowed some firms to access long-term financing on more favourable terms than have been available domestically, and to diversify their funding sources.

A corollary of Australian companies' ready access to offshore funding markets, and low level of aggregate gearing, is that the size of the domestic corporate bond market (relative to GDP) is smaller than in some other advanced economies, particularly the United States. However, in many respects the United States is the exception – reflecting the relatively fragmented nature of its banking system, and a degree of self-fulfilling momentum from having the most liquid debt markets in the world.

Overall, what is most important is that businesses have access to a range of funding sources, at reasonable cost, to facilitate investment in the Australian economy (along with access to hedging instruments to manage the risks). For many companies that earn revenues in US dollars – resources companies, for instance – the most efficient source of funds may well be the US debt market. Moreover, access to equity funding can be just as important as access to debt funding.

Banks and other credit institutions have continued to play an important role in funding Australian companies. This was evident during the financial crisis, when stress in wholesale debt markets led companies to use more intermediated credit, alongside sizeable equity raisings. An important longer-run development has been an increase in syndicated lending, whereby two or more lenders jointly provide credit to the same borrower. This growth has contributed to an increase in large Australian companies' access to offshore finance.

---

[8] Both Australian and foreign listed resource companies primarily fund themselves with internal funds. From 2003 to 2012, internal funding was 86 per cent and 150 per cent of total net funding flows for Australian and foreign listed resource companies, respectively. The share of internal funding is higher than in non-resources sectors. For example, other non-financial Australian listed companies have typically sourced around two-thirds of their net funding internally.

Even with the recent trend towards more market-based funding, some banks still play an integral role in helping to bring firms to capital markets. Others have shifted their lending portfolios towards housing and small business finance.

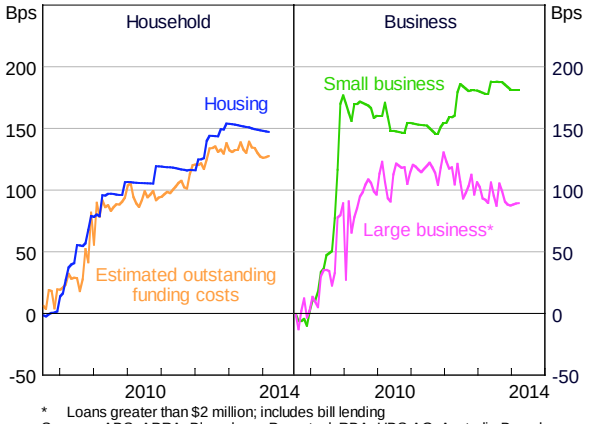
Most small businesses continue to use loans from banks and other financial institutions for most of their debt funding because it is often difficult and costly for them to raise funds directly from capital markets. Briefly, the available data and liaison by the Reserve Bank, including through its Small Business Panel and Roundtable (RBA 2012a), suggest that access to small business finance increased over the decade preceding the financial crisis. Since then most industries have had tighter but still reasonable access to funds, albeit at higher cost during the crisis. Chapter 5 considers small business finance in more detail.

2.3.3 Intermediation in the post-crisis environment

The price of risk has increased since the crisis, and with it the cost of intermediation. One consequence of this is that banks' lending rates have risen relative to the cash rate, across all loan types (Graph 2.10). This has predominantly reflected an increase in funding costs, although higher risk premia for the various kinds of borrowers have also contributed. For instance, the rise in mortgage rates has been, on average, less than the corresponding increase for loans to small businesses. The difference partly reflects the fact that the increase in perceived risk in small business loans has been greater.

Graph 2.10
Variable Lending Rates

Cumulative change in spreads to the cash rate since June 2007



* Loans greater than $2 million; includes bill lending
Sources: ABS; APRA; Bloomberg; Perpetual; RBA; UBS AG, Australia Branch

Over the same period, the interest rates earned by savers on deposits have increased relative to the cash rate. Prior to the crisis, interest rates on term deposits and saving deposits were consistently below the cash rate, whereas now they are consistently higher. This marks a fundamental change in the intermediation process. For much of the pre-crisis period, competition among financial intermediaries was focused mainly on the lending side of the business. In effect, intermediaries could assume that funding would be available and compete for market share in lending out the available funds. The focus has changed since the financial crisis, with competition for deposits and other funding intensifying.

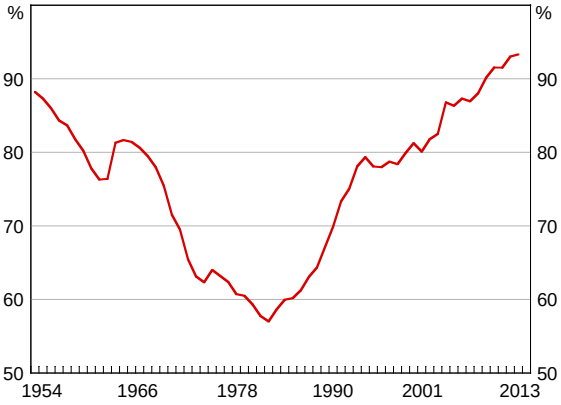
Lending rates in Australia nonetheless remain well anchored to changes in the cash rate. The Reserve Bank Board takes developments in banks' funding costs into account when determining the appropriate setting of the cash rate (Lowe 2012). This ensures that the structure of interest rates faced by households and businesses reflects the desired stance of monetary policy.

The same repricing of risk that has raised the level of borrowing and lending rates, relative to the cash rate, has also contributed to a shift in the market shares of different types of intermediaries. In particular, banks now account for a greater share of the total assets of Australian intermediaries than at any time in the past half-century (Graph 2.11).

The largest increase in banks' market share occurred during the 1980s and early 1990s, following the removal of interest rate controls that had previously placed banks at a competitive disadvantage to other intermediaries. Banks have further increased their market share since the Wallis Inquiry. And concentration *within* the banking system has also increased, in part due to a number of acquisitions by the major banks in the years surrounding the crisis.

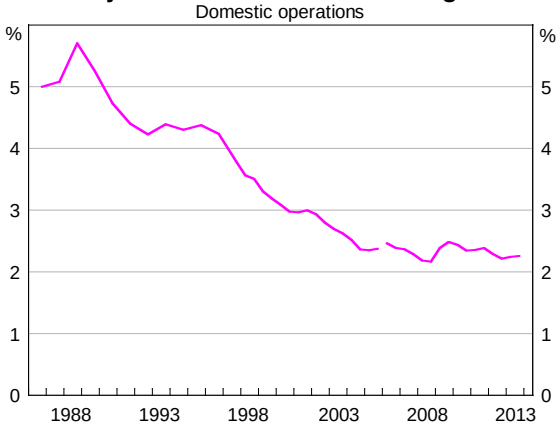
Despite greater concentration among providers, the competitive forces that were introduced in the 1990s seem to have endured, lowering the cost of intermediation for banks' customers. In the late 1980s the average net interest margin of the major banks was above 5 percentage points. By the mid 2000s, it had fallen to less than half that level and, broadly speaking, remains there today (Graph 2.12). The net result is that, despite the adjustments to the post-crisis environment, intermediation has become both cheaper and more widely available.

Graph 2.11
Banks' Assets
Share of financial intermediaries' assets



Sources: ABS; RBA

Graph 2.12
Major Banks' Net Interest Margin*
Domestic operations



* From 1998 data are on a half-yearly basis, prior years are on a yearly basis; from 2006 data are on an IFRS basis, prior years are on an AGAAP basis; includes St. George from 1993 and Bankwest from 2009

Sources: RBA; banks' financial reports

2.4 Pricing and Allocating Risk

Developments in recent years have reaffirmed the importance of properly pricing and allocating risk. The Wallis Inquiry took place amid growing confidence that financial innovation would help to efficiently distribute risk (Financial System Inquiry 1997, p 4). The optimism continued for another decade or so but, ultimately, the vulnerabilities of the global financial system were laid bare. For financial historians this was an all too familiar narrative: a fundamental shift in technology led to real and sustainable changes, but also engendered a wave of optimism that ultimately went too far (Kindleberger and Aliber 2005).

One reason for the excessive build-up of risk was a focus on the merits of each innovation in isolation without proper consideration for the system as a whole. Chapter 4 examines the concept of systemic risk, alongside a broader discussion of the various financial risks.

2.4.1 The pre-crisis euphoria and the post-crisis rethink

Prior to the financial crisis, financial market volatility was low and stable. Credit spreads were narrow and leverage was readily available. It was the so-called 'Great Moderation'. Favourable macroeconomic conditions globally were shaped by – and reinforced – a belief that new technologies had allocated risk to those most capable of holding it (IMF 2006, p 36). Many business models were based on the assumption that the benign conditions in global financial markets would persist indefinitely, and many financial products were priced accordingly.

For a while, everything looked to be working out quite well (at least to some); financial institutions were highly profitable and global growth was strong. But in reality, risks were underpriced, there was too much leverage and little was being done to address the building vulnerabilities. Financial institutions and markets had become highly interconnected and large maturity mismatches were common.[9]

The financial crisis brought these latent risks to the fore. Compensation for risk spiked because financial institutions suddenly became unwilling to assume as much of it (BIS 2009, pp 16–36). The result was a swift tightening in financial conditions, at great cost to the global economy. Trust in the financial system was eroded. Extraordinary intervention by regulators, central banks and governments was needed to avoid further debilitating economic effects (IMF 2009, pp 39–51).

The episode was a reminder of the need to consider risk allocations from the perspective of the system, rather than viewing single exposures in isolation. In recent years, policymakers have focused on reforming the global regulatory framework to address the tendency for financial companies to overlook the systemic implications of their actions (particularly during the boom times; Chapter 3).

2.4.1.1 The Australian experience

Australia was not immune to these events: risks were mispriced and misallocated. But, broadly speaking, the Australian financial system adapted quite well throughout a period of acute stress (Davis 2011). Some public support was required, but not to the extent or for the duration that was needed elsewhere.

A number of factors contributed to the resilience of the Australian system. For one, lending standards were not eased to the same extent as in some other countries during the decade prior to the financial crisis. For another, Australian institutions took on relatively little exposure to the complex structured products that caused large losses at banks in Europe and the United States. The sound prudential framework in Australia was also a source of resilience. In part, the lessons learned from the failure of HIH Insurance in 2001 served to bolster industry and supervisory practices (see 'Box 2A: The Collapse of HIH Insurance').

[9] The fact that risk was underpriced was apparent to many observers, including the Australian authorities (APRA 2005, p 9; BIS 2006, pp 140–144; Laker 2006, p 8; RBA 2006, p 1).

Box 2A The Collapse of HIH Insurance

HIH Insurance – Australia's second largest insurer at the time – was placed into provisional liquidation in 2001. This followed rapid expansion across a range of product lines, driven by domestic and overseas acquisitions. The effects of the collapse were not limited to policyholders, creditors and employees. Markets for certain insurance products were severely disrupted (including builders' warranty and workers' compensation). And government support was required to ensure the provision of certain services and to prevent further destabilising effects.

The HIH Royal Commission attributed the failure of HIH to a number of factors, including mismanagement, poor corporate governance and inadequate accounting. The Commission made a number of recommendations to improve disclosures, strengthen accounting rules and improve the governance of accounting bodies (HIH Royal Commission 2003). The Commission also recommended changes in the practices and governing legislation of a number of public bodies, including the Australian Accounting Standards Board, and particularly the Australian Prudential Regulation Authority (APRA).

Although the Commission found that APRA did not cause or contribute to the collapse of HIH, a number of shortcomings in its regulatory and supervisory practices were identified. The Commission noted that these shortcomings may have partly reflected the disruptions associated with changes to the institutional framework following the Wallis Inquiry (such as APRA's formation and the relocation of staff to its Sydney office).

In response, the government introduced several enhancements to APRA's governance arrangements (Treasurer 2003). APRA's board was restructured from a part-time non-executive board to an executive board comprising three to five full-time members. APRA's role was clarified, its powers were strengthened (through increased powers to wind up insolvent institutions, for example) and its funding was increased.

APRA also took its own remedial actions. It introduced new risk assessment and supervisory response tools known as the Probability and Impact Rating System (PAIRS) and the Supervisory Oversight and Response System (SOARS) (APRA 2003a, 2003b). It adopted new standards to better regulate large holding companies and entities with foreign units. And specialist teams were created to assess specific risks and institutions. At the same time, APRA embraced a system-wide perspective of supervision, and worked to foster a culture of scepticism and questioning (APRA 2004, p 4; Laker 2006, 2010). These improvements in APRA's supervisory practices and capabilities played an important part in the development of the financial system and its resilience during the financial crisis.

The collapse of HIH Insurance provided important lessons for industry participants and policymakers. The failure itself, and the deficiencies that were exposed, illustrated that changes to the institutional framework can be disruptive and weaken supervisory practices, at least in the short term. The period since has shown that effective supervision during good times can contribute to the resilience of the financial system during periods of stress.

2.4.2 Some longer-run trends

Stepping back from the crisis, there were a number of important longer-run trends in the pricing and allocation of risk during the period since the Wallis Inquiry. First, innovations enabled the pricing of increasingly granular risks. Second, financial institutions reformed their approaches to risk management and devoted more resources to the enterprise. Third, Australian households took on greater financial risk.

2.4.2.1 Innovations in pricing and allocating risk

Financial and technological innovations in recent decades enabled the unbundling – and the re-bundling – of financial risks on a greater scale. Market participants have increasingly used instruments, including derivatives and structured finance products, to deconstruct risk events into their constituent elements and repackage them in a variety of ways; this process is perhaps best described as the 'atomisation' of risk (Knight 2007). While a source of problems in recent times, these innovations do hold the promise of tangible benefits regarding the allocation of risk.

The result has been a marked increase in the range of instruments that are traded in financial markets (Borio 2007). The new products and markets have increased the scope for households and companies to tailor their risk exposures. For instance, many Australian companies use derivatives to manage the risk on their offshore borrowings or to insulate their balance sheet positions from changes in interest rates (Gyntelberg and Upper 2013).

At the same time, the financial system has become more complex. And the interlinkages between markets and institutions have grown. Banks have increasingly used financial markets to source income and to hedge their operations. Markets, in turn, have remained dependent on banks for liquidity. Moreover, the globalisation of finance has increased the potential for financial shocks to be propagated across borders and markets. Each of these changes was evident during the years surrounding the crisis. For instance, the rapid growth in over-the-counter (OTC) derivative markets led to large bilateral, cross-border exposures. It also increased the interconnectedness and counterparty risk in the financial system, which helped to amplify the global liquidity shock of 2008.

2.4.2.2 Risk management among financial institutions

The growth in the size and complexity of the financial system has led to an increase in the resources devoted to allocating and managing risk. In Australia, the financial sector and its supervisors have taken a number of measures to improve risk practices over recent decades, including:

- **Greater resources for risk management** (Laker 2007). This reflected, in part, a response to the large losses recorded by Australian financial companies in the early 1990s (Sykes 1994).
- **Some enhancements to risk identification.** For example, credit risk management systems provided further information on the characteristics of loan portfolios. And advances in information technology have enabled banks to view the exposures of their various business segments and subsidiaries, in contrast to some of the systems that were in place prior to the Wallis Inquiry (Carew 1997).
- **Greater use of risk modelling and quantitative approaches to the allocation of capital.** The implementation of the Basel II Capital Framework was an important catalyst for a more granular allocation of capital according to risk (see 'Box 2B: The Basel II Capital Accord').

These improvements contributed to the resilience of the Australian financial system in recent years. But they do not imply an absence of vulnerabilities. First, the operational risks remain acute, as demonstrated by the large losses of a major bank in 2004 due to 'rogue' trading losses, and similar transgressions at a number of foreign banks in recent years. Second, many risks to the financial system remain largely untested. One consequence of more than two decades of virtually uninterrupted economic growth is that the Australian financial system has not had to adapt to a period of prolonged weakness in the domestic economy. It is important that households, businesses, and financial institutions remain alert to the risks.

Box 2B The Basel II Capital Accord

One key development in banks' risk management practices since the Wallis Inquiry has been greater sophistication in the allocation of capital according to risk. The catalyst for this was a set of requirements developed by the Basel Committee on Banking Supervision (BCBS), known as the Basel II Accord.

Put simply, banks hold capital to protect against losses. The minimum amount of capital, as well as the form it takes, is determined by each jurisdiction's banking supervisor. Supervisors set minimum capital ratios to promote financial stability, partly because banks may not take into account the external costs of failure when choosing their own target capital ratio (Santomero and Watson 1977).

In the 1970s and early 1980s, supervisors mandated capital requirements based on simple measures such as a 'leverage ratio' (the ratio of equity to assets). However, it became apparent that there were inconsistencies across jurisdictions (allowing regulatory arbitrage), and there were incentives for banks to hold riskier assets in order to maximise returns (Byres 2012).

An important first step in addressing these concerns was achieved in 1988, with the Basel I Accord – the first set of internationally agreed principles on capital adequacy. A simple set of risk-sensitive weights were introduced to determine how much capital banks should hold for certain assets, and guidelines were set as to the form that capital should take.

Subsequent financial innovations, and the growing complexity of the financial system, reduced the effectiveness of the 'one size fits all' approach of Basel I (Littrell 2006). So in 2004, the BCBS established the Basel II Accord, which refined the Basel I framework in a number of ways:

- It established a 'three pillar' approach to capital adequacy: a framework for linking regulatory capital to risk, for improving internal risk measurement and management, and for enhancing supervisory and market discipline (BCBS 2004).
- It adopted significantly more risk-sensitive capital requirements. In Australia, APRA exercised its discretion by making the risk weights for residential mortgage lending considerably more granular and more conservative (Littrell 2006).
- It enabled some banks to use their internal assessments of risk as inputs into their capital requirements. This created incentives for some banks to invest in the infrastructure needed to better model and measure the risks in their portfolios. The BCBS also put in place minimum requirements designed to ensure the integrity of these internal risk assessments.
- It broadened the scope of the risks that banks were required to set aside capital for to include operational risk. In addition, APRA introduced an explicit minimum capital requirement for interest rate risk in the banking book.

The net result of these developments in the Australian context was greater sophistication in the modelling of risk and, in principle, a more prudent allocation of capital. This is one of a number of factors that has contributed to the resilience of the Australian banking system. By contrast, the crisis demonstrated that some foreign banking jurisdictions were not holding enough capital (BCBS 2011) – some of which were yet to implement the more risk-sensitive measures under Basel II. In response, the BCBS established the Basel III Accord which, among other things, increased minimum capital requirements for banks globally. The Basel III reforms, and their implementation in Australia, are considered in Chapter 3.

2.4.2.3 Risk allocations among households

There is not space here to detail the many changes in risk allocations since the Wallis Inquiry. A regular timely assessment of risks to financial stability is provided in the Reserve Bank's semiannual *Financial Stability Review*. Briefly, though, it is worth outlining two key changes to the allocation of risks among households since the Wallis Inquiry:

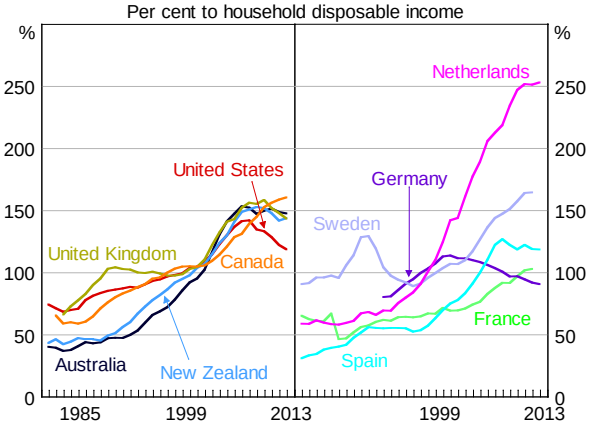
- the rise in indebtedness
- the increase in direct exposure to market risk.

Greater household indebtedness

Similar to many countries, Australia's household debt-to-income ratio roughly trebled between the 1980s and the mid 2000s (although it has since stabilised; Graph 2.13). Greater access to finance has benefited Australian households in a number of ways, including by expanding their scope to smooth consumption over their lives (Modigliani 1986). Even so, the rise in indebtedness has made some households more vulnerable to sudden changes in macroeconomic conditions (Borio and Lowe 2002).

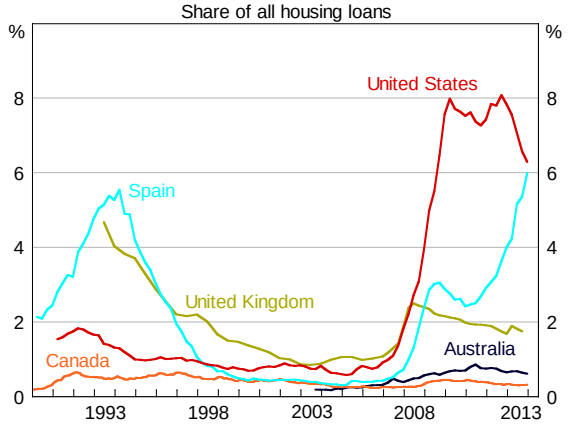
Most of the increase in household debt in Australia accrued to higher-income households, which tend to have lower debt-serviceability ratios and debt-to-income ratios than other borrowers (Finlay 2012). And lending standards generally remained prudent, despite some easing in the early 2000s and in the lead-up to the crisis. Some pockets of stress emerged, including in western Sydney during the mid 2000s (Urban Research Centre 2010), followed by some regions in Queensland and coastal New South Wales, and in Western Australia (RBA 2012b, p 41). But, viewed in aggregate, relatively prudent lending standards, alongside favourable economic conditions, have contributed to the strong performance of Australian mortgages in recent decades (Graph 2.14).

Graph 2.13
Household Debt*
Per cent to household disposable income



* There are differences in definitions across countries
Source: national sources

Graph 2.14
Banks' Non-performing Housing Loans*
Share of all housing loans



* There are differences in definitions and institutional coverage across countries
Sources: APRA; Bank of Spain; Canadian Bankers' Association; Council of Mortgage Lenders; FDIC; RBA

Greater direct exposure to market risk

The rise in superannuation holdings since the Wallis Inquiry has increased the exposure of Australian households to market risk – the risk of losses due to fluctuations in the market price of assets (see 'Box 4A: Types of Financial Risk'). In particular, the share of household assets held in equities has increased to 40 per cent, compared with less than 30 per cent in the late 1990s.

Over a long investment horizon, equities have generated higher returns than less risky investments such as deposits. For instance, on a pre-tax basis, $100 invested in the ASX 200 when the Wallis Inquiry was published would have nearly trebled by the end 2013, whereas the corresponding investment in a savings deposit would have not quite doubled.

Even so, the financial crisis demonstrated the risks to Australian households' wealth. Australian equity prices halved, reducing household wealth, including the retirement funds of many Australians. While equity prices rebounded swiftly, not all households could wait for the recovery before selling assets to generate cash. Subsequently, households have adopted more conservative asset allocations – shifting funds away from equities and into deposits.

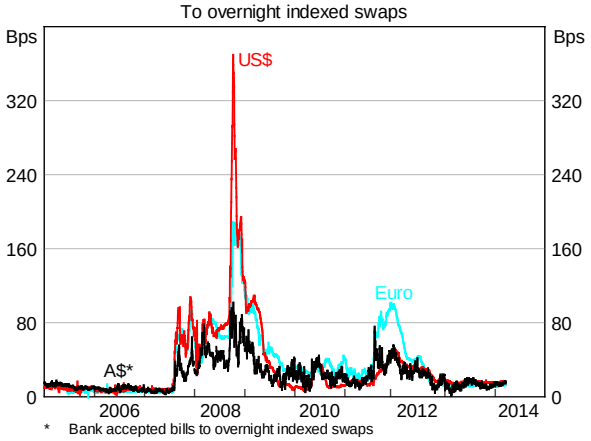
From a system perspective, the increase in households' exposures to equities had little impact on financial stability. One reason for this is that few equities were directly purchased using debt, which reduced the scope for a cycle of margin calls and sell-offs. Moreover, the increased direct exposure to market risk among households has reduced the concentration of these risks in institutions.

2.5 Liquidity

The financial crisis brought into sharp relief the importance of liquidity provision, not only for financial institutions but also for the broader economy (see 'Box 2C: The Global Financial Crisis'). The dearth of liquidity in late 2008, and the abrupt tightening in financial conditions, led firms to cut back on investment and production. The result was the most synchronised collapse in global trade since at least World War II.[10]

Whereas most scholars had focused on managing the liquidity risks associated with banks' retail deposits, the predominant channel through which the global liquidity shock of 2008 came about was the closure of interbank lending markets (Bech and Keister 2013). There were some deposit runs in Europe – most notably on UK lender Northern Rock (Shin 2009). But the key source of the liquidity shortage was the sudden unwillingness of banks to lend to each other. This is best exemplified by the spread between a short-term rate in the interbank market and the expected policy rate (Graph 2.15). In Australia, the spread did not rise as much as it did in other countries, reflecting fewer counterparty concerns and the associated smoother functioning of the interbank market.

Graph 2.15
3-month LIBOR Spreads
To overnight indexed swaps



* Bank accepted bills to overnight indexed swaps
Sources: AFMA; Bloomberg; Tullet Prebon (Australia) Pty Ltd

[10] The specific topic of trade finance is considered in CGFS (2014).

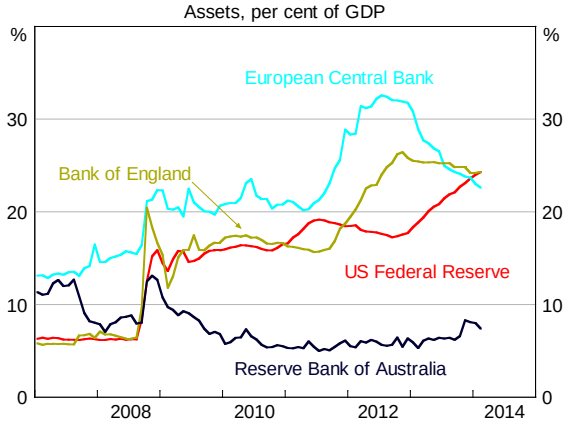
2.5.1 Central bank support

In the face of an unprecedented global shock, central banks took extraordinary measures to inject liquidity into the financial system. These efforts were initially concentrated on improving the functioning of short-term money markets. Policy rates were reduced to multi-decade lows. And central banks expanded the scale of their money market operations by widening the scope of eligible collateral and lengthening the term of repurchase agreements.

One summary way to gauge the actions of the Reserve Bank with those of other central banks during the crisis is to compare the evolution of their balance sheets. Graph 2.16 shows that the Reserve Bank provided liquidity support during late 2008 that was subsequently unwound.[11] In contrast, the balance sheets of central banks in Europe and the United States expanded significantly more and remain elevated.

The methods of support also differed. The US Federal Reserve and the Bank of England, for instance, directly purchased securities as part of their quantitative easing policies. For the Reserve Bank of Australia, the balance sheet expansion was achieved predominantly through its regular market operations.[12] The Reserve Bank was able to respond to market pressures promptly and with few changes to the operating framework, partly because of the flexible framework for open market operations (Debelle 2008). The fact that the Bank had dealt daily with a range of counterparties over an extended period also aided the Bank's response.

Graph 2.16
Central Bank Balance Sheets
Assets, per cent of GDP



Sources: RBA; Thomson Reuters

Several other factors enabled the Reserve Bank to promptly address the liquidity shortage in Australia. Two deserve special mention.

First, the foreign-currency denominated funding of the Australian banking system was hedged into Australian dollars – as it continues to be today. This meant that most of the liquidity demand was in Australian dollars rather than in foreign currency. This compares to the situation of a number of European banks that funded US dollar assets with US dollar liabilities which had been swapped out of their local currency. When liquidity issues arose for those European banks, the European Central Bank was constrained in its ability to provide the US dollar liquidity needed to address those stresses.

---

11 The Reserve Bank's balance sheet expanded in November 2013 as a result of the move to same-day settlement of direct entry payments. This increase was related to changes in the payments system and does not reflect crisis measures.

12 Some of the increase reflected the foreign exchange swap facility with the Federal Reserve, which was primarily initiated to assist the Federal Reserve's actions to ease global US dollar pressures.

Second, the asset quality of the Australian banking system remained in good shape. An important role of the central bank in a crisis is to lend to illiquid yet solvent institutions (Thornton 1802; Bagehot 1873). And the solvency of a bank is first and foremost a function of the quality and value of its assets.

2.5.2 The post-crisis environment

The crisis has not changed the desire among many households and businesses to borrow at long maturities while having access to their savings at short notice. It has, however, resulted in a reappraisal of the associated risks.

Prior to the crisis, the importance of liquidity in markets and to institutions had perhaps not been emphasised as much as it should have been in international regulation, where the focus had been on capital adequacy. The crisis demonstrated that, under conditions of uncertainty, liquidity pressures could emerge in markets that have seldom been affected in the past. It was a reminder that the same speculators that add liquidity to markets in good times may withdraw liquidity in bad times (Lowenstein 2000). Relatedly, the liquidity characteristics of some financial instruments had been overestimated.

In response to the difficulties encountered, predominantly in the North Atlantic countries, reforms to address bank liquidity have been developed; these form part of the broader Basel III package of bank reforms. The liquidity reforms and their implementation in Australia are discussed in Chapter 3. One key element is a requirement that banks hold sufficient liquid assets to withstand a 30-day stress period, including by taking into account the liquidity risk inherent in their various liabilities.

Alongside the regulatory response, there was a fundamental reassessment of liquidity risk by investors, ratings agencies and banks globally. The change in mindset is evident in the repricing of banks' liabilities and adjustments to the composition of their funding. Australian banks have competed strongly for deposits, reflecting a view that deposits pose less liquidity risk than short-term wholesale funding. The competitive pricing, alongside more prudent household behaviour, has contributed to an increase in the deposit funding of the Australian banking system.

Banks have also adjusted the composition of their assets to address liquidity risk, including through greater holdings of liquid assets (such as government debt). Australian banks have begun to place more weight on liquidity considerations in the pricing of some of their lending products.

It is worth reiterating that the changes in the cost and provision of liquidity services are not purely the result of regulatory changes. There are a number of interacting forces at work. Some of these changes are self-imposed, as financial institutions look at the lessons learned over recent years and seek to increase their resilience to future developments. Some are being imposed by the market in terms of the price and quantity of the available funding. Others reflect pressure from ratings agencies. In general, financial institutions have a better appreciation of liquidity risk than they did before the crisis. And efforts have been made to advance liquidity risk management and stress testing techniques. Taken in conjunction with the reforms to capital requirements and other risk management measures, these developments should help to make banks more resilient to future stress events. Moreover, the regulations will serve as a backstop in the event that some of the other forces dissipate in the future.

Box 2C The Global Financial Crisis

The global financial crisis began in the early part of 2007, though the conditions that brought it about had been in place well before then. There was no single cause of the crisis. It was, at its core, a crisis of credit markets, beginning in the United States and Europe before spreading across the globe via the many interlinkages of the financial system.

The financial cycle that underlay the crisis was similar to those of the past: there was a prolonged increase in optimism and risk appetite, an abrupt reappraisal of risk, then a severe loss of confidence (Kindleberger 1978; Reinhart and Rogoff 2009). The backdrop to this financial cycle was the favourable economic conditions and low interest rates that prevailed in the major economies in the first half of the 2000s (BIS 2009, pp 4–7). Investors took greater risks as they began to 'search for yield'. Credit grew strongly in a number of countries and some financial firms built up large speculative positions. The interconnectedness of the financial system rose at the same time that it became more difficult to monitor the risks.

The crisis first became apparent in the US market for subprime housing loans – that is, loans to borrowers that have a blemished credit history. Though a number of advanced economies suffered from housing booms and busts around the time of the crisis, the meltdown of the US housing market was unusually destructive, and preceded the peak of the crisis rather than being a consequence of it. Institutional features unique to the United States caused significant overbuilding of new housing before the crisis and made arrears rates especially sensitive to falling housing prices (Ellis 2008). Lending standards also eased considerably more in the United States. By 2006, a fifth of new housing lending was subprime and many other loans had different high-risk features (such as large introductory 'teaser' rate discounts or very high loan-to-valuation ratios). In theory, the risk of loss on these loans was limited provided housing prices continued to rise, as borrowers could sell their home to repay the debt. When housing prices began to fall in early 2007, the losses began to mount.

Informational asymmetries in the US securitisation market played a key role in the weakening in lending standards and the transmission of the subsequent losses throughout the globe. In the lead-up to the crisis, a growing volume of housing loans were originated by specialist lenders, pooled into mortgage-backed securities and more complex structured products, and sold on to investors around the world. Several features of this 'originate to distribute' model accelerated the build-up of risk in the global financial system (Brunnermeier 2009). First, because loans were sold shortly after they were originated, lenders had less incentive to scrutinise the creditworthiness of their borrowers. Second, many securitisations had opaque structures and embodied risks that were difficult to measure and value. These features were, in part, the product of incentive problems, among them excessive compensation schemes that encouraged improper risk-taking and short-termism (Haldane 2011).

The US housing meltdown was the catalyst for a global crisis because of its effect on funding markets and liquidity. The off-balance sheet vehicles that banks used to securitise housing loans were often financed by selling short-term commercial paper (Gorton 2008). Large internationally active banks also took advantage of cheap and abundant short-term wholesale funding, including repurchase agreements (repos), to finance their long-term lending and purchases of asset-backed securities. While highly profitable in the upswing of the financial cycle, these maturity mismatches proved untenable when losses on housing loans began to mount and investor confidence dissipated. The result was a 'modern bank run' as investors abruptly withdrew their short-term

funding (Shin 2009). The run on off-balance sheet vehicles quickly spread to the interbank market and throughout the global financial system. The disruptions to funding markets intensified with the collapses of Northern Rock, Bear Stearns, Fannie Mae and Freddie Mac, and ultimately peaked when Lehman Brothers failed on 15 September 2008, triggering a global loss of confidence (see BIS (2009) for a chronology of the crisis).

Part of the reason why the crisis was so severe was because of an excessive build-up of leverage. Leverage can be dangerous for several reasons. At a basic level, the higher a bank's (or other entity's) leverage, the more exposed it is to falls in asset prices (Adrian, Colla and Shin 2012). Borrowing that is secured by collateral can also create a fire-sale dynamic that exacerbates a crisis. When concerns about counterparty risk and collateral values intensified in the crisis, banks were forced to pledge larger amounts of collateral to borrow using repos and other types of short-term secured funding (Gorton and Metrick 2012). These collateral demands became prohibitive for some institutions, forcing them to sell assets to finance funding withdrawals, placing further downward pressure on asset values and instigating a damaging feedback loop.

The increase in leverage that occurred before the crisis meant that many banks had insufficient capital to withstand significant losses (BCBS 2011). Investment banks initially recorded large losses in their trading books, including on write-downs of securitisations and other financial products linked to US subprime housing loans. Although some of these losses were reversed when asset values recovered, bank profits came under renewed pressure as fragility in the financial sector spilled into the real economy. Confidence was shaken, households cut their spending and businesses reduced their production. GDP fell by around 4 per cent in the G7 economies in 2009, accompanied by steadily rising unemployment, and global trade fell by more than 10 per cent. As macroeconomic conditions worsened, businesses and households defaulted in greater numbers and loan losses surged.

The large losses and evaporation of liquidity brought many institutions to the point of failure. Central banks acted swiftly, cutting interest rates and providing liquidity to stressed banks. Even so, some banks became insolvent and were sold to other banks or wound down. Others received government capital injections. A number of governments introduced temporary guarantees for deposits and bank debt, and used large fiscal stimulus measures to bolster their economies.

Although these responses were generally effective in stemming the worst of the crisis, its effects would be felt for years to come. In a couple of countries the problems in the banking system were so large, relative to the rest of the economy, that national governments had to turn to the International Monetary Fund and other multilateral bodies for assistance. Weaknesses were exposed in the euro area that led to a sovereign debt crisis, which has acted as a drag on recovery. The events of the crisis also showed that too much faith had been placed in the idea that market efficiency and rational expectations would prevent financial imbalances from developing (Volcker 2012). To address the vulnerabilities in the financial system exposed by the crisis, the G20 agreed on a comprehensive regulatory response – discussed in Chapter 3.

References

Adrian T, P Colla and HS Shin (2012), 'Which Financial Frictions? Parsing the Evidence from the Financial Crisis of 2007 to 2009', *NBER Macroeconomics Annual 2012*, 27, pp 159–214. Available at <http://www.jstor.org/stable/10.1086/669176>.

APRA (Australian Prudential Regulation Authority) (2003a), *Annual Report 2003.*

APRA (2003b), 'Introducing PAIRS – APRA's Probability and Risk Rating System', *APRA Insight*, Issue 1, pp 5–10.

APRA (2004), *Annual Report 2004*.

APRA (2005), *Annual Report 2005.*

Arsov I, B Shanahan and T Williams (2013), 'Funding the Australian Resources Investment Boom', RBA *Bulletin*, March, pp 51–62.

Aylmer C (2013), 'Developments in Secured Issuance and RBA Reporting Incentives', Speech to the Australian Securitisation Forum, 11 November.

BIS (Bank for International Settlements) (2006), *76th Annual Report*, June, Basel, Switzerland. Available at <http://www.bis.org/publ/arpdf/ar2006e.pdf>.

BIS (2009), *79th Annual Report*, June, Basel, Switzerland. Available at <http://www.bis.org/publ/arpdf/ar2009e.pdf>.

Bagehot W (1873), *Lombard Street: A Description of the Money Market*, Henry S King and Co, London. Available at <http://www.econlib.org/library/Bagehot/bagLom.html>.

BCBS (Basel Committee on Banking Supervision) (2004), 'International Convergence of Capital Measurement and Capital Standards: A Revised Framework', November.

BCBS (2011), 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems', revised version, June.

Bean C (2003), 'Asset prices, Financial Imbalances and Monetary policy: Are inflation Targets Enough?', Paper prepared for Conference on 'Monetary Stability, Financial Stability and the Business Cycle', BIS, Basel, 28 March. Available at <https://www.bis.org/events/conf030328.htm>.

Bech ML and T Keister (2013), 'On the Economics of Committed Liquidity Facilities', in A Heath, M Lilley and M Manning (eds), *Liquidity and Funding Markets*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 183–206.

Borio C (2007), 'Change and Constancy in the Financial System: Implications for Financial Distress and Policy', in C Kent and J Lawson (eds), *The Structure and Resilience of the Financial Sys*tem, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 8–35.

Borio C and Lowe (2002), 'Asset Prices, Financial and Monetary Stability: Exploring the Nexus', BIS Working Papers No 114.

Brunnermeier MK (2009), 'Deciphering the Liquidity and Credit Crunch 2007–2008', *Journal of Economic Perspectives*, 23(1), pp 77–100.

Burgess S (2011), 'Measuring Financial Sector Output and its Contribution to UK GDP', *Bank of England Bulletin*, September, pp 234–246.

Byres W (2012), 'Regulatory Reforms – Incentives Matter (Can We Make Bankers More like Pilots?)', Remarks to Bank of Portugal conference on Global Risk Management: Governance and Control Lisbon, 24 October.

Carew E (1997), *Westpac: The Bank that Broke the Bank*, Doubleday, Sydney.

Cecchetti SG and E Kharroubi (2012), 'Reassessing the Impact of Finance on Growth', BIS Working Papers No 381.

CGFS (Committee on the Global Financial System) (2006), 'Housing Finance in the Global Financial Market', CGFS Papers No 26.

CGFS (2014), 'Trade Finance: Developments and Issues', CGFS Papers No 50.

Cochrane JH (2013), 'Finance: Function Matters, Not Size', *Journal of Economic Perspectives*, 27(2), pp 29–50.

Davis K (2007), 'Financial Restructuring in Australia', Paper prepared for the Australia–Japan Comparative Economic and Public Sector Restructuring Conference, University of Melbourne and University of Osaka, Melbourne, 6–7 February. Available at <http://www.kevindavis.com.au/secondpages/acadpubs/pre2002/1997-Fin%20Restructuring.pdf>.

Davis K (2011), 'The Australian Financial System in the 2000s: Dodging the Bullet', in H Gerard and J Kearns (eds), *The Australian Economy in the 2000s*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 301–348.

Debelle G (2008), 'Market Operations in the Past Year', Speech at the 2008 FTA Congress, Melbourne, 31 October.

Ellis L (2006), 'Housing and Housing Finance: The View from Australia and Beyond', RBA Research Discussion Paper No 2006-12.

Ellis L (2008), 'The Housing Meltdown: Why Did it Happen in the United States?', BIS Working Papers No 259.

Finlay (2012), 'The Distribution of Household Wealth in Australia: Evidence from the 2010 HILDA Survey', RBA *Bulletin*, March, pp 19–27.

Financial System Inquiry (1997), *Financial System Inquiry Final Report* (S Wallis, chairperson), Australian Government Publishing Service, Canberra. Available at <http://fsi.treasury.gov.au/content/FinalReport.asp>.

Goldsmith RW (1985), *Comparative National Balance Sheets: A Study of Twenty Countries, 1688–1978*, University of Chicago Press, Chicago.

Gorton GB (2008), 'The Panic of 2007', NBER Working Paper No 14358.

Gorton G and A Metrick (2012), 'Securitized Banking and the Run on Repo', *Journal of Financial Economics*, 104(3), pp 425–451.

Greenwood R and D Scharfstein (2012), 'The Growth of Modern Finance', July, pp 1–52. Available at <http://jrdonaldson.com/reading_group/Greenwood-Scharfstein.pdf>.

Gyntelberg J and C Upper (2013), 'The OTC Interest Rate Derivatives Market in 2013', *BIS Quarterly Review*, December, pp 69–82.

Haldane A (2011), 'Control Rights (And Wrongs)', Speech at the Wincott Annual Memorial Lecture, Westminster, London, 24 October.

HIH Royal Commission (2003), *The Failure of HIH Insurance* (NJ Owen, Commissioner), Commonwealth of Australia, Canberra. Available at <http://www.hihroyalcom.gov.au/finalreport/index.htm>.

IMF (International Monetary Fund) (2004), *World Economic Outlook – How will Demographic Change Affect the Global Economy?*, World Economic and Financial Surveys, IMF, Washington, DC. Available at <http://www.imf.org/external/pubs/ft/weo/2004/02/pdf/chapter3.pdf>.

IMF (2006), *Global Financial Stability Report – Assessing Global Financial Risks*, World Economic and Financial Surveys, IMF, Washington, DC. Available at <https://www.imf.org/external/Pubs/FT/GFSR/2006/02/pdf/chap1.pdf>.

IMF (2008), *Global Financial Stability Report – Containing Systemic Risks and Restoring Financial Soundness*, World Economic and Financial Surveys, IMF, Washington, DC. Available at <http://www.imf.org/External/Pubs/FT/GFSR/2008/01/pdf/text.pdf>.

IMF (2009), *Global Financial Stability Report – Responding to the Financial Crisis and Measuring Systemic Risks*, World Economic and Financial Surveys, IMF, Washington, DC. Available at <https://www.imf.org/external/pubs/ft/gfsr/2009/01/pdf/text.pdf>.

Kearns J and P Lowe (2011), 'Australia's Prosperous 2000s: Housing and the Mining Boom', in H Gerard and J Kearns (eds), *The Australian Economy in the 2000s*, Proceedings of a Conference, Reserve Bank of Australia, Sydney.

Kent C, A Park and D Rees (2006), 'Introduction', in C Kent, A Park and D Rees (eds), *Demography and Financial Markets*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 1–9.

Kent C, C Ossolinski and L Willard (2007), 'The Rise of Household Indebtedness', in C Kent and J Lawson (eds), *The Structure and Resilience of the Financial System*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 124–163.

Kindleberger CP and RZ Aliber (2005), *Manias, Panics and Crashes – A History of Financial Crises*, Fifth Edition, John Wiley & Sons, Hoboken, New Jersey.

Kindleberger CP (1978), *Manias, Panics and Crashes: A History of Financial Crisis*, Macmillan, London.

King G and R Levine (1993), 'Finance and Growth: Schumpeter Might Be Right', *The Quarterly Journal of Economics*, 108(3), pp 717–737.

Knight M (2007), 'Now You See It, Now You Don't: Risk in the Small and in the Large', Address at the Eighth Annual Risk Management Convention of the Global Association of Risk Professionals, New York, 27–28 February.

Laker J (2006), 'APRA – Issues on the Radar', Address to the Australia Institute of Company Directors, Adelaide, 9 August.

Laker J (2007), 'The Evolution of Risk and Risk Management – A Prudential Regulator's Perspective', in C Kent and J Lawson (eds), *The Structure and Resilience of the Financial System*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 300–317.

Laker J (2010), 'Supervisory Lessons From the Global Financial Crisis', Address to AB+F Leaders Lecture Lunch, Sydney, December 8.

Law SH and N Singh (2014), 'Does Too Much Finance Harm Economic Growth?' *Journal of Banking & Finance*, 41, pp 36–44.

Levine (2005), 'Finance and Growth: Theory and Evidence', in P Aghion and SN Durlauf (eds), *Handbook of Economic Growth*, Volume 1A, Chapter 12, Elsevier Science, Amsterdam, pp 866–934. Available at <http://thannaletchimy.webs.com/Topic%201.pdf>.

Littrell C (2006), 'Update on Basel II', Speech to the Finance and Treasury Association – 19th Annual Congress, 14 September.

Lowe P (2012), 'Bank Regulation and the Future of Banking', RBA *Bulletin*, September, pp 85–89.

Lowenstein R (2000), *When Genius Failed: The Rise and Fall of Long-term Capital Management*, Random House, New York.

Macfarlane I (ed) (1991), *The Deregulation of Financial Intermediaries*, Proceedings of a Conference, Reserve Bank of Australia, Sydney.

Modigliani F (1986), 'Life Cycle, Individual Thrift, and the Wealth of Nations', *American Economic Review*, 76(3), pp 297–313.

Pratten J (2013), 'Banking Fees in Australia', RBA *Bulletin*, June, pp 39–44.

Productivity Commission (2004), *First Home Ownership*, Report No 28, Melbourne.

RBA (Reserve Bank of Australia) (2006), *Financial Stability Review*, September.

RBA (2012a), 'Small Business Finance Roundtable: Summary of Discussion', RBA *Bulletin*, June, pp 91–94.

RBA (2012b), *Financial Stability Review*, September.

RBA and APRA (Australian Prudential Regulation Authority) (2007), 'Joint RBA-APRA Submission to the Inquiry into Home Lending Practices and Process', August.

Reinhart CM and K Rogoff (2009), *This Time is Different: Eight Centuries of Financial Folly*, Princeton University Press, Princeton.

Santomero A and J Seater (2000), 'Is There an Optimal Size for the Financial Sector?', *Journal of Banking & Finance*, 24(6), pp 945–965.

Santomero A and R Watson (1977), 'Determining the Optimal Capital Standard for the Banking Industry', *The Journal of Finance*, 32(4), September, pp 1267–1282.

Shin HS (2009), 'Reflections on Northern Rock: The Bank Run That Heralded the Global Financial Crisis', *Journal of Economic Perspectives*, 23(1), pp 101–119.

Shin HS and T Adrian (2010), 'Liquidity and Leverage', *Journal of Financial Intermediation*, 19(3), pp 418–437.

Sykes T (1994), *The Bold Riders: Behind Australia's Corporate Collapse*, Allen & Unwin, St Leonards, New South Wales.

Thorton H (1802), *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain*, Rinehart & Company, New York. Available at <http://oll.libertyfund.org/titles/thornton-an-enquiry-into-the-nature-and-effects-of-the-paper-credit-of-great-britain>.

Treasurer (2003), 'Government's Response to the Recommendations of the HIH Royal Commission', Media Release, No 82, 12 September. Available at <http://ministers.treasury.gov.au/DisplayDocs.aspx?doc=pressreleases/2003/082.htm&pageID=003&min=phc&Year=2003&DocType=0>.

United Nations, European Commission, Organisation for Economic Co-operation and Development, International Monetary Fund and World Bank Group (2009), *System of National Accounts 2008*, New York. Available at <https://unstats.un.org/unsd/nationalaccount/sna2008.asp>.

Urban Research Centre (2010), 'The Experience of Mortgage Distress in Western Sydney', University of Western Sydney. Available at <http://www.uws.edu.au/__data/assets/pdf_file/0019/140536/mortgage_distress_report-webversion_hires.pdf>.

Volcker P (2012), 'Unfinished Business in Financial Reform', *International Finance,* 15(1), pp 125–135.

3. The Regulatory Response to the Global Financial Crisis

The global financial crisis revealed a number of shortcomings in policies and practices at financial institutions and at regulatory and supervisory agencies, particularly in north Atlantic countries. These shortcomings included:[1] insufficient financial institution holdings of high quality capital and inadequate management of liquidity risk; inadequacies in basic microprudential supervision, corporate governance and risk management practices; an under-appreciation of the scale and complexity of operations at large trading banks and other financial institutions – particularly those with activities in multiple jurisdictions – and the difficulty in resolving them when they failed; inadequate oversight of over-the-counter (OTC) derivatives markets; and insufficient visibility of the extent of interconnectedness among financial institutions, including between the regulated and shadow banking sectors, and across borders.

This Chapter outlines the progress of regulatory reforms to address these shortcomings, with separate sections on the international and domestic responses. The main observations include:

- The objective of the reform agenda is to strike the right balance between addressing imprudent risk allocation, and facilitating the types of productive risk-taking that are essential to economic growth.
- The wide-ranging reform effort includes four core areas: building more resilient financial institutions (particularly banks); addressing the 'too big to fail' problem; addressing shadow banking risks; and making derivatives markets safer, including through enhancing the role of financial market infrastructures (FMIs). While considerable work remains to be done, the regulatory response to the crisis has already strengthened the resilience of the international financial system.
- As G20 president in 2014, the Australian approach, supported by the Bank, is to focus the G20's efforts on reaching agreement and progressing implementation in the four core reform areas, and to be cautious, for the moment, in adding further reforms to the agenda. As is appropriate with any reforms, regulators will need to closely monitor the effectiveness of the combination of new measures.
- While many of the regulatory deficiencies revealed were not observed in Australia, the crisis did highlight room for improvement in aspects of Australian regulatory and supervisory arrangements addressed by international reforms. Furthermore, Australian financial institutions operate in the global markets and it is in Australia's interests for the domestic regulatory architecture to be in line with international standards. Australia has made good progress in implementing the international reforms, adapting them to local conditions where necessary.

[1] These shortcomings have been extensively analysed by the jurisdictions most affected by the crisis, including in: the UK Financial Services Authority's 'Turner Review' (FSA 2009); the Senior Supervisors' Group Report (SSG 2009); the Joint Forum's Review (BCBS, IAIS and IOSCO 2010); the US Financial Crisis Inquiry (FCIC 2011); the Vickers' Report (ICB 2011); and the European Union's 'Liikanen Report' (EU 2012).

- Although much attention internationally has been directed at changing policy frameworks to limit systemic risk and promote financial stability, the Bank considers that the current arrangements in Australia for financial stability policy and regulatory coordination are working well, and does not see a case for significant change.

3.1 International Response

The international policy response to the crisis included four key areas for regulatory reform, that sought to harmonise some existing standards and create new ones where gaps were identified. The first area for reform addresses the riskiness of financial institutions by strengthening prudential regulatory standards, led by banking reforms known as Basel III. The second addresses the problem of an institution being 'too big to fail', where the threatened failure of a systemically important financial institution (SIFI) would leave authorities with no option but to bail it out using public funds. The third limits the scope for contagion arising from interconnections between counterparties in OTC derivatives markets. The fourth addresses risks arising from shadow banking, which encompasses entities and activities outside the regular banking system that are associated with credit intermediation and maturity/liquidity transformation.

With the Group of Twenty (G20) providing political impetus, international reform efforts have mainly progressed through the Financial Stability Board (FSB) and its member standard-setting bodies, including the Basel Committee on Banking Supervision (BCBS), the International Organization of Securities Commissions (IOSCO) and others. The credibility of these reforms has been enhanced by expansions to the memberships of these bodies and the involvement of G20 Leaders. The FSB, of which Australia was already a member, extended membership to major emerging market economies in 2008, and in 2009 the BCBS expanded its membership to 27 jurisdictions including Australia.[2] In 2008, G20 countries also started meeting at Leader level in response to the financial crisis.

There are global benefits from the adoption of well-designed, internationally agreed reforms. A broadly consistent set of regulatory requirements gives authorities, counterparties and customers alike some comfort that international entities operating in their jurisdiction are suitably regulated and supervised at the group level as well as locally. Consistent application of international regulatory standards helps financial firms to maintain credibility with international investors, by making it easier to compare their financial positions with firms located elsewhere. A common set of minimum standards for regulation and supervision helps reduce the risk of weaker regulation in some jurisdictions leading to financial instability and spillovers to other jurisdictions. With common standards regulators can more readily rely on their international counterparts to manage risks in their own systems, or in particular financial institutions that are headquartered overseas, rather than impose additional domestic requirements (and attendant costs). Common standards facilitate competition among providers of financial services and the free flow of international capital.

Applying global reforms across diverse financial systems and regulatory approaches is not without challenges. Some of the international reforms mainly address problems specific to more market-based financial systems, which might not be as relevant for some countries. A degree of flexibility to adapt reforms to national circumstances is needed, particularly for jurisdictions where financial systems came through the crisis in relatively better shape and regulatory settings proved more appropriate, such as Australia and much of Asia. In some cases it may be appropriate to tailor regulation to be more conservative than international minimum standards require. However this can have extraterritorial effects which should also be considered.

---

[2] The BCBS originally consisted of Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States.

Another challenge for regulators and financial systems has been keeping up with the rapid pace of policy development and implementation. As judged by the FSB, global policy development across the four key reform areas is broadly on track with the planned timetable, though national implementation is lagging in some areas, particularly for crisis resolution preparation (Schwartz 2013). Australia is seeking to assist further progress in these core reforms through its presidency of the G20.

3.1.1 Strengthening prudential regulatory standards: Basel III

The financial crisis revealed that banks in some countries were not holding enough loss absorbing capital for the risks they were taking. This was despite these institutions meeting minimum capital requirements in the periods immediately prior to, and even during, the crisis. Additionally, in the lead up to the crisis, North Atlantic banks' exposures to maturity mismatch increased markedly due to an increased reliance on short-term financing, and through the granting of liquidity backstops to their off-balance sheet vehicles (Brunnermeier 2009).

Australia was not as badly affected by the crisis as some other countries. Part of the reason for this is that the Australian Prudential Regulation Authority (APRA) has historically adopted a somewhat more conservative approach to its regulatory and supervisory practices than some other regulators. Specifically, APRA adopted a more conservative approach to its capital standards than the previous Basel II minimum requirements: banks were required to meet more of their capital requirements using common equity, and to deduct instruments from their regulatory capital that are not readily available to absorb losses, such as deferred tax assets and investments in other financial institutions. Additionally, Australian banks were more conservatively managed. They did not have large trading books, and were not engaged in off-balance sheet activities to anywhere near the same extent as their international counterparts.

In response to international regulatory shortcomings, the international bank standard-setting body, the BCBS, developed Basel III, a comprehensive set of reform measures that aim to strengthen the regulation, supervision and risk management practices of the banking sector.

The Basel III capital framework was finalised in June 2011 and aims to strengthen banks' ability to withstand losses (BCBS 2011). Minimum capital ratios have been raised, capital has been defined more strictly to refer to genuinely loss-absorbing instruments, countercyclical capital add-ons are now available if needed and a simple constraint on overall leverage is to be added.

To strengthen banks' liquidity management, new requirements have been developed such as the Liquidity Coverage Ratio, whereby banks must hold sufficient liquid assets to withstand a hypothetical 30-day period of funding stress (BCBS 2013).

Policy development of the Basel III reforms is now substantially complete and the BCBS aims to finalise the remaining components by the end of 2014. This includes the Net Stable Funding Ratio - which will require banks to maintain a stable funding profile in relation to the composition of their assets and off-balance sheet activities - and revised frameworks for banks' trading books and securitisation. The BCBS will continue to monitor national implementation of Basel III to ensure it is timely and effective. It will also investigate inconsistencies in the calculation of risk-weighted assets, as part of broader efforts to improve the balance of simplicity, comparability, and risk sensitivity in the Basel framework.

3.1.2 Addressing the 'too big to fail' problem: Crisis management and resolution

3.1.2.1 Systemically important financial institutions (SIFIs)

Following the financial crisis, there has been a push in international forums to address the potential for taxpayers to be exposed to losses from government solvency support for systemically important financial institutions (SIFIs). This emphasis on 'too big to fail' institutions is understandable given the experiences of both the financial crisis and more recent tension in the euro area, particularly in the light of the large injections of government capital that were needed to stabilise systemically important banks, and the 'sovereign-bank nexus' in which undercapitalised banks degraded the solvency of their sovereigns, and vice versa.

As defined by the FSB, SIFIs are 'institutions of such size, market importance and interconnectedness that their distress or failure would cause significant dislocation in the financial system and adverse economic consequences' (FSB 2013, p2). These institutions are considered 'too big to fail' because public authorities are assumed to be left with no option but to recapitalise SIFIs using public funds if their viability is threatened. A potential problem is that if creditors perceive that a particular institution is 'too big to fail' they may not fully price-in the risk assumed by the institution. This could constitute a large implicit public subsidy for private enterprise and potentially encourage SIFIs to take greater risks. Regulatory developments in this area aim to reduce the probability that a SIFI will fail, reduce the impact of failures when they do occur and eliminate any competitive advantages in funding markets that SIFIs might hold due to their 'too big to fail' status.

The focus of regulation to date has been on global systemically important banks (G-SIBs). Currently, 29 institutions are identified as G-SIBs, for which supervisory intensity has increased and capital surcharges have been set.[3] A principles-based regulatory framework has also been developed for domestic systemically important banks (D-SIBs). This framework, developed by the BCBS, is more flexible than the G-SIB framework and, appropriately, allows for discretion to be applied by national regulators both to accommodate the structural characteristics of domestic financial systems and to ensure that requirements are set in a manner proportionate to the relative risks posed by various institutions. Based on principles set out by the BCBS, APRA announced a framework for Australian D-SIBs in December 2013. The Australian D-SIB framework is discussed in Section 3.2.2.1.

The SIFI framework continues to be expanded to non-bank SIFIs by the FSB and the standard setting bodies. The International Association of Insurance Supervisors (IAIS) has published a methodology for identifying global systemically important insurers (G-SIIs), and a set of policy measures that will apply to them, including the plan to develop basic capital requirements to apply to all group activities. Based on that IAIS methodology, nine global systemically important insurers were identified in July 2013. Earlier this year, the FSB and IOSCO released for consultation methodologies for identifying non-bank non-insurer G-SIFIs – in particular, finance companies, securities broker-dealers and investment funds – based largely on the G-SIB and G-SII approaches.

In 2012, the Committee on Payment and Settlement Systems (CPSS) and IOSCO published the *Principles for Financial Market Infrastructures* (PFMIs). These are international standards for the design and operation of systemically important FMIs that aim to strengthen their resilience, including during periods of systemic stress. FMIs are key entities in the financial system that deliver services essential to the smooth functioning of financial markets. They include payment systems, central

[3] No Australian banks have been identified as G-SIBs (FSB 2013a).

securities depositories and securities settlement systems, central counterparties and trade repositories. The implementation of the PFMIs in Australia is discussed in Section 3.2.4.

3.1.2.2 Crisis management and resolution

A further key focus of the 'too big to fail' work agenda is addressing cross-border contagion risks. Cross-border crisis management groups have been established for the SIFIs, and one of their key tasks is to improve recovery and resolution plans for these firms. At the Seoul Summit in 2010, G20 Leaders endorsed FSB recommendations for improving authorities' ability to resolve SIFIs in an orderly manner, without exposing taxpayers to loss, while maintaining continuity of their vital economic functions (FSB 2010). Substantial progress has been made in implementing this framework. At the Cannes Summit in November 2011, G20 Leaders endorsed the *Key Attributes of Effective Resolution Regimes for Financial Institutions* (Key Attributes) as best practice for jurisdictions in establishing resolution regimes (FSB 2011). Additional guidance on resolution strategies for G-SIBs has since been issued.

Despite the progress made by international regulators towards 'ending too big to fail', a substantial body of work remains (FSB 2013f). Priority areas to be progressed by the Brisbane G20 Leaders' Summit include the following.

- The FSB, in consultation with standard-setting bodies and with the backing of the G20, will, by the end of 2014, prepare proposals so that G-SIBs can absorb losses in resolution ('gone concern loss absorbing capacity' or GLAC) - for example by holding adequate quantities of liabilities that can be 'bailed-in'. The aim is that GLAC should be sufficient to recapitalise critical functions of a failed institution to a level that promotes market confidence and maintains market access.
- The development of a framework for the cross-border recognition of resolution actions, particularly with respect to the recognition of actions by home resolution authorities to bail-in liabilities held in host jurisdictions, and to impose short stays on early close-out of financial contracts pending their transfer upon a firm entering resolution. Progress in these areas is considered necessary for orderly cross-border resolution, particularly to prevent a run by the firm's international creditors and counterparties.

Frameworks for the recovery and resolution of financial market infrastructures (FMIs) and insurers will be finalised soon, including in relation to the protection of client assets in resolution.

Building on standards initially developed for banks, CPSS and IOSCO are finalising guidance for the requirement in the PFMIs to develop recovery plans. This follows extensive consultation (CPSS and IOSCO 2013). Within these guidelines an FMI's recovery actions would be taken within the framework of its existing rules, which form the basis for the contractual relationship between the FMI and its participants. The rulebook can be a powerful mechanism to support recovery planning, providing clarity and certainty to participants around potential future obligations. In particular, the rulebook can specify actions that would be taken in defined scenarios, including how losses would be allocated and how financial resources would be replenished to return the FMI to viability. In principle, if a comprehensive recovery plan could be executed effectively, resolution would not be necessary

However, even where the rulebook clearly specifies a course of action, an FMI may be unable to fully implement its recovery plan without public intervention. Recognising this, international policymakers are encouraging jurisdictions to establish special resolution regimes for FMIs, consistent with the FSB's Key Attributes. The FSB is also expected shortly to release guidance on how the Key Attributes may be applied in the case of FMIs. Resolution would be likely to be most effective and least disruptive if the resolution authority could complete the actions contemplated in the FMI's own

recovery plan. Therefore, while recovery planning is primarily the responsibility of the FMI, the resolution authority should be content to inherit those plans. In this sense, resolution may be regarded as a 'backstop' to a comprehensive recovery plan, but an essential one.

Australia has also taken steps to strengthen its crisis management and resolution framework in recent years. These developments are described in Section 3.2.2.2. Progress towards developing an Australian framework for FMI recovery and resolution is discussed in Section 3.2.4 and Chapter 8.

3.1.2.3 Bail-in

The FSB has highlighted bail-in as an area where many FSB jurisdictions need to take further legislative measures to fully implement the Key Attributes (FSB 2013i). Bail-in is a resolution strategy where the unsecured and uninsured liabilities of a failing financial institution are written-down or converted into equity in order to recapitalise the firm. It contrasts with 'bail-out' where government funds are used for this purposes.

Views differ, but there are three broad classes of bail-in:

- contractual bail-in, for example where Basel Tier 2 capital instruments are either converted into equity or written down at a specified trigger point close to, or at the point of, non-viability in accordance with contractual terms
- bail-in via explicit statutory powers granted to resolution authorities to write-down and convert debt instruments into equity, regardless of contractual terms, subject to certain conditions being met, and in accordance with the hierarchy of claims
- bail-in by business transfer, where the viable part of the business is transferred to another financial or bridge institution, leaving tranches of lower-ranked debt in the failed institution to be wound up.[4]

Bail-in can, in principle, be applied to any unsecured debt instrument, including (uninsured) deposits, bonds, commercial paper, derivative obligations and trade credits. However, in practice, longer-term senior unsecured debt is generally considered by policymakers to be the most bail-inable. Short-term liabilities are also considered to be less bail-inable as they are more likely to be subject to runs. Bailing-in unsecured derivatives obligations risks contagion given their widespread use as a risk management tool, and bailing-in trade credits, operational liabilities and uninsured deposits is considered to be less likely due to the social or political implications of exposing individuals or small firms to loss.

The main argument for bail-in is that it transfers the risk of loss from taxpayers to unsecured creditors. Some argue that increasing the responsibility of unsecured creditors - which should encourage more appropriate pricing of default risk - may also strengthen the market discipline of financial institutions that might not otherwise fully internalise the social costs associated with their operations (Mishkin 2006; Tarullo 2009). It is not clear, however, that this is necessarily a stronger mechanism than shareholder discipline.

The arguments against bail-in include the risk of exacerbating a financial distress situation by causing uninsured and unsecured short-term creditors to withdraw funds to avoid being bailed-in, or by making it less likely that financial institutions will be able to roll over long-term debt. Bail-in may also

[4] The FSB notes that bail-in through business transfer powers is not fully equivalent to the description of bail-in in the Key Attributes, which requires that all, or parts of, unsecured creditor claims are converted into equity of the firm in resolution (FSB 2013i, p 24).

cause contagion if debt held by other financial institutions is bailed-in, or if it raises concerns that creditors to other banks in the same jurisdiction will also be bailed-in in the near future. Furthermore, to the extent that the existence of statutory bail-in powers encourages particular types of investors to demand more secured debt relative to unsecured debt, some types of unsecured creditors – such as suppliers – may become more exposed to losses.

The arguments against bail-in do not preclude its inclusion in the suite of available resolution tools. However, they do suggest that implementation needs to be carefully considered and should proceed cautiously in order to avoid unintended adverse consequences. The arguments for conservatism in the implementation of bail-in are further supported by the observation that there are few, if any, examples of banks which have successfully been resolved as going concerns through the use of bail-in powers alone.[5]

3.1.3 Reforms to OTC derivatives markets

Since the global financial crisis, international policymakers have also sought to strengthen practices in OTC derivatives markets. The focus on this market reflects the rapid growth in the value of outstanding contracts over the decade preceding the crisis, and risk management vulnerabilities in some products, such as credit derivatives, revealed during the crisis.

A particular policy concern has been the lack of transparency of market activity and the scope for contagion arising from counterparty exposures between participants in OTC derivatives markets. An international policy consensus has emerged for the greater use of centralised infrastructure – trade repositories, central counterparties (CCPs) and trading platforms – in OTC derivatives markets to help address some of the concerns of regulators and market participants. Accordingly, in a statement following the Pittsburgh Summit in September 2009, G20 Leaders committed that:

> All standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest. OTC derivative contracts should be reported to trade repositories. Non-centrally cleared contracts should be subject to higher capital requirements (G20 2009).

In November 2011, G20 Leaders added to these commitments, agreeing that international standards on margining of non-centrally cleared OTC derivatives should also be developed.

Although the end-2012 deadline was not met, progress towards meeting the G20 commitments has been made in many jurisdictions. The FSB has monitored progress closely, issuing periodic progress reports on implementation. One barrier to more rapid implementation has been difficulties in coordinating implementation across jurisdictions so as to avoid overlap, duplication, conflicts or gaps in regulatory requirements. This issue has been recognised by the G20 and FSB and work is underway to address it. In particular, a group of 12 OTC derivatives market regulators (including ASIC), known as the OTC Derivatives Regulators Group (ODRG), has been meeting regularly to examine the application of rules in a cross-border context.

In September 2013, international standard setters published a final policy framework for initial and variation margin requirements for OTC derivatives that are not centrally cleared (BCBS and IOSCO 2013). The framework sets out a time line for implementing these requirements in member jurisdictions according to the level of an entity's OTC derivatives activity.

---

[5] A summary of bank creditor losses in the recent crisis is given in Appendix 3 of Schich and Kim (2012). Further examination by RBA staff suggests that none of those banks returned from resolution as a privately owned, stand-alone entity.

3.1.4 Shadow banking

Shadow banks are non-bank financial intermediaries that perform some of the tranditional functions of banks including maturity and liquidity transformation and extending credit (Pozsar *et al* 2013). Unlike banks, however, shadow banks do not have access to central bank liquidity support, are not covered by deposit insurance schemes and are not prudentially regulated to the same extent. Examples include finance companies, structured investment vehicles and money market funds (MMFs). In Australia, these entities account for a small and declining share of financial system assets (Chapter 4).

While the presence of shadow banks has some benefits, including providing broader access to funding for borrowers, shadow banks can also amplify the credit cycle and promote financial instability, as was observed during the financial crisis.

The FSB presented a package of policy recommendations to strengthen oversight and regulation of shadow banking entities to the G20 Leaders' Summit in September 2013 (FSB 2013g).[6] The recommendations, developed by the FSB in conjunction with IOSCO and BCBS aim to mitigate risks posed by the shadow banking system while not inhibiting sustainable non-bank financing models that do not pose such risks. They comprise:

- measures to reduce banks' interactions with shadow banking entities, including limiting banks' exposures to single counterparties and risk-based capital requirements for banks' exposures to funds
- common standards for the regulation of MMFs to reduce their susceptibility to runs
- measures to assess and align the incentives associated with securitisation, including enhanced disclosure requirements and risk retention rules[7]
- policies to dampen risks and procyclical incentives associated with securities lending and repurchase agreements (repos) that may amplify funding strains in times of market stress, including enhanced data collection and reporting standards, regulation of securities financing including minimum standards on cash collateral reinvestment, and improvements to market structure such as central clearing
- a high-level policy framework for shadow banking entities other than MMFs.

In addition, the FSB is continuing to conduct annual data monitoring exercises to assess global trends and broader risks emanating from shadow banking; its latest global report was released in November 2013 (FSB 2013d).

While the recommendations relating to MMFs, securitisation and other shadow banking entities have largely been finalised, policy development is continuing in the areas of banks' interactions with shadow banking entities, and securities lending and repos. In December 2013, the BCBS issued its policy on capital requirements for banks' equity investments in funds, which is based on the general principle that banks should apply a 'look-through' approach, by risk weighting the underlying exposures of a fund as if the exposures were directly held. The BCBS is also working on proposals to ensure that all activities of banks are captured within the scope of consolidated (i.e. group-wide) supervision and regulatory reporting, and finalising its proposed supervisory framework for banks'

---

6 The FSB (2013g, p iv) broadly defines shadow banking as 'credit intermediation involving entities and activities (fully or partially) outside the regular banking system'.

7 Risk retention rules aim to ensure that entities which sponsor financial transactions retain a portion of financial risk, or 'skin in the game'.

large exposures to single counterparties (including to shadow banking entities). The FSB is proposing additional requirements relating to securities lending and repo transactions including: numerical collateral haircut floors for OTC transactions by entities that receive securities financing from regulated financial intermediaries but are not subject to prudential capital and liquidity regulation;[8] and minimum qualitative standards for methodologies used by all market participants to calculate collateral haircuts.

With many of the shadow banking policy recommendations finalised, the focus is now switching to implementation, using a 'road map' of time lines released at the September G20 Summit. IOSCO is to conduct peer reviews this year on the implementation of its MMF and securitisation recommendations and, in 2015, there will be a peer review of implementation of the policy recommendations for other shadow banking entities.

3.1.5 Other areas of reform

Regulatory reform has extended beyond the four key areas already outlined. Other areas of reform which have been agreed include regulators taking greater account of macroprudential risks across the financial system (expanded upon below) and enhancing the effectivenes of supervision, as well as addressing misaligned incentives across a range of areas such as credit rating agencies and bankers' remuneration (FSB 2013b, 2013e). Some of these reforms are related to the four core areas.

3.1.5.1 Macroprudential supervision and policy

While one contributing factor to the financial crisis was microprudential shortcomings on the part of regulators, another was an under-appreciation of the importance of certain determinants of systemic risk – in particular the ways in which interconnectedness in the financial system, and a lack of diversity in financial institutions' business models, could engender financial instability.[9] Consequently, much attention has since been directed at developing a 'macroprudential policy framework' to limit systemic risk.[10]

A macroprudential framework requires prudential authorities to take a system-wide view in their supervisory activities, rather than solely focusing on the safety of individual institutions. As described by Yellen (2009) it is 'akin to caring for an entire ecosystem rather than individual trees'. A system-wide approach to supervision recognises: that the actions of individual firms can collectively generate systemic risk via spillovers and externalities, even if those firms are individually managing liquidity, capital and exposure to risk; that risk can build over time; and that the distribution of risk matters. For example, if many small institutions, or a few large institutions, were to invest in similar classes of assets, then a downturn in that asset class may be amplified as investors simultaneously 'rush for the exits'.

Internationally, a large number of central banks and prudential regulators, including in Australia, already have responsibilities for system-wide oversight (or 'macroprudential' responsibilities). Many jurisdictions embed systemic oversight in their organisational structures through measures such as establishing financial stability departments, including financial stability objectives in the mandates of regulators and establishing arrangements for regulatory coordination (Section 3.1.5.2). A number of jurisdictions also have a history of deploying macroprudential tools.

---

8 The proposed minimum haircuts would not apply to government securities.

9 This was cited as a contributing factor that allowed risks to build up in the United States (FCIC 2011, pp 55–56).

10 After their meeting in 2010, G20 Leaders called on the FSB, IMF and Bank for International Settlements (BIS) to investigate how countries could implement macroprudential policy frameworks (FSB, IMF and BIS 2011).

No consensus definition of macroprudential tools exists, but they can reasonably be thought of as policy measures carved out of the normal prudential framework and managed in response to evolving conditions, usually under separate governance arrangements, to achieve particular outcomes related to financial stability or system-wide concerns more generally. Emerging market economies have a history of using macroprudential tools, often because their exchange rate regime constrains the use of monetary policy (Borio and Shim 2007). Some economies have also used capital controls with explicit macroprudential objectives. In contrast, the use of explicit macroprudential tools in advanced economies has been relatively rare since financial liberalisation.

Several advanced economies have used macroprudential tools since the crisis, typically to mitigate rapid growth in residential property prices and/or household indebtedness. Policymakers have capped loan-to-valuation ratios (LVRs) and debt-servicing ratios (DSRs) to dampen activity in their housing markets, and tightened mortgage underwriting and loan amortisation standards. A few jurisdictions have sought to protect their banking system from a possible rise in loan losses by tightening provisioning requirements and increasing capital requirements for home loans.

Since their recent establishment, the macroprudential policy committees in the United Kingdom and the United States have reported at length on potential sources of systemic risk. To date, however, their policy recommendations have focused on strengthening prudential and supervisory requirements, rather than deploying specific macroprudential tools. In other economies:

- The Swiss authorities activated their Basel III countercyclical capital buffer last year and raised the buffer further in January of this year. Swiss banks are required to hold additional common equity Tier 1 capital equal to 2 per cent of their risk-weighted exposures to Swiss home loans.
- Israel has undertaken several rounds of macroprudential tightening, capping mortgage LVRs and DSRs and tightening mortgage underwriting standards, as has Canada through its government-guaranteed mortgage insurance program. New Zealand, Norway, Sweden and Finland have implemented LVR restrictions over recent years.
- In Asia, Hong Kong, Malaysia and Singapore have used measures such as LVR caps, loan amortisation caps, and various fiscal policies, such as property taxes, to mitigate risks in their residential and commercial property markets. South Korea has also used levies and caps on banks' foreign currency exposures to lessen banks' foreign currency and maturity mismatches.

It is still too early to judge the effectiveness of macroprudential tools that have been used in advanced economies since the crisis. Policymakers have offered favourable self-assessments (Wong *et al* 2011), and empirical studies offer some *prima facie* evidence that macroprudential tools can be used to constrain growth in credit and asset prices, though perhaps to a limited extent (Kuttner and Shim 2013). Other studies have suggested, however, that macroprudential tools are not always effective, particularly in the face of strong external demand and easy monetary policy (Crowe *et al* 2013), and several questions remain. One is the choice of an appropriate macroprudential target. Many of the tools aim to limit growth in variables or quantities in which strong growth has preceded previous financial crises. Identifying robust predictors of crises has, however, proven difficult, in part because the underlying causes of financial crises can differ, and also because predictors are often selected with the benefit of hindsight. Furthermore, without identification of the mechanisms underlying growth in particular quantities, it is difficult to determine if, in seeking to control them, the symptoms rather than the causes of future financial distress are being addressed (Ellis 2013). Overall, the use of macroprudential tools remains a work in progress.

3.1.5.2 National institutional reforms and coordination

Macroprudential oversight typically requires interagency coordination, with the degree and nature of coordination determined by the jurisdiction's regulatory structure. Most jurisdictions have a single supervisory authority for their banking system, and for many, including Australia, this is not the central bank. In addition, securities market regulation and supervision is normally undertaken by a separate agency.

In Australia, high level coordination between agencies is achieved through informal (non-statutory) arrangements, through the Council of Financial Regulators (CFR). While this approach has worked well in Australia (Section 3.2.6.2), regulators can also coordinate through formal arrangements. Some other jurisdictions, including the United States, United Kingdom, the European Union (EU), Sweden and Norway have formalised arrangements in the last few years to delineate their respective financial stability mandates, powers and tools.

In 2010 the Financial Stability Oversight Council (FSOC) and the European Systemic Risk Board (ESRB) were created in the United States and European Union, followed in 2011 by the creation of the Financial Policy Committee (FPC) in the United Kingdom.[11] The FSOC and FPC have statutory independence despite their secretariats being housed within the US Treasury (FSOC) and the Bank of England (FPC). The FSOC and the FPC are directly accountable to the US Congress and UK Parliament, while the ESRB is indirectly accountable to the European Commission via the European System of Financial Supervision.[12] In 2013, Sweden set up a Financial Stability Council, comprised of representatives of the Swedish Government, Finansinspektionen (the prudential agency), the Swedish National Debt Office and Sveriges Riksbank. In Norway, the Ministry of Finance has overall responsibility for financial stability (since 2006) and sets capital requirements for financial institutions, including, since October 2013, the level of the countercyclical capital buffer.

The powers of the above cross-agency authorities vary by jurisdiction. They include the authority to: break up firms considered to pose systemic risks; request additional data from institutions that they may otherwise not be required to report to regulators; and issue binding recommendations. For example, in September 2011 the ESRB issued a recommendation of minimum standards for the risk management and granting of foreign currency loans, to be implemented by the end of 2012.

It is too early to judge the performance of these more formal structures for coordination between agencies. Stated advantages include:

- enhancements to the credibility and status of financial stability policies
- potential clarification of responsibility through the creation of a body with an overarching mandate that has powers to mediate resolution of differences between regulatory agencies, enforce outcomes should the need arise, and take action if other agencies cannot or will not.

However, it is unclear how reassigning part of a regulatory agency's constituent powers to an overarching body will influence coordination and effectiveness of regulatory policies. Similarly, it

---

[11] The FSOC was created in July 2010 by the *Dodd–Frank Wall Street Reform and Consumer Protection Act 2010*. The ESRB was created in December 2010 with powers set out in EU Regulations No 10/92/1010 and No 1096/2010; and the FPC first met in 2011 but only became a statutory body in April 2013 as a result of the *Financial Services Act 2012*.

[12] Under United States and European Union arrangements, decisions are made by majority vote. Voting mechanisms were chosen in these jurisdictions due to the expected need for rapid decision-making in a crisis and the large number of agencies participating in these committees. The FSOC has 10 voting members and the ESRB has 37 voting members. The UK FPC, which has 10 members, makes decisions by consensus, although a decision is reached by majority vote if a consensus cannot be found.

remains to be seen if formality is the feature of institutional arrangements that ensures better outcomes.

3.1.5.3 Structural banking reforms

Policymakers in Europe and the United States have also taken unilateral steps towards ending 'too big to fail' by forcing the structural separation of banks' commercial banking and investment banking businesses. Like Basel III and financial reforms that enhance the recovery and resolution of large banks, these 'structural banking reforms' aim first and foremost to safeguard the financial system from bank failures and protect taxpayers and depositors from loss. Specifically, the reforms are designed to: protect retail banking activities from contagion elsewhere in the financial system; reduce the implicit public sector subsidies of risk-taking in capital markets; make systemically important banks simpler and easier to resolve; and forcibly draw a line between the so-called low- and high-risk cultures of commercial and investment banking (Gambacorta and Van Rixtel 2013).

The main differences in the various proposals, including the Liikanen reforms in the EU, the Vickers reforms in the United Kingdom, and the Volcker Rule in the United States, relate to which capital market activities should be separated from retail banking activities and how. The Volcker Rule is the narrowest in scope: it prohibits prudentially regulated institutions from engaging in most forms of proprietary trading (i.e. short-term, speculative risk-taking by the institution unrelated to client business, as opposed to market-making) and limits their investments in managed funds. In addition to a similar ban on proprietary trading, the Liikanen reforms would also require that banking groups house their trading and market-making businesses in a separately capitalised subsidiary. The Vickers reforms are broader than the other two proposals. They allow banking groups to run investment banking businesses but require their retail operations to be ring-fenced into a separate, protected entity, with limited intragroup transactions between the two. The ring-fenced entity is also prohibited from providing services outside the European Economic Area.[13]

A concern expressed by some observers is that in attempting to protect domestic taxpayers and depositors, structural banking reforms may, unintentionally, lead to harmful fragmentation of global banking and capital markets. The FSB, together with other bodies, will report on the cross-border consistencies and global financial stability implications of structural banking reforms to the G20 Summit in November.

3.1.6 The impact of reform

The volume and breadth of financial reforms undertaken since the crisis will no doubt create challenges for regulators and market participants. Given that implementation remains in its early stages, and that many of the reforms follow extended implementation timetables, it is too early to be able to draw a full set of conclusions about the overall impact of reforms. As always, regulators will need to carefully monitor developments in the financial system to ensure that reforms are having the desired effects.

---

[13] Some jurisdictions have also taken steps to enhance the resolvability of foreign banks operating in their jurisdictions, including by 'ring-fencing' their operations. In the United Kingdom, the authorities are considering a set of reforms that may require foreign bank branches to incorporate as a subsidiary if their home country supervision and resolution arrangements are not sufficiently equivalent to those in the United Kingdom (or if their parent is headquartered in a country with depositor preference laws, such as Australia). In the United States, the Federal Reserve recently finalised a rule that will require large 'foreign banking organisations' to consolidate their bank and non-bank subsidiaries under a ring-fenced holding company.

That said, as outlined above, the regulatory response to the financial crisis offers many benefits, and has already played an important role in strengthening the resilience of the global financial system. Large internationally active banks have substantially increased their capital buffers over recent years, such that nearly all of them already show a common equity Tier 1 capital ratio that exceeds the 7 per cent minimum that will ultimately be required under Basel III (BCBS 2014, p 10). Banks have also increased their holdings of liquid assets and reduced their reliance on short-term funding, which can be flighty in a crisis. Financial markets are more transparent, less interconnected, less complex, and hence less likely to become dysfunctional in the event of financial institution distress. All together, these developments have helped place the international financial system on a sounder footing that supports sustainable growth in the global economy.

The financial reform agenda aims to reduce the likelihood and severity of future financial crises, but without placing undue costs on financial institutions. Many of the 'costs' associated with the reforms, including an increase in the price of financial intermediation, are not unintended. The Basel III reforms have had the intended effect of forcing banks to allocate capital and liquidity more efficiently across their businesses and, by pricing risk more accurately, to internalise the costs associated with their activities. Though banks will incur expenses while transitioning to the new regulatory environment, they will be better placed to support sustainable growth in the long run, and to do so while posing less risk to taxpayers and investors. Macroeconomic assessments conducted by the BCBS and FSB in 2010 suggested that the expected long-term benefits of the Basel III capital and liquidity measures would substantially exceed the expected costs (BCBS and FSB 2010a, 2010b). Similar macroeconomic assessments of the G-SIB framework and the OTC derivatives reforms have found comparable net economic benefits (BCBS and FSB 2011; MAGD 2013).

As with any body of regulatory change, however, there is the potential for unintended consequences. Both the official sector and the private sector have identified potential costs of financial reforms that warrant close monitoring.

- Some commentators are concerned that major bank reforms will cause an increase in financial fragmentation, or a fall in cross-border capital flows. Attention has focused on how some internationally active banks have withdrawn from international markets and reduced their cross-border lending. It is likely, however, that much of the reduction in cross-border capital flows that has occurred since the crisis reflects a sensible reallocation of risk, rather than an undesirable response to steeper barriers to competition. Some pull-back in offshore activity is to be expected after a significant boom and bust in leverage, as banks need time to repair their balance sheets and realign their business models. In this context, the flexibility in the financial system has provided a valuable counterbalance to bank deleveraging. For example, many non-financial corporations have issued greater amounts of non-intermediated debt over recent years, although access to capital market funding is typically restricted to larger firms.

- Another concern is that stricter capital requirements, by encouraging market-making banks to shrink their inventories of corporate bonds and other traded assets, could cause a structural decline in market liquidity. International experience to date is that market-making banks have significantly reduced their traded security inventory. That said, a number of commentators consider that corporate bond markets have remained reasonably liquid through recent bouts of market volatility.

- Concerns have also been raised that financial reforms could constrain banks from providing long-term investment finance and operating in emerging market and developing economies. The FSB has conducted a number of studies into these areas and found that there is little evidence that points to significant adverse effects (FSB 2012, 2013c).

- The heavier regulatory burden placed on banks could push credit and liquidity intermediation into the shadow banking system, which was a major source of systemic risk for some countries during the recent crisis. International policymakers have taken significant steps towards strengthening the regulation and oversight of shadow banking systems, and will monitor developments closely with a view to prompt identification and management of emerging risks.
- Regulatory changes that require banks to hold more liquid assets and collateralise more of their derivatives exposures will increase the demand for high-quality liquid assets, potentially leading to a significant rise in the prices banks pay for these assets. Financial markets could also become more procyclical and interconnected as banks seek to manage their liquid assets more efficiently. Responses from the private sector have the potential to mitigate the adverse consequences associated with the increased demand for liquid assets but this is an area that will require close monitoring. Financial markets are already taking steps to distribute liquid assets more efficiently through the financial system – for example, by greater use of collateral management services and collateral swap transactions (Heath and Manning 2012). These actions offer some potential benefit but could also make the financial links between institutions more complex and opaque. Central banks can also alleviate collateral shortages in times of stress by expanding the range of securities that can be pledged against central bank borrowing.
- Reforms to OTC derivatives markets will make counterparty risk increasingly concentrated among a small number of CCPs. Doing so will mitigate the risk of contagion in OTC derivatives markets, but will also increase the systemic importance of large CCPs. Acknowledging this, international standard setters have implemented enhancements to standards for FMIs and made progress towards introducing effective recovery and resolution arrangements for FMIs.

Regulators will closely monitor developments in these and other areas and, where necessary, will adjust the regulatory framework to ensure that financial reforms are having the intended effects.

3.2 Domestic Response

Australian financial institutions operate in a global environment. They interact with international entities and have operations in other jurisdictions. Hence, it would be impractical and counterproductive, to adopt a 'go it alone' policy, by not implementing the agreed global reforms. It is, in any event, in Australia's interests to adopt high standards in supervision and regulation. In some cases, the agencies have assessed that it is in the national interest to adopt the new global standards with some adaptation to local conditions.

On strengthening prudential regulatory standards, Australia is relatively well advanced in adopting the Basel III reforms. In the area of 'too big to fail', APRA has released its framework for D-SIBs and FSB analysis suggests that Australia has a resolution regime for banks and insurers that is broadly consistent with best practice. Implementing G20 commitments on the regulation of derivative markets has been a difficult task internationally, but Australia is relatively well progressed. Australia was also one of the first jurisdictions to implement new international standards for the design and operation of FMIs.

3.2.1 Implementation of Basel III

Of the 27 BCBS member jurisdictions, Australia is one of 12 that have issued final Basel III capital rules, that were legally in force as at October 2013. APRA requires ADIs to meet a number of the key capital measures two or three years earlier than set out under the Basel III capital framework. An extended implementation timetable for Basel III capital measures was not thought to be necessary for Australian ADIs because they were expected to be easily able to meet the requirements. Indeed,

Australia's banks now exceed the 2013 minimum capital requirements, and are on track to meet the 2016 minimum requirements. Part of the reason for Australian banks' strong capital positions is that APRA has historically adopted capital standards that are more conservative than the international minimums set by the BCBS, both in terms of the common equity requirement and the treatment of deductions. This conservative approach contributed to the resilience of Australian banks during the recent crisis, and their robust profitability over subsequent years enabled them to strengthen their capital positions further.

APRA, with input from the Bank, has also made good progress on developing the Basel III liquidity standards for Australia. While the BCBS has allowed delayed implementation internationally, APRA has kept to the original timetable and will fully implement the Liquidity Coverage Ratio (LCR) requirement - that banks will have to hold sufficient liquid assets to withstand a hypothetical 30-day period of funding stress - on 1 January 2015.

- Because government debt is relatively scarce in Australia compared to other jurisdictions, Australian banks would not be able to meet the proposed LCR requirement purely by holding existing liquid assets. In response, the Bank and APRA successfully argued for a menu of alternative approaches to these requirements, and developed and gained global acceptance for the Committed Liquidity Facility (CLF) through which the requirement can be met in Australia. In January, the BCBS' oversight body, the Group of Governors and Heads of Supervision, agreed that CLFs of a type similar to Australia's should be made available in all jurisdictions, subject to a number of constraints.

- The Australian CLF will enable ADIs to access a pre-specified amount of liquidity in times of stress by entering into repurchase agreements secured against eligible securities with the RBA. ADIs will pay an ongoing fee of 15 basis points to have access to the facility, on both drawn and undrawn amounts. Should the facility be used, ADIs will pay an interest rate on repurchase agreements of 25 basis points above the cash rate, as they would within the RBA's normal market operations. Repurchase agreements will be subject to appropriate margining which will add to the effective cost of accessing the facility. The RBA will haircut securities market values by as much as 25 per cent, depending on the type of security involved. Consequently, the CLF will only insure an ADI against the liquidity risk on its securities. The credit and market risks associated with the securities remain with the ADI (Debelle 2011). To limit the systemic risk associated with excessive cross-holdings of ADI securities, the RBA will allow ADIs to use certain related-party assets as collateral, such as self-securitised residential mortgage-backed securities, in addition to those securities which are eligible for the RBA's normal market operations.

- APRA will determine the amount each ADI can access through the CLF, subject to RBA approval, based on the ADI's overall liquidity needs and the balance of their LCR requirement that cannot reasonably be met using high-quality liquid assets. ADIs will need to demonstrate that they have taken 'all reasonable steps' to meet their LCR requirement by improving their liquidity risk profile, including by using stable, long-term sources of funding where appropriate. APRA has undertaken a trial exercise with ADIs on their planned use of the CLF, and will formalise their access towards the end of the year. The CLF will commence from 1 January 2015 alongside the LCR.

3.2.2 Domestic systemically important banks (D-SIBS), crisis management and resolution

3.2.2.1 D-SIBs

Australian banks are not classified as global systemically important and are therefore not subject to the stricter rules to be applied to G-SIBs to address the '**too big to fail**' problem. However, matching recent developments in other jurisdictions, and Australia's commitment to international reforms, in December 2013 APRA announced a framework for D-SIBs, based on principles set out by the BCBS.

APRA's D-SIB framework (APRA 2013) is based on the BCBS's four objective indicators of systemic importance: size, interconnectedness, substitutability and complexity. Under this methodology, APRA determined the four major banks to be the only D-SIBs in Australia; these four banks consistently ranked highest across a range of measures of the Australian financial system. The methodology did not produce a consistent ranking of banks below the top four.

The Australian D-SIB framework involves an additional capital requirement to absorb losses (namely a common equity Tier 1 capital requirement equivalent to 1 per cent of their risk-weighted assets) and more intense supervision than is applied to other ADIs, a feature that is already embedded in APRA's supervisory approach. The additional capital requirement will be implemented through an extension of the capital conservation buffer of each D-SIB from 2.5 per cent to 3.5 per cent of risk-weighted assets. D-SIBs will be required to meet the capital conservation buffer, including the higher D-SIB component, by 1 January 2016.

APRA's D-SIB higher loss absorbency (HLA) requirement is equal to the lowest capital requirement for G-SIBs and is at the lower end of the range adopted for D-SIBs in other jurisdictions. APRA sees its HLA requirement as sufficient because of APRA's more conservative approach to the measurement of capital, as well the more intense supervision the major banks already receive under APRA's risk-based supervisory approach. The HLA capital requirement is intended to reduce the probability of a D-SIB's failure, given the significant adverse impact that a failure of a D-SIB could be expected to have on the domestic financial system and economy. It can also be thought of as consistent with potential negative externalities associated with perceptions that a bank is 'too big to fail'.

3.2.2.2 Crisis management and resolution

A number of steps have been taken in the area of crisis management and resolution arrangements in recent years, including strengthening APRA's crisis management powers in 2008 and 2010, enhanced powers for information sharing for the Reserve Bank, ongoing engagement with the New Zealand authorities around crisis management, and improved arrangements for coordination among CFR member agencies. These changes have been motivated partly by other countries' experiences during the financial crisis, the subsequent international regulatory response, and recommendations from the International Monetary Fund's (IMF's) 2005–2006 Financial System Stability Assessment for Australia. The FSB's peer review of resolution regimes suggests that Australia's resolution arrangements in respect of ADIs and insurers were generally consistent with international best practice and compared well to many other jurisdictions (FSB 2013i).

The principles and objectives of financial distress management are prescribed by the various acts that define the powers and responsibilities of the CFR agencies and the governance of financial institutions. These include the *Reserve Bank Act 1959*, the *Australian Securities and Investments Commission Act 2001*, the *Australian Prudential Regulation Authority Act 1998*, the *Banking Act 1959*, the *Insurance Act 1973*, the *Life Insurance Act 1995*, and the *Corporations Act 2001*. These principles

and responsibilities are summarised in the CFR *Memorandum of Understanding on Financial Distress Management* (CFR MOU), which member agencies signed in September 2008.

The CFR MOU identifies the responsibilities of each Council member and is intended to facilitate a coordinated response to stresses in the financial system. It states that, in exercising their respective financial distress management responsibilities, member agencies will seek to balance the following objectives:

- Protecting depositors, policyholders or superannuation fund members, with a view to avoiding or minimising losses where possible.
- Maintaining the stability of, and confidence in, the financial system.
- Resolving the distress situation effectively and as quickly as practicable.
- Ensuring that the owners, directors and management of a distressed or failed institution bear appropriate responsibility.
- Minimising the economic and fiscal impacts of any financial distress resolution arrangements, and maintaining appropriate market disciplines. (CFR 2008)

The CFR MOU recognises that private sector, or market-based, solutions are generally the preferred means of responding to the distress of financial institutions. This conclusion reflects an important principle of responsibility: that management and boards of these institutions should be accountable for their decisions, and that it is not the role of the public sector to protect them from the consequences of those decisions. In some circumstances, however, it may be appropriate for public sector balance sheets to play an important stabilising role (Lowe 2013). For example, it has long been recognised that there is a role for central banks to supply liquidity to individual institutions and the market in times of stress by purchasing assets under a repurchase agreement, against collateral of sufficient quality, with a conservative haircut. In doing so, the central banks can provide liquidity when it is most highly valued, and with relatively little risk.

Another example is the Australian Government Guarantee Scheme for Large Deposits and Wholesale Funding (the Guarantee Scheme) where the Australian Government was prepared to insure bank debt for a fee during the financial crisis. This followed similar guarantees for financial institutions' wholesale debt by governments in several other countries, in response to a virtual closure of parts of global capital markets to non-sovereign borrowers after the collapse of Lehman Brothers in September 2008. The Guarantee helped reassure investors in Australian ADIs, and ensured that Australian ADIs were not disadvantaged compared with banks in other jurisdictions.

While the Guarantee Scheme was administered by the RBA, the CFR played an advisory role in its design and operation. Consistent with the principles set out in the CFR MOU, the fee for the Guarantee Scheme was set at a level higher than the market would have demanded for providing such insurance in normal times (Schwartz 2010). There is a strong argument that Australian taxpayers were well compensated for the risk they undertook, with insurance premiums paid by financial institutions to date exceeding $4 billion, and no money paid out under the guarantee. The Guarantee Scheme closed to new liabilities from 31 March 2010, although large deposits and wholesale liabilities guaranteed under the Scheme at that date remain guaranteed, for a fee, for the relevant term.

In circumstances where a public sector response to financial distress is required, the CFR MOU requires that the following principles will be considered:

- In considering the most appropriate means for resolving financial distress, the impacts on the broader economy will be taken into account.
- Any resolution option will also take into account short- and long-term benefits, costs and risks.
- Communication will be timely, coordinated and focused on the information needs of stakeholders.
- The response to financial distress will take into account cross-border implications where relevant, with a view to achieving a satisfactory outcome for all affected jurisdictions, subject to ensuring that the outcome meets the needs of the Australian financial system and depositors, policyholders and fund members in Australia. Trans-Tasman issues are particularly important in this context, given the integration between Australia and New Zealand in the financial area and relevant legislative mandates. (CFR 2008)

In particularly adverse and unlikely scenarios, the equity of a bank might be wiped out despite the implementation of prudential policies aimed at reducing the likelihood of failure, intervention by regulators and the provision of liquidity support by the RBA. In principle, various resolution options are available in such circumstances including the closure and liquidation of the institution, the transfer of all or part of the institution to another financial institution or a bridge entity, or, in circumstances of extreme systemic stress and risk aversion, temporary acquisition of the institution by the government until risk appetite has returned to more normal levels. The choice is guided by the principles, objectives and processes outlined in the CFR MOU and the relevant legislation.

In these circumstances, any potential decision involving public support of a troubled institution must ultimately be taken by the Government at the time and all resolution options require the consent of the Treasurer. An important principle in such cases is that public support be appropriately managed from the point of view of cost recovery. For example, if, during a period of extreme stress and risk aversion, the Government was to underwrite a capital injection for a troubled bank because the private sector was temporarily unwilling to do so, the Government's shares in the institution would be sold when the risk appetite of the private sector had returned to more normal levels. This approach worked well when, during the 1990s, the Swedish Government nationalised two of Sweden's largest banks in addition to providing a blanket guarantee of all bank liabilities. Liquidating the nationalised banks' problem assets was achieved more quickly than anticipated and at very little cost to taxpayers (Ingves and Lind 1996; Ergungor 2007). In some circumstances, taxpayers have profited from government capital injections, as illustrated by the profit realised by the US Treasury in 2012 when it sold its final holdings of common stock in American International Group (AIG), which had been acquired in 2008.

3.2.2.3 Depositor protection

Australian depositors benefit from multiple layers of legal protection. Depositors of a failed ADI could be given access to their deposits by the authorities transferring the deposit book to another ADI, or by paying them out via Australia's deposit guarantee framework, the Financial Claims Scheme (FCS).

Historically, the primary mechanism for depositor protection in Australia has been depositor preference, which is enshrined in the Banking Act.[14] Under this arrangement, depositors have preferred legal status over other unsecured creditors in the hierarchy of claims against a failed ADI, meaning that they must be paid out before other claims are honoured.

The FCS was introduced in 2008, at the height of the global financial crisis, as a complement to depositor preference after having been discussed by Australian authorities for some years. Initially, temporary deposit coverage of up to $1 million per depositor per institution was provided free by the Government (with additional coverage available for a fee). Coverage under the FCS was reduced from $1 million to $250 000 per depositor per institution from 1 February 2012. Based on available industry data around that time, the cap was estimated to cover around 80 per cent of household deposits by value and 99 per cent of all deposit accounts by number (Turner 2011).

The FCS is currently post-funded. That is, in the unlikely event the FCS is triggered for an ADI, the Government initially provides, under a standing appropriation, the funds to make payments under the FCS. Monies paid under the FCS are then recovered from the ADI in the winding-up process, with the Government (APRA) standing in place of protected account holders in the hierarchy of claims under the Banking Act. There is provision to make up any shortfall by applying a levy on the ADI sector.

In addition to reducing the cap, other steps have been taken to refine the FCS. This includes the CFR recommendation to the then Government in March 2013 that the FCS should move to a pre-funded arrangement. Such a model, which is now common among deposit insurance schemes internationally, would be consistent with the principle of users paying for the benefits provided. Ex-ante funding would also, at least partly, compensate the Government for the risks it bears from these guarantees and would build a fiscal buffer to assist in meeting any potential future costs of ADI resolution.

Key practical design issues that would need to be decided when switching to an ex-ante funding scheme include the size and calculation of the levy to be applied to ADIs – whether to use a flat levy or a risk-based levy – and the appropriate assessment base on which the levy should be applied.

- Under a flat levy calculation, all ADIs are levied at the same rate. The amount they pay only reflects differences in the size of their assessable base.
- Under a risk-based calculation, the rate of the levy would vary between ADIs depending on an assessment of their riskiness. This can be done in an attempt to discourage excessive risk-taking, to counter moral hazard and to sharpen market disciplines on ADIs. However, the disadvantage of risk-based levies is that they could send (perhaps unwarranted) adverse signals to markets about the stability of individual ADIs that could trigger a disproportionate reaction. Further, although a risk-based fee has conceptual merit from risk-pricing and incentives perspectives, it is more complex to design and administer.

On the assessment base for the levy, the most straightforward approach, and the approach suggested to the then Government by the CFR, would be to use FCS-protected deposits as the base (i.e. covered deposits up to $250 000 per account holder per ADI). A pricing model with a wider base, such as one that includes non-FCS protected liabilities, would be more complicated (and may require, for example, a different levy rate for non-FCS protected liabilities compared with the rate that applies to protected deposits). While FCS-protected deposits could be used as the assessment base for pricing

[14] Australia is one of the few countries with depositor preference. Other jurisdictions with some form of depositor preference include Argentina, China, Hong Kong SAR, Malaysia, Russia, Switzerland and the United States. More recently, the EU has reached an agreement to introduce depositor preference as part of the Bank Recovery and Resolution Directive and legislation has been passed in the United Kingdom that will extend depositor preference to deposits covered by the Financial Services Compensation Scheme.

purposes, this does not mean the proceeds from ex-ante funding should be used only for FCS payouts in a closed resolution[15]. Allowing for a wider use of the proceeds, in particular for open resolution as well, would be more useful than using the funds only to reimburse insured deposits, given the funds would be available for use in a broader range of circumstances. This approach is supported by the Bank and the other CFR agencies, and was included in the advice provided to the then Government in early 2013.

3.2.3 OTC derivatives markets

The CFR has overseen work towards meeting the G20 Leaders' commitment in Australia on OTC derivatives markets reform. Amendments to the Corporations Act were passed in Australia in December 2012 that gave the Government the power to impose mandatory central clearing, trade reporting or platform-based execution requirements.[16] The legislative framework is designed to be flexible, given the cross-border reach of some other jurisdictions' legislation in this area and uncertainties around the broader effects of regulation of these markets on market functioning.

Under the framework, the responsible Minister may issue a determination that mandatory requirements should apply to a specified class or classes of derivatives. In making the decision to issue a determination the Minister must take into account a number of factors, including the advice of APRA, ASIC and the Reserve Bank (the Regulators). To date, the Regulators have delivered their advice to the Minister through periodic reports based on surveys of participants in the Australian OTC derivatives market. Following a determination, ASIC may make Derivative Transaction Rules, which set out the details of any requirements, such as the institutional and product scope of the requirements and any transitional arrangements.

Given the global reach of OTC derivatives markets, the Regulators have in their advice and rule-making sought to promote consistency with overseas OTC derivatives regimes. Broad equivalence between regimes supports cross-border activity in financial markets and, where overseas jurisdictions are willing to recognise broadly equivalent regimes, reduces compliance costs for Australian businesses. Cross-border coordination is also important to avoid overlapping, duplicative or conflicting regulations.

Trade reporting is the first requirement to have been implemented under this framework. Based on recommendations from the Regulators, in May 2013, the Minister made a determination requiring a wide range of OTC derivatives to be reported (*Corporations (Derivatives) Determination 2013*). In July 2013, ASIC published final rules setting out the details of trade reporting requirements (*ASIC Derivative Transaction Rules (Reporting) 2013*). The data collected under the rules will be used primarily by the Regulators to assess systemic risk arising from OTC derivatives markets, and may also be used for other purposes such as conducting market surveillance and enforcement.

No requirement to centrally clear has yet been implemented in Australia. The Regulators have taken the view that regulatory and commercial incentives may be enough to drive industry towards central clearing. These incentives arise from a combination of factors, including implemented and anticipated overseas requirements to centrally clear, the higher capital charges applied to non-centrally cleared positions, and the resulting shift in liquidity to centrally cleared markets. Nevertheless, on the grounds of international consistency, the Regulators recommended in July 2013 that the government

---

[15] Closed resolution occurs when the bank is closed to new business and liquidated. It contrasts with open resolution where the core functions of the bank are transferred to another bank or a bridge bank, or the bank is recapitalised *in situ*.

[16] The amendments also established a licensing regime for trade repositories. Under the regime, ASIC has responsibility for regulating and supervising trade repositories.

consider imposing a requirement for internationally active financial institutions to centrally clear interest rate derivatives that have been mandated in other jurisdictions (APRA, ASIC and RBA 2013). This recommendation has been accepted by the Government, with a proposal published in February 2014 for consultation (Australian Government 2014).

A decision on mandatory clearing of Australian dollar-denominated interest rate derivatives, which the Regulators consider to be the most systemically important derivatives product class in Australia, has been deferred until the next report in early 2014. In the meantime, two CCPs, ASX Clear (Futures) and the London-based global CCP, LCH.Clearnet Limited (LCH.C Ltd) have received regulatory approval to offer OTC derivatives clearing services to Australian participants. All four of the large domestic banks have become foundation customers of ASX's service, with two having also joined LCH.C Ltd as direct participants.

A requirement for platform-based execution has not been implemented in Australia, and there is limited uptake in platform-based execution by OTC derivatives market participants. The Regulators continue to see in-principle benefits to greater use of trading platforms, but it is not clear whether mandating their use is necessary to realise those benefits. Accordingly, the Regulators will continue to monitor developments in other jurisdictions and seek more detailed information on activity in the Australian market.

3.2.4 Financial market infrastructures

Australia has adopted the new international standards for FMIs, the PFMIs, developed by the CPSS and IOSCO (CPSS and IOSCO 2012). The Bank and ASIC have shared responsibility for oversight of FMIs in Australia and have taken complementary steps to implement the PFMIs (ASIC and RBA 2013) (Chapter 8). In March 2013, new Financial Stability Standards (FSS) determined by the Bank came into force (RBA 2012).

The FSS, aligned with the stability-related requirements in the PFMIs, are substantially more detailed than the previous standards. They clarify minimum requirements on matters such as the size of pre-funded financial resources, collateral eligibility criteria and access to liquidity. They also set new requirements in a number of areas. In particular, for the first time, FMIs are called upon to develop recovery plans, which articulate the steps FMIs would take in the event of an extreme financial shock.

The recovery planning requirements in the new FSS were subject to transitional relief in Australia until end March 2014. This reflected that international work was ongoing to develop more detailed guidance in this area. Even though the PFMIs require FMIs to hold more financial resources, in very extreme cases these might still not be enough to cover a participant default. Given the increasing (and sometimes mandatory) use of CCPs, these firms and their regulators need to have robust plans for dealing with such an unlikely scenario. The Bank has since been working with domestic FMIs on the development of its recovery plans.

The official sector is in parallel developing arrangements to intervene directly in circumstances of acute FMI distress where a recovery plan cannot be fully implemented as intended. In Australia, the Government is considering its response to a CFR recommendation to the Treasurer in February 2012 that ASIC and the Bank be given the power to appoint a statutory manager to a troubled FMI (CFR 2012) (Chapter 8).

3.2.5 Shadow banking

There has been relatively less domestic focus on implementation of **shadow banking** reforms given that most global proposals have only recently been finalised and the small and declining size of the shadow banking sector in Australia (Chapter 4).

During the international policy development phase, Australia advocated that regulators need sufficient flexibility to respond proportionately to risks, reflecting the fact that in Australia the shadow banking sector has a relatively small share of financing activity and the possibility that heavy regulation may impose costs in excess of potential benefits (Schwartz and Carr 2013).

Even though this sector is small, the authorities do periodically take regulatory actions. An example is the regulatory response to the failure of a number of small finance companies that were issuing retail debentures in recent years. In April 2013, APRA released proposals to restrict registered financial corporations - which include finance companies and money market corporations - from issuing retail debentures with maturities of less than 31 days and from using words such as 'deposit' and 'at-call' to market their products to retail investors. APRA's proposals re-emphasise the distinction between the regulatory framework for these entities, which are not prudentially regulated, and the more intensive supervisory regime applicable to ADIs. These proposals complement those released by ASIC earlier in 2013, which included possible capital and liquidity requirements for retail debenture issuers. In addition to regulatory action, authorities also undertake periodic assessments of developments in the sector.

- ASIC has also increased the scrutiny on hedge funds. For example, in September 2013 ASIC released its review of the level of systemic risk posed by 'single-strategy' hedge funds. The report, which also reviewed the results of ASIC's 2012 hedge funds survey, found that Australian hedge funds do not currently appear to pose a systemic risk to the Australian economy.
- The RBA presents an annual review to the CFR on developments in Australia's shadow banking sector. This informs a discussion among CFR members on potential risks arising from this sector, and, if necessary, for member agencies to take appropriate action within their areas of responsibilities.

APRA has also outlined work it is doing to make changes to its securitisation framework. APRA will consult on its proposed new framework which is based on simple, low-risk structures that make it straightforward for ADIs to use securitisation as a funding tool and for capital relief. This, in turn, should lead to a reduction in industry complexity, and an improvement in ADI risk allocation and management.

3.2.6 Australia's response to other reforms

3.2.6.1 Macroprudential policies and tools

In keeping with its responsibility for overall financial system stability, the RBA, along with other CFR agencies, and particularly APRA, continues to monitor international developments in the area of 'macroprudential' policies and tools. While these regulatory measures were used prior to the crisis – especially in emerging market economies – such measures have become more prominent in light of the crisis and have begun to be developed or used more widely, including in New Zealand. The use of macroprudential tools in advanced economies is largely a recent phenomenon, making it difficult to draw definitive conclusions about their effectiveness. The Bank will continue to carefully monitor

experience with these measures, with New Zealand being a particular focus as Australia's four major banks have large operations in that market.

Australia did not need to adjust its regulatory framework to give the authorities a mandate to pursue system-wide oversight and promote financial stability, because both APRA and the RBA already had mandates and powers in these domains.[17] In Australia's case, both APRA and the RBA have responsibilities for system-wide oversight, although each agency has different, but overlapping and complementary, powers and responsibilities. APRA has powers and responsibilities that relate mainly to individual institutions, but its legislative mandate includes stability of the system, and it can adjust its prudential settings to address system-wide concerns. The RBA has a broad financial stability mandate, existing in conjunction with other macroeconomic objectives and attached to a very different set of powers. The RBA is authorised to provide financial services to the Government and to the financial system, and has significant powers to engage in financial activities in the public interest, which enable the RBA to act as lender of last resort and liquidity manager for the financial system.

One point of difference here is that the Bank's responsibility for overall financial system stability is not stated explicitly in legislation. However, the broader provisions in section 10 of the *Reserve Bank Act 1959* (the Act) have long been interpreted as implying a mandate to pursue financial stability, given the serious damage to employment and economic prosperity that can occur in times of financial instability. Further, this (implicit) goal has been made explicit in a number of ways, such as in 1998 when the then Treasurer referred to financial stability being the regulatory focus for the Bank (in the second reading speech in support of the APRA Act). More recently, this role was included in the *Statement on the Conduct of Monetary Policy* agreed by the Governor and the Treasurer, which (in its 2013 version) states 'financial stability, which is critical to a stable macroeconomic environment, is a longstanding responsibility of the Reserve Bank and its Board'. The absence of a financial stability mandate in legislation has not inhibited the Bank from fulfilling this role. Given recent overseas developments involving new financial stability bodies and mandates, however, there may be appetite to consider a legislative mandate for the Bank. The Bank would see any such move as a clarification of the status quo, rather than as a substantive change in its responsibilities.

In carrying out its duties as Australia's integrated supervisor of financial institutions, it should be remembered that APRA already takes an industry-wide, or systemic, perspective, as is consistent with its financial stability mandate. APRA makes its systemic mandate operational through a number of elements of its supervisory practice. This point is sometimes not recognised by those advocating a separate macroprudential mandate. For example, APRA's risk-based approach subjects institutions that pose greater systemic risks to more intensive supervision, and potentially higher capital or other prudential requirements. In this context, and as noted earlier, APRA has released its D-SIB framework, identifying the four major banks as D-SIBs and requiring them to hold additional capital from January 2016. Further, APRA has, at times, imposed prudential measures in response to the build-up of risk in particular sectors. For example, following its stress testing of the housing loan portfolios of ADIs in 2003, APRA made significant adjustments to the risk-weighting of housing loans as well as adjustments to the capital regime for lenders mortgage insurers (LMIs). Such a response to systemic or industry-wide – essentially macroprudential – concerns reflects a broader perspective than a narrow focus on a particular aspect of lending standards such as the LVR.

[17] See APRA and RBA (2012) for a detailed description of the tools and practices of APRA and the RBA that are designed to support financial stability from a system-wide perspective.

The Reserve Bank will work closely with APRA in assessing the need to implement such measures in the future. For example, in terms of the Basel III counter-cyclical capital buffer (CCCB), APRA would be responsible for making and disclosing any decision to require or amend this buffer, while it is anticipated that the Bank would provide analysis to inform any decision. However, before any decisions are taken on the implementation of such measures, it will be important to judge whether these measures would achieve their intended goals, or only offer temporary benefits, and whether once implemented, they can be removed or 'exited' from with relative ease.

3.2.6.2 Role of the Council of Financial Regulators

The CFR is the coordinating body for Australia's main financial regulatory agencies. Its membership comprises APRA, ASIC, the RBA and the Treasury. The CFR was established in 1998 following the recommendations of the previous Financial System Inquiry (the Wallis Inquiry).[18] It is a non-statutory interagency body, and has no regulatory functions separate from those of its four members.

CFR meetings are chaired by the Reserve Bank Governor, with secretariat support provided by the RBA. They are typically held four times per year but can occur more frequently if required. As stated in the *CFR Charter*, the meetings provide a forum for:

- identifying important issues and trends in the financial system, including those that may impinge upon overall financial stability;
- ensuring the existence of appropriate coordination arrangements for responding to actual or potential instances of financial instability, and helping to resolve any issues where members' responsibilities overlap; and
- harmonising regulatory and reporting requirements, paying close attention to the need to keep regulatory costs to a minimum (CFR 2004).

Much of the input into CFR meetings is undertaken by interagency working groups, which has the additional benefit of promoting productive working relationships and an appreciation of cross-agency issues at the staff level.

The CFR has worked well since its establishment and, during the crisis in particular, it has proven to be an effective means of coordinating responses to potential threats to financial stability. For example, the CFR played a critical role in the latter part of 2008 at the height of the financial crisis when the Government introduced the FCS along with the Guarantee Scheme for Large Deposits and Wholesale Funding. The CFR provided advice to the Government on the specific features of these guarantee arrangements. In 2010, the CFR undertook an assessment of the suitability of the structure of the FCS to the post-crisis environment. The advice from this exercise informed the Government's revised arrangements for the FCS, including a lowering of the cap. The CFR also has a role in advising the Government on the adequacy of Australia's financial system architecture, such as OTC derivatives markets and payment and settlement systems, in light of ongoing developments.

The experience since its establishment, and especially during the crisis, has highlighted the benefits of the existing non-statutory basis of the CFR. In a joint APRA-RBA paper on domestic financial stability policy prepared for the IMF's Financial Sector Assessment Program review of Australia in 2012, the two agencies stated, in referring to the CFR, that 'these arrangements provide a flexible, low-cost approach to coordination among the main financial regulatory agencies' (APRA and RBA 2012, p 4).

---

[18] The CFR succeeded the Council of Financial Supervisors, which operated from 1992 to 1998.

In addition to the CFR, there is strong bilateral coordination among the four CFR member agencies. The broad terms of these coordination arrangements are set out in various bilateral Memoranda of Understanding. Those to which the RBA is a signatory include the RBA/APRA Memorandum of Understanding and the RBA/ASIC Memorandum of Understanding. There are also formal meetings of a coordination committee of senior officials from APRA and the RBA which meets roughly every six weeks.

Other jurisdictions have adopted different approaches to interagency coordination in recent years, and in a number of instances have moved in the direction of greater formalisation of coordination arrangements (Section 3.1.5.2). However, the potential benefits of such approaches should not be overstated and these arrangements are too new in many (advanced) jurisdictions to judge their effectiveness. Adopting such an approach in Australia by formalising the CFR with explicit responsibilities and policy tools would involve transferring agency constituent powers to the CFR, with the risk of blurring lines of responsibility that to date have worked well. In a number of countries the approach has been to create separate macroprudential and microprudential regulatory bodies. The Bank, along with APRA, is not convinced of the merits of such a division between macroprudential and microprudential policy. The RBA and APRA 'view macroprudential policy as subsumed within the broader and more comprehensive financial stability policy framework' (2012 p.1). If the financial stability framework is effective and there is strong interagency cooperation and coordination, separate governance arrangements for macroprudential policy are not necessary. More generally, most macroprudential tools being discussed are essentially normal prudential tools used for macroprudential purposes, which also means a clear distinction between macro- and microprudential policy could be difficult to maintain in practice.

Moreover, the approaches adopted overseas are often not readily applicable to Australia. For example, the FPC is a part of the Bank of England (BoE), with the BoE and its new subsidiary, the Prudential Regulation Authority accounting for 5 of the 10 voting members of the FPC. In contrast, the CFR is separate from the RBA and is comprised of heads of the four agencies on an equal basis (with the RBA chairing). As noted in a recent FSB peer review of the United Kingdom, the 'specific governance model chosen in the UK is unique and reflects the UK's experience with their Monetary Policy Committee, on which the FPC's structure appears closely modelled' (FSB 2013h, p 17). In the United States, financial regulatory responsibilities are divided among many agencies (for example, FSOC has 10 voting members, each representing a different agency or industry). In Australia, reaching agreement among CFR members has, to date, usually not been difficult, given only four agencies are involved, and there has been a long tradition of cooperation between them (the CFR, and its predecessor, has been in operation for over 20 years).

Measures short of legislative change can also help underpin effective cooperation. For example, maintenance of relations with senior APRA executives is one of the key position objectives listed on the position description for the RBA's Financial Stability Department senior managers. Similar position descriptions for senior executives and policy staff at APRA typically require them to develop and maintain strong external relationships with relevant stakeholders. Mutual staff secondments are also an important way to build and maintain staff contacts and a level of cooperation and trust.

Finally, it is important to note that formalised, legal frameworks for financial stability coordination are not a guarantee of success. In particular they cannot be relied on to engender a 'culture' of cooperation, trust and mutual support between domestic regulatory agencies. These are essential elements of an effective financial stability framework, especially during a crisis.

3.2.6.3 Consumer credit regulation

Consumer protection laws and policy measures aimed at improving financial literacy contribute to the transparency, efficiency, and therefore competitiveness, of financial markets. They do so by addressing information asymmetries between providers and users of financial services and by increasing bargaining power.[19] Problems arising from the subprime mortgage market in the United States during the recent financial crisis refocused attention on these issues. Although lending standards in Australia were not as lax as in the United States during the pre-crisis period, the share of loans that were 'low-doc' – where borrowers self-certify their income in their loan application – grew strongly in the lead-up to the crisis.

The Australian Government subsequently took action to further reduce the already limited scope for lending standards in Australia to give rise to the same issues seen in the United States. Specifically, the Commonwealth assumed nationwide responsibility for consumer credit regulation by introducing the National Consumer Credit Protection (NCCP) legislation in 2009. This legislation adopted and extended the former state-by-state system's Uniform Consumer Credit Code (UCCC) and introduced a national licencing regime for providers of credit or credit-related services, and responsible lending requirements. In addition, legislation was introduced to deal with unfair contract terms, giving courts the power to alter unfair terms and conditions in contracts.

Due to Australia's already relatively prudent lending standards, the reforms were not expected to have a large effect. Standards of low-doc lending in Australia tightened considerably in the aftermath of the crisis reflecting a reassessment of the risks by lenders and residential mortgage-backed securities investors. The introduction of the NCCP legislation may also have contributed to the reduction in the low-doc share of mortgage approvals.

3.2.6.4 Promoting appropriate policies and avoiding undue regulatory burden

Though Australia avoided the worst of the crisis, as a member of the global financial system it is in Australia's interests to 'play by the international rules'. International reforms have also addressed areas where there was room for improvements in Australia's arrangements. These points are sometimes lost in the debates about implementing financial regulatory reforms, which often focus on the increase in the regulatory burden faced by financial institutions.

It would be impractical, and counterproductive, for Australia, and its regulators and financial institutions, to adopt a 'go it alone' policy, by not implementing globally agreed reforms. Australian financial institutions already interact with foreign entities and have operations in other jurisdictions. While the flexibility to adapt rules to national circumstance should be, and is, taken into account, failing to implement agreed international reforms could be counterproductive to the extent that it poses obstacles to Australian banks wanting to expand their operations overseas or fund themselves in external markets, as well as potentially deter Australia's attractiveness as a financial centre. It is, in any event, in Australia's interests to adopt high standards in supervision and regulation.

Nonetheless, CFR agencies have, to the extent of their influence, sought to ensure that international reforms are sensible for Australia. Examples where the Bank and other CFR agencies have sought to modify international proposals that were not well suited to the Australian financial system include

[19] Information asymmetries occur when different market participants have different levels of knowledge. One example would be when financial service providers understand more about their products or services than the consumers of those products. Conversely, information asymmetries could arise because consumers know more about their individual circumstances than financial service providers.

meeting the LCR through the CLF to reflect the relative scarcity of government debt available as liquid assets, and promoting appropriate weights for high quality mortgages in the Net Stable Funding Ratio requirement. In its membership of the global bodies where these policies are debated and developed (such as the G20, the FSB, and standard-setting bodies such as the BCBS), the motivation of the Bank and other domestic agencies has been to ensure good policy outcomes, and that flexibility in rules and implementation is retained where appropriate.

As G20 president in 2014, the Australian approach, supported by the Bank, is to focus the G20's efforts on reaching agreement and progressing implementation in the four core reform areas, and to be cautious, for the moment, in adding further reforms to the agenda. This approach has found broad acceptance.

References

APRA (Australian Prudential Regulation Authority) (2013), 'Information Paper: Domestic Systemically Important Banks in Australia', December. Available at <http://www.apra.gov.au/adi/Publications/Documents/Information-Paper-Domestic-systemically-important-banks-in-Australia-December-2013.pdf>.

APRA and RBA (Reserve Bank of Australia) (2012), 'Macroprudential Analysis and Policy in the Australian Financial Stability Framework', September. Available at <http://www.rba.gov.au/fin-stability/resources/2012-09-map-aus-fsf/pdf/2012-09-map-aus-fsf.pdf>.

APRA, ASIC (Australian Securities and Investments Commission) and RBA (2013), 'Report on the Australian OTC Derivatives Market', July. Available at <http://www.cfr.gov.au/publications/cfr-publications/2013/report-on-the-australian-otc-derivatives-market-july/pdf/report.pdf>.

ASIC Derivative Transaction Rules (Reporting) 2013. Available at <http://www.comlaw.gov.au/Details/F2013L01345>.

ASIC and RBA (2013), 'Implementing the CPSS-IOSCO Principles for Financial Market Infrastructures in Australia', February. Available at <http://www.rba.gov.au/payments-system/policy-framework/principles-fmi/implementing-principles-australia.html>.

Australian Government (2014), 'Implementation of Australia's G-20 Over-The-Counter Derivatives Commitments – Proposals Paper – G4-IRD Central Clearing Mandate', February. Available at <http://www.treasury.gov.au/ConsultationsandReviews/Consultations/2014/G20-over-the-counter-derivatives-commitments>.

BCBS (Basel Committee on Banking Supervision), IAIS (International Association of Insurance Supervisors) and IOSCO (International Organisation of Securities Commissions) (2010), 'Review of the Differentiated Nature and Scope of Financial Regulation: Key Issues and Recommendations', January. Available at <http://www.bis.org/publ/joint24.pdf>.

BCBS (2011), 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems', revised version, June. Available at <http://www.bis.org/publ/bcbs189.pdf>.

BCBS (2013), 'Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools', January. Available at <http://www.bis.org/publ/bcbs238.pdf>.

BCBS (2014), 'Basel III Monitoring Report', March. Available at <http://www.bis.org/publ/bcbs278.pdf>.

BCBS and FSB (Financial Stability Board) (2010a), 'An Assessment of the Long-term Economic Impact of Stronger Capital and Liquidity Requirements', August. Available at <http://www.bis.org/publ/bcbs173.pdf>.

BCBS and FSB (2010b), 'Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements', December. Available at <http://www.bis.org/publ/othp12.pdf>.

BCBS and FSB (2011), 'Assessment of the Macroeconomic Impact of Higher Loss Absorbency for Global Systemically Important Banks', October. Available at <http://www.bis.org/publ/bcbs202.pdf>.

BCBS and IOSCO Board (2013), 'Margin Requirements for Non-centrally Cleared Derivatives', September. Available at <http://www.bis.org/publ/bcbs261.pdf>.

Borio C and I Shim (2007), 'What Can (Macro-) prudential Policy do to Support Monetary Policy?', BIS Working Papers No 242, December. Available at <http://www.bis.org/publ/work242.pdf>.

Brunnermeier M (2009), 'Deciphering the Liquidity and Credit Crunch 2007–2008'*, Journal of Economic Perspectives*, 23, pp 77–100.

CPSS (Committee on Payment and Settlement Systems) and IOSCO (2012), *Principles for Financial Market Infrastructures,* April. Available at <http://www.bis.org/publ/cpss101.htm>.

CPSS and IOSCO (2013), *Recovery of Financial Market Infrastructures – Consultative Report*, August. Available at <http://www.bis.org/publ/cpss109.htm>.

Corporations (Derivatives) Determination 2013. Available at <http://www.comlaw.gov.au/Details/F2013L00819>.

CFR (Council of Financial Regulators) (2004), *CFR Charter***.** Available at <http://www.cfr.gov.au/about-cfr/charter.html>.

CFR (2008), *Memorandum of Understanding on Financial Distress Management***.** Available at <http://www.cfr.gov.au/about-cfr/mou/index.html>.

CFR (2012), 'Review of Financial Market Infrastructure Regulation: Letter to the Deputy Prime Minister and Treasurer', February. Available at <http://www.treasury.gov.au/ConsultationsandReviews/Consultations/2012/CFR-Financial-Market-Infrastructure-Regulation>.

Crowe C, G Dell'Ariccia, D Igan and P Rabanal (2013), 'How to Deal with Real Estate Booms: Lessons from Country Experiences', *Journal of Financial Stability*, 9(3), pp 300–319.

Debelle G (2011), 'The Committed Liquidity Facility', Speech to the APRA Basel III Implementation Workshop 2011, Sydney, 23 November.

Ellis L (2013), 'Macroprudential Policy: What Have We Learned?', Speech to the Bank of England Workshop for Heads of Financial Stability, London, 6–7 March.

Ergungor O (2007), 'On the Resolution of Financial Crises: The Swedish Experience', Federal Reserve Bank of Cleveland Policy Discussion Paper No 21. Available at <http://www.clevelandfed.org/research/policydis/pdp21.pdf>.

FCIC (Financial Crisis Inquiry Commission) (2011), 'Financial Crisis Inquiry Report', January. Available at <http://fcic-static.law.stanford.edu/cdn_media/fcic-reports/fcic_final_report_full.pdf>.

Frankel J and G Saravelos (2012), 'Can Leading Indicators Assess Country Vulnerability? Evidence from the 2008–09 Global Financial Crisis', *Journal of International Economics*, 87(2), pp 216–231.

FSA (Financial Services Authority) (2009), 'The Turner Review: A Regulatory Response to the Global Banking Crisis', March. Available at <http://www.fsa.gov.uk/pubs/other/turner_review.pdf>.

FSB (Financial Stability Board) (2010), 'Reducing the Moral Hazard Posed by Systemically Important Financial Institutions: FSB Recommendations and Time Lines', October. Available at <http://www.financialstabilityboard.org/publications/r_101111a.pdf>.

FSB (2011), *Key Attributes of Effective Resolution Regimes for Financial Institutions*, October. Available at <http://www.financialstabilityboard.org/publications/r_111104cc.pdf>.

FSB (2012), 'Identifying the Effects of Regulatory Reforms on Emerging Market and Developing Economies: A Review of Potential Unintended Consequences', June. Available at <http://www.financialstabilityboard.org/publications/r_120619e.pdf>.

FSB (2013a), '2013 Update of Group of Global Systemically Important Banks'. Available at <https://www.financialstabilityboard.org/publications/r_131111.pdf>.

FSB (2013b), 'Credit Rating Agencies Reducing Reliance and Strengthening Oversight: Progress Report to the St Petersburg G20 Summit', August. Available at <http://www.financialstabilityboard.org/publications/r_130829d.pdf>.

FSB (2013c), 'Financial Regulatory Factors Affecting the Availability of Long-term Investment Finance', February. Available at <https://www.financialstabilityboard.org/publications/r_130216a.pdf>.

FSB (2013d), 'Global Shadow Banking Monitoring Report', November. Available at <http://www.financialstabilityboard.org/publications/r_131114.pdf>.

FSB (2013e), 'Implementing the FSB Principles for Sound Compensation Practices and their Implementation Standards: Second Progress Report', August. Available at <http://www.financialstabilityboard.org/publications/r_130826.pdf>.

FSB (2013f), 'Progress and Next Steps Towards Ending "Too Big To Fail" (TBTF)', September. Available at <https://www.financialstabilityboard.org/publications/r_130902.pdf>.

FSB (2013g), 'Strengthening Oversight and Regulation of Shadow Banking', August. Available at <http://www.financialstabilityboard.org/publications/r_130829a.pdf>.

FSB (2013h), 'Peer Review of the United Kingdom', September. Available at <https://www.financialstabilityboard.org/publications/r_130910.pdf>.

FSB (2013i), 'Thematic Review on Resolution Regimes', April. Available at <http://www.financialstabilityboard.org/publications/r_130411a.pdf>.

FSB, IMF (International Monetary Fund) and BIS (Bank for International Settlements) (2011), 'Macroprudential Policy Tools and Frameworks: Update to G20 Finance Ministers and Central Bank Governors', October. Available at <https://www.imf.org/external/np/g20/pdf/021411.pdf>.

Gambacorta L and A Van Rixtel (2013), 'Structural Bank Regulation Initiatives: Approaches and Implications', BIS Working Papers No 412, April. Available at <https://www.bis.org/publ/work412.pdf>.

G20 (Group of 20) (2009), 'Leaders' Statement: The Pittsburgh Summit', 24–25 September. Available at <https://www.g20.org/sites/default/files/g20_resources/library/Pittsburgh_Declaration.pdf>.

Heath A and M Manning (2012), 'Financial Regulation and Australian Dollar Liquid Assets', RBA *Bulletin*, September, pp 43–52.

ICB (Independent Commission on Banking) (2011), *Final Report Recommendations* (Vickers Commission), September.

Ingves S and G Lind (1996), 'The Management of the Bank Crisis – in Retrospect,' Sveriges Riksbank *Quarterly Review*, 1, pp 5–18. Available at <http://www.riksbank.se/upload/Dokument_riksbank/Kat_publicerat/Artiklar_PV/qr96_1_artikel1.pdf>.

Kuttner K and I Shim (2013), 'Can Non-interest Rate Policies Stabilise Housing Markets? Evidence from a Panel of 57 Economies', BIS Working Paper No 433, November. Available at <http://www.bis.org/publ/work433.pdf>.

Liikanen E *et al* (2012), *High-Level Expert Group on Reforming the Structure of the EU Banking Sector: Final Report*, October. Available at <http://ec.europa.eu/internal_market/bank/docs/high-level_expert_group/report_en.pdf>.

Lowe P (2013), 'Some Tensions in Financial Regulation', Address to the Institute of Global Finance Second Conference on Global Financial Stability and Prosperity, Sydney, 4 July.

MAGD (Macroeconomic Assessment Group on Derivatives) (2013), 'Macroeconomic Impact Assessment of OTC Derivatives Regulatory Reforms', August. Available at <http://www.bis.org/publ/othp20.pdf>.

Mishkin F (2006), 'How Big a Problem Is Too Big To Fail?', *Journal of Economic Literature*, 44(4), pp 988–1004.

Pozsar Z, T Adrian, A Ashcraft and H Boesky (2013), 'Shadow Banking', *Federal Reserve Bank of New York Economic Policy Review* , 19(2), pp 1–16.

RBA (2012), 'New Financial Stability Standards: Final Standards and Regulation Impact Statement', December. Available at <http://www.rba.gov.au/payments-system/clearing-settlement/standards/201212-new-fss-ris/index.html>.

Schich S and B Kim (2012), 'Developments in the Value of Implicit Guarantees for Bank Debt: The Role of Resolution Regimes and Practices', OECD *Journal: Financial Market Trends*, 2012(2), pp 35–65. Available at <http://www.oecd.org/finance/Value_Implicit_Guarantees_Bank_Debt.pdf>.

Schwartz C (2010), 'The Australian Government Guarantee Scheme', RBA *Bulletin*, March, pp 19–26.

Schwartz C (2013), 'G20 Financial Regulatory Reforms and Australia', RBA *Bulletin*, September, pp 77–85.

Schwartz C and T Carr (2013), 'Shadow Banking: Australian and International Experience Around Times of Financial Stress and Regulatory Reform', *JASSA: The Finsia Journal of Applied Finance*, Issue 3, pp 30–38.

SSG (Senior Supervisors Group) (2009), 'Risk Management Lessons from the Global Banking Crisis of 2008'. Available at <http://www.newyorkfed.org/newsevents/news/banking/2009/SSG_report.pdf>.

Tarullo D (2009), 'Confronting Too Big to Fail', Speech to Exchequer Club, Washington, DC, October. Available at <http://www.federalreserve.gov/newsevents/speech/tarullo20091021a.htm> .

Turner G (2011), 'Depositor Protection in Australia', RBA *Bulletin*, December, pp 45–55.

Wong E, T Fong, K Li and H Choi (2011), 'Loan-to-value Ratio as a Macro-prudential Tool – Hong Kong's Experience and Cross-country Evidence', Hong Kong Monetary Authority Working Paper 01/2011. Available at <http://www.hkma.gov.hk/media/eng/publication-and-research/research/working-papers/HKMAWP11_01_full.pdf>.

Yellen J (2009), 'Linkages between Monetary and Regulatory Policy: Lessons from the Crisis', Presentation to The Institute of Regulation & Risk, North Asia Hong Kong, November. Available at <http://www.frbsf.org/our-district/press/presidents-speeches/yellen speeches/2009/november/yellen-monetary-regulatory-policy-lessons-crisis/>.

4. Sources and Management of Systemic Risk

This Chapter outlines the concept of systemic risk and the factors that might give rise to it. Sources of systemic risk in the Australian financial system – entities, activities and markets – are examined as well as the measures in place to manage it. The key messages from this Chapter are:

- Systemic risk is the risk of financial system disruption so widespread or severe that it causes material damage to the real economy.
- The four major banks are important sources of systemic risk in Australia because of their size and interconnections with the real economy and the rest of the financial system. While on the one hand, the systemic risk posed by the major banks is heightened due to the similarity of their business models and funding structures, on the other hand, their business models are relatively low risk.
- Compared with other assets, housing is not particularly risky in most countries. The housing market nonetheless poses systemic risk because of its size, importance to the real economy, and interconnection with the financial system, including through the sizeable exposure that banks have to housing. While not as large, the commercial property market also poses systemic risk through its cyclicality and strong connections to the banking system; historically it has been one of the main sources of loan losses during episodes of banking distress globally.
- Financial market infrastructures (FMIs) are critical to the smooth functioning of financial markets, but can also be a source of systemic risk because of their size, strong connections with banks and other financial institutions, and the lack of substitutes in the markets they serve.
- The Reserve Bank closely monitors systemic risk in the Australian financial system, including how risk can propagate. Public policy does not seek to eliminate systemic risk – this would require removing certain risk-taking altogether, which would not be optimal for society. However, effective public policy design and other mitigation strategies can substantially reduce systemic risk and the impact on the financial system and real economy.

4.1 What is Systemic Risk?

There is no consensus definition of systemic risk, but a reasonable working definition is that it is the risk of financial system disruption so widespread or severe that it causes, or is likely to cause, material damage to the economy.[1] Such disruptions can have significant implications for employment, wages, prices and activity, including for people and firms outside of the financial sector. That is, systemic risk and financial system disruptions can impose large negative externalities (external costs) on the rest of the economy. These externalities imply that a financial system without regulation to address these risks is not socially optimal. Although some definitions of systemic risk do not emphasise negative effects on the real economy,[2] the public policy case for seeking to manage or mitigate systemic risk

1 See Group of Ten (2001), ECB (2009a), IMF, BIS and FSB (2009) and EU (2010) for similar definitions.
2 See Kaufman and Scott (2003) and Billio *et al* (2011) for examples of definitions that do not emphasise harm to the real economy.

stems from these; the experience of the global financial crisis highlights that the effects on the real economy can be severe.

Systemic risk differs from financial risk (the various types of which are outlined in 'Box 4A: Types of Financial Risk'). Financial risk involves both good and bad potential outcomes for those that assume such risk, whereas systemic risk is concerned solely with negative outcomes for the economy. Moreover, because systemic risk is borne by the economy as a whole, it cannot be fully diversified away or transferred to others like financial risks can be. However, systemic risk can be reduced by certain policies.

Several aspects can be identified that may lead to a particular risk being considered systemic.

- An entity or market might be so large that adverse outcomes for it would have significant effects on the economy. Thus even if the risk of this outcome is very low, the entity or market is considered to pose systemic risk because of its sheer **size**: in other words, it is systemically important. In Australia, the major banks and the housing market both fall into this category.
- In other settings, risks might propagate from one entity or part of the financial system to others because of their **interconnections**, such as borrowings or payments. That is, a shock to one institution can be quickly propagated to others through direct connections. Examples of networks of entities that borrow from one another, and that in principle could propagate distress through chains of failures, include the banking system and the non-financial businesses that extend trade credit to one another. Actual or expected failure to settle payments in a high-value payment system or in insurance and other risk transfer markets can also propagate distress. These are all examples of 'contagion' within the financial system.[3]
- Systemic risk might also arise in cases where individual entities or markets, including those that are small in size, tend to fail or experience financial distress all at once. This occurs because they are affected by the same shocks or behave in the same way in particular circumstances; that is to say, they display **correlation**. This also falls within the term contagion as it is generally used. One example is the reactions that can occur in financial markets when there is uncertainty about a firm's financial position, especially in distressed market conditions. Creditors may extrapolate bad news about one institution to other institutions (particularly those with similar business or funding models) and 'rush to the exit'.
- Systemic risk often stems from cycles in financial risk-taking by entities and market participants; this mechanism can be referred to as **procyclicality**, although it is not only a function of the business cycle (Kindleberger and Aliber 2011). Under certain circumstances, investor exuberance can be self-propagating, as rising prices caused by greater risk-taking are wrongly interpreted as signals of favourable future financial and economic conditions. Similar behaviours can also accelerate downturns, as purely financial distress, and the changes it causes, are interpreted as signals of less favourable future conditions. One manifestation of procyclical risk-taking that is critical for systemic risk is leverage cycles, such as those in financial markets and property markets (Fostel and Geanakoplos 2013). Leverage plays a key role in many risk amplification processes; losses that less-leveraged entities could absorb may render more-leveraged ones unable to meet obligations to creditors.

In practice, many sources of systemic risk involve more than one of these aspects. For example, the effects of procyclicality may be amplified through the various channels of correlation and

[3] See De Bandt, Hartmann and Peydro-Alcalde (2010) for a general discussion of contagion.

interconnection. And a highly leveraged large institution in financial difficulty is, other things equal, more of a problem than a small one.

Most researchers accept that a variety of shocks can lead to systemic disruption, both shocks from outside the financial system such as a recession or natural disaster, and those generated by the activities of the sector itself. Examples of internally generated shocks include lending booms and lax lending standards that lead to broad-based credit problems, the propagation of stress through the global financial system via derivatives and wholesale funding markets, as well as simple but large shocks to prices of financial assets (BCBS 2004; ECB 2009a; Bernanke 2010). Consistent with this, a shock that triggers systemic disruption may initially affect a large number of institutions or only a single institution (De Bandt, Hartmann and Peydro-Alcalde 2010). The Group of Ten (2001) acknowledged that, in some concentrated financial systems, the collapse of a single market or financial institution may itself constitute systemic disruption.

The costs of systemic financial crises can be severe, as is clear from the deep recessions and slow recoveries in many of the economies most affected by the recent crisis, such as the United States, the euro area, and the United Kingdom.[4] A number of mechanisms produce these costs (Cecchetti, Kohler and Upper 2009), although how they operate is still a topic of research. One important channel is a decline in the availability of credit. Whether this reflects lenders' responses to deterioration in the balance sheets and creditworthiness of their customers, or deterioration in their own financial health, the outcome is that funding of productive activity becomes constrained.[5] Another mechanism is the wealth effect on household consumption when asset prices decline, as they often do in periods of financial disruption.[6] The severity of such effects in large part depends on the strength of any feedback loops between the financial and non-financial sectors of the economy.

4.2 Systemic Risk in the Australian Financial System

Systemic risk varies across the Australian financial system, reflecting that some parts of the system are more important to market functioning and economic activity than others. Systemic risk also varies over time due to changes in risk appetite and the operating environment.

4.2.1 Banks

Within the financial sector, banks are the entities that are widely regarded as posing the greatest systemic risk. There are at least three reasons for this:

- First, banks provide financial services that are critical to the functioning of the economy, in particular payment facilities, deposit-taking and allocating credit to productive activities. Disruption to these types of services would be expected to impose significant costs in terms of foregone economic activity.

---

4 Cerra and Saxena (2008) found that economic downturns were more severe and persistent if they were preceded by a banking crisis. Reinhart and Rogoff (2009) estimate that 13 systemic banking crises between 1977 and 2001 plus the Great Depression were associated with an average 7 per cent rise in unemployment (over 4.8 years) and a fall in output of 9.3 per cent (over 1.9 years).

5 See Jacobs and Rayner (2012) and La Cava (2013) for attempts to estimate the credit supply channel in Australia. Bernanke and Gertler (1989) and Bernanke, Gertler and Gilchrist (1999) discuss the effects of declining creditworthiness of borrowers. Gertler and Kiyotaki (2010) and Adrian, Colla and Shin (2012) discuss the effects when it is lenders whose creditworthiness declines.

6 See Christelis, Georgarakos and Jappelli (2011) for the US experience and Windsor, Jaaskela and Finlay (2013) for an examination of this channel in Australia.

- Second, banks are inherently unstable because of their asset-liability structure. Banks assume liquidity risk by engaging in maturity transformation and providing liquidity services. These inherent functions of banks mean they are exposed to liquidity shocks, such as funding market disruptions. If a bank's creditors seek to withdraw their funds at the same time, the bank may be unable to meet its obligation to return these funds due to the difficulty of liquefying its assets. Banks use fixed-price liabilities (including deposits) to fund most of their assets, so they are highly leveraged; that is, their capital is equivalent to only a small proportion of their total assets. This gives depositors and other creditors only a small buffer against losses on a bank's assets, increasing their incentive to quickly withdraw their funds in times of financial distress or uncertainty.
- Third, problems in one or two banks – whether internally generated or arising from external shocks – have the potential to quickly spread to others. Contagion in banking markets can stem from interconnections between banks through borrowing and lending activities, payment or derivative transactions, as well as correlated exposures and similar funding structures. In certain circumstances, a lack of transparency and uncertainty surrounding parts of banks' balance sheets can be enough for some creditors to run on an entire banking system rather than simply one or two banks.

4.2.1.1 The four major banks

Some entities and markets can pose risk simply because of their size or importance to the economy, even if they are low risk in an individual sense. The four major banks in Australia – Australia and New Zealand Banking Group (ANZ), Commonwealth Bank of Australia (CBA), National Australia Bank (NAB) and Westpac Banking Corporation (WBC) – can be reasonably considered to fall into this category. Their stand-alone credit ratings across several credit rating agencies and low funding spreads show that the market considers them to have a low risk of failure. Such an assessment is consistent with their capital positions and business models, as well as, more broadly, Australia's sound regulatory and macroeconomic environment. In the unlikely event that one of these entities were to become distressed, however, this would be likely to have a marked and negative effect on the real economy.

This recognition motivated their recent designation as domestic systemically important banks (D-SIBs) by the Australian Prudential Regulation Authority (APRA) (Chapter 3). In determining the systemic importance of the Australian banks, APRA (2013a) examined four broad indicators – size, interconnectedness, substitutability and complexity – and found a clear distinction between the major banks and other banks.[7]

- The four major Australian banks are much larger in the domestic market than other banks, with their resident assets each representing between 16 per cent and 23 per cent of resident banking system assets, compared with 2 per cent for the next largest bank (Table 4.1).
- Compared with other banks, the major banks have deeper connections to other financial institutions through their borrowing and lending activities. Using data on large exposures to individual counterparties (which capture risk concentrations arising from both on- and off-balance sheet transactions), Tellez (2013) found that the Australian banking system network is characterised by a large number of financial institutions being exposed to the four major banks and, to a lesser extent, a few other large banks.

[7] The International Monetary Fund (IMF) (2012a, p 5) came to the same conclusion in a paper produced as part of its 2012 Financial Sector Assessment Program review of Australia, stating that 'defining domestic systemic importance for financial institutions is relatively straightforward in Australia … the four largest banking groups stand head and shoulders above the rest'.

- Substitutability can be regarded as the ease with which other banks can replace the services that were provided by a failed bank. The four major banks dominate the provision of financial services considered most critical to the economy: they each account for a large share of lending to households and businesses and, together, the bulk of payments activity.
- The complexity of a bank's activities is often measured by its holdings of over-the-counter (OTC) derivatives, trading assets and structured financial assets. The activities related to these can increase the opacity of a bank's financial position and thus the difficulty in resolving it in the event of failure or if it encounters severe financial stress. Although the four major banks are less engaged in these activities compared with many of the largest global banks, their complexity is generally measured to be much higher than most other banking institutions in Australia.

Table 4.1: APRA's Assessment of Systemic Importance

	Selected measure	Share of system total
Size[(a)]	Resident assets	Four majors: 16–23 per cent 5th largest: 2 per cent
Interconnectedness[(a)]	Loans and advances to financial corporations	Four majors: 15–25 per cent 5th largest: 4 per cent
	Deposits from financial corporations	Four majors: 16–22 per cent 5th largest: 6 per cent
	Securities outstanding	Four majors: 14–19 per cent 5th largest: 3 per cent
Substitutability[(a)]	Loans and advances	Four majors: 16–25 per cent 5th largest: 2 per cent
	Loans and advances to households and non-financial corporates	Four majors: 16–25 per cent 5th largest: 2 per cent
Complexity[(b)]	Risk-weighted assets for traded market risk	Four majors and Macquarie: 14–30 per cent 6th largest: 1 per cent

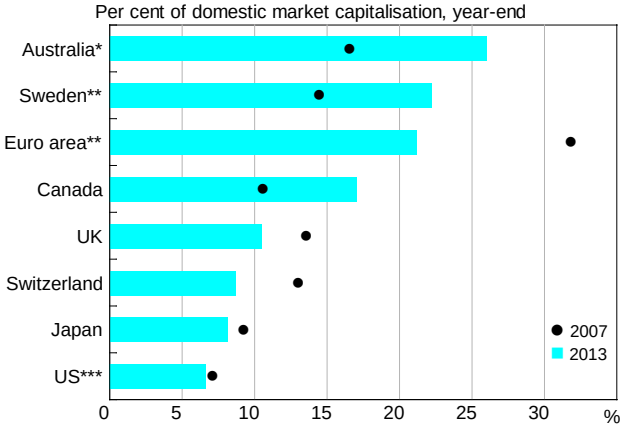
(a) Data are on a resident, domestic books basis and include Australian-owned banks, foreign-owned bank subsidiaries, and foreign-owned bank branches

(b) Data are on a consolidated basis; foreign-owned bank branches do not hold capital in Australia so are not included

Sources: APRA; banks' financial disclosures

There are other, less direct, ways in which the four major banks are important to the Australian financial system and the economy. In particular, the household sector has a sizeable equity (and debt) exposure to them via superannuation and other investment portfolios. For example, ABS data indicate that domestic retail investors and other domestic investors (mainly superannuation funds) own around three-quarters of the major banks' equity. The major banks' share of equity market capitalisation in Australia is around 25 per cent, which is higher than the (listed) banking sectors in a number of other large countries (Graph 4.1). Given this sizeable equity exposure, a substantial decline in the major banks' market value could result in a material negative wealth shock to the household sector, albeit one that is unevenly distributed across households.

Graph 4.1
Banking Sector Market Capitalisation
Per cent of domestic market capitalisation, year-end



* Includes the four major banks
** Per cent of relevant broad market index
*** Includes the bank index plus five large diversified banks
Sources: Bloomberg; RBA; World Federation of Exchanges

In addition to their individual systemic importance and interconnections with the economy, the systemic risk posed by the major banks might be heightened due to their similarity (or perceived similarity). In the terminology used above, they are correlated in ways that could increase the chance of simultaneous credit losses, joint funding stress, or sentiment-driven contagion. A range of balance sheet metrics and banking indicators support the assertion that the major banks' businesses are quite similar.[8] They have: similar sized balance sheets; broadly comparable shares of lending and deposits; relatively large shares of housing loans; similar capital positions; and the same credit ratings (Table 4.2). Furthermore, non-resident assets comprise a fairly similar proportion of their balance sheets at between 15–35 per cent, with New Zealand being the largest offshore business in most cases.

Although it could be argued that similarity increases the probability of *joint* bank financial distress, it could still reduce systemic risk if it reflects the joint adoption of business models that are relatively low risk. This is a consideration in Australia, given that the major banks' businesses focus heavily on traditional commercial banking – that is, servicing household and business customers – in Australia and New Zealand. The major banks have been able to earn good returns from this business, giving them less incentive to pursue potentially high-yielding, but higher risk, assets offshore. They had little exposure to the complex structured credit products that were the catalyst of the global financial crisis; they are also not significantly involved in the types of investment banking activities that faced difficult market conditions and significant structural change of late. Indeed, loans represent the bulk of their assets, whereas trading assets and securities are only a small share, including compared to most large banking groups globally (Ellis 2013). And within their loan portfolios, housing loans – which typically pose less risk than most other forms of lending – account for over half of total loans.

Systemic risk can, nonetheless, be heightened by perceptions that systemically important banks are 'too big to fail'. If creditors assume that the public sector will not allow such banks to fail, they will assess the risk of failure as lower than that justified by a bank's stand-alone financial health. This can result in competitive distortions, allowing these entities to grow larger and become even more systemically important. It may also encourage moral hazard as banks that are perceived to be too big to fail may take on excessive risk with the assumption that the public sector will step in to cover the costs of downside risks, whereas the bank itself is the sole beneficiary on the upside. These dynamics can lead to large costs for the public sector in the event of failure. It is very difficult to quantify the

[8] The IMF (2012a, p 19) commented about the major banks that 'with similarities in business models and common exposures, shocks are likely to impact these banks in a similar way.'

extent to which the too big to fail issue exacerbates systemic risk in Australia or other countries more generally, and thus to calibrate policies to account for apparent lower costs of funding or more risky behaviour.[9]

Table 4.2: The Major Banks
Consolidated, as at end of 2013 financial year

	ANZ	CBA	NAB	WBC
Total assets ($b)	703	754	808	697
Ranking among international banks by total assets, at end 2012	42	39	37	40
Deposits to liabilities (per cent)	56	57	48	59
Loans to total assets (per cent)	67	74	51	77
Housing loans to total loans (per cent)	54	67	70	68
Trading assets and securities to total assets (per cent)	17	17	15	15
Cost-to-income ratio (per cent)	46	44	45	42
Return on equity (per cent)	15	18	12	15
Risk-weighted assets to total assets (per cent)	51	45	50	45
Tier 1 capital ratio (per cent of risk-weighted assets)	10.4	10.2	10.4	10.7

Sources: *The Banker*; banks' annual and Pillar 3 reports

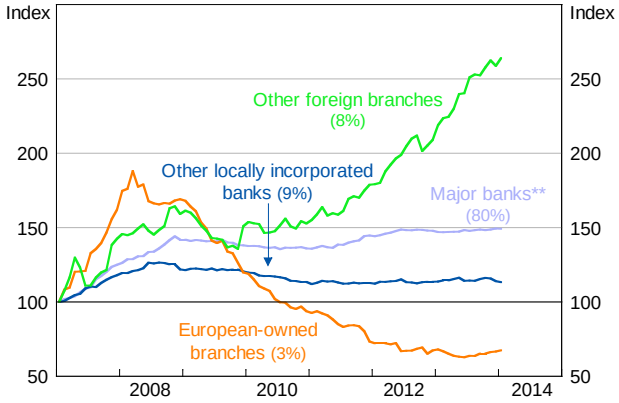
4.2.1.2 Non-major banks and other lenders

In addition to the major banks, the Australian banking system includes a range of other authorised deposit-taking institutions (ADIs): smaller Australian-owned banks (including mutual banks), foreign-owned bank subsidiaries, foreign-owned bank branches, credit unions and building societies. The designation of only the four major banks as D-SIBs reflects the comparatively smaller direct impact that the failure of a single non-major ADI would be expected to have on the domestic financial system and economy. However, the correlated behaviour of bank creditors during periods of severe financial stress means the failure of any single institution could transmit financial distress to other institutions that are perceived to be similar; a degree of systemic risk could emerge from such situations. Relatedly, some of these entities face higher levels of individual financial risks than the major banks, given their loan books are typically more concentrated, both geographically and in particular business lines. Their funding structures are also less diverse, with some funding markets not available to particular institutions.

In addition, it may be the case that smaller institutions aggressively pursuing growth can heighten procyclicality and thus overall systemic risk within an economy. There is some international evidence that foreign bank branches expand at a relatively fast pace during buoyant times and then reduce lending relatively quickly during downturns (Hoggarth, Hooley and Korniyenko 2013). Lending by foreign bank branches in Australia has been quite procyclical over the past decade, and may have influenced some asset prices (such as commercial property prices) in instances where it has been provided to more marginal borrowers (Graph 4.2).

[9] See IMF (2012a) for one attempt at calculating the funding advantage the major banks potentially receive from implicit government support.

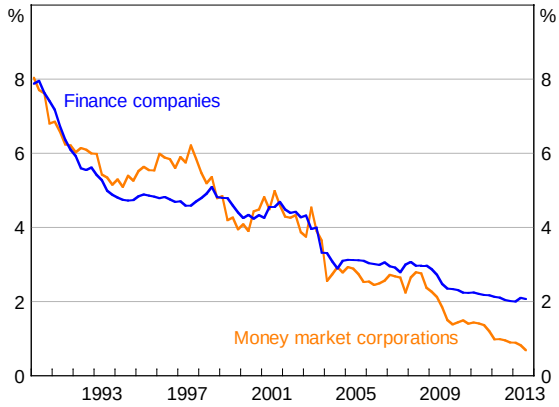
Graph 4.2
Banks' Business Lending*
Domestic books, January 2007 = 100



* Data are not break adjusted; each group's share of total business lending, as at January 2014, is shown in parentheses
** Includes St. George and Bankwest
Source: APRA

Registered financial corporations (RFCs), comprising finance companies and money market corporations, are another set of financial institutions involved in credit intermediation in Australia. As these entities are not prudentially regulated by APRA, they can be considered 'shadow banking' entities under the Financial Stability Board's (FSB's) definition (Chapter 3). RFCs do undertake maturity transformation, and some are highly leveraged (RBA 2012a). Nonetheless, the RFC sector currently poses limited systemic risk given its small size and minimal connections to the regulated banking system. While there are currently over 300 RFCs, in aggregate, their share of total domestic financial system assets is small and has been declining over time (Graph 4.3). In addition, RFCs' overall borrowing from and lending to banks are each equivalent to less than 1 per cent of banking system assets. Within the RFC sector, a number of finance companies issuing unlisted retail debentures have failed over recent years, most notably property lender Banksia Securities Limited in late 2012. These failures have had no adverse impact on financial stability, although they have raised investor protection concerns.

Graph 4.3
Assets of Registered Financial Corporations*
Share of financial system assets



* Excludes entities with less than $50 million in assets
Sources: ABS; APRA

4.2.1.3 Bank funding liabilities and structures

As explained above, banks are inherently exposed to liquidity shocks, such as funding market disruptions. An individual bank can experience a funding shortfall because the behaviours of its creditors are correlated – specifically, creditors can seek to withdraw their funds at around the same time. Creditors can also extrapolate bad news about one bank to other banks, perhaps due to similarities between bank balance sheets or business models, or general uncertainty about banks' prospects. Such correlation in creditor behaviour, in the form of runs on banks by depositors, has been a feature of private banking systems since their establishment (Gorton 2012).

Although bank liquidity crises have historically arisen from depositor runs, short-term wholesale funding, including its secured (e.g. repurchase agreements) and unsecured interbank forms, proved to be less stable than short-term customer deposits during the global financial crisis (IMF 2013). Apart from the existence of insurance for many retail deposits, wholesale creditors' behaviour may be more correlated than that of depositors because of their lower switching costs and the greater substitutes for their funds. The lower stability of short-term wholesale credit may also stem from creditors' procyclical risk appetite – in good times, when risk-taking is rising, wholesale creditors will tend to fund a bank at lower spreads, whereas in times of financial stress their appetite for bank credit risk can retreat rapidly (Gorton and Metrick 2012). In considering the liquidity risks associated with a bank's use of wholesale funding (and its funding composition more generally), it is important to consider the diversity and maturity of its funding. For instance, a bank could reduce its liquidity risk by regularly issuing longer-term wholesale debt and ensuring its maturity profile is spread over time (Stewart, Robertson and Heath 2013).

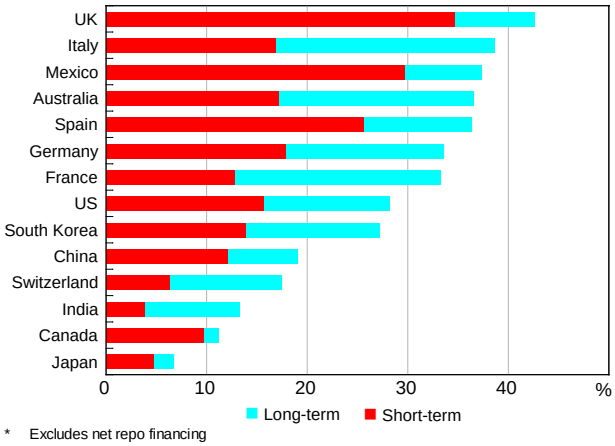
Since the onset of the financial crisis, Australian banks (like many banks internationally) have responded to market pressures to boost stable funding sources by increasing their deposit funding (for further discussion of bank funding composition and recent trends, see Chapter 5). Although the Australian banking system continues to source a high share of its funding from wholesale markets relative to a number of other banking systems, a relatively large share of Australian banks' wholesale debt has a remaining duration of longer than one year (Graph 4.4).[10] As such, the share of short-term wholesale funding in Australian banks' total funding is not unusual. Indeed, Australian banks have increased the average maturity of their wholesale funding over recent years, and there are indications that recent issues have involved a wider range of investors than a few years ago. Increased diversity could lower a bank's funding risks if it reduces the correlation of creditor behaviour, all other things being equal.

Within the wholesale investor base, it is generally assumed that offshore wholesale creditors are more likely than domestic creditors to withdraw their funds during times of uncertainty or stress; such investor behaviour was demonstrated in the financial crisis, and the recent experience of some European countries shows that this can also apply to non-resident depositors (RBA 2012b). Consistent with this, Australian banks' use of offshore wholesale funding markets is often regarded by observers as a potential source of systemic risk, and periodic bouts of turbulence in global capital markets over recent years have created wholesale funding pressures for Australian banks.

---

[10] Stewart *et al* (2013) also provide a comparison of Australian banks' funding structures to those in selected other countries. They highlight that differences in statistical definitions might contribute to the higher share of wholesale funding for Australian banks. For example, in Australia, certificates of deposit and offshore intragroup deposits are treated as short-term wholesale funding rather than deposit funding, based on an assessment of how sticky they would be during times of stress; this is not necessarily the case elsewhere.

Graph 4.4
Banks' Wholesale Debt*
Share of total funding, 2011



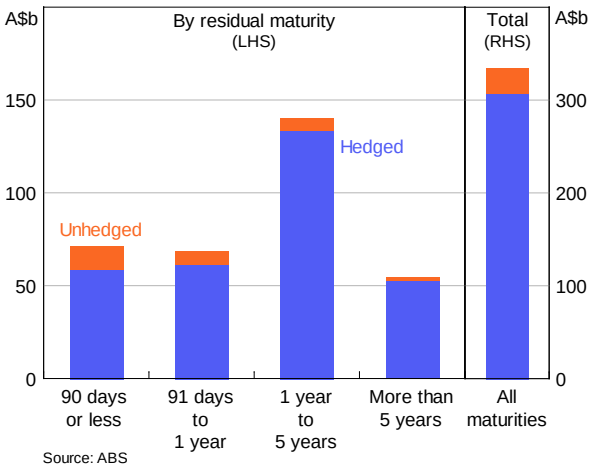
* Excludes net repo financing
Sources: BIS; RBA

As with other forms of offshore funding by non-financial sectors, a 'sudden stop' in offshore bank funding in the future – as occurred during the second half of 2008 – cannot be ruled out.[11] In general, a lower exchange rate would be likely to be part of the adjustment mechanism to any disruptive event of this nature. There are a number of other possible adjustment mechanisms in response to a reduction in offshore demand (i.e. wider funding spreads) for Australian banks' paper, including slower credit growth, a change in the composition of bank funding, and large non-financial corporations directly accessing capital markets. Such adjustments need not be disorderly – indeed, the experience with Australian banks' lower use of offshore funding over the past few years supports this.

The majority of Australian banks' offshore funding is denominated in foreign currency, primarily US dollars. According to the 2013 Foreign Currency Exposure survey published by the ABS, Australian banks hedge more than 90 per cent of their foreign currency denominated debt securities, with the proportion of long-term debt being hedged even higher (Graph 4.5). Moreover, the maturities of the derivatives used to hedge against foreign currency risk are matched to the maturities of the underlying debt securities (Rush, Sadeghian and Wright 2013). Hedging foreign currency risk through derivatives removes exchange rate risk but exposes banks to the risk that the counterparty to the transaction will be unable to honour its obligations, forcing the bank to find a replacement swap or obtain foreign currency on the spot market at prevailing rates (IMF 2012b). Australian banks manage their counterparty credit risk exposure by entering into most transactions with large internationally active banks with high credit ratings, as well as by requiring bilateral collateralisation on transactions. Because derivative exposures increase Australian banks' interconnections with offshore banks, they are, in principle, a channel in which offshore financial shocks can transmit to the Australian banking system. However, collateralisation of these transactions, including the flows of collateral to Australian banks that occur if an offshore financial shock causes a depreciation in the Australian dollar, should ensure effective management of this risk.

[11] The abrupt withdrawal of foreign capital inflows to banks or other recipients is sometimes referred to as a 'sudden stop' (see Brei (2007), for example).

Graph 4.5
Banks' Hedging of Foreign Currency Debt Security Liabilities
As at 31 March 2013



Source: ABS

4.2.1.4 International banking

Banks conduct business internationally either by undertaking cross-border transactions directly from their home location or by establishing foreign branch or subsidiary offices in foreign locations. Typical motivations for such activity include to assist their home country customers in international transactions and to pursue higher risk-adjusted returns than are available from solely domestic business (CGFS 2004). Although international expansion potentially increases and diversifies a bank's earnings, operating across borders and under different economic and market conditions may entail higher levels of financial risks, such as credit, market (including foreign exchange risk), and particularly operational risk. If these risks significantly materialise they could weaken the credit or liquidity position of the parent bank, and therefore pose systemic risk in the home market. This risk increases with the size and unfamiliarity of international exposures, as well as the strength of the interconnections (e.g. funding, legal and operational links) between the parent and its foreign offices. From a regulatory perspective, international banking activity can be harder for individual authorities to monitor (Song 2004), and problems with internationally active banks also tend to be more difficult for individual countries to resolve (IMF 2010a).

The large Australian banks are less internationally active on the asset side of their balance sheet than on the liability side, given their lending business is primarily focused on the domestic market, while some of this activity is funded offshore. A significant share of their international exposures are in New Zealand; all four major banks have sizeable operations there (Table 4.3). These tend to be similar to the major banks' operations in Australia, that is, focused on housing and business lending. The similarity of these operations to their Australian businesses, as well as their long-standing presence in New Zealand, alleviate the normally heightened operational, credit and market risks faced by banks operating in overseas jurisdictions. At the same time, the traditional banking focus in New Zealand, and the positively correlated performance of the Australian and New Zealand economies, mean that the majors receive little diversification benefit from these operations. As a practical example of how stress might transmit across the Tasman, the majors significantly increased their funding of their NZ subsidiaries during the global financial crisis prior to the announcement of government guarantees in both countries.

Table 4.3: Australian-owned Banks' Foreign Claims
Consolidated global operations, immediate borrower basis, end September 2013

	Level $ billion	Share of consolidated assets Per cent	Share of foreign claims Per cent
New Zealand	298	9.0	39
United Kingdom	140	4.3	19
Asian region	142	4.3	19
United States	89	2.7	12
Other countries	86	2.6	11
Total	**756**	**22.9**	**100**

Sources: APRA; RBA

Domestic banks' international activities are not the only channel through which international banking can transmit financial stress. Foreign-owned banks have the potential to spread problems from their home country to the economy they operate in (Peek and Rosengren 2000). Again, the systemic risk posed by a foreign-owned bank will depend on its size in the host market and the strength of its interconnections with its parent bank. The strength of interconnections are likely to vary depending on whether the foreign-owned banks operate under a branch or subsidiary licence; foreign branches do not have a legal identity separate from the parent bank and thus tend to be more reliant on the parent for funding, lending and operational matters. That said, there have been numerous cases across different countries over recent years where foreign subsidiaries have encountered local funding difficulties as a result of severe problems at the parent bank.

In Australia, there have been some cases since the onset of the financial crisis where otherwise sound foreign-owned banking businesses operating in Australia have been destabilised by difficulties at a foreign parent (Laker 2010b). Even so, the systemic risk posed by external shocks transmitted to Australia by foreign branches and subsidiaries is limited by their small size. The largest foreign bank accounts for less than 2 per cent of domestic banking system assets, and foreign banks in aggregate only account for 12 per cent.

4.2.2 The housing market

The housing market can be considered to pose systemic risk because of its size and importance to the real economy, its interconnection with the financial system through banks' sizeable exposure to housing, and the concentration of risk in certain other players in the housing finance chain, such as lenders mortgage insurers (LMIs).

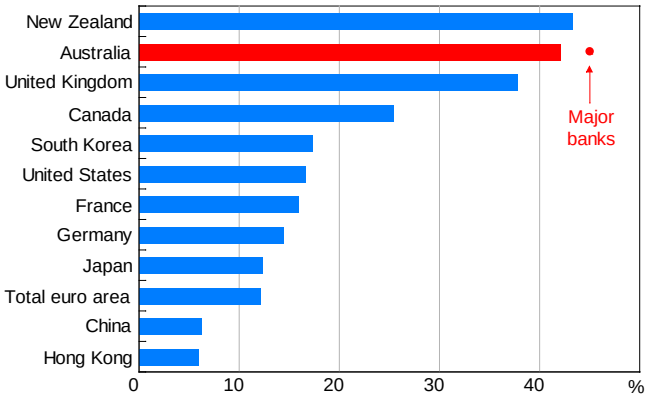
4.2.2.1 Bank lending

Banks and other ADIs provide almost all housing credit in Australia (about 97 per cent). While the banks' share of housing credit has varied a little in the post-Wallis period, it has increased following the crisis, as non-bank lenders were affected by the dislocation in residential mortgage-backed securities markets.

The low share of securitised housing credit and the (related) low penetration of non-bank housing loan providers are factors that contribute to Australian banks having a high share of housing loans in their asset portfolios. Aggregate housing loans represent around 40 per cent of total domestic

banking system assets; the available data indicate that this is well above the share for many other large banking systems (Graph 4.6).[12] In some overseas jurisdictions, public and private mechanisms exist that transfer housing loans off banks' balance sheets. These include government-sponsored mortgage insurance and support for mortgage securitisation, as well as legislative support for group structures that separate covered bond issuance and other banking activities. In these jurisdictions, the mortgage market could be just as large but less connected and important to the banking system. The Australian major banks' housing loan share is a little higher than the Australian industry total, at 45 per cent of their assets.

Graph 4.6
Total Bank Housing Loans*
Per cent of total bank assets by country, as at June 2013**



* Definition of housing loans may differ between countries
** Data for China, Hong Kong and South Korea are for December 2012
Sources: central banks

The sizeable exposure of the major banks and many other banks in Australia to loans secured by housing collateral represents a concentration risk in their asset portfolios. Were a significant part of the national housing market to suffer a severe downturn, banks' asset performance could deteriorate significantly. APRA's stress tests, which involve severe macroeconomic downturns featuring large rises in unemployment and falls in house price (Section 4.3.2), give some comfort about the banks' ability to withstand the direct credit losses they would incur on their housing exposures under such a scenario. Nonetheless, the impact on the banking system could still be severe if bank creditors became worried enough about a deterioration in banks' housing exposures to seek to withdraw their funds.

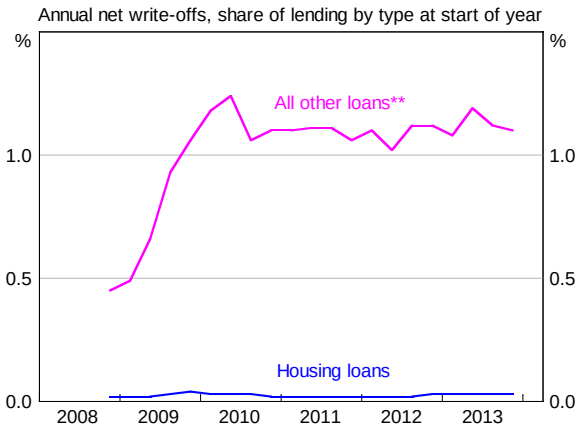
Although Australian banks' asset books have a high share of housing loans, concerns about such a concentration need to be weighed against the alternatives: the systemic risks posed by banks having different asset compositions and business models. Housing lending is rightly viewed as lower risk than many other forms of lending, including lending for commercial property investment and development, corporate lending, small business lending, and credit card and other personal lending. And as demonstrated during the global financial crisis and the euro area crisis, banks' non-loan assets have the potential to generate larger losses than housing loans.

Australian banks recorded very low loss rates on their housing loan portfolios during the financial crisis (Graph 4.7), as well as over previous decades. In contrast, loss rates on some other loan portfolios have been elevated at times. Although some housing loan losses have been covered by mortgage insurance, the large difference in loss rates primarily reflects differences in underlying risk.

[12] Many banks in Australia have an additional exposure to housing collateral because small business loans are often secured by residential property. The four major banks' total residential mortgage exposure is estimated to be roughly 50 per cent of their assets once residentially secured small business loans are included.

This pattern of relative loss rates is also evident in other countries and enshrined in international rules on bank capital requirements.

Graph 4.7
Banks' Credit Losses*



* Domestic books; includes banks with more than $1 billion in housing loans – 19 banks at December 2013
** Business loans and non-housing personal loans
Source: APRA

The RBA has previously discussed a number of industry risk management and regulatory factors that have contributed to the relatively strong performance of housing loans in Australia (for example, see RBA (2009) p 21). Of critical importance from a risk management perspective has been that banks have generally maintained prudent lending standards. While some more risky lending practices emerged in the years leading up to the financial crisis, these practices have been much less prevalent in recent years. By and large, banks have maintained a focus in their credit assessments on the borrowers' capacity to repay over the life of the loan, including by verifying borrowers' incomes and other financial obligations. Australian borrowers' ability to service their mortgages across the interest rate cycle has also been assisted by the practice of Australian banks applying an interest rate add-on to their lending rate when assessing borrowers' loan-servicing capacity; this practice is not always prevalent in other jurisdictions (APRA 2013b).

Lending that does not involve proper assessment of borrowers' capacity to repay the debt assumes that the borrower will be able to refinance or sell the property in the future to avoid default, and therefore that house prices will not fall (Ellis 2012). This sort of 'asset-based' financing became especially prevalent in the United States in the mid 2000s; widespread lending of this type can increase systemic risk by increasing the procyclicality of the housing market, as well as the correlation between banks' housing loan performance and the housing market.

A feature that distinguishes the Australian mortgage market from those in many other countries is that mortgages in Australia are predominantly variable-rate mortgages with the rate set at the lenders' discretion. This structural characteristic has a number of implications for risk:

- While the variable-rate mortgages offered in Australia expose households to ongoing interest rate risk, this necessitates that lenders (and borrowers) include in their approval process an assessment of whether it can be serviced at higher (assumed) interest rates.
- Compared to fixed-rate loans, variable-rate mortgages offer much greater flexibility in allowing households to prepay their debt. This is a particularly appealing feature for many owner-occupier borrowers in Australia because the interest payments on owner-occupier mortgages are not tax deductible (Ellis 2006). From a lenders' perspective, mortgage prepayment should act to reduce

the credit risk on the mortgage. This is because borrowers have built up a financial buffer that can be drawn upon in difficult times (Stewart *et al* 2013); prepayment also means that banks' losses on any defaulted mortgages would be smaller than otherwise.

- Although households can guard against interest rate risk by taking out a fixed-rate mortgage, the typical terms used by borrowers in Australia are relatively short at between two and five years. If interest rates rise substantially during the term of the fixed-rate loan, households would be exposed to a negative repayment shock at its expiry. Such a large immediate repayment shock could be more difficult for households to adjust to than incrementally higher repayments, especially because the ability to build up a financial buffer by prepaying fixed-rate loans is contractually limited in Australia.[13] The Australian situation is different from the US and Danish mortgage markets which are unique in that they provide borrowers with the ability to fix an interest rate over the life of the mortgage, yet still prepay their loan early without penalty (Frankel *et al* 2004).

4.2.2.2 The role of lenders mortgage insurers

Housing finance in Australia is facilitated by the use of mortgage insurance, which is a specialist type of insurance that protects mortgage lenders in the event that a borrower cannot repay their loan. In Australia, this cover is offered by prudentially regulated institutions known as lenders mortgage insurers. These institutions charge an upfront premium to lenders, which usually pass on the cost to borrowers.

Lenders generally use mortgage insurance for riskier loans, such as those loans originated with loan-to-valuation ratios (LVRs) above 80 per cent. In addition to insuring individual loans, LMIs also insure pools of loans as a form of credit enhancement for securitisation, although the use of such policies has fallen in recent years. Overall, more than one-quarter of Australian housing loans are estimated to be covered by mortgage insurance.

Importantly, the use of LMI does not eliminate the systemic risk arising from a severe downturn in the housing market; it merely shifts some of the underlying credit risk to a different class of prudentially regulated entity. As discussed in RBA (2013b), the correlated nature of mortgage insurance policies means that LMIs would likely face substantial claims under these circumstances, potentially weakening their creditworthiness. Distress in the LMI sector could hinder the payment of claims to lenders, thus imposing losses on them, although the direct financial impact of this on the Australian banking system is unlikely to be substantial. However, there could be significant indirect effects. For example, without the ability to transfer risk to LMIs, lenders might be unwilling to write high LVR housing loans, which are disproportionately used by first home buyers. Any such pullback in housing credit would in turn affect the broader economy and confidence in the financial system.

It is possible that the use of mortgage insurance in housing finance could either reduce or increase systemic risk (BCBS, IAIS and IOSCO 2013). Mortgage insurance can help promote financial stability to the extent that it dampens swings in lending standards (and therefore the housing market cycle) – this might occur because LMIs' risk appetite is lower than some (marginal) lenders, or because they are a 'second set of eyes' in loan origination processes across the industry. On the other hand, lenders could respond to the use of mortgage insurance by relaxing lending standards because they believe the LMI is assessing the risk, or because they believe that any loss is an LMI loss.

---

[13] It is common practice for lenders in Australia (and many other countries) to charge break fees for early repayment of fixed-rate loans, or prepayment of fixed-rate loans each year over a specified amount. These fees aim to recoup the economic cost of the bank hedging its interest rate risk over the life of the loan.

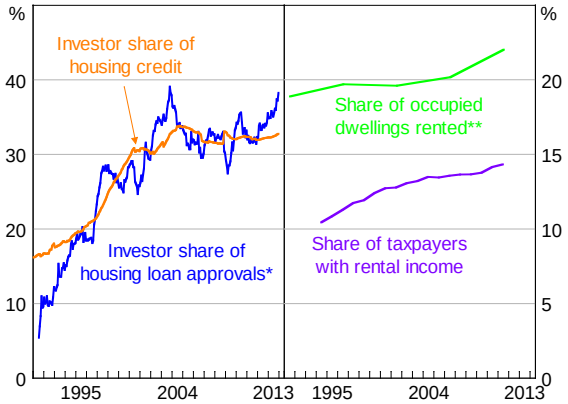
The structure of the Australian LMI industry differs from other countries where mortgage insurance is used extensively, in that the mortgage insurers are all privately owned and operate without government guarantees (RBA 2013b). In addition to the widespread use of private mortgage insurance in the Australian mortgage market, the systemic importance of the largest LMIs in Australia is increased by the high concentration in the industry. There are only five active LMIs, of which two – Genworth Australia and QBE LMI – account for around three-quarters of the industry's annual premium pool. The other three LMIs are owned by major banks or other prudentially regulated lenders, which reduces the extent to which default risk is transferred out of the banking system.

4.2.2.3 The role of investors in the housing market

A feature of the Australian housing market is its extent of investor involvement. The share of occupied dwellings that are rented suggests that investors hold around a quarter of the housing stock (Graph 4.8). Investors account for a higher share of outstanding housing debt than this (over 30 per cent), reflecting their higher average gearing rate than owner-occupiers and possibly some ownership of holiday rental and second properties.

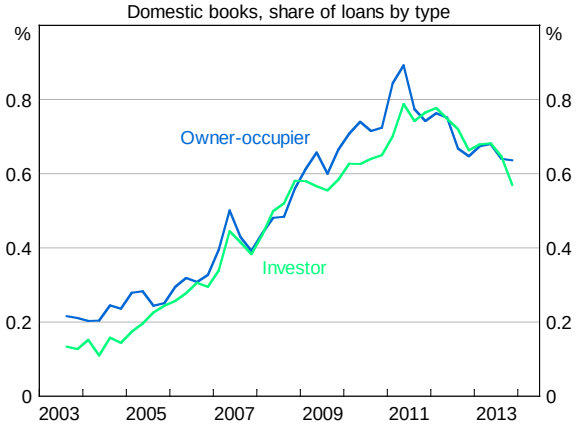
Substantial investor involvement in the housing market could have implications for systemic risk. Investor housing loans – over half of which are taken out on interest-only terms – tend to amortise more slowly than owner-occupier loans, as interest deductibility and negative gearing reduce the incentive for property investors to pay down their loans faster than required. These borrowers could therefore be more likely than owner-occupiers to experience negative equity during a sharp housing market downturn, and thus generate loan losses for lenders in the event of default. However, this risk is mitigated by the lower prevalence of investor loans with high LVRs at origination; in recent years, around 10 per cent of investor loan approvals had LVRs greater than 90 per cent, compared with over 15 per cent of owner-occupier loan approvals. Moreover, investors tend to have higher incomes and levels of (non-housing) wealth. Consistent with this, the performance of investor housing loans has historically been in line with that of owner-occupier housing loans (Graph 4.9).

Graph 4.8
Investor Participation in the Housing Market



* Includes refinancing; excludes construction
** Renting from real estate agents or individuals not in the same household
Sources: ABS; APRA; ATO

Graph 4.9
Banks' Non-performing Housing Loans
Domestic books, share of loans by type



Source: APRA

A more indirect, but more likely, channel by which investors can pose systemic risk is through their influence on housing prices and housing price expectations. If investors' decisions to invest in housing are more correlated than those of owner-occupiers, then greater investor participation in the housing market could increase its procyclicality – that is, the amplitude of housing price cycles. This could occur because an investor's investment decision relies more heavily on relative expected returns on housing and alternative investments, and less on non-financial factors. Strong house price upswings might lead to unrealistic house price expectations by property purchasers, who respond by increasing leverage. It may also encourage more marginal (owner-occupier) borrowers to overstretch themselves in order to purchase a home before it is 'out of reach'. These types of behaviours would increase the chance of a sharp downturn in housing prices and significant loan losses for lenders.

4.2.3 The commercial property market

The commercial property market poses significant systemic risk despite being smaller in size than the housing market. There are strong connections between the commercial property market and the banking system because a substantial portion of commercial property investment and development, including development of both residential and non-residential property, is financed by lending from banks. Moreover, the characteristics of the commercial property market and features of banks' loan contracts can mean that their commercial property portfolios are riskier than their housing loan portfolios, or even their general corporate loan portfolios. Indeed, banks' commercial property exposures have historically been one of the main sources of loan losses during episodes of banking sector distress internationally. This was the case in the US savings and loan crisis, banking crises in Japan, Scandanavia, and more recently, Ireland, Spain and the United Kingdom. In Australia, commercial property loans were a major contributor to sizeable banking system loan losses, and the failures of a few state government-owned and foreign-owned banks, during the early 1990s (Gizycki and Lowe 2000).[14]

Ellis and Naughtin (2010), and Ellis, Kulish and Wallace (2012), among others, provide several reasons why fluctuations in the commercial property market propagate rapidly through financial institutions' balance sheets, particularly when compared to those for the housing market:

[14] Rising property prices also featured in the run-up to banking crises in Australia in the 1890s and 1930s, driving speculation and a view that 'one couldn't lose money by investing in land' (Fisher and Kent 1999).

- *Exposure to the construction cycle.* Relative to the housing loan book, commercial property lending is more concentrated in financing new development. This type of lending tends to be more risky because the value of the project is not realised until completion, as well as being more cyclical.
- *Commercial property developments are lumpy and can have long construction lags.* Commercial property developments are large relative to existing stocks. Because they impact local supply, vacancy rates can remain high long after a downturn. The long construction phase means that there is a risk that demand falls before the completion of a property.
- *Default is cyclical and borrowers face fewer disincentives to default*. Commercial property investors face the risk of lost income during an economic downturn. If the value of the property has also fallen, such that they are in negative equity, borrowers might make themselves better off by defaulting. This is in contrast to an owner-occupier who still derives benefit from the property regardless of equity.
- *Commercial property financing is procyclical.* Lending is often short term and needs to be refinanced. Changes in market conditions can cause borrowers to breach covenants, making refinancing difficult.

4.2.4 Financial market infrastructures (FMIs)

FMIs are key components of the financial system, delivering services critical to the smooth functioning of financial markets, such as the settlement of payments and the clearing and settlement of transactions in securities and derivatives.

Well-designed and reliable FMIs can be a source of both financial stability and operational efficiency. Indeed, this has been the experience in Australia and internationally. As noted in Chapter 8, FMIs were a source of stability during the crisis, operating reliably throughout and retaining the confidence of market participants. FMIs act as a coordinating device, bringing a network of counterparties together to support trading liquidity and the netting of exposures and settlement obligations. They also establish secure arrangements for the timely clearing and settlement of obligations between counterparties; assist institutions in the management of counterparty credit risks; and help to coordinate actions in the event of a market participant's default.

Many of these benefits derive from the size and breadth of the network that an FMI controls. Accessing a large network of counterparties with a single operational connection delivers not only operational and informational efficiencies, but also greater scope for netting of offsetting exposures. Accordingly, there is a tendency towards a single FMI (or few FMIs) providing services in any given market (Pirrong 2011). This concentration can, however, be a source of systemic risk, since it creates a high level of market dependence on the single provider. Any shortcomings in the design or risk management framework of the FMI can, in the event of a financial or operational shock, have spillover effects across the system.

Given their typically large size, their lack of substitutability in the markets they serve, and strong connections with banks and other financial institutions, FMIs are generally systemically important. This means they require sound design, and high standards of operational and financial resilience. International policymakers have focused increasingly on FMI resilience in recent years, especially in light of the international initiative to expand the scope of central counterparty (CCP) clearing to OTC derivatives markets, discussed in Chapter 3 (Tucker 2013; Coeuré 2014).

FMIs have, however, long had a central role in the financial system. High-value payment systems grew out of early arrangements for the settlement of interbank claims. As central banks emerged as the providers of the ultimate settlement asset, operating these systems became an integral function of central banks (Norman, Shaw and Speight 2011). Central banks also have a natural interest in ensuring that payment and settlement systems operate safely and effectively, so as to underpin the role of money as a medium of exchange and to facilitate central banks' provision of liquidity to the financial system both in normal times and in periods of stress (CPSS 2005). CCPs also have a long history. They have existed for more than a century, initially clearing exchange traded derivative markets (Moser 1998), but more recently expanding to other asset classes. The need to ensure robust design, operational resilience and sound risk management has therefore always been there; the reforms have not created 'new' systemically important FMIs, but rather amplified their existing systemic importance.

Since FMIs necessarily concentrate payments, clearing and settlement processes, they need to manage carefully the risks that may arise from their activities. The remainder of this section discusses the potential systemic consequences if these processes are not well designed and associated risks not appropriately managed.

4.2.4.1 Sources of systemic risk in FMIs

Table 4.1 identified a number of indicators of systemic importance for banks: size, substitutability, interconnectedness and complexity. With the possible exception of complexity, these features generally also apply to FMIs. Table 4.4 considers these indicators for the key FMIs operating in Australia, which are discussed further in Chapter 8. There is typically only a single FMI providing payments, clearing or settlement services in each market or product class. Each FMI has a broad direct or indirect participant base and clears or settles a high value of financial market activity every day.

Table 4.4: Systemic Importance of FMIs Operating in Australia

	Description of Activity	Size (Values Cleared/ Settled, Daily)[(a)]	Substitutes	Interconnectedness (Number of participants)[(b)]
Payment Systems				
RITS	Settlement of high value payments (including for retail payment systems and other FMIs)	$167 billion	No substitute provider	85 participants (71 banks, 14 non-banks), of which 24 settle indirectly
CLS	Settlement of foreign exchange transactions	$253 billion (AUD settlements)	No substitute provider	63 settlement members (including four Australian banks). Other entities access indirectly
Central Counterparties				
ASX Clear	Clearing of cash equities and equity-related derivatives	Cash equities: $4.2 billion traded value Equity options: $118 million traded value/$3.1 billion underlying.	No substitute provider	37 active direct participants (including Australian/foreign banks, brokers)

	Description of Activity	Size (Values Cleared/ Settled, Daily)[(a)]	Substitutes	Interconnectedness (Number of participants)[(b)]
ASX Clear (Futures)	Clearing of ASX 24 exchange-traded derivatives and AUD OTC interest rate derivatives	$195 billion for five major listed financial contracts[(c)]	No substitute provider for ASX-24 derivatives LCH.Clearnet Ltd for OTC derivatives	19 direct participants (including Australian/foreign banks). Large number of indirect participants for listed derivatives
LCH.Clearnet Ltd	Clearing of OTC interest rate derivatives	$15 billion notional value	ASX Clear (Futures)	88 direct participants internationally (including two Australian banks)
Securities Settlement Facilities				
ASX Settlement	Settlement of cash equities	$8.5 billion[(d)]	No substitute provider	80 direct participants (including Australian/ foreign banks, brokers)
Austraclear	Settlement of OTC trades in debt securities, AUD payments	$39 billion for securities trades $11 billion for payment-only transactions	No substitute provider	829 participants (including financial institutions and corporates); some access indirectly

(a) Average for year ended 31 December 2013; OTC derivatives data for April 2013.
(b) As at 31 December 2013.
(c) Data for exchange-traded derivatives only; OTC derivatives clearing service first used September 2013.
(d) Includes settlement of off-market trades.
Sources: ASX; Bloomberg; LCH.Clearnet Limited; RBA

While, as noted in Section 4.1, financial risks may typically be either diversified or transferred away, this may not be feasible in the case of the risk a participant bears from its use of an FMI. Since many financial markets or product classes are served by a single FMI, a market participant wishing to undertake activity in a given market may have no choice but to accept the risks associated with participating in the FMI that serves that market. To the extent that such risks are a common source of vulnerability for participants, or that they may trigger contagion, the financial risks associated with an FMI's activities may become sources of systemic risk.

Of the sources of financial risk identified in 'Box 4A: Types of Financial Risks', the key risks to an FMI that could lead to contagion elsewhere in the system are credit, liquidity, operational and business risks (Manning, Nier and Schanz 2009).

- *Credit risk*: The risk that a participant in the system defaults on its obligations to the FMI, imposing direct unanticipated losses on other members. Certain variants of credit risk are also relevant:
  - In a securities settlement facility (SSF), a relevant credit risk is principal risk; this is the risk that one party fulfils its obligation to pay funds or deliver securities, while the other does not.
  - For CCPs, the relevant credit risk is replacement cost risk; that is, the risk that a counterparty defaults prior to the intended settlement date, requiring that the non-defaulting counterparty replace the trade – potentially on less favourable terms. Particularly in derivatives markets, pre-settlement periods may be long, and in some cases – for example, in interest rate swap contracts – there may be a number of interim cash-flow obligations through the life of the contract. The fundamental role of a CCP (discussed in more detail in Chapter 8) is to manage this source of risk.

- *Liquidity risk*: The risk that one or more participants – or where the FMI assumes risk as principal (e.g. a CCP), the FMI itself – has insufficient liquidity in the settlement asset to meet its obligations. This could disrupt the flow of liquidity in the FMI and, in some extreme circumstances, lead to delay in or failure of other participants to meet their obligations. In an SSF, an analogous concept is liquidity in the security to be delivered.
- *Operational risk*: The risk of losses arising directly or indirectly from technical failure or other forced interruption to the operations of an FMI.
- *Business risk*: The risk that the operator of an FMI suffers commercial losses that threaten its viability, leading to the suspension or termination of its services and flow-on disruption or losses for its participants.

Importantly, a participant default on obligations arising in a payment, clearing or settlement system will typically be the result of a credit event that arises outside of the system; the system then becomes the mechanism by which the loss is transmitted. As noted in the Wallis Report, 'the payments system may be the transmission mechanism for systemic instability' (Financial System Inquiry 1997, p 363). How widely losses are ultimately transmitted depends on the FMI's design and the role the FMI plays in the financial system.

The remainder of this section describes how shortcomings in the design of an FMI or an interruption to an FMI's services can give rise to flow-on losses in the financial system or disruption to other markets and services, thereby creating systemic risk through contagion. Regulation and oversight against robust risk management and operational standards, alongside well-articulated recovery and resolution arrangements, can help to mitigate the various risks described (discussed further below).

FMI design

A fundamental design feature in a payment system or SSF is its settlement model. A well-designed settlement model can be a source of stability, instilling confidence in the market that obligations will be met on a timely basis. The frequency of settlement is one aspect that has received considerable attention both domestically and internationally over the past two decades, and indeed featured in the Wallis recommendations.

- In high-value payment systems, it was increasingly appreciated in the 1980s and 1990s that a 'deferred net settlement' model – in which interbank obligations accumulate over a period and settle on a net basis – could be a source of systemic risk: if banks credit incoming payments to customer accounts before final interbank settlement has occurred, credit exposures could build up between banks, potentially triggering a cascade of defaults should one participant in the system fail (Humphrey 1986). Under the alternative of 'real-time gross settlement', by contrast, payments are settled individually with finality in real time intraday, eliminating the scope for such a build-up of unintended interbank credit exposures.
- In SSFs, the length of the settlement cycle gives rise to similar concerns. However, since securities are subject to market risk, the counterparties to the trade need to manage the associated replacement cost risk (via a CCP if one operates in the relevant market). The complexity of replacement cost risk management can increase with the length of the settlement cycle. It is also well understood that in a securities transaction non-simultaneous exchange of funds for securities (or in a foreign exchange transaction, one currency for another) is a source of principal risk.

An FMI's risk management framework is also central to its design. This is clearly illustrated in the case of a CCP. In contrast to a typical high-value payment system or SSF, a CCP assumes financial risk as principal (Chapter 8). As the legal counterparty to both the buyer and the seller of a given contract,

the CCP maintains a balanced book: obligations due from the CCP to one party are fully covered by its receipts from the other. In the event that one party fails, however, the CCP must still fulfil any obligations to the surviving party. In such circumstances, the CCP must enter into a replacement contract with a new counterparty to rebalance its position; this may entail a financial loss. To manage its financial exposures, a CCP establishes arrangements for margining and risk mutualisation among participants.[15] While such arrangements protect the CCP and provide essential clarity around participants' obligations, in extreme circumstances they could trigger flow-on liquidity or capital stress. Such procyclicality was identified more generally in Section 4.1 as a source of systemic risk. In the FMI context, procyclicality could arise even in the absence of default if, as market conditions deteriorated, a CCP increased margin rates or other collateral requirements (Rehlon and Nixon 2013).

Other potential channels for transmission of shocks have been identified, arising from observed and anticipated changes to the FMI landscape (Hermans, McGoldrick and Schmeidel 2013).

- *Concentration in the provision of OTC derivatives clearing services*. Smaller OTC derivative market participants may not be eligible, or may find it uneconomical, to participate directly in a CCP. Accordingly, they may seek access to CCPs as clients of direct participants that act as 'clearing agents'. Provision of such clearing services is a scale business. Smaller market participants are therefore likely to channel their trades through a concentrated group of clearing agents that have the operational and balance sheet capacity to support such activity.
- *Interdependencies between CCPs, or between CCPs and other FMIs*. Links between CCPs may arise where CCPs establish arrangements between themselves that allow a participant of one CCP to trade with a participant of another. Such arrangements may lead to a build-up of credit exposures between the linked CCPs which if not appropriately managed could be a source of contagion and wider instability.

Interruption to FMI services

A lengthy interruption to an FMI's provision of services, for either operational or financial reasons, could cause widespread disruption and potential losses. For instance:

- In the event of an interruption to settlement in a high-value payment system, financial institutions would be unable to extinguish their obligations to each other, leading to the build-up of exposures between them. It would also disrupt central bank operations and, more broadly, the flow of liquidity between institutions. To the extent that other FMIs or retail payment systems relied on final settlement in the high-value payment system, the dislocation would have wider implications across the financial market infrastructure.
- Problems at an SSF or CCP could lead to the closure of underlying markets. An important benefit of CCP clearing is that it facilitates anonymous trading: the buyer and seller of a financial product do not need to monitor each other's capacity to meet settlement obligations; only the capacity of the CCP to do so. Should either a financial or operational shock disrupt a CCP's ability to stand between buyers and sellers, it is likely that the underlying market would cease to function,

[15] Margin is a 'defaulter pays' tool and covers both observed market movements and, to a high level of confidence, potential future price moves. To provide a further buffer in more extreme market circumstances, a CCP also maintains a pool of additional financial resources, comprising a mix of the CCP's own capital and participant contributions. This is a pre-funded mutualised resource. Should its pre-funded financial resources be depleted, the CCP may make additional calls on surviving participants.

leaving market participants unable to establish new positions or manage existing exposures.[16] Loss of confidence in an SSF's capacity to complete timely settlement could similarly interrupt activity in the underlying securities markets.

4.2.5 Insurers

Insurers – including general insurers and life insurers – assume the risk of financial loss from physical events, in exchange for an upfront premium.[17] The use of insurance can support economic activities that might otherwise not be undertaken because the potential loss is deemed to be too large. By shielding household and business balance sheets against potentially severe financial loss, insurance may also contribute to financial stability.

Insurers pool and invest the premium revenue they receive from policyholders in financial assets, primarily highly rated sovereign, bank and non-financial corporate debt. They typically have long-term investment horizons reflecting that insurance claims may be paid out a number of years after premium is received. Insurers may therefore exert a stabilising influence on financial markets as they are less likely than other investors to sell their assets when prices are falling (ECB 2009b).

Although insurers are not immune from failure, the insurance business model has traditionally been viewed as relatively stable. Insurers' liabilities tend to be well diversified because they are often tied to a range of uncorrelated physical events. Moreover, the upfront funding of their liabilities protects insurers against the risk of liquidity shortfalls that are inherent in banking markets (IAIS 2011). Not being reliant on debt funding also reduces insurers' interconnections within the financial system, in turn lowering their contagion risk.

A failed insurer can typically be resolved in an orderly fashion; existing policy liabilities can be run off over time, limiting the potential for a 'fire sale' of their assets that may destabilise financial markets. The systemic impact of a failed insurer will partly depend on the extent to which other insurers are able to replace their services. For instance, insurance risks that are specialised or where remaining insurers already have high concentrations would likely be more difficult to replace than other insurance business. An example of substitutability problems in the insurance market was the failure of Australia's second largest insurer, HIH, in 2001. HIH had underpriced risks in some business lines that it dominated (e.g. builders warranty insurance), so competitors only re-entered the market with substantial premium rate increases, and the disruption to insurance supply imposed significant costs on parts of the economy, particularly the building industry (IAIS 2011; 'Box 2A: The Collapse of HIH Insurance').

Participation in non-traditional insurance and non-insurance activities – such as derivatives business – have the potential to significantly increase the systemic risk posed by an insurance group. This was demonstrated by AIG, the US insurance group, during the financial crisis. Because AIG was connected to many banks and other financial institutions through its provision of credit protection on structured credit products and its securities lending, its failure had the potential to cause cascading losses in the financial system (FCIC 2011). Reflecting the potential for greater systemic risk, non-traditional insurance business is the 'impact factor' that receives the highest weight (45 per cent of the total)

---

16 Fortunately, there are relatively few examples of CCP failures. Hills *et al* (1999) cite three instances: the failure of Caisse de Liquidation in 1974, the Kuala Lumpur Commodity Clearing House in 1983, and the Hong Kong Futures Guarantee Corporation in 1987. All three instances involved shortcomings in the risk management arrangements of the CCPs and all involved some interruption to activity in underlying markets.

17 Life insurers also commonly offer investment policies that are more akin to funds management business than insurance; references to life insurers in this section refer to true 'risk' insurance business.

under the International Association of Insurance Supervisors' (IAIS') recently released methodology for identifying global systemically important insurers (G-SIIs) (IAIS 2013).

The largest Australian insurers make up a small part of the global insurance market. Accordingly, no Australian insurers were among the nine insurers identified as G-SIIs by the FSB using the IAIS' methodology. From a domestic perspective, the systemic risk posed by the large Australian insurers is lessened by their traditional insurance business models and, with the exception of LMIs, limited connections to the rest of the financial system. For example, only 2 per cent of banks' funding is sourced from general and life insurers.

4.2.6 Managed funds

Managed funds invest and hold funds on behalf of their clients, in the process providing debt and equity funding to financial markets and other sectors. Managed funds can differ greatly in their investment strategies and the types of financial instruments they hold – for instance, some focus mainly on investing in short-term bank paper, whereas others invest in long-term infrastructure debt. Chapter 7 discusses the specific systemic risks posed by superannuation, which is the largest part of the managed fund industry in Australia, and the one that is subject to prudential regulation.

Managed funds can face liquidity risk. Liquidity transformation usually occurs because funds offer at-call or at-short-notice withdrawals to clients, while some assets may not be able to be sold quickly. This liquidity mismatch exposes funds to the risk of investor runs – where concerns about a fund lead to large-scale withdrawals by investors. If withdrawals exceed the amount of available cash, the fund may need to liquidate other assets at unfavourable prices, reducing the value of the units in the fund. This creates an incentive for individual investors to rush to withdraw while a fund is still liquid. If the fund is updating unit prices to properly account for losses caused by withdrawals, however, this is a weaker incentive than that faced by bank depositors (who can withdraw their funds at par while a bank remains liquid). Australian mortgage funds experienced high rates of withdrawals during 2008–09 and, in line with the requirements of the *Corporations Act 2001*, many suspended withdrawals due to insufficient liquidity. While the suspension of withdrawals may have preserved some of the unit value, it may also have contributed to the decline in popularity of the suspended funds and the broader mortgage fund industry, as investors came to better appreciate the risks involved. The risk of a run can be exacerbated when funds are more complex or opaque.

Although managed funds are connected with the rest of the financial system through their investments, it is unlikely that most individual managed funds would pose systemic risk because of their small size. However, high correlation in investment strategies across individual managed funds could magnify the impact of this sector on the financial system. This could occur because of 'herding' behaviour among fund managers – that is, where decisions to buy or sell a particular asset prompt other fund managers to do the same (Office of Financial Research 2013).

More complex individual managed funds could also give rise to financial instability. For example, hedge funds may pose risks to the financial system due to their use of leverage and other linkages to the banking system, and in some cases dominant positions in complex and less liquid financial markets (Kambhu, Schuermann and Stiroh 2007). In Australia, these more complex parts of the sector are relatively small and less leveraged than in Europe or the US. For example, hedge funds only account for about 3 per cent of the aggregate assets held by the managed funds industry in Australia. Australian hedge funds also have quite limited levels of leverage, suggesting that they pose little systemic risk to the financial system as a whole (ASIC 2013).

4.3 The Process for Monitoring Systemic Risk

The financial stability responsibilities of the Reserve Bank, APRA and the Australian Securities and Investments Commission (ASIC) require ongoing monitoring of systemic risk. This section sets out the processes used within the Reserve Bank to monitor systemic risk, and the interactions between this work and that done by other agencies.[18]

4.3.1 Analysis at the Reserve Bank

Monitoring systemic risk requires the use of multiple sources of data, analytical frameworks and models. One major component of systemic risk monitoring at the Reserve Bank is analysis of balance sheets of households, businesses and financial intermediaries. The size of each sector's balance sheet indicates its potential impact upon other sectors, and balance sheet structure can indicate resilience to shocks. Importantly, monitoring is done at aggregated (sector and sub-sector) levels, and with disaggregated data. Such disaggregated analysis is important for the monitoring of systemic risk, as it allows the identification of risk concentrations that may be concealed by aggregate data. Financial distress often develops in the tails of the distribution of borrowers or lenders, and significant financial disruption is likely to manifest prior to the distress of the median or average case in a sector.[19]

Given its importance as a source of systemic risk, the banking sector is monitored closely by the Reserve Bank. Much of this is based on confidential regulatory data collected by APRA.[20] On the asset side, there is a focus on the composition of banks' lending books, given that some types of lending are riskier than others, as well as the repayment performance of the existing stock of loans. On the liabilities side, the amount and quality of banks' capital is a focus, as it is the primary buffer through which adverse shocks can be absorbed. Banks' other funding sources are also monitored closely: amounts of deposits, short-term and long-term debt used, and similarities in funding structures across banks, are major determinants of susceptibility to funding and liquidity crises, including widespread withdrawals of funding across the banking system. Analysis of banks' profitability – perhaps a more forward-looking measure of financial health – is also undertaken. Levels of direct exposure between banks, one indicator of the potential for contagion, are also considered (see, for example, Tellez (2013)). Analysis includes the banking system's international exposures, in order to obtain an overview of the risks banks face across the whole corporate group (RBA 2013a).

Many other indicators of risk are also examined, including financial market prices. Residential and commercial property prices are analysed in the context of market conditions, as well as changes in intermediaries' standards for lending against property, given the potential of such developments to harm financial stability. The size, growth and composition of the non-prudentially regulated share of the financial system is also monitored, as the global financial crisis has clearly shown the economic harm that can be caused by distress in sizeable 'shadow banking' systems (FSB 2011b).

In conjunction with these quantitative indicators, qualitative data on attitudes and behaviours in the financial system are monitored. A range of indicators, including investor behaviour and various dimensions of lending standards (that is, loan features and the loan approval process), are closely monitored for signs of excessive risk-taking and exuberance, as these add to procyclicality in the financial system. The Reserve Bank also watches for signs of governance problems, including conflicts

---

18 This section draws heavily on APRA and RBA (2012).

19 See Ellis (2010) for an example of misleading aggregate data in a financial stability context.

20 The Reserve Bank and its staff are required to preserve the confidentiality of such data in accordance with the requirements of the *Australian Prudential Regulatory Authority Act 1998* and the *Reserve Bank Act 1959*.

of interest and other incentive problems, which can give rise to rent-seeking.[21] These types of behaviours tend to emerge in more complex, opaque parts of the financial system, such as structured credit markets in the years before the crisis.

The global financial crisis spurred much new development of 'direct' quantitative measures of systemic risk that rely on sophisticated statistical or analytical techniques. The resulting measures can be grouped into those that attempt to measure systemic risk (incorporating assessments both of the likelihood of systemic crises and their impact), and measures that quantify individual institutions' contributions to systemic risk. This latter group of measures gives policymakers extra tools to identify institutions that should be more closely monitored or subject to higher levels of regulation. The total number of 'direct' quantitative measures has grown significantly in the wake of the crisis: Bisias *et al* (2012), for example, survey 31 different measures. While these are useful tools, the RBA does not place overt reliance on any one such measure. The lack of a proven track record in predicting or quantifying systemic risk makes exclusive reliance on a particular metric inappropriate at this stage. Further research may, over time, mitigate this concern.

4.3.2 Systemic risk monitoring at APRA

APRA takes an explicitly system-wide approach to the supervision of financial institutions. This is made operational through APRA's risk-based approach to supervision, specifically its Probability and Impacts Ratings System (PAIRS) and Supervisory Oversight and Response System (SOARS) (APRA 2012). The first of these combines an estimate of the probability of an institution's failure with an estimate of the likely impact of its failure on the financial system, giving both an equal weight, to provide an overall assessment of the risk it poses. SOARS ensures supervisory resources are concentrated on the institutions that receive the highest risk scores under this approach. In effect, this means that the largest banks in Australia have dedicated teams of supervisors, while a single person often supervises multiple smaller institutions.

This systemic approach is supported by APRA's thematic approach to risks in each of the industries it regulates. This involves both 'horizontal reviews' in which an individual institution's financial metrics are compared to those of its peers, as well as the maintenance of industry risk registers that facilitate the monitoring of issues APRA sees as involving risks for each industry as a whole. Examples of risks to the banking industry that have received attention in recent years include credit quality in commercial property lending and the effect of low interest rates on residential mortgage lending standards (Laker 2010b; APRA 2013b).

The macroeconomic stress tests that APRA has conducted since the early 2000s are another component of its systemic risk monitoring (Laker 2010a, 2012). These cover the vast majority of the Australian banking system by assets, and involve the application of a common scenario and common risk parameters (e.g. loss rates) across banks. In recent years, these stress tests have focused mainly on determining whether banks have adequate capital to withstand a severe macroeconomic downturn that also involves large falls in property prices.

Consistent with their overlapping roles in monitoring systemic risk, APRA and the Reserve Bank share much of their monitoring and analysis. This is done both through formal mechanisms such as the Council of Financial Regulators (CFR) and the RBA-APRA Coordination Committee, as well as on a less formal basis at the working level.

---

[21] Rent-seeking can be roughly defined as manipulating the environment to obtain a private benefit without adding economic value to society, although in practice such activity is usually detrimental to others.

4.4 Policy Mitigants and Responses to Systemic Risk

Public policy does not seek to eliminate systemic risk – this would require removing certain financial risk-taking altogether, which would not be optimal for society. However, effective public policy design and other mitigation strategies can substantially reduce systemic risk. Effective responses to systemic risk events may also lower their impact on the financial system and the economy.

4.4.1 Sound macroeconomic policies

Sound macroeconomic policies – specifically, monetary, exchange rate and fiscal policies – underpin financial system stability. Monetary policy provides a nominal anchor to the economy. A policy that achieves a low and stable rate of inflation, while responding to current economic conditions, can help to promote financial stability. In particular, it can reduce the risk of unanticipated transfers of wealth between creditors and debtors, and ensure that price signals (including the price of risk) reflect economic costs.

Overly tight monetary policy redistributes financial wealth from debtors to creditors and can lead to increased defaults (corporate and household), falling asset prices (as the supply of assets for sale often increases), and a reduced appetite for new debt. This has occurred previously, during periods such as the Great Depression, and is thought to increase the financial fragility of firm and bank balance sheets and the risk of systemic financial instability (Eichengreen and Grossman 1994; Bernanke 1995).

Periods of excessively loose monetary policy can also lead to an increase in systemic risk. In this case, abnormally low interest rates can stimulate the demand for credit, boost asset prices and increase leverage in the economy. These developments tend to be accompanied by a rise in marginal lending and inadequate pricing of risk (that is, a misallocation of credit). Loose monetary policies, and the relaxation of lending standards, have been discussed as a contributing factor to the global financial crisis (see Woodford (2010) and the references cited therein).

A floating exchange rate regime can be an important element of financial system stability because it allows monetary policy to be directed at domestic circumstances. It can also induce domestic agents to actively manage foreign exchange risk, reducing the chance that foreign exchange mismatches build up in domestic financial portfolios and liabilities. Some jurisdictions with more constrained monetary policies, given their fixed exchange rate regimes or membership of currency unions, have pursued 'macroprudential policies' to deal with the resultant capital account volatility and credit expansion (Crowe *et al* 2013).

Sound fiscal policy is important for mitigating systemic risk. Unsustainable fiscal policies can create systemic risk because of the strong interconnections between sovereign and financial sector balance sheets. Concern about sovereign creditworthiness can induce losses on financial institutions' holdings of sovereign debt; it can also lower the value of collateral banks use to raise funding (CGFS 2011). Problems in the financial system have the potential to feed back to sovereign finances as tighter financial conditions adversely affect the economy. Adverse feedback loops between sovereign and bank balance sheets have been evident in the euro area over recent years.

Taxation policies that do not distort investment and risk-taking decisions also help to promote financial stability. Tax systems that provide incentives to engage in leveraged speculation, either through property or other financial assets, or that encourage a high level of debt when financing investment projects, can result in higher systemic risk. Prudent design of the tax system, including

appropriate capital gains taxation, and depreciation allowances that are consistent with economic costs, can be helpful in this regard.

In addition to prevention, sound macroeconomic policy means there are more options available to policymakers if faced with a financial crisis. In particular, co-ordinated expansions in monetary and fiscal policy, when appropriately managed, can reduce the magnitude of a crisis and result in a faster economic recovery, which in turn benefits financial stability.

In sum, given the importance of sound macroeconomic policies for financial stability, and the significant costs of financial crises, the macroeconomic policy framework and settings in a particular jurisdiction can and should be managed with consideration of society's appetite for bearing systemic risk.

4.4.2 Prudential regulation and supervision

Financial markets are subject to consumer protection and market integrity regulation to promote fairness and efficiency. Prudential regulation is a more intense form of regulation that aims to minimise financial and systemic risk, and protect depositors, by ensuring a higher level of safety and confidence in certain financial services and products, appropriate to the nature of the promises embedded in those products. The Wallis Inquiry concluded that some level of prudential regulation should apply to those financial promises that are inherently difficult to honour, where the likelihood of the promise being met is difficult to assess and where a breach of the promise has significant adverse consequences for the recipient of the promise and the financial system.

All developed countries have in place well-established systems of prudential regulation. In Australia, APRA is charged with the prudential regulation and supervision of banks and other deposit-takers, general and life insurance companies, and the bulk of the superannuation fund sector. APRA's mandate is to ensure that, under all reasonable circumstances, the financial institutions that it oversees are able to honour their financial promises, within a stable, efficient and competitive financial system. Protecting the financial interests of depositors, policyholders and superannuation fund members (which together it defines as 'beneficiaries') and promoting the stability of the financial system are at the heart of APRA's mandate. It fulfils this mandate using a combination of standard-setting and supervision of the institutions it oversees, while at the same time maintaining an insistence that the primary responsibility for the safety and soundness of regulated institutions remains with their boards of directors and senior management. Although APRA's prudential activities are designed to ensure that institutions act in a manner that minimises the likelihood of financial losses to beneficiaries, they are not intended to eliminate failures entirely – to do so would be very burdensome for financial institutions and would obstruct competition and innovation.

4.4.2.1 Licensing and prudential standards

APRA is responsible for setting prudential standards and licensing institutions to conduct business,[22] including requirements for capital, liquidity, governance, risk management and information systems. For ADIs, there is generally no distinction in these requirements between Australian-owned and foreign-owned ADIs that are locally incorporated. In contrast, there is a distinction in the requirements for foreign-owned banks that are licenced to operate in Australia as a branch. As per international practice, they are subject to their home regulators' standards on a consolidated basis. One of the key rules to reduce the risk to Australian depositors of these institutions is that they are

[22] More generally, institutions providing financial products (whether they be licenced by APRA or not) are also subject to ASIC's financial services licensing regime.

prohibited from accepting initial deposits of less than $250 000 from individuals and non-corporate institutions.

The capital standards that apply to locally incorporated banks, other deposit-takers and insurers specify a minimum capital requirement that depends on the (measured) risk profile of their portfolios. At the heart of a risk-based regulatory capital framework is the principle that the amount of capital needed for a given activity should reflect the risk of that activity; it also recognises that there are incentives for financial institutions to boost returns by taking on greater risk for a given amount of capital employed (Byres 2012).

Commercial property loans are one example of a portfolio that has tended to experience greater losses during market downturns. Consistent with this, Australian banks' regulatory capital requirements for commercial property exposures can be much higher than for other forms of lending.

In addition to capital standards, prudential regulators generally require financial institutions to have specific policies to manage concentration risk – for example, concentrations in particular types of counterparties, industries, countries and asset classes. This reflects that risk concentrations are likely to increase the chance of correlated losses. For these reasons, APRA imposes prudential limits on banks' and insurers' exposures to both single unrelated counterparties and single related entities (usually termed 'large exposure rules'). Because these single counterparties tend to be other banks or insurers, these measures also act to reduce interconnectedness in the financial system.

As discussed in Chapter 3, the international response to the global financial crisis centred on a regulatory reform agenda to address key sources of systemic risk. Implementation of Basel III and 'too big to fail' reforms has largely been the responsibility of APRA, with significant changes to APRA's prudential standards as a result.

4.4.2.2 Supervision

In addition to licensing financial institutions to conduct business and setting prudential standards, APRA is tasked with supervising institutions. Supervision in a narrow sense involves the continuous monitoring of individual institutions to ensure they comply with prudential standards, are in a sound financial condition and more generally conduct their affairs in a prudent manner. However, because the financial system is complex and dynamic, ensuring individual institutions meet prudential rules is alone not enough to safeguard financial stability. This has been evident in the financial crises that have occurred recently in those overseas jurisdictions that previously adopted a more 'light touch' approach to prudential supervision.

To effectively address systemic risk, supervision needs to be forward-looking (such as by assessing emerging risks for institutions) and have a system-wide focus (such as by analysing the way different parts of the system interact, or are likely to interact, with each other). Good supervision also involves a willingness to act when risks are identified, such as by taking timely and effective action, intruding on decision making and questioning common wisdom, even in the face of external criticism (IMF 2010b). Of course, identifying risks and acting on them requires the necessary legal authority and resources to be available to the prudential supervisor. A prerequisite to having all of these elements of good supervision is support from government and parliament (Littrell 2013).

APRA also liaises with supervisors in other jurisdictions, to assist with ongoing supervision of internationally active banks, as well as crisis management arrangements. One component of these relationships is participation in supervisory colleges for some foreign-owned banks operating in Australia. Given the importance of the major Australian banking groups for financial stability in Australia and New Zealand, banking supervisors (and representatives of other regulatory authorities)

in both countries meet regularly through the Trans-Tasman Council on Banking Supervision.[23] The Australian and New Zealand banking regulators are also legally required to consider financial stability in the other country in their regulatory actions.

4.4.3 Regulation and oversight of FMIs in Australia

In a similar vein, regulation and oversight promote best practice in the design and operation of FMIs with the aim of ensuring that they remain a source of strength and resilience in the financial system, rather than a source of instability. As the role of FMIs has expanded, most notably with the G20's commitment to centrally clear all standardised OTC derivatives, there is an increasing awareness internationally of the importance of high regulatory standards for FMIs (Chapter 3).

Historically, payment and settlement systems have been overseen by central banks. Central bank oversight emerged with the growing realisation that the safety and efficiency of such systems was integral to central banks' financial stability objective as well as their monetary operations (CPSS 2005). The primary regulatory role in relation to CCPs and, often, the broader functioning of SSFs has typically fallen to securities commissions, sometimes with accompanying oversight by the central bank.

Over recent years, in several jurisdictions central banks have assumed a more formal regulatory role in respect of CCPs and SSFs (jointly CS facilities) alongside securities commissions. A deeper role for central banks in the regulation or oversight of CS facilities recognises the systemic importance of these entities and the value of integrating this activity with the broader financial stability activities of the central bank. This shift took place in Australia following the Wallis Inquiry, with the Reserve Bank granted the responsibility for setting financial stability standards in the regulation of CS facilities, alongside ASIC's licensing responsibilities (Chapter 8).

The *Principles for Financial Market Infrastructures* (PFMIs), which set international standards for the design and operation of FMIs, were published by the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) in April 2012 (CPSS-IOSCO 2012) (Chapter 3 and Chapter 8). Alongside the PFMIs, CPSS and IOSCO also developed a set of 'responsibilities' for central banks, market regulators and other relevant authorities for FMIs. These responsibilities emphasise the consistent application of the PFMIs to systemically important FMIs, the power to enforce corrective action to ensure observance of the PFMIs, and the importance of cooperation among authorities responsible for particular FMIs.

Building on earlier CPSS work on oversight principles (CPSS 2005), the responsibility for cooperation among authorities promotes effective mutual assistance so as to avoid duplication of regulation and minimise the burden on the regulated entity. Accordingly, good cooperation is relevant both domestically and internationally. Domestically, cooperation between the central bank and securities commission is essential, given the typical joint responsibility for CS facilities. Clarity of roles, both to the authorities themselves and to regulated entities, is particularly important. In the Bank's view, the current arrangements in Australia deliver both good cooperation and clarity. As the cross-border reach of many FMIs' activities expands, international cooperation is also becoming crucial, giving host authorities both regulatory influence and access to information (Chapter 8).

[23] See CFR (2013) for more information.

4.4.4 Other measures to mitigate systemic risk

4.4.4.1 Other banking related measures

The 'four pillars' policy reflects the view that any mergers between the four major banks in Australia, or their takeover by a foreign entity, would be against the national interest and hence should not be allowed. The policy has been confirmed by successive Australian governments since the Wallis Inquiry in 1997; before this time it was a 'six pillars' policy additionally involving two insurers. In addition to its possible effects on competition in the banking sector, the policy also has financial stability effects. The four major banks are each systemically important due to their size and interconnectedness with other financial institutions. Mergers between these banks would increase systemic risks arising from concentrations in the banking sector and add to the complexity and costs of a potential bank failure. Additionally, foreign ownership of a major bank may lead to increased risk from greater exposure to international financial markets, or changes in the business models of Australian banks towards more complex and risky banking activities. On the other hand, however, mergers between major banks and large international banks could have the benefit of providing more diversified income streams, and additional sources of capital, that are not related to the performance of the Australian economy.

4.4.4.2 Consumer protection and market integrity measures

Some regulations aimed at the protection of consumers of financial services and the integrity of financial markets have the associated benefit of reducing systemic risk. These fall mainly within the ambit of ASIC, and include regulations underlying the licensing and conduct of credit and financial services providers, regulation of disclosure and conduct in financial markets, as well as regulations surrounding corporate governance and auditing. These rules act to address the issues of information asymmetry and agency problems, and by reducing the financial risk faced by many individual parties, can mitigate systemic risk.

Consumer credit rules are probably the example that has had the greatest impact on the evolution of systemic risk in Australia. Since the mid-1990s, these have required lenders to show that retail borrowers can reasonably be expected to repay loans without substantial hardship, including without having to sell underlying collateral.[24] They explain part of the good performance of residential mortgages in Australia; indeed, mortgages originated by loan brokers, who were until 2009 not bound by these rules, performed worse than those made directly by large banks prior to that time (Battellino 2008). The partial absence of responsible lending rules of this type has been identified as a factor in the poor performance of residential mortgages in the United States (Gerding 2009).

ASIC licenses and supervises conduct in financial markets in Australia, including equity, derivatives and futures markets. ASIC's work in such markets is aimed at ensuring they are efficient and fair, and covers the information market participants must disclose and the prevention of manipulative practices. Such regulations improve the confidence of market participants and make it easier for businesses to raise needed funding.

4.4.4.3 Public communication

Public communication can be used to promote financial stability. It operates mainly by informing the risk perceptions of investors, financial analysts and the broader community, in order to influence behaviour and, ultimately, prevent future adverse financial system outcomes. Communication about

[24] The relevant rules are the National Consumer Credit Code (which was introduced in 2009), and its predecessor, the Uniform Consumer Credit Code (which was introduced in 1996).

financial stability is particularly important as a tool for non-regulatory central banks such as the Reserve Bank (and overseas peers, see Sveriges Riksbank (2014)). But it is also employed by central banks with regulatory powers, such as the Bank of England (Bank of England 2013).

The Reserve Bank's main platform for public communication about financial stability is the *Financial Stability Review,* which is published at the end of March and September of each year. Other forms of communication include speeches by senior Reserve Bank staff and articles in the quarterly RBA *Bulletin*. Other Australian regulatory authorities also use such communication to achieve their goals.[25]

Sometimes public communication is used to address issues that represent a stability threat in the near term; the responses of Australian authorities to rapid increases in house prices and household indebtedness in the early 2000s are a good example of this.[26] Probably more frequently, communication is used to highlight risks surrounding developments that, while not currently a threat, have the potential for adverse consequences in the longer term.

4.4.5 Crisis management and resolution

4.4.5.1 Liquidity support

The fundamental intermediation and liquidity provision functions of the financial sector mean it bears significant liquidity risk, and this is socially desirable. But the inherent susceptibility of banks and other financial institutions to runs and other panics (and the economic consequences of such financial distress) show there is a cost to this structure. It has been recognised since at least the 19th century that there is a role for central banks to supply extra liquidity to the market during periods of stress, and to act as a 'lender of last resort' for entities unable to obtain funding elsewhere (Goodhart 1988).

Providing liquidity support to the financial system during times of stress is a central part of the Reserve Bank's role. During the period 2007 through 2009, there were considerable frictions in the interbank market resulting from turmoil in global credit markets, and the Reserve Bank significantly increased its supply of liquidity to the system to accommodate greater demand. The Bank made some changes to its operating procedures for liquidity provision, but these were easily accommodated within its existing market operations framework (Debelle 2008). For example, the pool of eligible collateral was widened and operations were conducted at longer maturities. The fact that the Bank had dealt with a wide range of counterparties over an extended period also contributed to the effectiveness of its liquidity support during the crisis.

The provision of liquidity support by the central bank to an individual institution – rather than the entire system – is a related, but separate form of intervention which central banks can make. The widely accepted doctrine for such actions is Walter Bagehot's (1873) exhortation to central banks to 'lend freely against good collateral at a high rate of interest'. Notable components are the availability of good collateral (inseparable from the solvency of the institution), and a high rate of interest, which is intended to act as both *ex ante* and *ex post* deterrence from reliance on this type of central bank support. However, lender of last resort operations are unlikely to be as simple as Bagehot's dictum suggests (Stevens 2008). Assessing the solvency of an institution and the quality of its collateral is likely to be very challenging in real time. In cases such as Australia, where supervision lies outside the central bank, a good flow of information from the prudential supervisor on the health of the institution requesting support is essential; this is something that would be facilitated in Australia by

[25] For examples, see Price (2013) and Tanzer (2013).

[26] See Bloxham, Kent and Robson (2010) for a case study that focuses on the Reserve Bank's efforts in the early 2000s to draw attention to the risks associated with large, ongoing increases in housing prices and household borrowing.

the close working relationship between the Reserve Bank and APRA. The Reserve Bank's role as the lender of last resort does not extend to supporting insolvent institutions;[27] while such interventions should not be absolutely ruled out, they are decisions that can only be properly taken by governments (Stevens 2008; Lowe 2013).

4.4.5.2 Resolution of distressed financial institutions

Most of the policy measures discussed above are designed to reduce systemic risk by lowering the chance that a financial institution will fail, under reasonable circumstances. But this does not mean that financial institutions are immune from failure (nor should they be). Policy measures are therefore needed to ensure a failing financial institution can be resolved effectively.

Financial institutions that have failed cannot be liquidated in the same way that non-financial corporate entities can, because doing so could significantly disrupt the financial system and impose large costs on the economy. In other words, liquidation may increase systemic risk. Specifically, there is the potential for a liquidation to result in: economic costs and hardship arising from the loss of systemically important financial services (such as deposit and payment services); fire sales of financial assets that destroy value; investor panic; and the loss of confidence in otherwise sound financial institutions. Such disorderly outcomes could increase the possibility of ad hoc government support for a failing institution, which would not be consistent with the principle of responsibility.

Resolution frameworks therefore need to be designed in ways that allow non-viable institutions to exit the market in an orderly manner, while minimising the adverse costs to society. According to the FSB's Key Attributes (2011a), an effective resolution framework should extend to all types of financial institutions that may be systemically important or critical in the event of failure. They should also:

- ensure continuity of critical financial services, such as payment and banking services
- predefine protection of certain depositors and policyholders from financial loss
- have clear resolution responsibilities for authorities, and the legal powers to carry out these responsibilities
- avoid unnecessary destruction of value in the resolution process
- impose losses in a way that respects the hierarchy of creditor claims
- not rely on public solvency support, or create the expectation that such support will necessarily be available.

In addition to minimising systemic risk once a financial institution fails, a well-designed resolution framework can also lower *ex ante* systemic risk by incentivising those market participants that are well placed to assess risk to do so. As discussed in Chapter 3, resolution arrangements in Australia have been strengthened over recent years, and have recently been assessed by the FSB as generally consistent with international best practice (FSB 2013).

[27] These arrangements were included in the 2010 Statement on Conduct of Monetary Policy and reaffirmed in the 2013 version.

Depositor protection is another policy that provides both *ex ante* and *ex post* mitigation of systemic risk. In Australia, two mechanisms work directly to protect depositors in ADIs from loss: depositor preference and deposit insurance in the form of the Financial Claims Scheme.[28] Depositor preference – the legislated seniority of depositors to other unsecured creditors in the event of ADI failure – is a long-standing feature of the Australian banking system. The Financial Claims Scheme was introduced in 2008 and currently provides cover for deposits up to $250 000 per person per ADI (Chapter 3).

Box 4A Types of Financial Risk

Simply put, risk is uncertainty about outcomes, whether they be good, bad or neutral ones. A common example of risk in a financial context is the uncertainty about the future price of an investor's asset. A central principle in finance is that in order to receive higher returns on average, investors must take on greater risk; that is, it becomes less certain that the higher average return will be realised.

Attempts to measure and manage financial risk generally focus on negative outcomes. This is appropriate; bad realisations tend to be less predictable than good outcomes and their consequences can be serious. The most common types of financial risk are outlined below, as well as their typical allocation in the economy:[1]

- **Credit risk** is the risk that a borrower or counterparty will not repay their debt obligations. In Australia, much credit risk resides within the banking sector, because of its central role in making loans and its presence in many financial markets. Insurers, superannuation funds and households take on credit risk through investments in debt securities (of governments, financial corporates and non-financial corporates) and bank deposits.
- **Market risk** is the risk of losses from changes in market prices (e.g. interest rates, equity prices, foreign exchange rates and commodity prices). Most financial institutions take on some market risk. Households and businesses are also exposed to market risk via investments in equities, debt securities, and other market-linked assets. Households' exposure to market risk has increased significantly since the introduction of compulsory superannuation in Australia.
- **Liquidity risk** is the risk of being unable to satisfy cash flow needs, including the higher costs that may be incurred in quickly raising funds or selling assets to do so. As described in Chapter 1, financial intermediaries are inherently exposed to liquidity risk through the process of maturity transformation. The Reserve Bank plays a role in minimising this risk by providing liquidity to the system in times of stress.
- **Longevity risk** is the risk involved in providing for the financial needs of individuals past working age, specifically, the risk that the desired income stream will be required for longer than anticipated. The Australian government assumes longevity risk through the old age pension system. Since the introduction of compulsory superannuation, however, individuals are increasingly managing their own longevity risk.

1 Malz (2011) provides a detailed overview of financial risks.

28 The Financial Claims Scheme also covers policyholders of licenced general insurers.

- **Insurance risk** is the risk of financial loss from (usually) physical risks that insurers assume in return for the payment of premiums. Losses covered by general and life insurers include those from natural disasters and from accidents (e.g. automotive, workplace, travel). Life insurers can also assume longevity risk.
- **Operational risk** is the risk of losses arising from inadequate or failed policies and controls that ensure the proper functioning and behaviour of processes, systems and people. A number of the risks to financial institutions can be loosely classified as operational risks – for example, fraud, legal risks and information technology failures. These sorts of risks tend to be harder to identify than credit or liquidity risk and the likely losses harder to measure; consequently, it is more difficult to calibrate the amount of resources needed to withstand them.

References

Adrian T, P Colla and HS Shin (2012), 'Which Financial Frictions? Parsing the Evidence from the Financial Crisis of 2007 to 2009', *NBER Macroeconomics Annual 2012*, 27, pp 159–214. Available at <http://www.jstor.org/stable/10.1086/669176>.

APRA (Australian Prudential Regulation Authority) (2012), 'Probability and Impact Rating System', June.

APRA (2013a), 'Domestic Systemically Important Banks in Australia', Information Paper.

APRA (2013b), 'Loan Serviceability Standards in Housing Lending', *APRA Insight,* Issue 2, pp 40–54.

APRA and RBA (Reserve Bank of Australia) (2012), 'Macroprudential Analysis and Policy in the Australian Financial Stability Framework', September.

ASIC (Australian Securities and Investments Commission) (2013), 'The Australian Hedge Funds Sector and Systemic Risk', Report 370, September.

Bagehot W (1873), *Lombard Street: A Description of the Money Market*, 1912 reprint, Smith, Elder & Co, London.

Bank of England (2013), *Financial Stability Review*, November.

Battellino R (2008), 'An Update on Household Finances', RBA *Bulletin*, November, pp 76–84.

BCBS (Basel Committee on Banking Supervision) (2004), 'Bank Failures in Mature Economies', BCBS Working Paper No 13, April.

BCBS, IAIS (International Association of Insurance Supervisors) and IOSCO (International Organisation of Securities Commissions) (2013), 'Mortgage Insurance: Market Structure, Underwriting Cycle and Policy Implications', Bank for International Settlements, April.

Bernanke B (1995), 'The Macroeconomics of the Great Depression: A Comparative Approach', *Journal of Money, Credit and Banking*, 27(1), pp 1–28.

Bernanke B (2010), 'Causes of the Recent Financial and Economic Crisis', Statement before the Financial Crisis Inquiry Commission, Washington, DC, 2 September.

Bernanke B and M Gertler (1989), 'Agency Costs, Net Worth, and Business Fluctuations', *The American Economic Review*, 79(1), pp 14–31.

Bernanke B, M Gertler and S Gilchrist (1999), 'The Financial Accelerator in a Quantitative Business Cycle Framework', in JB Taylor and M Woodford (eds), *Handbook of Macroeconomics*, Volume I, Elsevier, pp 1341–1393.

Billio M, M Getmansky, AW Lo and L Pelizzon (2011), 'Econometric Measures of Connectedness Systemic Risk in the Finance and Insurance Sectors', *Journal of Financial Economics*, 104(3), pp 535–559.

Bisias D, M Flood, AW Lo and S Valavanis (2012), 'A Survey of Systemic Risk Analytics', Office of Financial Research Working Paper No 0001.

Bloxham P, C Kent and M Robson (2010), 'Asset Prices, Credit Growth, Monetary and Other Policies: An Australian Case Study', RBA Research Discussion Paper No 2010-06.

Brei M (2007), 'The Impact of Sudden Stops on Bank Lending: Are there Cross-Sectional Differences?', *Social and Economic Studies*, 56(4), pp 21–46.

Byres W (2012), 'Regulatory Reforms – Incentives Matter (Can We Make Bankers More Like Pilots?)', Remarks to the Bank of Portugal Conference on 'Global Risk Management: Governance and Control', Lisbon, 24 October.

Cecchetti SG, M Kohler and C Upper (2009), 'Financial Crises and Economic Activity', NBER Working Paper No 15379.

Cerra V and SC Saxena (2008), 'Growth Dynamics: The Myth of Economic Recovery', *The American Economic Review*, 98(1), pp 439–457.

CFR (Council of Financial Regulators) (2013), 'Trans-Tasman Council on Banking Supervision'. Available at <http://www.cfr.gov.au/about-cfr/financial-distress-planning-management/trans-tasman-council-on-banking-supervision.html>.

CGFS (Committee on the Global Financial System) (2004), 'Foreign Direct Investment in the Financial Sector of Emerging Market Economies', Report, March.

CGFS (2011), 'The Impact of Sovereign Credit Risk on Bank Funding Conditions', Report, July.

Christelis D, D Georgarakos and T Jappelli (2011), 'Wealth Shocks, Unemployment Shocks and Consumption in the Wake of the Great Recession', Centre for Financial Studies Working Paper No 2011/27.

Coeuré B (2014), 'Risks in Central Counterparties (CCPs)', Speech to the Policy Panel during the Conference, 'Mapping and Monitoring the Financial System: Liquidity, Funding and Plumbing', Washington, DC, 23 January.

CPSS (Committee on Payment and Settlement Systems) (2005), 'Central Bank Oversight of Payment and Settlement Systems', May.

CPSS and IOSCO (International Organization of Securities Commissions) (2012), *Principles for Financial Market Infrastructures*, April.

Crowe C, G Dell'Ariccia, D Igan and P Rabanal (2013), 'How to Deal with Real Estate Booms: Lessons from Country Experiences', *Journal of Financial Stability*, 9(3), pp 300–319.

De Bandt O, P Hartmann, JL Peydro-Alcalde (2010), 'Systemic Risk in Banking: An Update', in AN Berger, P Molyneux and JOS Wilson (eds), *The Oxford Handbook of Banking*, Oxford University Press, Oxford, pp 633–672.

Debelle G (2008), 'Market Operations in the Past Year', Speech to FTA Congress, Melbourne, 31 October.

ECB (European Central Bank) (2009a), 'Special Feature B: The Concept of Systemic Risk', *Financial Stability Review*, December, pp 134–141.

ECB (2009b), 'Special Feature E: The Importance of Insurance Companies for Financial Stability', *Financial Stability Review*, December, pp 160–168.

Eichengreen B and R Grossman (1994), 'Debt Deflation and Financial Instability: Two Historical Explorations', unpublished manuscript, University of California at Berkeley.

Ellis L (2006), 'Housing and Housing Finance: The View from Australia and Beyond', RBA Research Discussion Paper No 2006-12.

Ellis L (2010), 'Remarks to Finsia Financial Services Conference', Address to Finsia Financial Services Conference – Meeting of the Minds: Our Global Agenda, Sydney, 20 October.

Ellis L (2012), 'Prudent Mortgage Lending Standards Help Ensure Financial Stability', Address to the Australian Mortgage Conference, Sydney, 23 February.

Ellis L (2013), 'Stability, Efficiency, Diversity: Implications for the Financial Sector and Policy', Address to the Paul Woolley Centre for the Study of Capital Market Dysfunctionality Conference, Sydney, 18 October.

Ellis L and C Naughtin (2010), 'Commercial Property and Financial Stability – An International Perspective', RBA *Bulletin*, June, pp 25–30.

Ellis L, M Kulish and S Wallace (2012), 'Property Market Cycles as Paths to Financial Distress', in A Heath, F Packer and C Windsor (eds), *Property Markets and Financial Stability*, Proceedings of a Conference held by the Reserve Bank of Australia and the Bank for International Settlements, Sydney, pp 109–132.

EU (European Union) (2010), Regulation (EU) No 1092/2010 of the European Parliament and of the Council: European Union Macro-Prudential Oversight of the Financial System and Establishing a European Systemic Risk Board, 24 November.

FCIC (Financial Crisis Inquiry Commission) (2011), 'The Financial Crisis Inquiry Report', Final Report, January.

Financial System Inquiry (1997), *Financial System Inquiry Final Report* (S Wallis, chairperson), Australian Government Publishing Service, Canberra. Available at <http://fsi.treasury.gov.au/content/FinalReport.asp>.

Fisher C and C Kent (1999), 'Two Depressions, One Banking Collapse', RBA Research Discussion Paper No 1999-06.

Fostel A and J Geanakoplos (2013), 'Reviewing the Leverage Cycle', Cowles Foundation Discussion Paper No 1918.

Frankel A, J Gyntelberg, K Kjeldsen and M Persson (2004), 'The Danish Mortgage Market', *BIS Quarterly Review*, March.

FSB (Financial Stability Board (2011a), *Key Attributes of Effective Resolution Regimes for Financial Institutions*, October.

FSB (2011b), 'Shadow Banking: Scoping the Issues', April.

FSB (2013), 'Thematic Review on Resolution Regimes', April.

Gerding EF (2009), 'The Subprime Crisis and the Link between Consumer Financial Protection and Systemic Risk', Florida International University Law Review, 22 May.

Gertler M and N Kiyotaki (2010), 'Financial Intermediation and Credit Policy in Business Cycle Analysis', in BM Friedman and M Woodford (eds), *Handbook of Monetary Economics*, Volume 3, pp 547–599.

Gizycki M and P Lowe (2000), 'The Australian Financial System in the 1990s', in D Gruen and S Shrestha (eds), *The Australian Economy in the 1990s*, Proceedings of a Conference held by the Reserve Bank of Australia, Sydney, pp 180–215.

Goodhart C (1988), *The Evolution of Central Banks*, MIT Press, Cambridge, Massachusetts.

Gorton G (2012), *Misunderstanding Financial Crises: Why We Don't See Them Coming*, Oxford University Press, New York.

Gorton G and A Metrick (2012), 'Securitized Banking and the Run on Repo', *Journal of Financial Economics*, 104(3), pp 425–450.

Group of Ten (2001), 'Report on Consolidation in the Financial Sector', January.

Hermans L, P McGoldrick and H Schmeidel (2013), 'Central Counterparties and Systemic Risk', European Systemic Risk Board Macro-prudential Commentaries, Issue No 6, November.

Hills B, D Rule, S Parkinson and C Young (1999), 'Central Counterparty Clearing Houses and Financial Stability', Bank of England *Financial Stability Review*, June.

Hoggarth G, J Hooley and Y Korniyenko (2013), 'Which Way do Foreign Branches Sway? Evidence from the Recent UK Domestic Credit Cycle', Financial Stability Paper No 22.

Humphrey DB (1986), 'Payments Finality and Risk of Settlement Failure', in A Saunders and L White (eds), *Technology and the Regulation of Financial Markets*, Lexington Books/Salomon Brothers Center Series of Financial Institutions and Markets, New York, pp 97–120.

IAIS (International Association of Insurance Supervisors) (2011), 'Insurance and Financial Stability', November.

IAIS (2013), 'Globally Systemic Important Insurers: Initial Assessment Methodology', July.

IMF (International Monetary Fund) (2010a), 'Resolution of Cross-Border Banks—A Proposed Framework for Enhanced Coordination', June.

IMF (2010b), 'The Making of Good Supervision: Learning to Say "No"', IMF Staff Position Note, May.

IMF (2012a), 'Australia: Addressing Systemic Risk Through Higher Loss Absorbency—Technical Note', IMF Country Report No 12/311.

IMF (2012b), 'Australia: Financial System Stability Assessment', IMF Country Report No 12/308.

IMF (2013), 'Chapter 3: Changes in Bank Funding Patterns and Financial Stability Risks', Global Financial Stability Report: Transition Challenges to Stability, October, pp 105–148.

IMF, BIS (Bank for International Settlements) and FSB (2009), 'Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations', Report to the G-20 Finance Ministers and Central Bank Governors, October.

Jacobs D and V Rayner (2012), 'The Role of Credit Supply in the Australian Economy', RBA Research Discussion Paper No 2012-02.

Kambhu J, T Schuermann and K Stiroh (2007), 'Hedge Funds, Financial Intermediation, and Systemic Risk', Federal Reserve Bank of New York Economic Policy Review, December, pp 1–18.

Kaufman GG and KE Scott (2003), 'What is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?', *The Independent Review*, 8(3), pp 371–391.

Kindleberger CP and RZ Aliber (2011), *Manias, Panics and Crashes: A History of Financial Crises*, Palgrave Macmillan, Houndmills.

La Cava G (2013), 'Inventory Investment in Australia and the Global Financial Crisis', RBA Research Discussion Paper No 2013-13.

Laker J (2010a), 'The Australian Banking System Under Stress?', Address to the Australian Business Economists Conference, Sydney, 9 June.

Laker J (2010b), 'Supervisory Lessons from the Global Financial Crisis', AB+F Leaders Lecture Lunch, Sydney, 8 December.

Laker J (2012), 'The Australian Banking System Under Stress – Again?', AB+F Randstad Leaders Lecture, Brisbane, 8 November.

Littrell C (2013), 'Macro Prudence vs. Macro-Prudential Supervision', Speech at the 3rd Annual Risk Day Conference, Sydney, 22 March.

Lowe P (2013), 'Some Tensions in Financial Regulation', Address to the Institute of Global Finance Second Conference on Global Financial Stability and Prosperity, Sydney, 4 July.

Malz M (2011), *Financial Risk Management: Models, History and Institutions*, John Wiley & Sons, Hoboken.

Manning M, E Nier and J Schanz (2009), *The Economics of Large-value Payments and Settlement: Theory and Policy Issues for Central Banks*, Oxford University Press, Oxford.

Moser JT (1998), 'Contracting Innovations and the Evolution of Clearing and Settlement Methods at Futures Exchanges', Federal Reserve Bank of Chicago Working Paper No WP-98-26.

Norman B, R Shaw and G Speight (2011), 'The History of Interbank Settlement Arrangements: Exploring Central Banks' Role in the Payment System', Bank of England Working Paper No 412.

Office of Financial Research (2013), 'Asset Management and Financial Stability', September.

Peek J and S Rosengren (2000), 'Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States', *The American Economic Review*, 90(1), pp 30-45.

Pirrong C (2011), 'The Economics of Central Clearing: Theory and Practice', *International Swaps and Derivatives Association Discussion Paper Series*, No 1, May.

Price J (2013), 'The Regulator's Perspective on the Regulation of SMSFs', Speech to The Institute of Public Accountants National Congress, Gold Coast, 8 November.

RBA (Reserve Bank of Australia) (2009), *Financial Stability Review*, September.

RBA (2012a), 'Box D: A Closer Look at the Shadow Banking System in Australia', *Financial Stability Review*, March, pp 69–72.

RBA (2012b), 'The Global Financial Environment', *Financial Stability Review*, September, pp 5–18.

RBA (2013a), 'Box A: Australian Bank Activity in Asia', *Financial Stability Review*, March, pp 36–38.

RBA (2013b), 'Box C: Lenders Mortgage Insurance', *Financial Stability Review*, September, pp 39–42.

Rehlon A and D Nixon (2013), 'Central Counterparties: What Are They, Why Do They Matter and How Does the Bank Supervise Them?' Bank of England *Quarterly Bulletin*, Quarter 2, pp 1–10.

Reinhart CM and KS Rogoff (2009), 'The Aftermath of Financial Crises', *The American Economic Review*, 99(2), pp 466–472.

Rush A, D Sadeghian and M Wright (2013), 'Foreign Currency Exposure and Hedging in Australia', RBA *Bulletin*, December, pp 49–58.

Song I (2004), 'Foreign Bank Supervision and Challenges to Emerging Market Supervisors', IMF Working Paper No WP/04/82.

Stevens G (2008), 'Liquidity and Lender of Last Resort', RBA *Bulletin*, May, pp 83–91.

Stewart C, B Robertson and A Heath (2013), 'Trends in the Funding and Lending Behaviour of Australian Banks', RBA Research Discussion Paper 2013-15.

Sveriges Riksbank (2014), 'The Riksbank's Work to Prevent Financial Crises'. Available at <http://www.riksbank.se/en/Financial-stability/The-Riksbanks-work-to-prevent-financial-crises/>.

Tanzer G (2013), 'The Australian Hedge Funds Sector and Systemic Risk', Speech at the AIMA Australia Hedge Fund Forum, Sydney, 10 September.

Tellez E (2013), 'Mapping the Australian Banking System Network', RBA *Bulletin*, June pp 45–54.

Tucker P (2013), 'Central Counterparties in Evolving Capital Markets: Safety, Recovery and Resolution', Banque de France *Financial Stability Review*, No 17, April, pp 179–184.

Windsor C, J Jaaskela and R Finlay (2013), 'Home Prices and Household Spending', RBA Research Discussion Paper No 2013-04.

Woodford M (2010), 'Inflation Targeting and Financial Stability', Keynote address to the Future of Central Banking Conference, Rome, 30 September.

5. Sectoral Trends in Funding Patterns in the Australian Economy

This Chapter analyses some of the key trends in the sources and uses of funds by each sector of the economy. The overall funding needs of the economy reflect the collective saving and investment decisions of the household, corporate and government sectors. Net lenders save more than they borrow, and provide their surplus funds to net borrowers whose demand for funds exceed their saving. Financial corporations intermediate the flow of funds between net lenders and net borrowers. The balance of funding needs that are not met domestically are financed by foreign investors. These flows from savers to borrowers build up over time as asset and liability positions.

The key points of the Chapter are:

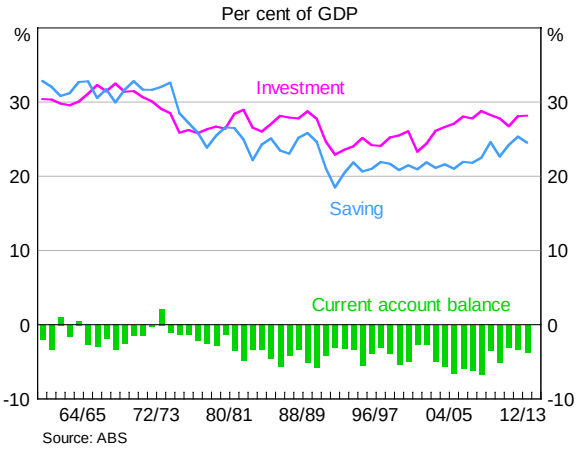
- Australia has recorded current account deficits in nearly every decade of its history. Current account balances are determined by the myriad of saving and investment decisions of Australian households, businesses and governments.
- Following the crisis, some commentators questioned whether enough capital would be available to meet the needs of Australians, given reduced foreign demand for bank debt globally. In the event, the capital account adjusted, with the price and composition of funding shifting accordingly.
- In recent years, the household sector has adopted a more prudent approach to its finances, shifting the composition of its financial asset portfolio away from riskier assets, such as equities, and towards deposits. Non-financial corporations have changed their funding mix toward a higher share of internal funding and a lower share of debt.
- While the Australian domestic corporate bond market remains smaller than in some other advanced economies, it has matured in recent years. This has been evident in greater domestic issuance by lower-rated entities and some lengthening in the tenor of that issuance. Several recent developments in market infrastructure may further support activity.
- Small businesses are less likely to use debt funding than larger businesses. And most of their debt funding is provided by banks and other credit institutions rather than the capital markets. The available evidence suggests that small businesses in most industries have had tighter but still reasonable access to funds throughout and after the financial crisis, albeit at higher cost during the crisis.

5.1 National Saving and Investment

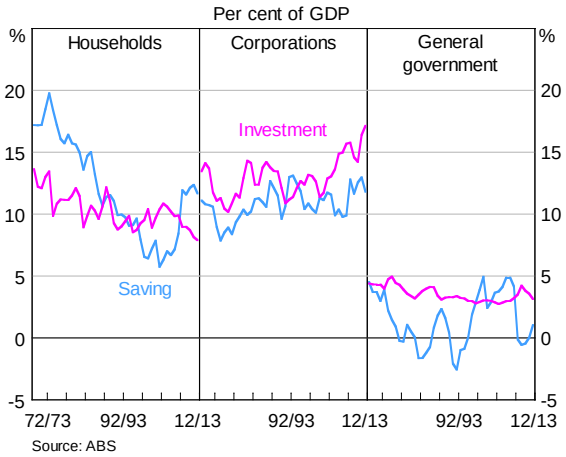
At the national level, the difference between the level of investment and saving is equal to the current account balance.[1] Investment in the Australian economy has tended to exceed saving, leading to current account deficits (Graph 5.1). The Australian economy has recorded current account deficits in almost every decade for at least 150 years. National saving as a share of GDP declined in the quarter century to the mid 1990s, remained stable until the late 2000s, and has risen in recent years. Investment as a share of GDP hovered around 26 per cent from the mid 1970s to the mid 2000s and has since grown to around 28 per cent. As a result, the current account deficit as a share of GDP has narrowed in recent years to around 3 per cent.

In the household sector, saving has generally exceeded investment. The decade following the Wallis Inquiry was an exception, with saving unusually low as households increased their indebtedness (Graph 5.2). Since the mid 2000s, however, the household sector saving ratio has risen, partly because of the more prudent behaviour adopted following the global financial crisis (Stevens 2011).

Graph 5.1
Gross Saving and Investment



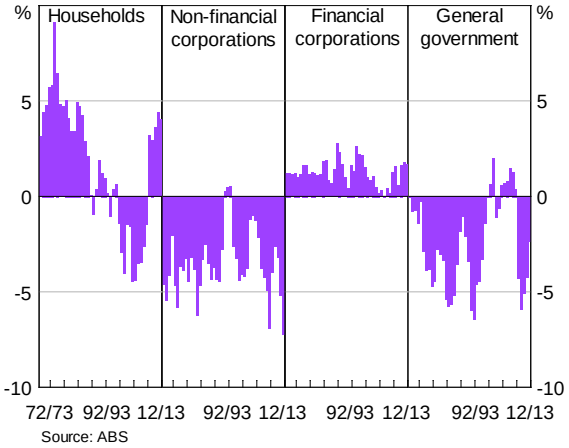
Graph 5.2
Gross Saving and Investment by Sector



The corporate sector includes non-financial and financial corporations. Non-financial corporations have tended to be net borrowers; their gross saving has not completely covered their investment (Graph 5.3).[2] On the other hand, financial corporations are net lenders reflecting their role in intermediation.

1 Differences between the current account balance and gross savings less investment reflect statistical discrepancies.
2 Public corporations are included in this analysis because separate data on private corporations are not available prior to 1989/90.

Graph 5.3
Net Lending by Sector
Per cent of GDP



Source: ABS

Investment by the general government sector has remained relatively stable as a share of GDP over the past 50 years.[3] Gross saving declined for much of the decade from the mid 1970s and then fluctuated with the economic cycle. Government net lending generally declines during periods of weak economic activity owing, in part, to the role of 'automatic stabilisers' in fiscal policy. Overall, the general government sector has tended to be a net borrower, except for in the decade prior to 2008.

5.2 The External Sector

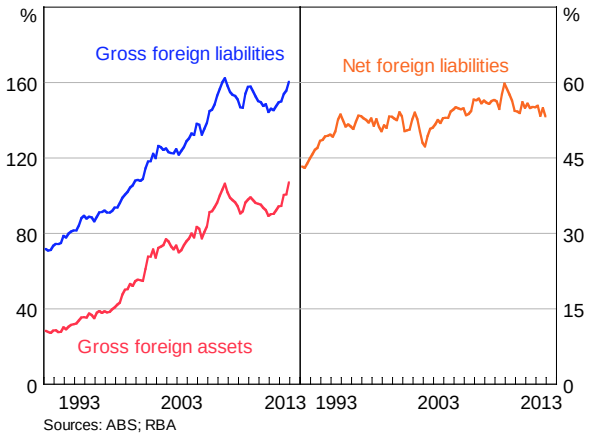
The financial counterpart to a current account deficit is net capital inflow from the rest of the world. These sustained net capital inflows (which in turn reflect the investment and saving decisions of Australian residents and foreigners) have accumulated to a net foreign liability position for the economy as a whole (Debelle 2011). Since 2005, the net foreign liability position has been relatively stable at around 55 per cent of GDP (Graph 5.4). This recent stabilisation primarily reflects a modest slowing in net capital inflows over the post-crisis period.[4]

Importantly, however, while Australia has an aggregate net foreign liability position with the rest of the world, it has a net foreign currency asset position. This means that the overall net foreign liability position would not in itself be a source of vulnerability if the Australian dollar were to suddenly depreciate. This net foreign currency asset position arises because around two-thirds of foreign liabilities are denominated in Australian dollars, whereas most foreign assets are denominated in foreign currency. Moreover, the liabilities that are denominated in foreign currency are hedged to a greater extent overall (60 per cent) than foreign currency assets (30 per cent), resulting in a slight increase in Australia's net foreign currency asset position after hedging is taken into account (Rush, Sadeghian and Wright 2013; Graph 5.5). This is because the banking sector tends to hedge almost all of its net foreign currency liability position, whereas the other financial corporations sector (which includes superannuation funds, fund managers and insurance corporations) hedge only a small portion of its net foreign currency asset position.

[3] The general government sector includes activities undertaken by the local, state and federal levels of government, but excludes public corporations.

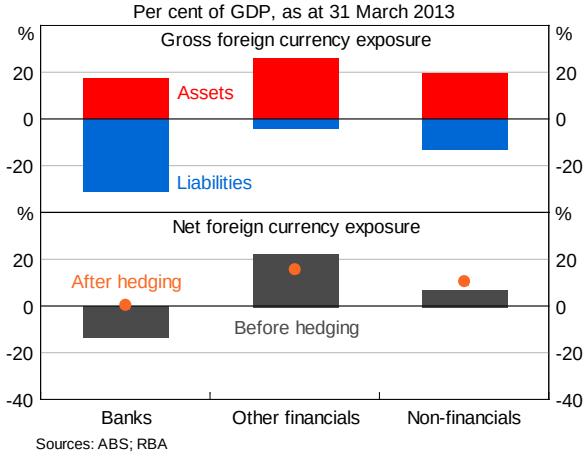
[4] While valuation effects related to a change in the prices of foreign assets and liabilities and the exchange rate influence the net foreign liability position, these have had only a small net effect over recent years.

Graph 5.4
International Investment Position
Per cent of nominal GDP



Sources: ABS; RBA

Graph 5.5
Foreign Currency Exposure by Sector
Per cent of GDP, as at 31 March 2013

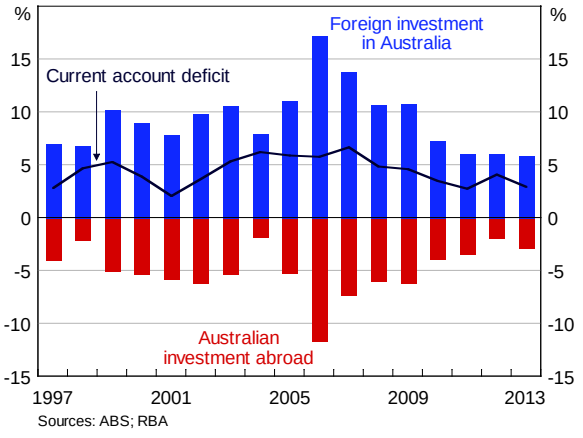


Sources: ABS; RBA

Net capital inflows to Australian entities have averaged the equivalent of around 4½ per cent of GDP since the float of the Australian dollar and liberalisation of the capital account in 1983. Since the onset of the financial crisis, net capital inflows have declined to an average equivalent to 3¾ per cent of GDP, but have remained within the range recorded over the post-float period. Gross investment flows into and out of Australia have both slowed since 2006, although foreign inflows have slowed by more (Graph 5.6).[5]

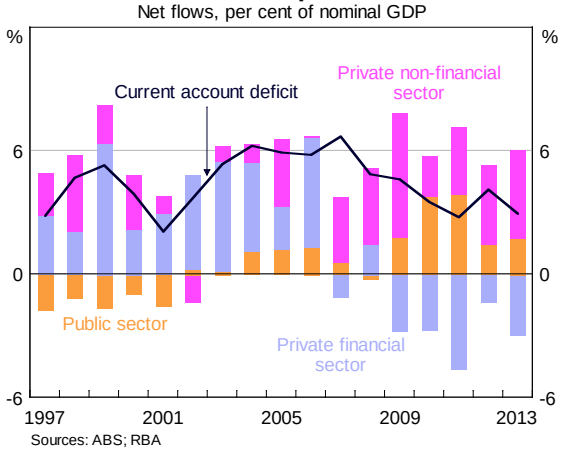
At the same time as net capital inflows to Australia declined, their composition also shifted. The private financial sector has not been a net recipient of capital flows since the onset of the financial crisis, while net inflows to the private non-financial and public sectors have increased relative to GDP (Graph 5.7). These changes reflect the saving and investment decisions of entities within these sectors, as well as the portfolio allocation decisions of foreign investors.

Graph 5.6
Gross Capital Flows and the Current Account
Per cent of nominal GDP



Sources: ABS; RBA

Graph 5.7
Australian Capital Flows
Net flows, per cent of nominal GDP



Sources: ABS; RBA

[5] The 'foreign investment in Australia' measure is equal to new foreign investment in Australia less repatriations of existing investments in Australia by foreign resident entities. Similarly, the 'Australian investment abroad' measure is equal to new Australian investment abroad less repatriations of existing foreign investments by Australian resident entities.

5.2.1 Capital flows to the private sector

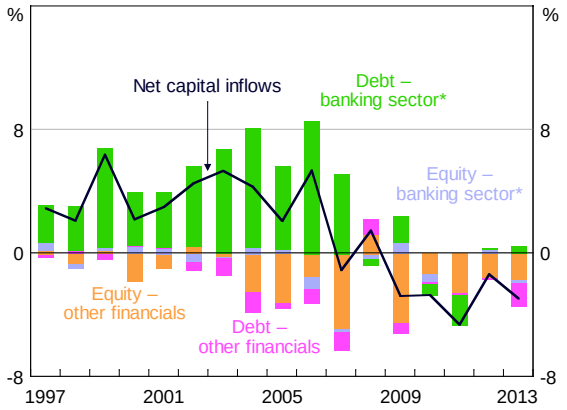
The Australian financial sector has historically tended to be a net recipient of capital flows. In the decade prior to the onset of the crisis, net flows into this sector averaged the equivalent of almost 4 per cent of GDP. These flows have reversed in recent years, resulting in net capital outflows from the private financial sector averaging equivalent to around 3 per cent of GDP per year.

This shift primarily reflects relatively large net debt inflows to the banking sector prior to the crisis followed by net debt outflows (or only small net debt inflows) in the post-crisis period, consistent with Australian banks' increased use of domestic funding sources over recent years (Graph 5.8). Early in the post-crisis period, some commentators questioned whether enough capital would be available to meet the needs of Australian households and businesses, given reduced foreign demand for bank paper globally. However, subsequent developments have shown that markets tend to respond to such changes by making various other adjustments, including altering the composition of capital inflows. Over the past decade, the composition of capital flows has changed quite significantly, providing contrary evidence to the hypothesis that the current account can only be funded by a single form of capital inflow such as offshore borrowing by banks. Indeed, in each of the past five years there was net capital outflow from the financial sector together with a current account deficit (Graph 5.7).

In contrast to the banking sector, the pattern of capital flows for other financial corporations has been little changed. Firms in this sector invest offshore, particularly in foreign equities, and so they have continued to record capital outflows.

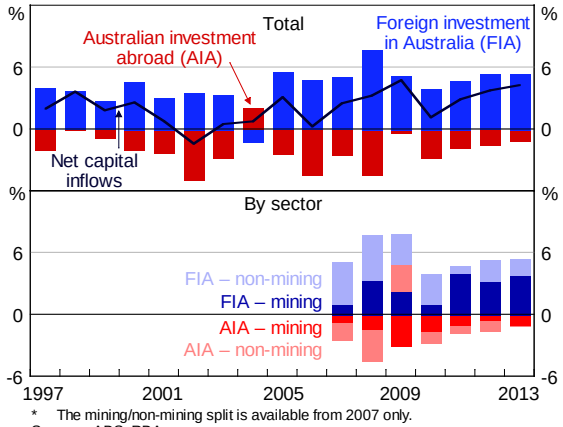
Net capital inflows as a share of GDP to the private non-financial sector have increased from an average of around 1½ per cent in the decade prior to the global financial crisis to around 4 per cent in the post-2008 period (Graph 5.9). In recent years, this has primarily reflected an increase in net capital inflows to the mining sector, which has been driven by foreign direct investment in resource companies operating in Australia (largely in the form of retained earnings) and, to a lesser extent, wholesale offshore debt issuance by Australian-based resources companies (Arsov, Shanahan and Williams 2013).

Graph 5.8
Private Financial Corporations
Net flows, per cent of nominal GDP



* Banking sector includes securitisers
Sources: ABS; RBA

Graph 5.9
Private Non-financial Corporations*
Gross flows, per cent of nominal GDP



* The mining/non-mining split is available from 2007 only.
Sources: ABS; RBA

5.2.2 Capital flows to the public sector

Net capital inflows to the Australian public sector have increased to the equivalent of around 2½ per cent of GDP since the onset of the financial crisis, compared with an average of 0.2 per cent of GDP over the previous two decades (Graph 5.7). The increase has been concentrated in purchases of Commonwealth Government Securities. Some of the increased demand appears to have come from central banks and sovereign wealth funds (although data on the extent of these purchases are not available). In contrast, the share of foreign ownership of state government debt has declined over recent years.

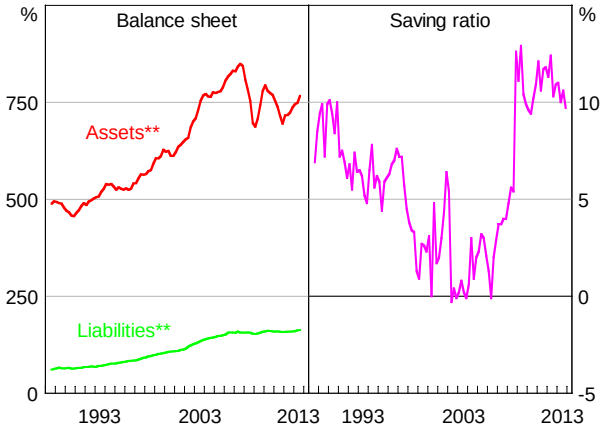
5.3 Household Sector

5.3.1 Key trends in household balance sheets and use of funds

The household sector tends to be a net saver in aggregate, lending funds to other sectors through deposits or purchases of financial assets. In addition to spending on consumption, households use their funds to purchase real assets, primarily housing, which are funded through a combination of debt and savings.

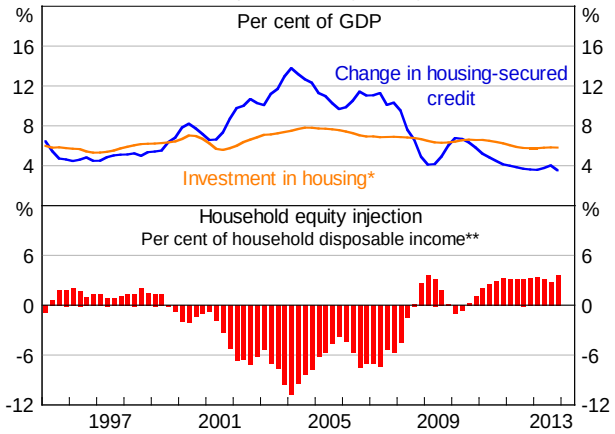
Households' financial behaviour has shifted over the past couple of decades. From the early 1990s to the mid 2000s, both debt and assets increased significantly faster than income and the household saving ratio declined.[6] More recently, debt has stabilised relative to incomes and the saving ratio has stabilised at a higher level (Graph 5.10). Consistent with these movements, the household sector withdrew housing equity during the early to mid 2000s but has injected it since the crisis (Graph 5.11). A number of interrelated factors have contributed to this, including financial deregulation (Chapter 2).

Graph 5.10
Household Balance Sheet and Saving Ratio*



* Household sector includes unincorporated businesses; saving is net of depreciation
** Per cent of annual household disposable income; disposable income is after tax and before the deduction of interest payments
Sources: ABS; RBA

Graph 5.11
Household Equity Injection
Four-quarter moving average



* Assumes 50 per cent of new dwellings are built upon newly acquired land from outside the household sector
** Household disposable income excludes unincorporated enterprises and is before interest payments
Sources: ABS; Australian Treasury; RBA; RP Data-Rismark

[6] Part of this decline in the saving ratio is because of the shift of some unincorporated enterprises, which are part of household sector in the national accounts framework, to become part of the corporate sector over the past few decades (Connolly and Kohler 2004).

Related shifts can also be seen in the composition of households' financial assets. Since the introduction of compulsory superannuation, assets held by superannuation funds increased strongly, except around the onset of the crisis (Chapter 7). This has resulted in households' exposure to equities, and thus market risk, rising. Direct holdings of financial assets have also risen over this period, but have become more concentrated in deposits since around 2008.

Since the onset of the financial crisis, there is evidence that the household sector has adopted a more prudent approach to its finances, shifting the composition of its financial asset portfolio away from riskier assets toward deposits (Black, Rogers and Soultanaeva 2012). For instance, according to ABS data, from the beginning of 2008 to September 2013, households were net sellers of equities of around $90 billion, but made net deposits of around $320 billion.

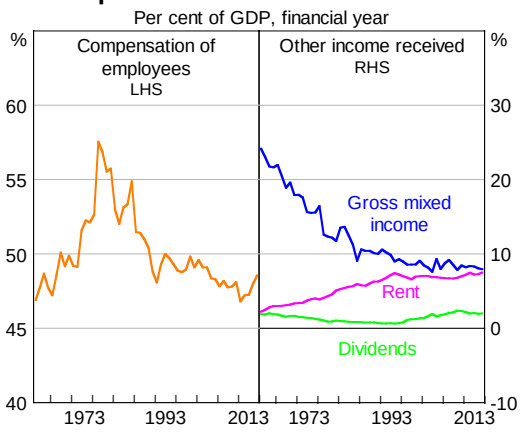
5.3.2 Key trends in the sources of funds

Consistent with ongoing innovation in the financial sector and the economy more generally, the range of products that Australian households can source funds through has grown since the Wallis Inquiry.

Over the past couple of decades, labour income, as measured by compensation of employees as a share of GDP, decreased slightly, while the shares of dividends and rent increased (Graph 5.12). This shift in labour income may be the result of an increase in firms' bargaining positioning relative to labour, as well as higher profit margins (Ellis and Smith 2007; Guscina 2006). The decline in gross mixed income reflects a general trend by the unincorporated sector towards incorporation, which, in national accounting terms, has shifted profits from the household sector to the corporate sector (Graph 5.12, right panel).

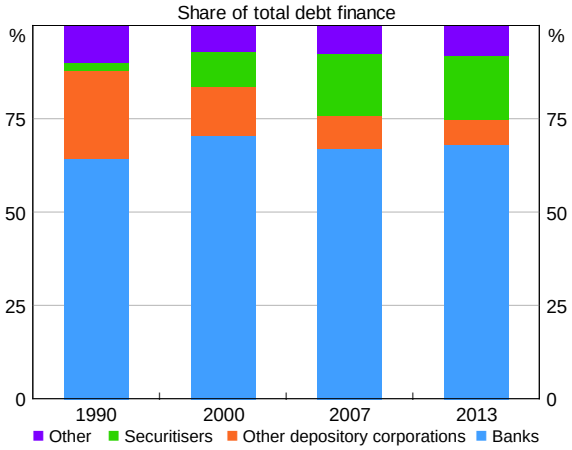
Households obtain almost three-quarters of their debt finance from banks, with this share broadly constant over the past decade (Graph 5.13). However, the share of debt finance originated by banks is somewhat higher, as banks and non-banks have contributed to the rise in securitised debt. Over the same period, the share of household borrowing from other depository corporations, namely credit unions and building societies (CUBS), has declined; part of this may have been due to some CUBS becoming banks.

Graph 5.12
Components of Household Income*



* Household sector includes unincorporated businesses
Sources: ABS; RBA

Graph 5.13
Sources of Household Debt Finance*



* Data for 2013 is for the year to September; includes unincorporated businesses
Sources: ABS; RBA

5.4 Non-Financial Corporate Sector

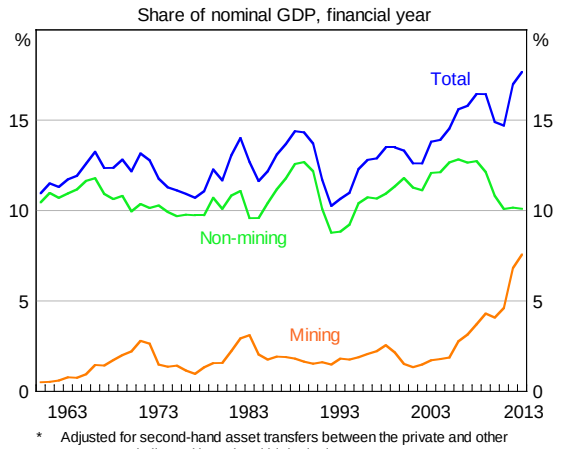
5.4.1 Key trends in the uses of funds

Businesses use funds to finance investment, pay interest on debt and make distributions to shareholders (via dividend payments and share buybacks). Net investment includes net physical investment and net acquisitions. Net physical investment generally comprises assets that maintain or increase productive capacity or are used in the ongoing operations of a company, such as machinery and equipment. In recent years, private business investment as a share of GDP has risen to its highest point in over five decades driven by the mining sector (Graph 5.14). Compared with net acquisitions, expenditure on the maintenance of these assets is often less discretionary and financed using internally generated funds.

Net acquisitions – such as the purchase of other companies or large assets – are often discretionary in nature and are more likely to be financed externally. Following the onset of the crisis, this activity was scaled back; some listed corporations sold assets, and others sought to conserve cash by postponing planned acquisitions. Acquisition-related deals in the syndicated loan market were also scaled back to negligible levels.

Within the listed sector, corporate net investment expenditure has typically accounted for roughly two-thirds of the use of funds, with dividend payments accounting for the bulk of the remainder (Graph 5.15). Overall, except for some highly geared corporations, net interest paid is a relatively small component of aggregate expenditure.

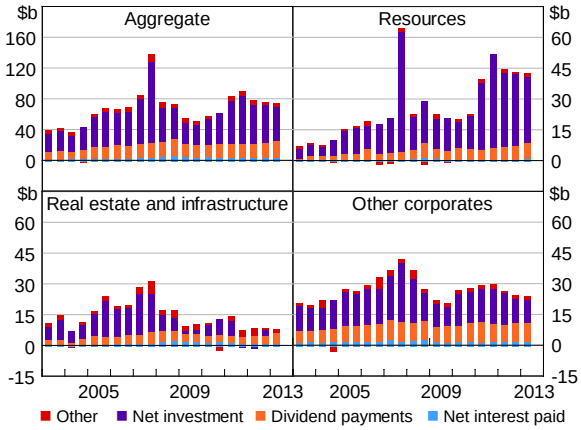
Graph 5.14
Private Business Investment*



* Adjusted for second-hand asset transfers between the private and other sectors, excluding cultivated and biological resources

Sources: ABS; RBA

Graph 5.15
Listed Corporations' Uses of Funds



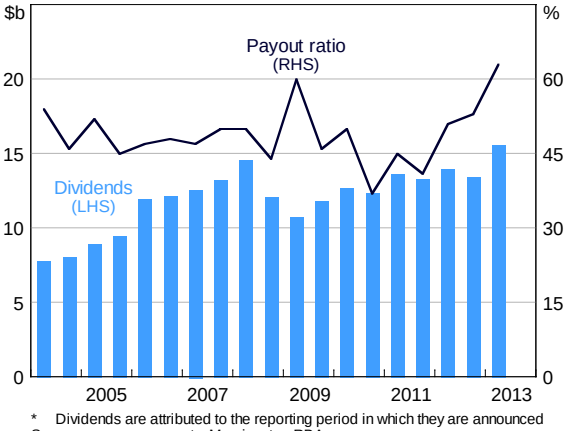
Sources: Morningstar; RBA

Dividend payments to shareholders were curtailed during the early stages of the crisis as earnings fell and corporations sought to conserve cash and repair their balance sheets. Dividends did not fall as much as earnings, however, resulting in an increase in corporations' payout ratios – the ratio of dividend payments to underlying earnings. More recently, as conditions have improved, listed corporations have increased their dividend payments, partly by increasing their payout ratios (Graph 5.16).

Interest payments generally account for a small share of corporate expenditure. However, the interest-servicing ratio of listed corporations increased rapidly during 2007 and 2008 as business

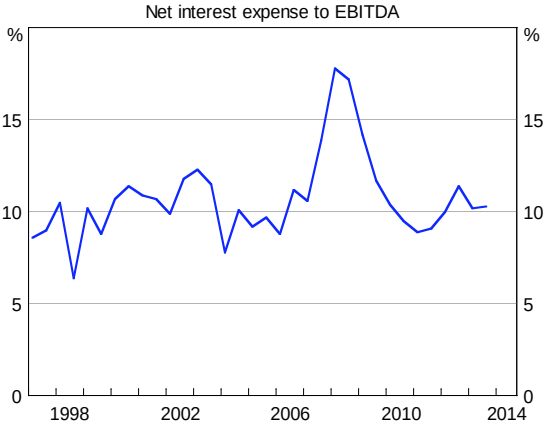
credit expanded and interest rates rose (Graph 5.17). The interest-servicing ratio has since declined, reflecting the decline in corporate gearing and lower borrowing rates.

Graph 5.16
Listed Corporations' Dividends*



* Dividends are attributed to the reporting period in which they are announced
Sources: company reports; Morningstar; RBA

Graph 5.17
Listed Corporations' Interest-servicing Ratio*
Net interest expense to EBITDA

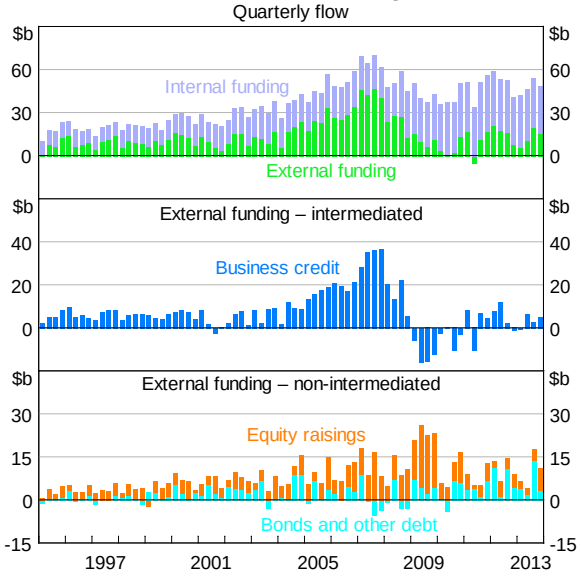


* Excludes foreign-domiciled companies
Sources: ABS; APRA; Morningstar; RBA

5.4.2 Key trends in the sources of funds

Businesses raise funds internally through their operations, as well as externally from banks, bond markets and equity markets (see 'Box 5A: Australia's Corporate Bond Market'; Graph 5.18). Prior to the financial crisis, businesses made greater use of external funding – both intermediated credit and market-based instruments such as bonds and equity. Companies continued to raise equity during the financial crisis (Black, Kirkwood and Shah Idil 2009). Since then, they have sourced most of their funds internally.

Graph 5.18
Business Funding
Quarterly flow



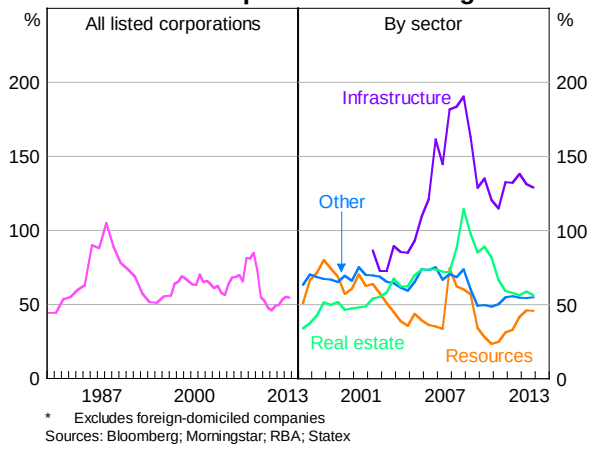
Sources: ABS; APRA; ASX; Austraclear; RBA

The composition of this flow of funding, and the structure of businesses' balance sheets, is shaped by the industry structure and the business models that are employed. For example, prior to 2008, infrastructure companies made greater use of external debt funding and were more highly geared

than other sectors (Graph 5.19). In particular, they had been borrowing against existing assets, a practice that was supported by rising asset values and favourable macroeconomic and financial conditions. In contrast, resource companies used relatively less external funding and had lower gearing, as their strong profit growth since the early 2000s provided most of the cash flows required to finance investment (Arsov *et al* 2013).

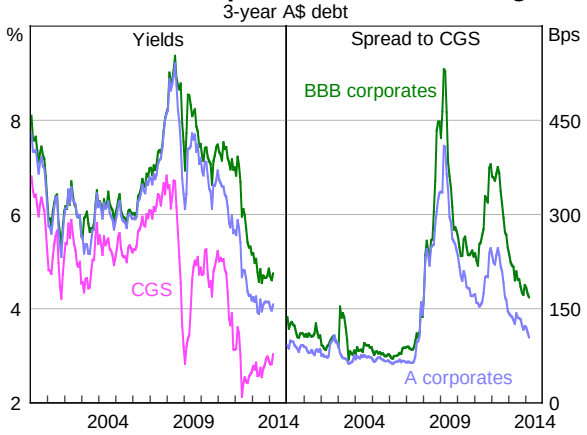
The funding mix changed substantially with the onset of the financial crisis. Almost all corporations used more internal funding as relative borrowing costs for debt rose, and debt funding became more difficult to access, particularly for lower-rated corporations (Graph 5.20).

Graph 5.19
Listed Corporations' Gearing*



* Excludes foreign-domiciled companies
Sources: Bloomberg; Morningstar; RBA; Statex

Graph 5.20
Australian Corporations' Bond Pricing
3-year A$ debt



Sources: RBA; UBS AG, Australia Branch

Corporations continued to have good access to equity markets during the global financial crisis and significantly reduced their gearing. This occurred in two distinct phases. First, corporations reduced their use of debt noticeably (Black *et al* 2009). The second phase involved more active balance sheet adjustment once market conditions improved slightly, with many corporations raising equity to pay down debt.

More recently, while bond issuance has been strong since 2012, business credit growth remains quite low compared with past experience. Despite a pick-up in initial public offerings (IPOs) in late 2013, equity raisings by listed companies have generally been subdued in recent years. This reflects reduced demand for external funding given the subdued level of capital expenditure outside of the resources sector, the resources sector funding a significant part of its investments from internally generated funds, and the greater attractiveness of debt financing due to the low level of global interest rates. Since late 2012, some real estate investment trusts have raised equity to fund expansions amid increased competition from foreign investors in Australian commercial property (RBA 2013a). Despite some increase in debt funding, business gearing remains low (Graph 5.19 above).

Box 5A Australia's Corporate Bond Market

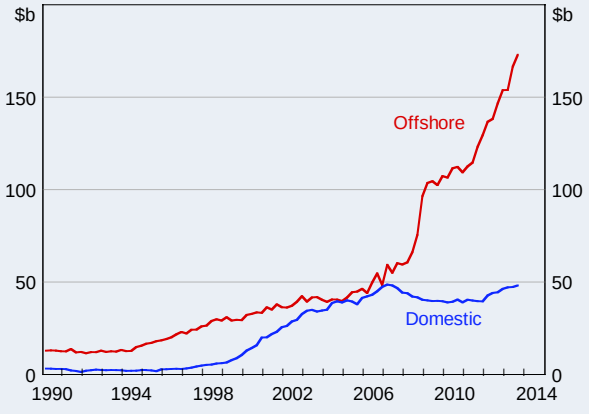
Australian non-financial corporations have traditionally used bank funding to meet the bulk of their borrowing needs. They have also made greater use of equity funding than companies in some other countries, at least partly because the Australian dividend imputation system largely eliminates the double taxation of dividends that applies in some other jurisdictions. As a consequence, Australian companies' use of bond funding has historically been relatively limited, especially compared with larger markets like the United States.

Since financial deregulation and capital account liberalisation in the 1980s, Australian companies have gained greater access to offshore debt markets. The US market in particular has provided Australian companies with access to investors that are comfortable investing in bonds with lower credit ratings and longer tenors than in other markets. In addition, the development of the foreign exchange derivatives market has allowed Australian companies to issue foreign currency denominated bonds offshore and swap them back into an Australian dollar exposure, thus managing the exchange rate risk. Issuing bonds offshore and hedging away the exchange-rate risk can therefore be a substitute for issuing Australian dollar bonds in the domestic market.

Moreover, for a number of the largest Australian non-financial corporations, a significant portion of their revenue is denominated in US dollars, because they have export businesses, including of major international commodities, or offshore operations. For such corporations, US dollar denominated issuance provides a natural hedge to their foreign currency revenue exposure.

Bringing these factors together, it is perhaps not surprising that most Australian corporate bonds have been issued offshore and that the Australian domestic corporate bond market remains relatively small (Graph 5A.1). However, because the market and regulatory infrastructure already exist, the domestic bond market serves important purposes regardless of its size. It provides an alternative local funding source that ensures that the market is contestable in normal times, and also that corporations can access funding even when intermediated sources are not functioning properly; in doing so, it therefore both promotes competition and mitigates systemic risk.

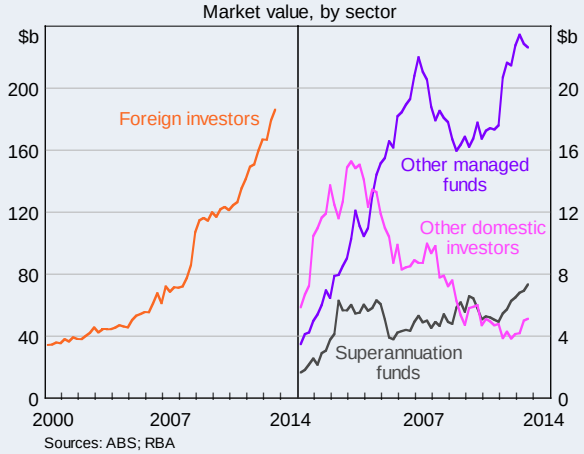
Graph 5A.1
Australian Corporate Bonds Outstanding
By market of issuance, market value



Sources: ABS; RBA

Reflecting the dominance of offshore issuance, foreign investors own the majority of Australian non-financial corporate bonds outstanding (Graph 5A.2). These holdings include a substantial investment in bonds issued domestically. At the same time, domestic funds managers hold a portion of the Australian corporate bonds issued offshore. Investment funds and insurance companies ('Other managed funds') are the largest domestic holders of corporate bonds while superannuation funds hold around $7 billion.

Graph 5A.2
Holdings of Australian Corporate Bonds
Market value, by sector



Sources: ABS; RBA

The domestic corporate bond market has matured in recent years. This has been evident in greater domestic issuance by lower-rated entities and some lengthening in the tenor of that issuance. Several recent developments in market infrastructure should further support activity, including: the publication of new measures of corporate bond yields and spreads by the Reserve Bank; efforts to simplify prospectus requirements for the issuance of retail vanilla bonds; the lengthening of the Commonwealth Government yield curve; and the listing of fixed income securities on the Australian Securities Exchange.

5.4.3 Small-Business Financing

Small businesses represent about 95 per cent of the over 2 million actively trading businesses in Australia. The economic contribution of small businesses is significant. They accounted for around 45 per cent of employment and over a third of production in the private non-financial corporations sector in mid 2012.

There is no single measure of what constitutes a small business. The Australian Bureau of Statistics defines as small businesses those with fewer than 20 employees. Reflecting the available data, the RBA typically categorises loans as provided to small business if the loan principal is under $2 million, or if the borrowing business is unincorporated.

Small businesses generally use a combination of debt and equity to fund their operations, although some are fully funded with equity. Small businesses mainly obtain their debt funding from banks and other financial institutions, as it is difficult and costly for them to raise funds directly from debt capital markets (RBA 2010). Credit cards, secured bank loans and overdrafts are identified as the most common sources of debt funding by small businesses (Table 5.1; CPA Australia 2012).

Table 5.1: Forms of Finance Used by Small Businesses[(a)]

2012

Finance product	Share of respondents
Credit card	73
Secured bank loan	41
Overdraft	40
Lease	36
Hire purchase	24
Family or friends	23
Chattel mortgage	20
Unsecured Bank loan	17
Vendor financing	8
Debtor financing	3
International trade financing	2
Inventory financing	1
Other	2
None	13

(a) The *CPA Australia Asia-Pacific Small Business Survey* is an annual survey conducted in six markets of businesses with fewer than 20 employees; for Australia, around 500 businesses are surveyed each year

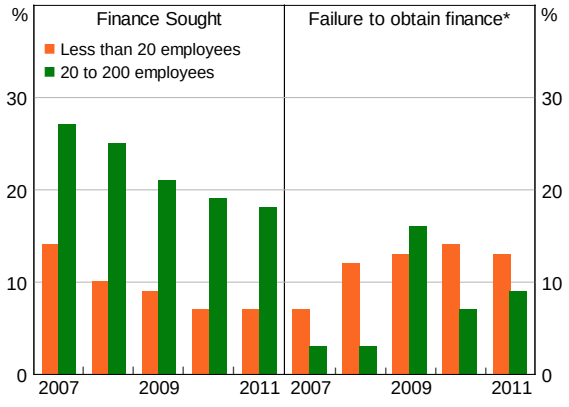
Source: CPA Australia (2012)

Unincorporated business owners are less likely to use debt and have lower gearing levels than incorporated businesses. Moreover, survey data suggest that smaller businesses in Australia are less likely than larger businesses to seek 'external finance' (debt and external equity funding) (Graph 5.21, left panel). Of the small businesses that choose not to seek external finance, only a small proportion attribute this to an expectation that it will be difficult to obtain. Even so, when small businesses seek external funding they are generally more likely to be rejected than larger businesses (Graph 5.21, right panel). This is partly because smaller businesses are typically viewed as having more volatile revenue streams, and there are often greater information asymmetries, compared with large businesses.

Graph 5.21

External Business Finance

Per cent of firms in size category, financial year ended June

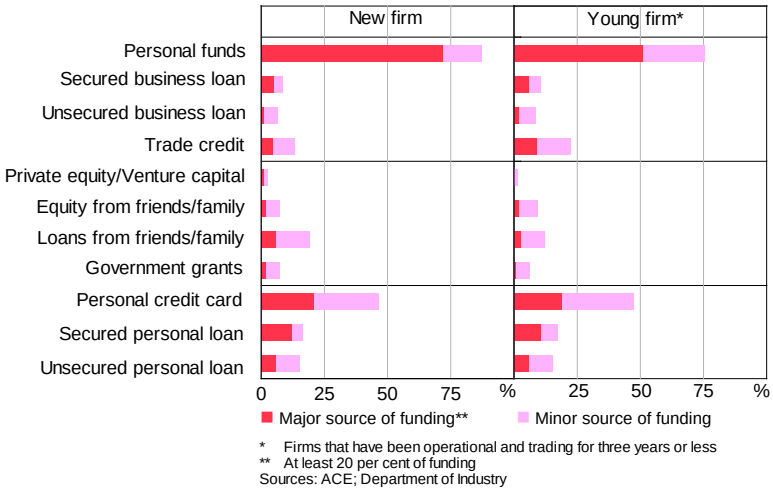


* Firms that sought finance and were active in all years of the survey

Source: ABS Business Longitudinal Survey

New and young businesses are less likely to use bank debt than to use personal funds. A survey conducted by the Australian Centre for Entrepreneurship Research of 800 'new' and 'young' small businesses found that the use of bank debt as a source of financing is low (Graph 5.22) (Davidsson, Steffens and Gordon 2011). When accessing bank funding, new and young firms use credit cards and personal loans rather than business loans.

Graph 5.22
Small Business Funding Sources
2007–2011



* Firms that have been operational and trading for three years or less
** At least 20 per cent of funding
Sources: ACE; Department of Industry

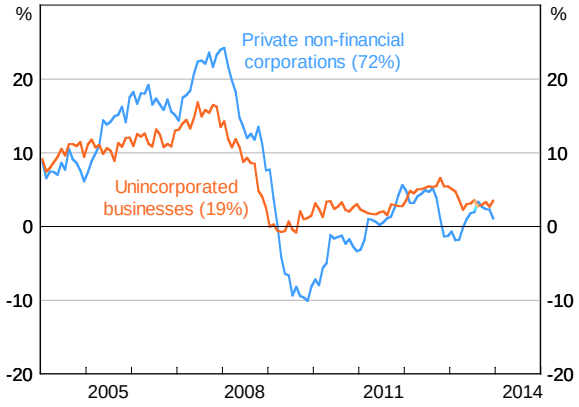
In contrast, personal savings are a major source of funds for over half of new and young firms. This could be because many new and young firms lack the required financial documentation to obtain bank debt. On the other hand, the low use of debt could also reflect reluctance among business owners to accumulate debt to finance a business when they are still uncertain about its viability.

5.4.3.1 Intermediated funding

Lending to unincorporated businesses by banks and other financial institutions increased over the five years preceding the financial crisis. While this lending slowed during the crisis, unlike lending to the corporate sector, it did not contract (Graph 5.23). The slower pace of growth has continued more recently. Similar trends are apparent in other proxies for small business lending, such as for business loans of less than $2 million.

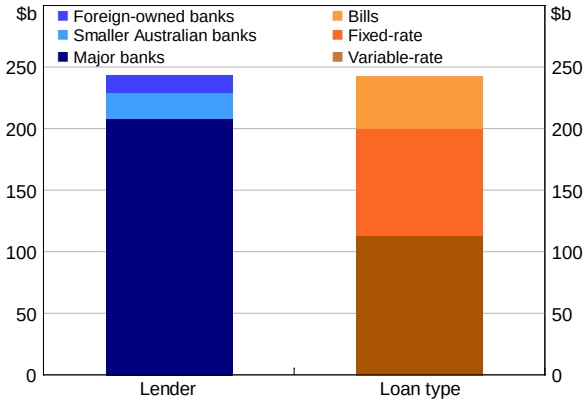
In September 2013, the four major banks accounted for about 85 per cent of the value of business loans smaller than $2 million, compared with about 70 per cent of larger loans (Graph 5.24). The smaller Australian banks account for most of the remaining lending to small businesses. While the share of small business lending provided by the major banks has been largely steady over the past three years, it increased substantially at the onset of the crisis. Foreign-owned banks provide only a small share of lending to small business, in part because they do not have a substantial branch network. About two-thirds of lending to small businesses is through commercial bills and other loans with variable interest rates. The remaining third of lending is at rates that are generally fixed for between one and five years.

Graph 5.23
Business Credit
Six-month annualised growth rate*



* Excludes securitised loans
Sources: APRA; RBA

Graph 5.24
Banks' Small Business Lending*
Outstanding as at September 2013



* Loans of less than $2 million
Sources: APRA; RBA

The slowdown in small business credit growth following the crisis reflected both demand and supply factors. RBA liaison reports that small businesses' demand for debt funding has slowed as they have scaled back their capital expenditure plans and focused on reducing existing debt. On the supply side, financial intermediaries tightened their lending standards in the initial stages of the crisis as their non-performing assets rose, though this was probably more relevant for larger businesses in particular segments, such as property development.

More recently, business surveys suggest that the availability of finance has improved and it is not the most significant factor concerning small businesses at present. For example, according to the Sensis Business Index, the share of small and mid-sized enterprises reporting that access to finance is relatively difficult has declined from about 40 per cent in late 2012 to 30 per cent in late 2013.[7] The available data and liaison by the Reserve Bank, including through its Small Business Finance Advisory Panel, suggest that small businesses in most industries have had tighter but still reasonable access to funds throughout and after the financial crisis, albeit at higher cost during the crisis.[8]

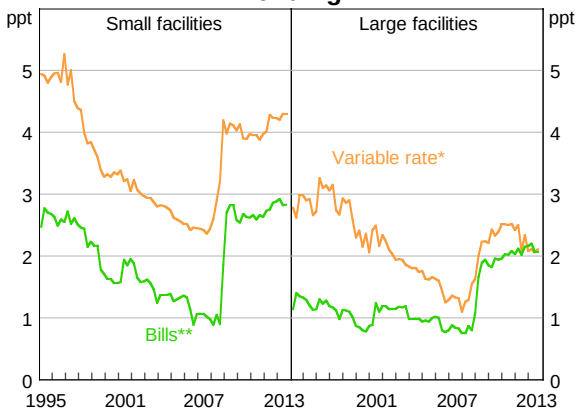
Smaller businesses generally pay more, on average, for debt than both households and larger businesses – in terms of both interest rates and product fees (Rudd and Stewart 2012; Graph 5.25). This is because smaller businesses are generally riskier borrowers than most other customer types. Compared with large businesses, they typically have more volatile revenue streams, are more likely to default, and have less documentation and shorter financial histories (Matić, Gorajek and Stewart 2012). Lenders manage these additional risks and costs by charging higher interest rates and/or fees, and by rejecting or modifying a greater proportion of small business credit applications.

---

7 The Sensis Business Index is based on a sample of approximately 1 800 small and medium sized enterprises from metropolitan and regional areas of Australia.

8 The Small Business Finance Advisory Panel is a group of small business operators from around Australia that the Reserve Bank convenes to discuss finance conditions in the small business sector (see <http://www.rba.gov.au/about-rba/panels/>).

Graph 5.25
Spreads on Outstanding Business Lending



* Spread to the end-quarter cash rate
** Spread to the 3-month trailing average of the 90-day bank bill rate
Sources: APRA; RBA

While small businesses face higher borrowing costs than large business, lending rates for small business are at historical lows. Accordingly, borrowing costs do not appear to have been a concern for small businesses recently. According to the PwC Private Business Barometer, in early 2013, only 3 per cent of businesses expected the cost of funding to be a constraint in the year ahead, compared with about 30 per cent of businesses surveyed in late 2009.[9]

The role of residential property

Residential property plays an important role in facilitating access to small business finance. By providing residential property as security, a small business owner is more likely to obtain funds from lenders, and at a lower rate. A borrower who is willing to provide collateral may signal to the bank that they are less likely to default. Moreover, in the case of default, the lender will have recourse to an asset which mitigates the potential losses.

It is common for small business owners to obtain funds borrowed through an existing personal residential mortgage, for example by refinancing the loan with a larger mortgage or by redrawing on their loan. Rising house prices increase the amount of equity that home-owners can withdraw from their properties. The MYOB Business Monitor reports that in late 2013 over 15 per cent of small businesses surveyed planned to obtain funding through redrawing on a mortgage or a home equity line of credit (MYOB 2013). This may partly reflect the fact that lending rates for traditional housing loans are typically lower than small business lending rates, even for those secured against property.

Alternative sources of debt

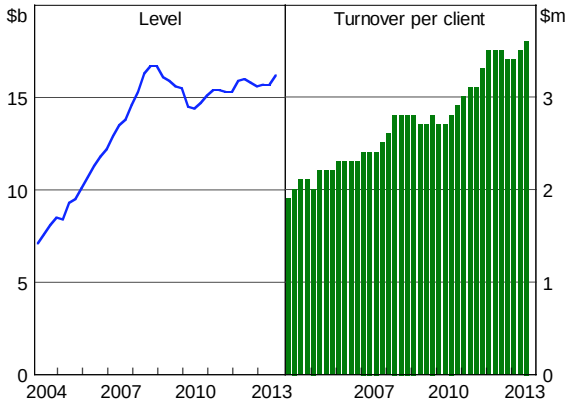
Smaller businesses make use of a range of debt sources beyond mortgages (see Table 5.1). One example is equipment and vehicle leasing. Leases differ from other forms of lending in that the lender receives legal ownership of the collateral asset. A lender may be able to provide a borrower with relatively cheap funding through a lease if the lender is better able to use the tax deductions allowed for depreciation of the collateral asset, and if bankruptcy costs are high.

Another source of funding for small businesses is debtor finance, which is short-term funding in exchange for the sale of accounts receivables (Graph 5.26). This can be obtained by 'discounting', whereby the business maintains responsibility for collecting receivables, or through 'factoring',

[9] The PwC Private Business Barometer surveys around 300 private businesses with annual turnover between $10 million and $100 million.

whereby the business passes on responsibility for collecting the accounts receivables (but may or may not assume the risk of bad debts). In Australia, discounting accounted for over 90 per cent of debtor financing turnover in late 2013.

Graph 5.26
Debtor Finance Turnover
Seasonally adjusted



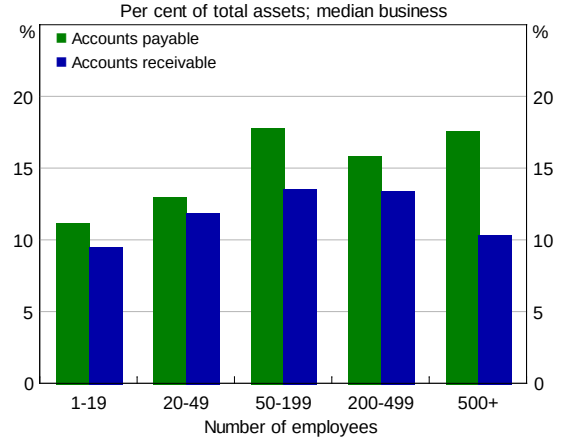
Sources: Institute for Factors and Discounters; RBA

The debtor finance market grew significantly from 2004 to 2008 and has remained broadly flat since then. Industry liaison suggests that it is an attractive form of financing for small businesses that have a large proportion of their accounts receivable outstanding to reputable companies. For these businesses, debtor finance can free up large quantities of funding, typically within 48 hours.

5.4.3.2 Non-bank sources of funding

Businesses can obtain trade credit from their suppliers when they receive inventory, equipment and services without making immediate payment (Fitzpatrick and Lien 2013). Smaller businesses make slightly less use of trade credit than larger businesses, probably reflecting smaller businesses' weaker bargaining position with suppliers (Graph 5.27). Furthermore, many small businesses, especially younger or unincorporated firms, may lack a sufficient financial history for trade creditors or credit agencies to assess their creditworthiness. Studies suggest that trade credit became a particularly important source of funding for smaller businesses during the recent financial crisis, both in Australia (Dun & Bradstreet 2012) and overseas (Carbó-Valverde, Rodríguez-Fernández and Udell 2012).

Graph 5.27
Trade Credit – Unlisted Businesses*
Per cent of total assets; median business



* Average of 2011 and 2012 financial year balances
Sources: Dun & Bradstreet; RBA

Trade credit is often cost-effective if the small business can repay its debt before the agreed repayment date; otherwise, it can be considerably more expensive than bank credit. Dun & Bradstreet (2012) show that, on average, both small and large businesses tend to miss their repayment date, which suggests that some businesses are borrowing from other businesses at significant cost. Liaison suggests that smaller business creditors often have their payment terms unilaterally extended by larger businesses. In this case, smaller businesses are effectively providing funding to larger businesses.

Equity funding

Equity financing, like debt, tends to be more costly for smaller businesses. This is because smaller business equity investors (including the owners) require a higher average return on equity to compensate for the higher uncertainty of the return. Despite this higher cost of equity, small businesses use slightly more equity than larger businesses.

Small businesses are likely to use a higher share of equity funding than larger businesses for a number of reasons (Matić *et al* 2012). First, the higher volatility of small business' cash flows and higher bankruptcy 'wind up' costs may make equity more accessible than debt. Second, debt and equity finance provided by professional investors involve costly risk assessments, with associated sizeable fixed costs. Most small businesses do not have a great need for capital to expand, and borrow at a scale that does not always overcome these fixed costs. These small businesses use internal equity finance and external equity sourced from friends, family and business owners, which do not involve large transaction costs and are relatively inexpensive. Third, usually, little information is publicly available for small businesses so the owners have more information about their company's prospects, risks and value than outside investors. The cost of compensating external financiers for their incomplete information may lead small business owners to prefer internal equity over external finance.

There are a number of other forms of external equity funding for smaller businesses. For example, equity might be provided by 'business angels' – individuals who invest their own money, time and expertise into promising and risky start-ups – or by venture capital firms, which generally provide somewhat larger intermediated equity funding on behalf of other investors. Surveys suggest that these forms of external equity funding only provide a small share of funding for small businesses.

Government financial assistance

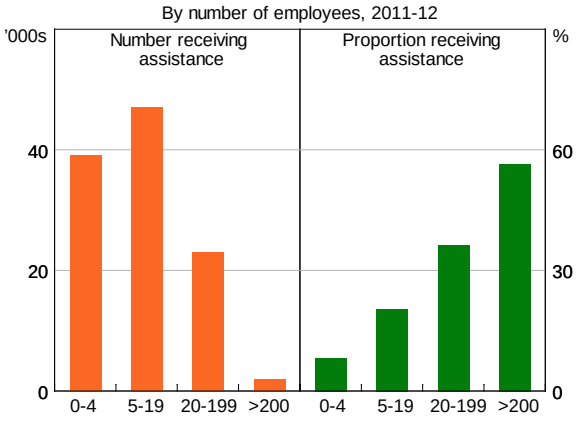
A range of government assistance is also available to Australian businesses. According to the Department of Industry (2013), there are over 500 financial and non-financial assistance programs offered at all levels of government. The Federal Government is the largest single provider of these programs. The Productivity Commission (2013) has estimated that the Federal Government spent over $2 billion on assistance for small business in 2011–12, representing around one-fifth of its total outlays on industry assistance.

Financial assistance can be offered in a number of forms, including grants, subsidies, taxation concessions and rebates. About three-quarters of businesses that access financial assistance are small businesses, although they only represent a low share of existing small businesses (Graph 5.28).[10] Many smaller enterprises are less likely to satisfy the characteristics targeted by the programs, such as an orientation to exports or innovation.

[10] There are about 700 000 businesses with less than 20 employees while there are about 70 000 with 20 or more employees.

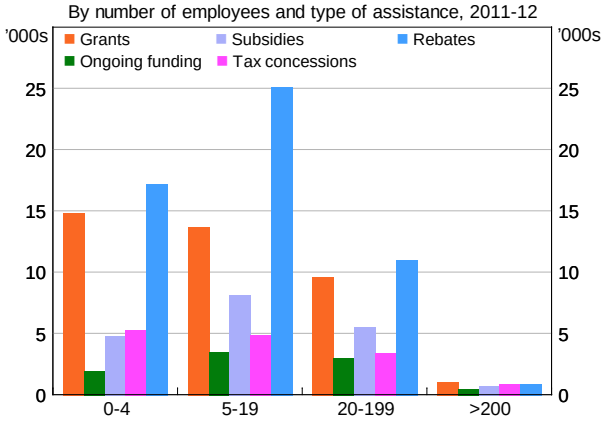
In terms of the type of financial assistance received, small businesses are more likely to access rebates and grants rather than ongoing funding, subsidies or tax concessions (Graph 5.29). Notably, most financial assistance is specific in nature, for certain business purposes, demographics or industries. (See 'Box 5B: Funding the Rural Sector' for some details on rural financial assistance). Few government programs provide general assistance to small businesses.

Graph 5.28
Financial Assistance to Business*



* Comprises grants, ongoing funding, subsidies, tax concessions and rebates
Source: ABS Business Characteristics Survey

Graph 5.29
Financial Assistance to Business*



* Businesses could identify more than one type of assistance
Sources: ABS; RBA

Australian governments also offer a range of programs that provide non-financial support for small businesses more generally. These include information services that direct firms towards sources of business advice or training, the provision of business advice through public agencies, and subsidies for the use of private sector advisers (Department of Industry 2013).

Innovative funding sources

Over the past few years, the widespread availability of the internet has made possible the emergence of new business funding sources such as 'crowd-funding' and 'peer-to-peer lending'. While these funding sources have different operating models, they are all forms of non-intermediated lending. Small business owners and entrepreneurs are directly matched with individuals willing to provide funds through websites.

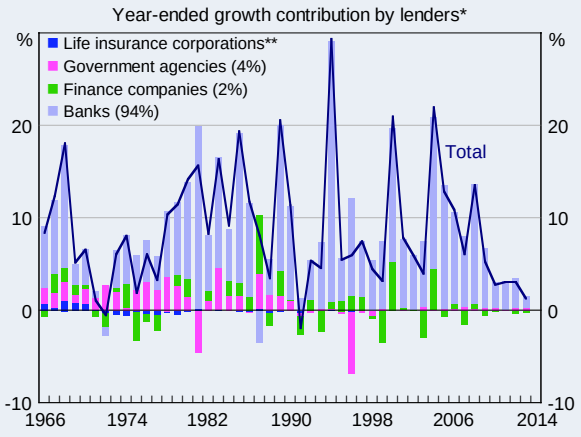
For example, with crowd-funding, entrepreneurs use the internet to seek funds directly from the general public (the 'crowd') rather than through traditional providers of finance like banks or venture capital investors (Schwienbacher and Larralde 2012). While some funds are provided as investments, in many cases they are provided either as donations or as prepayment for the final product to be developed. Business surveys suggest that currently these technological innovations provide a very small share of funding for new or small businesses.

Box 5B Funding the Rural Sector

The rural sector accounts for a relatively small but important component of Australian debt. Rural debt outstanding has more than doubled over the past decade to be $64.5 billion in June 2013. The increase was partly driven by increased demand for funding for farm improvements and capital investments, including the purchase of land, vehicles and equipment. Declining interest rates also contributed to the increased appetite for debt, as did the reduction in farm incomes resulting from the widespread drought in the 2000s (ABARES 2013).

Similar to other business credit, annual growth in rural lending has declined considerably in recent years, from an average of around 11 per cent over the decade to June 2009 to an average of around 2½ per cent over the four years to June 2013 (Graph 5B.1). Rural demand for debt declined in this period, partly reflecting subdued growth in rural incomes. On the supply side, the removal of the pre-crisis easing in lending standards since the crisis may also have affected growth in rural debt.

Graph 5B.1
Rural Debt Growth



* The share of rural debt provided by each lender is indicated in parentheses.
** Series discontinued in 1997
Sources: APRA; RBA Rural Debt Survey

Sources of debt funding

Increases in bank lending – particularly for loans over $500 000 – accounted for almost all of the growth in rural debt in the past decade. Lending by finance companies has been fairly weak over this period, and has contracted steadily since mid 2008. Finance companies currently account for only 2 per cent of rural debt, down from around 9 per cent in June 2007. The recent reduction in non-bank lending may have resulted from the difficulty faced by financial institutions in accessing wholesale credit during the financial crisis, with some finance companies exiting the market. This has reportedly made it difficult for some farmers to access credit, particularly in Tasmania (House of Representatives 2009; NFF 2010).

Despite the risks posed by rural income volatility and high debt levels, banks have offered various support measures to farmers, such as offering to restructure existing loans during the drought of the 2000s (Productivity Commission 2009).

The volatility of income and unpredictable returns mean that non-intermediated funding is generally difficult for agricultural businesses to obtain, particularly small farms. However, following declines over the 2004–11 period, foreign direct investment in the Australian rural sector almost doubled over 2012, to $1.2 billion (ABS 2009; ABS 2013). Rural liaison contacts across all states have been reporting an increase in foreign investment, particularly from China. Lending by state and territory government

agencies, which has been increasing at an average rate of 10 per cent annually over the decade to June 2013, currently accounts for 3½ per cent of rural debt outstanding.

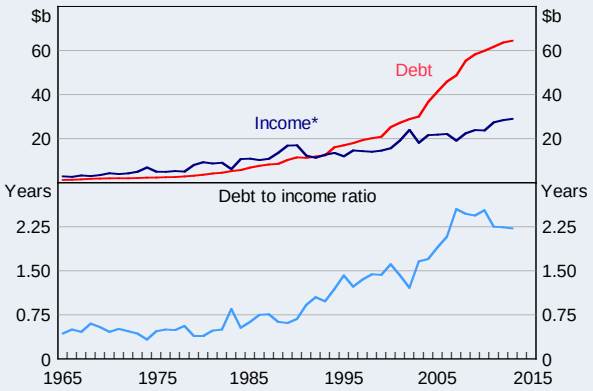
The Commonwealth Government offers a number of other measures to support rural sector funding, such as the Exceptional Circumstances program and the National Drought Program Reform package. The total cost to the Commonwealth Government of providing farm assistance programs between July 2001 and June 2008 was around $5.9 billion (Productivity Commission 2009). The new Farm Finance program will provide up to $420 million of concessional loans through to 2015 to assist farmers with productivity improvements or debt restructuring.

Determinants of rural lending

Lenders face a number of risks in financing the rural sector. Not only is the agricultural industry characterised by significant income volatility, but many rural operations are seasonal; as such, rural loan arrangements are often required to have relatively long maturities and less frequent repayment instalments to match the borrowers' cash flows.

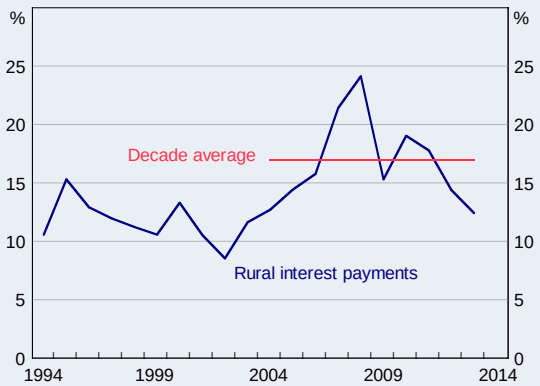
The level of a firm's debt relative to income may limit their access to credit. The rapid increase in debt, including in the rural sector, over the decade preceding the crisis led to a corresponding increase in the sector's debt-to-income ratio (Graph 5B.2). Although the ratio has fallen slightly over the past few years, it still remains elevated. RBA's liaison with agricultural businesses suggests that some farmers are finding it difficult to access additional funding due to their high debt levels. Nonetheless, the rural sector's interest payments as a share of income have declined considerably since 2008, reflecting slower credit growth and lower borrowing rates (Graph 5B.3).

Graph 5B.2
Rural Debt and Income



* Rural income is after deduction of taxes and subsidies on production and before deduction of depreciation, property income and COE
Sources: ABS; APRA; RBA Rural Debt Survey

Graph 5B.3
Rural Interest Payments*
Share of rural income



* Estimated using rural debt outstanding and the average business lending rate
Sources: ABS; RBA

The volatility of farm income means that lenders place particular emphasis on collateral requirements. ABARES survey data suggest that institutional lenders generally require farms to have debt levels below 30 per cent of assets. Businesses whose debt is permitted to exceed this level tend to be large operations with high cash incomes, or access to off-farm income (ABARES 2013). ABARES estimates that 91 per cent of broad-acre farms and 72 per cent of dairy farms had equity exceeding 70 per cent of assets on 30 June 2012.

Farm land is commonly used as the main source of loan collateral. ABARES reports that land values for broad-acre and dairy farms have declined in some areas since 2009, including the northern pastoral regions. The slowdown in rural land price appreciation is often cited as a factor constraining the rural sector's access to finance, as would be the case for any sector facing a decline in the value of the collateral that it can offer.

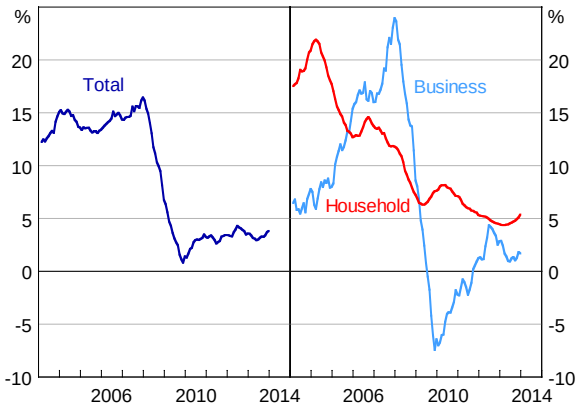
5.5 The Financial Sector

The financial sector intermediates between savers and borrowers. This section focuses primarily on the banking sector. The superannuation sector is discussed in Chapter 7.

5.5.1 Key trends in the uses of funds

Over the quarter century to the onset of the financial crisis, credit rose rapidly (Graph 5.30). This resulted in credit as a share of GDP rising from around 80 per cent in the mid 1990s to around 160 per cent by 2007. As discussed in Chapter 2, this partly reflected the increased capacity of households to borrow as nominal interest rates fell in line with the decline in inflation from the early 1990s. Over the past five years, credit growth has slowed to an average annual rate of about 3 per cent. This has been particularly marked in the business sector, where credit contracted during the few years immediately after the crisis.

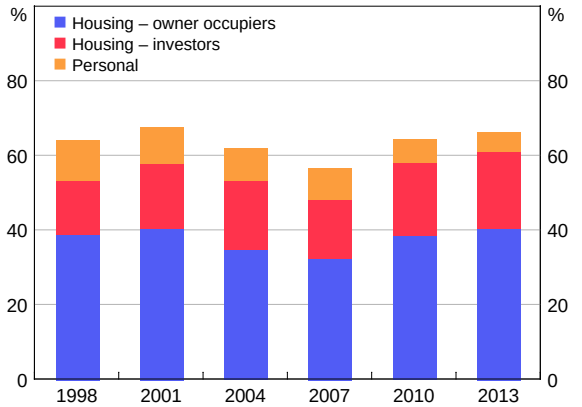
Graph 5.30
Credit Growth
Year-ended



Sources: APRA; RBA

Lending to households accounts for about two-thirds of the banks' loan books and this is largely for the purchase of homes (Graph 5.31). While most home loans are for owner-occupiers, the share of housing loans to investors increased until the early 2000s (RBA 2002). Since then, around one-third of banks' housing loans have been to investors.

Graph 5.31
Banks' Lending to Households
End December, share of total lending*



* Excludes lending to goverment and financial intermediaries
Sources: APRA, RBA

Housing credit grew at a fast pace in the two decades prior to 2005, averaging over 15 per cent per year. In the past three years, the rate of growth has been significantly slower, averaging around

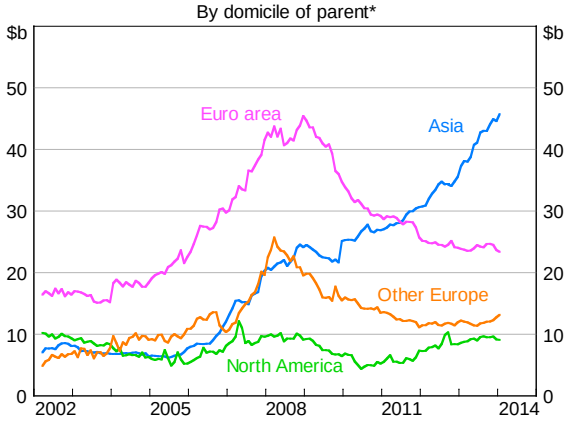
5½ per cent per year. The rapid pace of growth during that earlier period largely reflected the increased capacity of households to borrow, and was also facilitated by the expansion in the activities of non-bank lenders, particularly mortgage originators (Ryan and Thompson 2007).

Personal credit comprises a small share of lending to households. It is roughly evenly split between fixed-term personal loans and revolving credit, with the latter comprised largely of credit card lending. Credit card lending increased for a while after the crisis but there has been no growth over the past two years. The value of fixed-term personal loans also declined after the crisis and, despite a recovery over the past two years, is still below its peak in late 2007.

At the beginning of the crisis, business credit growth increased temporarily because some businesses that had difficulty accessing non-intermediated debt markets turned to the domestic banks for their financing needs. Business credit subsequently fell for a few years, due to softer demand and a general tightening in supply, particularly to the commercial property sector. The latter partly reflects banks reassessing the risks of lending to this sector, in light of commercial property exposures accounting for a disproportionate share of impaired bank loans. It is also because some European banks – which had large exposures to this sector – have scaled back their operations in Australia to focus on repairing balance sheets in their home markets.

The structure of the market for business credit has changed since the financial crisis. Some foreign bank and non-bank lenders have exited, particularly European-owned entities, as their parent entities have sought to scale back their global operations (RBA 2012b). The share of business credit provided by foreign-owned entities has, however, increased a little over the past year, as some Asian banks continue to expand their local presence (Graph 5.32).

Graph 5.32
Foreign Bank Business Credit
By domicile of parent*



* Non-seasonally adjusted, non-break adjusted, includes securitisation
Sources: APRA; RBA

Australian banks use funds for purposes other than lending, for example holding cash and other liquid assets to meet withdrawals from customers and other day-to-day operations. Since the crisis, banks' holdings of securities have increased significantly, although from a low base. This partly reflects market and regulatory pressure on the banks to hold more liquid assets (Chapter 2).

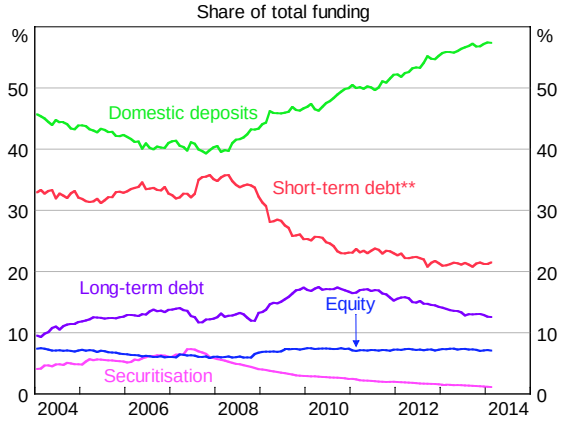
The banks' holdings of securities on their investment book have increased noticeably since the crisis while their holdings of securities for trading purposes have declined. This is consistent with Australian banks' greater focus on traditional lending activities than on market operations, compared with many banks overseas, and is also reflected in their small on-balance sheet holdings of derivatives for trading purposes.

5.5.2 Key trends in the sources of funds for the banking sector

5.5.2.1 Funding composition

From the late 1970s, the banking sector's share of deposit funding declined, reaching a low of 40 per cent in 2007. Offsetting this, the share of funding sourced from wholesale debt markets increased, and from the early 2000s securitisation grew as a funding source. Since 2007, the banking sector has shifted away from the use of short-term wholesale debt and securitisation, and back towards deposits (Graph 5.33). This result is consistent with a reassessment of funding risks by banks globally, as well as market and regulatory pressures for banks to secure more stable funding sources.

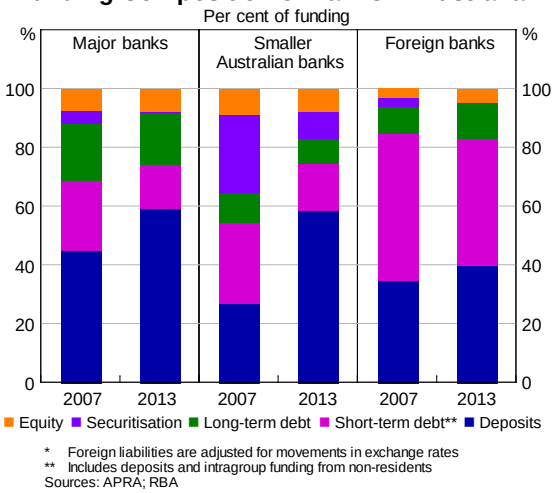
Graph 5.33
Funding Composition of Banks in Australia*



* Adjusted for movements in foreign exchange rates; tenor of debt is estimated on a residual maturity basis.
** Includes deposits and intragroup funding from non-residents
Sources: APRA; RBA; Standard & Poor's

The funding mix differs across banks, with the major banks having larger shares of deposit funding and long-term wholesale debt, but making less use of securitisation, compared with the banking system as a whole. The smaller Australian-owned banks generally make greater use of securitisation and less use of long-term debt than the major banks. Foreign-owned banks have less deposits, largely due to their chosen business models and restrictions on retail deposit funding for foreign branches, and correspondingly source more funding from domestic and offshore capital markets (Graph 5.34).

Graph 5.34
Funding Composition of Banks in Australia*



* Foreign liabilities are adjusted for movements in exchange rates
** Includes deposits and intragroup funding from non-residents
Sources: APRA; RBA

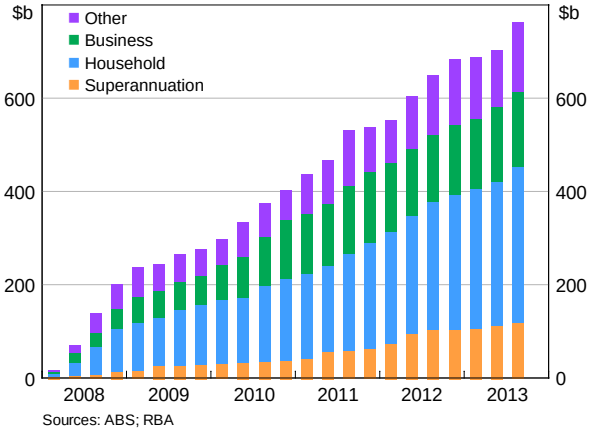
5.5.2.2 Deposit funding

The share of deposit funding has steadily increased, rising from about 40 per cent of total funding in late 2007 to about 57 per cent in late 2013. While this trend has occurred across all types of banks in Australia, it has been most pronounced for the smaller Australian banks; their share of funding sourced from deposit liabilities has doubled since 2007. Prior to the financial crisis, these institutions used securitisation more heavily as a form of funding. However, global investor appetite for residential mortgage-backed securities (RMBS) diminished sharply during the crisis, and Australian RMBS were not immune from this.

Much of the post-crisis growth in deposit liabilities was concentrated in term deposits. The share of total funding sourced from term deposits increased by around 12 percentage points between mid 2007 and early 2012. Since then, however, most of the growth in deposits has been in at-call savings deposits, reflecting developments in the pricing of these products.

Much of the increase in the share of deposit funding since the onset of the financial crisis has been provided by households, either directly or through superannuation funds (Graph 5.35). This reallocation is in part because of the household sector's shift to more prudent financial behaviour, as well as a response to developments in relative pricing of deposits compared with other assets. Self-managed super funds (SMSFs) also typically invest a higher share of their assets in bank deposits and assets held by SMSFs have increased rapidly in recent years (Chapter 7).

Graph 5.35
Increase in Banks' Deposits
Net change since December 2007

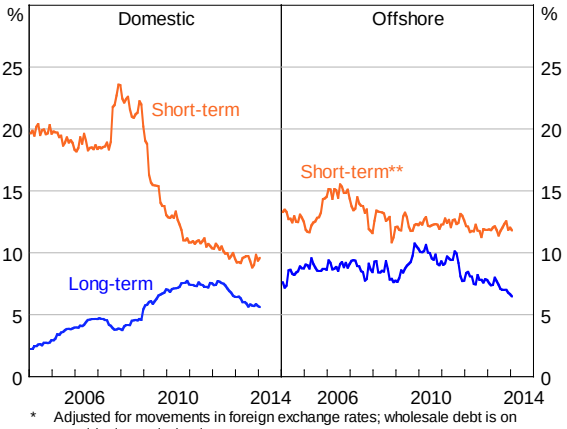


Sources: ABS; RBA

5.5.2.3 Wholesale debt

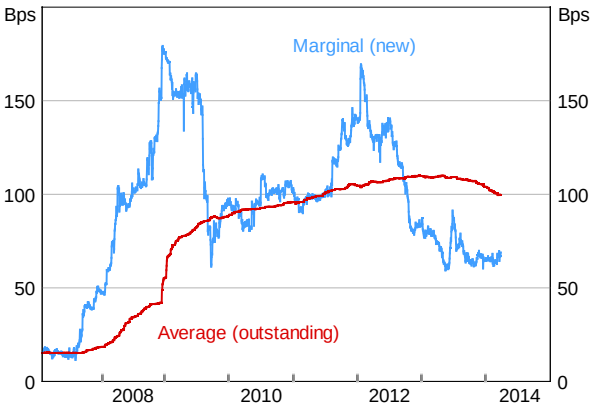
Since 2007, Australian banks have reduced their use of wholesale funding sourced offshore, and more generally reduced their use of funding from wholesale debt markets. This has been particularly true of short-term wholesale debt; its share of overall funding has halved (Graph 5.36). Nevertheless, the Australian banks have maintained a steady debt issuance program over recent years and are able to readily access funds at competitive pricing. The spread on new issuance is now at around its lowest level since 2009 (Graph 5.37).

Graph 5.36
Wholesale Funding*
Share of total funding



* Adjusted for movements in foreign exchange rates; wholesale debt is on a residual maturity basis
** Includes deposits and intragroup funding from non-residents
Sources: APRA; RBA

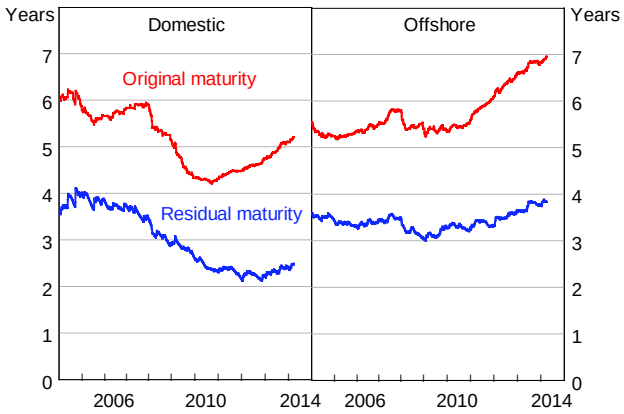
Graph 5.37
Major Banks' Domestic Bond Spreads
Unsecured bonds, spread to swap rates



Sources: Bloomberg; RBA; UBS AG, Australia Branch

The average maturity of Australian banks' long-term wholesale debt is over five years at issuance. After declining during the financial crisis, the weighted average maturity of domestic debt at issuance has risen again to be over five years, while for offshore issuance it has increased to just under seven years driven by the issuance of relatively long-term covered bonds (Graph 5.38; Stewart, Robertson and Heath 2013).

Graph 5.38
Maturity of Banks' Long-term Debt
Outstanding wholesale debt, weighted average



Sources: Bloomberg; RBA; UBS AG, Australia Branch

During the crisis, banks and other financial institutions around the world found it increasingly difficult to access wholesale debt markets to raise funds. Following the institution of government debt guarantees in a number of countries, in October 2008 the Australian Government introduced the Guarantee Scheme for Large Deposits and Wholesale Funding (Chapter 3; Schwartz 2010). The Scheme was designed to ensure that Australian authorised deposit-taking institutions (ADIs) were not placed at a disadvantage compared with their international competitors, and permitted Australian ADIs to issue securities with maturities of up to five years that were fully guaranteed by the Australian Government.[11] The bulk of these securities have now matured, or been bought back by the issuer, with the remaining stock rolling off by early 2015 (RBA 2013b).

[11] The Scheme also permitted ADIs to offer guaranteed deposits of more than $1 million.

5.5.2.4 Covered bonds

ADIs have been allowed to issue covered bonds following the passage of enabling legislation in October 2011.[12] Investors in covered bonds have a preferential claim on a pool of assets (called the cover pool) in the event that the issuing institution fails to make the scheduled payments on the covered bond (RBA 2012a). If the cover pool is insufficient to meet the issuer's obligations to investors, they have an unsecured claim on the issuer for any residual amount.

Covered bonds typically have a higher credit rating than that of the issuer because: the cover pools are usually comprised of high-quality assets such as prime mortgages; covered bondholders rank above unsecured creditors; and extra collateral is held in the cover pool. Australian banks' covered bonds have consistently been rated AAA, which has allowed the banks to attract new funding from investors with AAA mandates. There is some evidence that covered bonds have allowed Australian banks to access a geographically more diverse investor base; for example, central banks in some Asian countries have purchased some of these bonds. Demand has also come from foreign banks in jurisdictions where covered bonds are eligible to count as liquid assets under the Basel III liquidity rules.

The existence of depositor preference in Australia has meant that Australian ADIs have historically been prevented from issuing covered bonds. The reason was that covered bondholders would have preferential access to the cover pool, thereby subordinating the claims of other unsecured creditors, including depositors, over those assets (Turner 2011). There is a cap on covered bond issuance by ADIs to limit the subordination of depositors to covered bond investors. An ADI must limit the value of its cover pools to a maximum of 8 per cent of its assets in Australia. At present, each of the major banks have utilised roughly one-third of this limit. While there is some variation across banks, Australian ADIs have set their cover pools at close to 120 per cent of the value of covered bonds; this implies that covered bonds could provide up to around 6¾ per cent of total on-balance sheet funding for Australian assets.

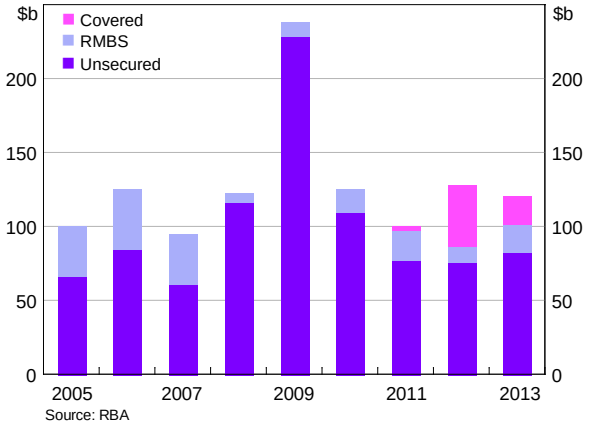
About $70 billion has been raised through covered bonds by Australian banks, predominantly in offshore markets (Graph 5.39). This represents about one-quarter of the banks' wholesale debt issuance since October 2011. Covered bonds have also enabled the banks to increase the tenor of their issuance, which has helped to smooth the maturity profile of their outstanding debt. The banks have typically issued covered bonds at tenors of 5 to 10 years, compared with a norm of 3 to 5 years for their unsecured issuance.

5.5.2.5 Securitisation

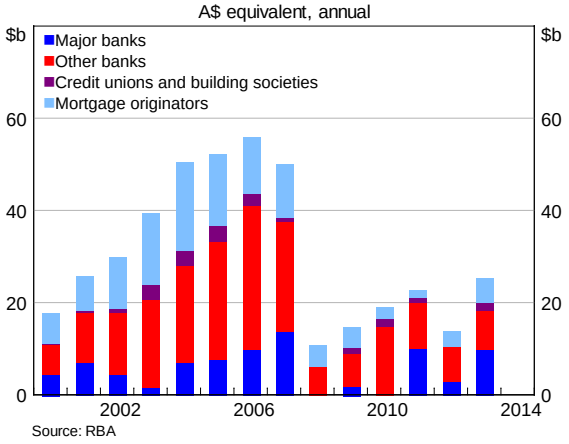
Over the decade leading up to the financial crisis, securitisation was a rapidly growing segment of the financial sector globally and in Australia (Graph 5.40). Securitisation was an important means of funding for smaller regional banks and some building societies and credit unions (Debelle 2009). Prior to mid 2007, regional banks securitised around one-third of their housing loans while the major banks securitised less than 10 per cent. As a result, despite their smaller size, the regional banks accounted for roughly 40 per cent of RMBS issuance whereas the major banks accounted for 20 per cent.

[12] *Banking Amendment (Covered Bonds) Act 2011*.

Graph 5.39
Australian Banks' Wholesale Issuance
A$ equivalent, annual



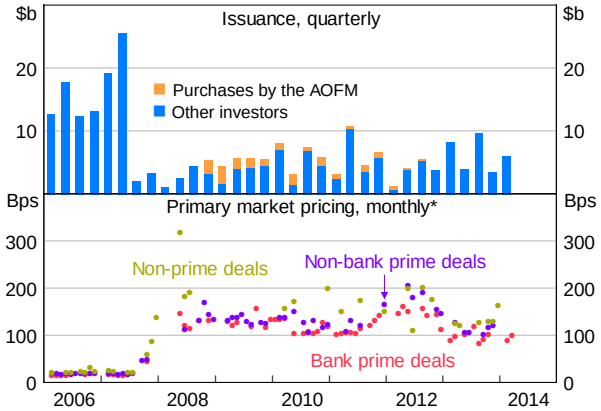
Graph 5.40
Issuers of RMBS
A$ equivalent, annual



The reappraisal of risk brought on by the financial crisis led to demand from international investors for RMBS retreating faster than domestic demand (Debelle 2010). Many offshore structured investment vehicles, which comprised a sizeable share of the international investor base, were forced to shut down and liquidate their portfolios. This included selling their Australian RMBS into the secondary market, even though the securities and the collateral underlying the loans had been performing well and have continued to do so.

In 2008 the government announced a support program for the industry by participating in new issues through the Australian Office of Financial Management (AOFM). Conditions in the securitisation market have improved significantly since late 2012, with issuance volume increasing and pricing at issuance at some of the lowest spreads since late 2007 (Graph 5.41). The decline in the cost of issuance has extended to non-bank lenders and smaller banks (Aylmer 2013). As a result of the recovery in demand from private investors, the AOFM's program was halted in April 2013.

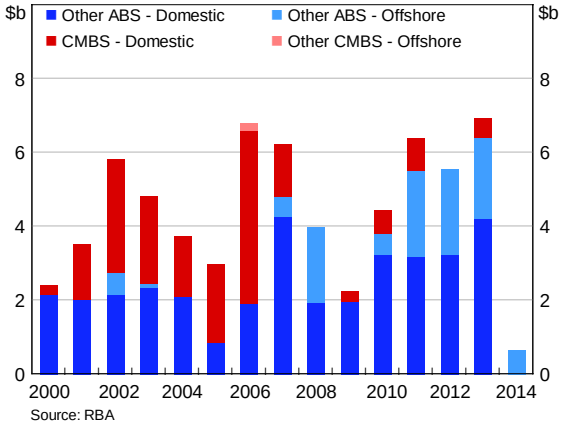
Graph 5.41
Australian RMBS



RMBS currently account for a negligible share of the major banks' funding, but are more important for the smaller financial institutions.[13] Despite the recent narrowing in spreads, the cost of new securitisation funding is significantly higher than prior to the financial crisis. Notably, spreads on RMBS are fairly similar for the different types of banks (and also for non-banks) because the securities are bankruptcy remote from the issuer. This means that securitisation is relatively more cost-effective for the smaller banks, given that spreads on their on-balance sheet wholesale debt (particularly long-term debt) are significantly higher than for the major banks.

The market for Australian asset-backed securities other than RMBS has historically been small in comparison to the RMBS market. Before the financial crisis most of these securities were commercial mortgage backed securities (CMBS); however, issuance of CMBS has been weak since 2007. Issuance of other asset-backed securities, chiefly securities backed by a mix of assets, but predominantly by automobile leases, remained more robust during the crisis and has increased in recent years (Graph 5.42).

Graph 5.42
Issuance of Australian CMBS and Other ABS



Source: RBA

5.6 General Government

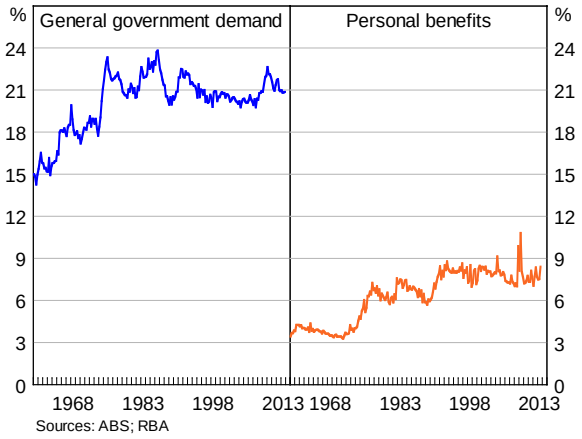
5.6.1 Key trends in the uses of funds

General government demand (essentially government spending excluding transfer payments) was broadly stable as a share of GDP throughout most of the 1990s and early 2000s (Graph 5.43, left panel). Over this period, annual growth in real government payments averaged 2.6 per cent, with the stability as a share of the economy consistent with favourable macroeconomic conditions and steady growth in private sector demand.

More recently, the fiscal stimulus enacted during the financial crisis contributed to an increase in total payments as a share of GDP, and an associated increase in government demand, driven largely by investment. Since its peak in March 2010, government demand has been trending downward toward its pre-stimulus level as a share of GDP, as the temporary stimulus measures have unwound.

[13] Major banks, along with other banks, may use so-called 'self-securitisations' to package assets so as to be eligible for the Committed Liquidity Facility that will be provided as part of the Australian implementation of the Basel III liquidity rules. These structures do not, outside of crisis situations, constitute a form of funding for the banks that create them.

Graph 5.43
General Government Spending
Per cent of GDP



Sources: ABS; RBA

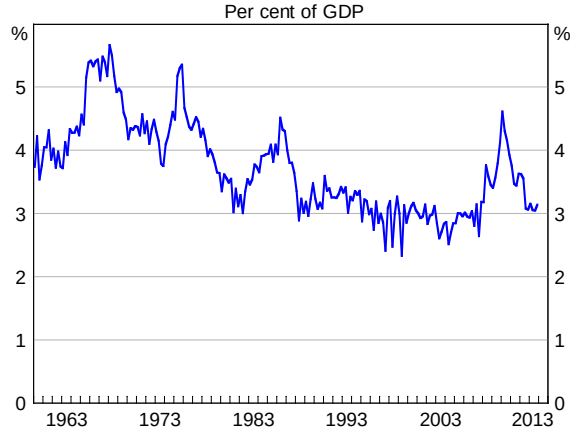
5.6.1.1 Transfer payments

Personal benefits spending encompasses old age, unemployment, family and child, disability, ex-service pensions, health and other benefits transfers to the private sector. Personal benefits spending remained stable at around 8 per cent of GDP throughout most of the 1990s and early 2000s, after increasing noticeably during the 1970s (Graph 5.43, right panel). In line with trends in the total number of unemployed persons, spending on unemployment benefits trended lower over the first half of the 2000s, before increasing as the unemployment rate rose. Despite a brief spike during the financial crisis, personal benefits spending has been slightly lower as a share of GDP and as a share of government payments over the past decade.

5.6.1.2 Investment

General government investment remains relatively small as a share of GDP. Investment has been reasonably stable as a share of GDP since the late 1990s, at around 3 per cent, apart from a notable increase during the financial crisis due to stimulus measures such as the Building the Education Revolution program (Graph 5.44). In aggregate, general government investment remained somewhat elevated following the fiscal stimulus, supported by increased expenditure on transport infrastructure, principally on roads. General government investment is projected to remain around its pre-stimulus share of GDP in the coming years. See Box 5C for further information on infrastructure investment.

Graph 5.44
General Government Investment
Per cent of GDP



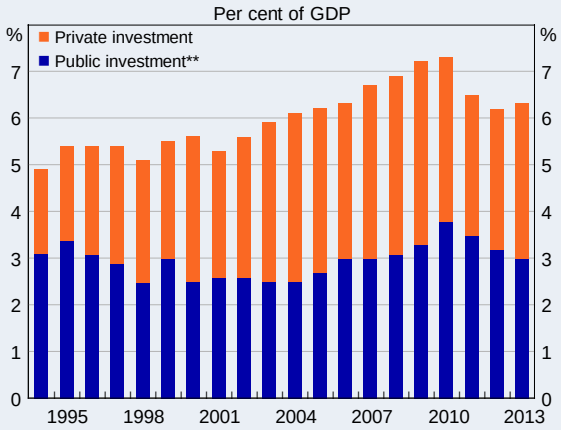
Source: ABS

Box 5C Financing Infrastructure Investment

In Australia, infrastructure investment has averaged around 6 per cent of GDP over the past four decades (Graph 5C.1).[1] Infrastructure investment reached a peak of almost 7½ per cent of GDP in 2009–10, and has since declined to just under 6½ per cent.[2] The share of private infrastructure investment grew steadily from the mid 1980s, reaching just above 55 per cent in 2008, driven by both a decline in the level of infrastructure investment by federal and state Government Trading Enterprises (GTEs) and a pick-up in private infrastructure investment.

These trends were driven by a number of key developments. First, many federal and state GTEs were privatised over the period – including Telstra, Qantas and a number of airports and state utilities. Second, the mining boom spurred significant investment in private transport infrastructure, such as ports and private roads (BITRE 2012).

Graph 5C.1
Infrastructure Investment*



* Includes gross fixed capital formation in: transport; communications; education; health care; electricity; gas, water and waste services; postal and warehousing services
** Includes GTEs
Source: ABS

Since the global financial crisis, the share of private infrastructure investment in Australia has fallen below 50 per cent. Given that bank funding, particularly syndicated loans, is traditionally the predominant source of private infrastructure investment, the reduction in lending globally by a number of banks over the past few years (principally those headquartered in advanced economies) may partly explain the decline in the share of private investment (Chong and Poole 2013).

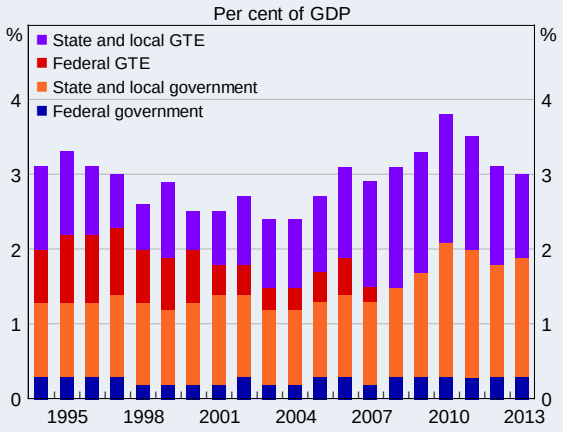
How projects have been funded

Public infrastructure investment predominantly comes from state and local governments and their GTEs (Graph 5C.2). These investments are financed through a combination of transfer payments from the federal government, state tax revenue, debt issuance by the state borrowing authorities and asset sales.

1 Infrastructure can be defined as the structures and facilities that are necessary for the functioning of the economy and society. Economic infrastructure refers to the physical infrastructure that is a direct input to economic activity, for example roads, electricity networks, telecommunication networks and water and sewerage facilities. Social infrastructure refers to the facilities that aid the provision of social services, such as schools and hospitals.

2 This is likely to overestimate the amount spent on infrastructure. It is calculated using data on gross fixed capital formation in the transport, communications, education, health care, utility and postal sectors, not all of which will be related to infrastructure investment.

Graph 5C.2
Public Infrastructure Investment*



* Includes gross fixed capital formation in: transport; communications; education; health care; electricity; gas, water and waste services; postal and warehousing services
Source: ABS

Debt finance is a key source of funding for private infrastructure investment, particularly for projects with less volatile income flows. Total debt of listed infrastructure firms is about $40 billion, or roughly 5½ per cent of banks' total business lending. However, this may understate bank lending to infrastructure companies as a large part of the infrastructure sector is unlisted.

Australian infrastructure companies tend to be more highly geared than most other listed companies (Graph5.19, right panel). Most of the debt financing of infrastructure companies is obtained from financial institutions. Private sector research indicates that unlisted infrastructure companies tend to have even higher gearing than their listed counterparts (Pereira 2008).

Private infrastructure investment can also be financed through equity, with investors classified as primary or secondary investors. Primary investors are directly involved in decisions regarding the construction of the infrastructure asset (construction companies, for example). Once projects are in operation with a proven revenue stream, equity is often sold in the secondary market. Initial Public Offerings (IPOs) were a popular form of equity raising prior to the global financial crisis, reaching a peak of over $3 billion in 2005. However, since 2009 there have been no infrastructure IPO-equity listings on the ASX.

Public-private partnerships

Infrastructure projects financed by the private sector fall into two categories: those that are fully owned and operated by the private sector (for instance private telecommunications networks); and those commissioned by government but are at least partly financed by the private sector, commonly known as public-private partnerships (PPPs). A PPP generally refers to a long-term contract between a private party and a government agency for providing a public asset or service, for which the private party bears significant risk and management responsibility (World Bank 2012). In many PPPs, private parties have sole responsibility for sourcing finance.

Private financing through PPPs is only feasible under a certain set of conditions, including:

- the existence of credible and regulatory frameworks that give strong legal protection to investors

- public sector capacity and resources to structure and manage PPPs effectively
- appropriate project selection and identification of the most efficient bidder
- appropriate risk sharing between the private sector and government.

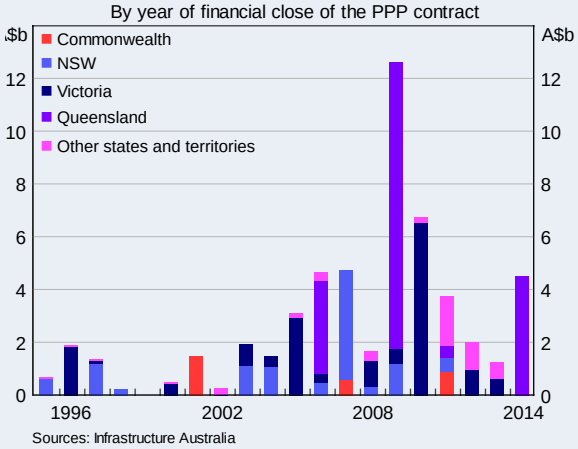
PPPs can be more costly than traditional government procurement due to the higher cost of private financing compared with government debt. Therefore, the net benefit of PPPs may depend on the extent of the efficiency gains achieved by private participation in the project.

The Productivity Commission (2014) notes that PPPs can lead to a lower overall cost of providing infrastructure services for example, when they facilitate:

- access to private technology or innovation, including specialised contractors and operators
- enhanced private sector incentives to deliver projects on time and within budget
- opportunities for competition for the market in provision of infrastructure and its services
- long-term value for money through appropriate risk transfer.

Despite their high profile, PPPs account for a small share of infrastructure financing in Australia. Since 1995, PPP projects totalled just under $50 billion, or around 5 per cent of total infrastructure investment. New South Wales, Queensland and Victoria are the only states that have been significant users of PPPs over the past two decades (Graph 5C.3). The use of PPPs has been declining since the financial crisis (Chong and Poole 2013).

Graph 5C.3
PPPs in Australia
By year of financial close of the PPP contract



Sources: Infrastructure Australia

The high-profile restructure of several large PPPs for toll roads may have made these types of infrastructure projects less attractive to private investors. Moreover, persistent losses on recent toll-road developments such as the Cross City, Lane Cove and Airport Link tunnels created a need for a demand-risk guarantee provided by the government in order to attract private participation.

Tighter financial conditions following the crisis may have contributed to the decline in PPPs in recent years. Financial institutions have incurred losses on a number of loans after several infrastructure projects suffered significant revenue shortfalls and were unable to service their debt.

The government can directly alter the risk and return to private investors from infrastructure projects through the use of guarantees, where the government takes some of the risk from private investors. The funding and some risks (such as construction risks) associated with infrastructure projects can also be shared between multiple parties within the private sector.

PPPs have had mixed success in raising funds and transferring risk for infrastructure projects from the government to the private sector. Even where PPP contracts are well designed, the ultimate risk and corresponding costs of the project reside with government, since the public may hold the government ultimately accountable for the provision and quality of infrastructure services.

Superannuation funds and infrastructure

Institutional investors can gain exposure to infrastructure projects in several ways, including by:

- providing debt finance to the owners or operators (e.g. through bond purchases)
- purchasing the equity of an infrastructure company (e.g. a special purpose vehicle for a project), or of companies that are exposed to infrastructure projects
- investing in listed and unlisted equity infrastructure funds.

Infrastructure investment may be suited to superannuation funds because the underlying assets can provide maturity matching, inflation-hedging (through inflation-linked assets), and a stable and predictable income stream. Superannuation funds typically invest in brownfield infrastructure: that is, existing infrastructure assets where the investment does not directly contribute to the construction of new infrastructure. This is due to the well-established revenue capacity of brownfield infrastructure.

Australian superannuation funds allocate, on average, 6 per cent of total funds under management to infrastructure exposures, compared with a global average of around 3¼ per cent (Preqin 2012). This comparatively high level of investment may be partly due to the greater availability of infrastructure investment opportunities: since the early 1990s, Australian governments have actively privatised assets that are attractive to superannuation funds, such as airports and ports, creating a ready stream of brownfield assets. It could also partly be the result of superannuation regulations allowing Australian superannuation funds to invest in illiquid assets to a higher degree than some other countries.

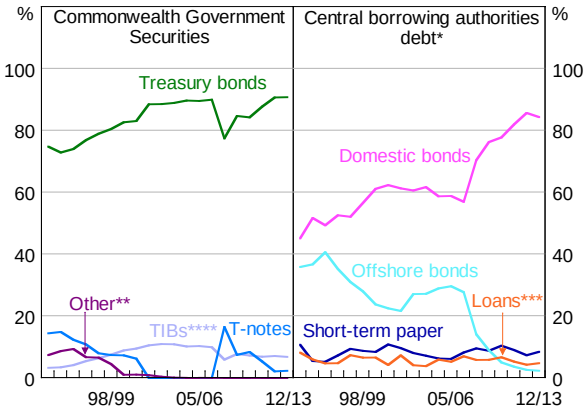
Most of this investment is made indirectly through investment in infrastructure funds. This is likely because only Australia's largest superannuation funds have the capacity to provide the level of resourcing and investor sophistication needed for direct investment in infrastructure.

5.6.2 Key trends in the sources of funds

5.6.2.1 Commonwealth Government Securities

The federal government funds shortfalls in its revenue over intended expenditure by issuing debt securities (Commonwealth Government Securities (CGS)). Most CGS are issued as fixed coupon bonds to match the government's funding requirements, but the AOFM (which is responsible for managing federal government debt) also issues a small amount of inflation indexed securities, or Treasury inflation-linked bonds (TIBS; Graph 5.45, left panel). To manage the intra-year cash flow mismatch between revenue receipts and outlays, the government also on occasion issues short-term Treasury notes (with an average maturity of around three months). The short-term nature of these instruments means that although gross issuance during the year can be sizeable, net issuance is negligible as the portfolio matures relatively quickly, so that the stock of outstanding Treasury notes remains low.

Graph 5.45
Composition of Australian Government Debt
Per cent of total

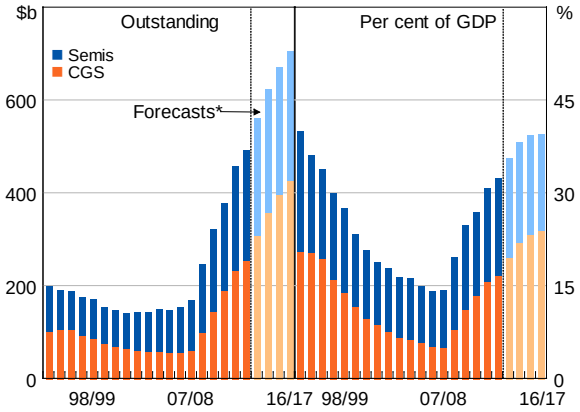


* Central borrowing authorities debt is defined as the sum of bills of exchange, one name paper (domestic and offshore), bonds (domestic and offshore), short-term and long-term loans (excluding loans from state government, local government and PTEs)
** Other includes treasury adjustable rate bonds and CGS denominated in a currency other than Australian dollars
*** Excludes loans from state and local government PTEs
**** Treasury inflation-linked bonds
Sources: ABS; AOFM

The stock of outstanding CGS declined from 1997 to 2007 in both nominal terms and relative to GDP, reflecting sustained federal government budget surpluses (Graph 5.46). Gross CGS issuance continued during this period to maintain the stock of outstanding CGS at a level that was sufficient to support liquidity in the CGS market; this was in recognition of the role of CGS as a benchmark that is used to price other securities. In 2011, a panel of financial market participants and financial regulators, including the Reserve Bank, agreed that the stock of outstanding CGS should be maintained at around 12 to 14 per cent of GDP over time to maintain a liquid and efficient bond market.[14] Drawing on this advice, the government at the time committed to maintaining liquidity in the CGS market, even when issuance of debt is not required to fund a budget shortfall (Australian Government 2011).

[14] The panel consisted of representatives from Reserve Bank of Australia, the Treasury, the AOFM, the Australian Prudential Regulation Authority, the NSW Treasury Corporation, the Treasury Corporation of Victoria, and a number of private sector market participants.

Graph 5.46
Outstanding Stock of Australian Government Securities



* CGS projections from 2014 onward, as at December MYEFO; semi-government projections based on indicative funding targets for the 2013/14 financial year, and State Budget projections thereafter
Sources: ABS; AOFM; RBA; state treasury corporations; Treasury

Net issuance of CGS increased after 2007 to fund the federal government's budget which moved into deficit after the onset of the global financial crisis. As a result, the stock of CGS on issue is expected to increase to over $300 billion in 2014 (equivalent to 20 per cent of GDP). The most recent projections suggest that the amount of CGS on issue will continue to increase, albeit broadly in line with growth in the economy after 2015. The *Commonwealth Inscribed Stock Act 1911* was amended in December 2013 to remove the legislative debt limit of $300 billion to facilitate the expected continued growth in the stock of federal government debt (Australian Government 2013).

5.6.2.2 Semi-government bonds

The state public sector, comprised of the state and territory governments, local governments and public trading enterprises (PTEs), funds the shortfall in its revenue through the issuance of debt securities and to a much lesser extent through bank loans. The funding for each state's public sector is raised by a dedicated Central Borrowing Authority (CBA) – a specialised financial corporation that is fully owned and explicitly guaranteed by the respective state government – and is then on-lent to the state public sector. The CBA maintains a small stock of short-term securities to manage short-term funding requirements of the state public sector. However, for the most part the CBA raise debt by issuing long-term bonds, both domestically and offshore, in what is commonly referred to as the semi-government bond market (Graph 5.45, right panel). CBAs issue primarily fixed-income bonds, but they also issue inflation-linked bonds to meet demand from PTEs for inflation-linked borrowing and, more recently, floating rate notes which are attractive to banks investing in semi-government securities. Nearly two-thirds of the outstanding semi-government securities are issued by Queensland and New South Wales, with issuance by Victoria and Western Australia accounting for most of the remainder.

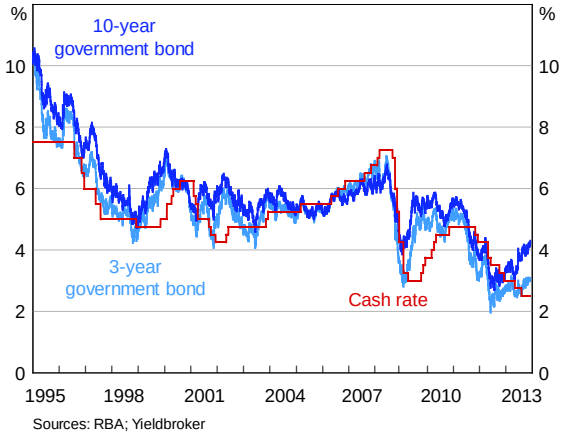
Unlike CGS, the stock of outstanding semi-government bonds remained relatively steady in nominal terms between the mid 1990s and the mid 2000s (Graph 5.46). Net issuance of semi-government bonds increased from mid 2005 to fund the state and territory governments' budget deficits and capital expenditure by the PTEs, with the latter reflecting increased infrastructure investments by the states. As a result, the stock of outstanding semi-government securities has risen to $240 billon (equivalent to 16 per cent of GDP) and the most recent projections (based on the CBAs' funding plans and the states' own budget forecasts) indicate that the outstanding stock will rise further over the next four years.

5.6.2.3 Cost of government borrowing

Government yields in major markets have declined considerably since the beginning of the global financial crisis and CGS yields have declined similarly. Despite some increase in CGS yields since mid 2012 in line with the global trend, the federal government is currently able to fund its deficit at very low nominal rates (Graph 5.47).

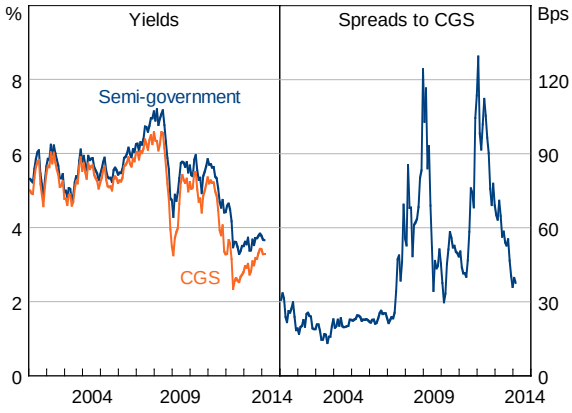
The explicit state government guarantees mean that the CBAs have the same high credit ratings as the respective state and territory governments (currently AA to AAA) and have resulted in semi-government bonds trading typically at small spreads over CGS. Nevertheless, during episodes of global financial markets stress, semi-government bond spreads over CGS generally widen, as investors in Australian securities seek to hold more of the safest and most liquid Australian securities – namely CGS. In particular, the spread between semi-government securities and CGS widened to over 120 basis points in late 2008 and then again in mid 2012 (Graph 5.48).

Graph 5.47
Australian Interest Rates



Sources: RBA; Yieldbroker

Graph 5.48
CGS and Semi-government Bond Pricing
5-year bonds*



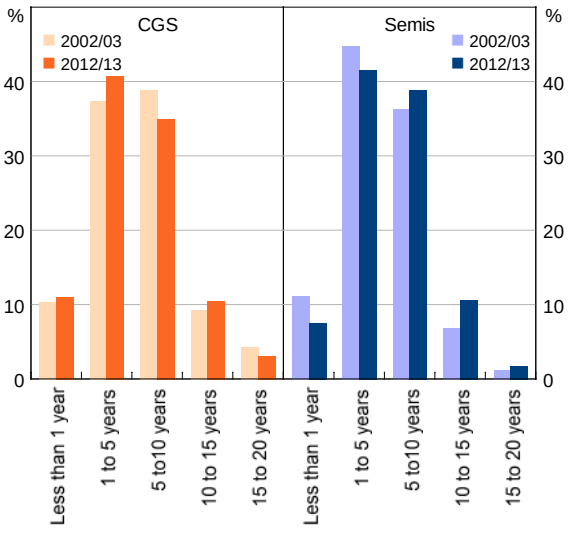
* Face value weighted by bonds with a remaining maturity between 4 and 6 years; semi-government includes bonds issued by NSW, Qld, Vic and WA

Sources: RBA; Yieldbroker

5.6.2.4 Maturity profile of debt outstanding

For a number of years prior to 2008, most CGS issued were at terms greater than one year but less than 10 years as the AOFM sought to maintain liquidity in a small number of key maturities. More recently the AOFM has sought to lengthen the maturity profile, in part to provide a longer risk-free reference rate for other financial products. CBAs seek to borrow at the longest maturities possible, with the maturity profile of the CGS market generally constraining issuance at longer tenors (Graph 5.49). CGS provides primary pricing for the domestic fixed-income market, and hence it is difficult for semi-government bonds to be issued at longer maturities than CGS. The weighted average residual maturity of the semi-government market is comparable to that of the CGS market – 5.8 years compared with 5.6 years.

Graph 5.49
Australian Government Bonds Outstanding*
By maturity, per cent of total



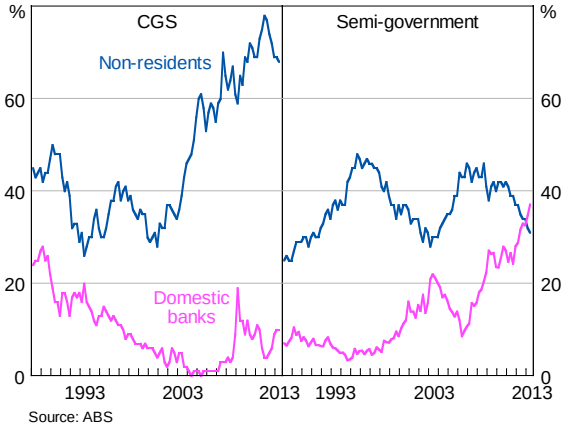
* Domestic semi-government bonds
Sources: AOFM; RBA

5.6.2.5 Holders of Australian government debt

The high credit rating of Australian CGS and their higher nominal yield relative to the yields on government bonds in other developed economies have made CGS an attractive investment in an environment of low global yields. As a result, the foreign ownership share of CGS has risen.

Domestic investors, particularly Australian banks, have increased their holdings of semi-government securities since the onset of the global financial crisis (Graph 5.50). This partly reflects the need for banks to hold higher levels of liquid assets that have been introduced as part of Basel III regulatory reforms. Under these requirements, the RBA determined that the Australian banks could reasonably hold the equivalent of around 30 per cent of the outstanding stock of CGS and semi-government securities without impairing market liquidity. As a result of the higher yield available on them, Australian banks are now the largest investors in semi-government securities, holding 40 per cent of the outstanding stock.

Graph 5.50
Australian Government Debt Holders
Per cent of total outstanding



Source: ABS

Offshore issued semi-government bonds were a significant part of the market in the past because non-resident investors' holdings in these had more favourable tax treatment than their holdings of domestically issued semi-government bonds. However, legislative changes in 2008 extending the interest withholding tax exemption to domestically issued semi-government bonds removed this differential tax treatment, and the CBAs have since then actively sought to refinance their offshore bonds with domestic bonds to the point where the stock of outstanding offshore issued bonds is almost negligible.

References

ABARES (Australian Bureau of Agricultural and Resource Economics and Sciences) (2013), 'Australian Farm Survey Results 2010–11 to 2012–13', March.

ABS (Australian Bureau of Statistics) (2009), 'International Investment Position, Australia: Supplementary Statistics, 2008', ABS Cat No 5352.0.

ABS (2013), 'International Investment Position, Australia: Supplementary Statistics, 2012', ABS Cat No 5352.0.

Arsov I, B Shanahan and T Williams (2013), 'Funding the Australian Resources Investment Boom', RBA *Bulletin*, March, pp 51–61.

Australian Government (2011), 'Budget Strategy and Outlook 2011–12', in Budget Paper No 1, *2011/12 Australian Government Budget*, Commonwealth of Australia, Canberra, pp 7-16–7-18.

Australian Government (2013), 'Mid-Year Economic and Fiscal Outlook', December, Box 1, p 77.

Aylmer C (2013), 'Developments in Secured Issuance and RBA Reporting Initiatives', Address to the Australian Securitisation Forum, Sydney, 11 November.

BITRE (Bureau of Infrastructure, Transport and Regional Economics) (2012), 'Yearbook 2012: Australian Infrastructure Statistics', Statistical Report, July.

Black S, J Kirkwood and S Shah Idil (2009), 'Australian Corporates' Sources and Uses of Funds', RBA *Bulletin*, October, pp 1–12.

Black S, L Rogers and A Soultanaeva (2012), 'Households' Appetite for Financial Risk', RBA *Bulletin*, June, pp 37–42.

Carbó-Valverde S, F Rodríguez-Fernández and GF Udell (2012), 'Trade Credit, the Financial Crisis, and Firm Access to Finance', unpublished manuscript.

Chong S and E Poole (2013), 'Financing Infrastructure: A Spectrum of Country Approaches', RBA *Bulletin*, September, pp 65–76.

Connolly E and M Kohler (2004), 'The Impact of Superannuation on Household Saving', RBA Research Discussion Paper No 2004-01.

CPA Australia (2012), 'The CPA Australia Asia-Pacific Small Business Survey 2012', CPA Australia Ltd, Southbank.

Davidsson P, PR Steffens and SR Gordon (2011), 'Comprehensive Australian Study of Entrepreneurial Emergence (CAUSEE): Design, Data Collection and Descriptive Results', in K Hindle and K Klyver (eds), *Handbook of Research on New Venture Creation,* Edward Elgar, Cheltenham, pp 216–250.

Debelle G (2009), 'Whither Securitisation?', Address to the Australian Securitisation Conference 2009, Sydney, 18 November.

Debelle G (2010), 'The State of Play in the Securitisation Market', Address to the Australian Securitisation Conference 2010, Sydney, 30 November.

Debelle G (2011), 'In Defence of Current Account Deficits', Address at ADBI/UniSA Workshop on Growth and Integration in Asia, Adelaide, 8 July.

Department of Industry (2013), 'Grant and Assistance Finder'. Available at <http://www.business.gov.au/Grantfinder/Grantfinder.aspx>.

Dun & Bradstreet (2012), 'Trade Payments Analysis – December Quarter 2011', February.

Ellis L and K Smith (2007), 'The Global Upward Trend in the Profit Share', BIS Working Papers No 231.

Fitzpatrick A and B Lien (2013), 'The Use of Trade Credit by Businesses', RBA *Bulletin*, September, pp 39–46.

Guscina A (2006), 'Effect of Globalization on Labour's Share in National Income', IMF Working Paper 06/294.

House of Representatives (House of Representatives Standing Committee on Infrastructure, Transport, Regional Development and Local Government) (2009), 'The Global Financial Crisis and Regional Australia', Inquiry into the Effects of the Global Financial Crisis on Regional Australia, Parliamentary Paper 406/2009, 23 November.

Matić M, A Gorajek and C Stewart (2012), 'Small Business Funding in Australia', Small Business Finance Roundtable, Sydney, May.

MYOB (2013), 'MYOB Business Monitor – National Report September 2013'.

NFF (National Farmers' Federation) (2010), 'NFF Submission to the Senate Economics Committee Inquiry into Access of Small Business to Finance', 16 April.

Pereira R (2008), 'Listed versus Unlisted: Substitutes or Complements?', Russell Investments, December. Available at <https://www.russell.com/AU/_pdfs/capital-markets-reserach/research/2008-November-Listed-vs-Unlisted.pdf>.

Preqin (2012), 'Infrastructure Spotlight', July 2012, Volume 4, Issue 7.

Productivity Commission (2009), *Government Drought Support*, Report No 46, Final Inquiry Report, Melbourne.

Productivity Commission (2013), *Trade & Assistance Review 2011–12*, Annual Report Series, Productivity Commission, Canberra, June.

Productivity Commission (2014), *Public Infrastructure*, Draft Inquiry Report, Canberra.

RBA (Reserve Bank of Australia) (2002), 'Recent Developments in Housing: Prices, Finance and Investor Attitudes', RBA *Bulletin*, July, pp 1–6.

RBA (2010), 'Submission to the Inquiry into Access of Small Business to Finance', Submission to the Senate Economics References Committee Inquiry into Access of Small Business to Finance, 24 March.

RBA (2012a), 'Box D: Covered Bond Issuance by Australian Banks', *Statement on Monetary Policy*, February, pp 57–58.

RBA (2012b), 'Box A. Foreign-owned Bank Activity in Australia', *Financial Stability Review*, March, pp 38–40.

RBA (2013a), 'Business and Household Finances', *Financial Stability Review,* September, pp 43–53.

RBA (2013b), 'Box D: Buybacks of Government Guaranteed Securities', Statement on Monetary Policy, February, pp 54–55.

Rudd S and C Stewart (2012), 'Banking Fees in Australia', RBA *Bulletin*, June.

Rush A, D Sadeghian and M Wright (2013), 'Foreign Currency Exposure and Hedging in Australia', RBA *Bulletin*, December, pp 49–57.

Ryan C and C Thompson (2007), 'Risk and the Transformation of the Australian Financial System', in C Kent and J Lawson (eds), *The Structure and Resilience of the Financial System*, Proceedings of a Conference, Reserve Bank of Australia, August.

Schwartz C (2010), 'The Australian Government Guarantee Scheme', RBA *Bulletin*, March, pp 19–26.

Schwienbacher A and B Larralde (2012), 'Crowdfunding of Small Entrepreneurial Ventures', in D Cumming (ed), *The Oxford Handbook of Entrepreneurial Finance*, Oxford University Press, pp 369–391.

Stevens G (2011), 'The Cautious Consumer', RBA *Bulletin*, September, pp 77–82.

Stewart S, B Robertson and A Heath (2013), 'Trends in the Funding and Lending Behaviour of Australian Banks', RBA Research Discussion Paper No 2013-15.

Turner G (2011), 'Depositor Protection in Australia', RBA *Bulletin*, December, pp 45–55.

World Bank (2012), *Public-Private Partnerships Reference Guide*, Version 1, The World Bank, Washington, DC.

6. Competition, Efficiency and Innovation in Banking

This Chapter discusses developments in competition, efficiency and innovation in the Australian banking system. Competitive pressures for different banking products are considered, alongside a brief discussion of the interplays between competition and stability, as well as regulation and competitive neutrality. Seven key points stand out from the Australian experience:

- Competition in banking is procyclical. In times of optimism, competition is often more pronounced on the lending side, whereas competition for funding often intensifies following a financial crisis.
- The competitive landscape was transformed by the deregulation of the banking sector in the 1980s and the opening up of the system to greater competitive forces. Since then, while the regulatory framework continues to affect competition, cyclical dynamics in risk-taking among market participants have been at least as important.
- New entrants, or the threat of new entrants, shape the markets for banking services in important ways. In Australia, the arrival of mortgage originators led to a marked decline in spreads to the cash rate on mortgages. And the entry of foreign banks in the online deposit market saw deposit rates increase relative to the cash rate.
- Competitive forces contributed to a substantial decline in banks' net interest margins – the broadest measure of average intermediation costs – over the two decades prior to the global financial crisis. Despite the many changes in the prices of loans and debt instruments since then, Australian banks' net interest margins are still around their historic lows.
- The market for small business loans has more structural impediments to competition than most other lending markets, because the information asymmetries tend to be more significant. Technological advances and financial innovation can help to reduce these information asymmetries. In addition, measures to improve the supporting infrastructure for capital market funding can help to provide companies with substitute sources of funding to bank loans.
- Competition beyond a certain threshold may have implications for financial stability. But Australia's experience over the past two decades demonstrates that competition in the banking sector, and new entry in particular, can occur without compromising financial system stability.
- The perceived safety of banks, including the belief by many that some are 'too big to fail', could also alter competition, for example by lowering the funding costs of such banks.

6.1 Theory and Practice

As in other industries, the degree of competition in banking affects the efficiency of the provision of financial services, the quality of financial products and the innovativeness of the sector (Claessens 2009). Ultimately a healthy level of competition in the banking sector provides important benefits to households and businesses, including improved access to finance, increased scope for choice and lower prices.

The benefits of competition for allocative efficiency are well established in the literature on industrial organisation (Tirole 1988, p 6). However, there are a number of reasons why the textbook view of competitive markets needs to be nuanced for the banking sector. As discussed in Chapter 1, financial intermediaries are inherently fragile because of the maturity transformation that they provide. In addition, asymmetric information and moral hazard can lead to excessive risk-taking. And, in the event of a bank failure, the highly leveraged and interconnected nature of the industry can result in large social costs and instability, often of a systemic nature (Vives 2001). While competition is not responsible for the fragile nature of banking, excessive competition can exacerbate some of the risks. Prudential regulation is partly motivated by the need to channel competitive pressures to productive needs and maintain financial stability (Section 6.5).

The trade-offs between competition, efficiency, financial stability and, ultimately, economic growth are complex; Claessens (2009) provides a comprehensive discussion on these issues, and a summary of the literature on the effects, determinants and measurement of competition in the financial sector.

6.2 Evaluating Competition

Competition in any industry is difficult to define and assess (Porter 1979), and this is particularly so in the banking sector. For one, prices of banking products contain information about risk and liquidity as well as the degree of competition (Beck 2007). Moreover, the lines between some product markets are not clear-cut, so that competitive forces interact in complex ways.

Even so, one conclusion emerges clearly from the literature: the degree of contestability is particularly important for competition. Countries with fewer entry and activity restrictions tend to have greater competition in their banking systems (OECD 2011). It need not be actual entry that matters. The threat of entry can limit the ability of incumbents to exercise market power. In addition to regulatory barriers to entry, there are other frictions in the banking sector that impede contestability and competition. Examples include information asymmetries and switching costs.

It is widely agreed that indicators of market structure, such as market concentration, do not measure competition among financial institutions accurately (Davis 2007; OECD 2010). A market can be concentrated but highly competitive if it is open and contestable, resources are allocated efficiently, and pricing power of incumbents remains limited. However, these structural measures are often used in empirical work, given their relative ease of construction.

In addition to measures of contestability and concentration, some papers measure the intensity of competition directly by estimating the responsiveness of prices to changes in costs (the H-statistic is one such example; Claessens and Laeven 2004).[1] These measures have a stronger theoretical foundation than structural measures, but they are limited by the difficulty in determining when changes in price reflect competitive pressures versus changes in risk or liquidity premia.

[1] Claessens and Laeven (2004) calculate a H-statistic of 0.80 for Australia – the seventh highest value among the 50 countries studied. (A higher value corresponds with greater competition.)

6.3 Competitive Forces in Banking

Competition can be reflected in both the price of services and in their characteristics:

- Price competition can include the interest rate attached to a product, as well as fees and charges.
- Non-price competition may include loyalty programs and special access to certain events. It may also extend to the amount of finance offered to borrowers and the terms attached to a loan. In this way, competition can interact with lending standards and shape systemic risk (Chapter 4).

Because the literature finds concentration to be an inaccurate measure of competition, the focus below is on the forces that have shaped the contestability of the markets – including with respect to switching costs, pricing power and barriers to entry.[2]

There is not space here to examine the full range of banking services, so some selected markets are considered. Although each market is discussed separately, competitive dynamics across the various segments interact in important ways. Banking products are often bundled together: for example, some mortgages are provided with an offset facility that is akin to a deposit account. In addition, some banking products can be substituted for others: credit card debt may be substituted for a secured loan, for instance.

Moreover, because banks intermediate between borrowers and lenders, competitive dynamics in markets in which banks source funds can affect the way they compete for loans. Indeed, although the speed and scope of structural change has differed across markets, there is a common thread to most banking services: competitive forces since the Wallis Inquiry have been shaped to a significant extent by financial market conditions. Changes in risk appetite among market participants during the past decade have often been at least as important to competitive dynamics as regulatory reform or other structural change (discussed below). That does not deny, though, that the regulatory and supervisory structure has influenced competition (see 'Box 6A: Regulation and Competitive Neutrality').

The interaction of the competitive forces in funding and lending markets means that the spread to the cash rate for individual products is problematic in gauging competition. This has been especially true since the onset of the crisis, as a reappraisal of risks has increased banks' funding costs relative to the cash rate (Graph 6.1; Berkelmans and Duong 2014). A more comprehensive measure of bank margins, though still an imperfect one, is the net interest margin – which is closely linked to the difference in banks' average lending and borrowing rates.[3] Greater competitive pressures contributed to a halving in the major banks' net interest margins between the late 1980s and the mid 2000s (Graph 6.2). Australian banks' net interest margins have remained around their historic lows, despite the many changes in the prices of loans and debt instruments since the crisis. The net interest margins of the regional banks continue to be lower than those of the major banks, in part because of higher debt funding costs and larger shares of lower-margin housing lending.

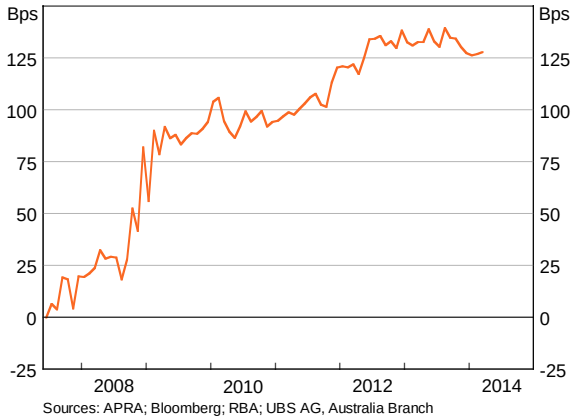
Some developments in bank fees are considered; further details will be available in the next report on the Reserve Bank's annual bank fee survey that is due for publication in mid 2014. The operation and effects of the 'four pillars' policy that ensures the separation of each of the four major banks is not addressed here – it has been discussed in Chapter 4 and at length elsewhere (Davis 2007).

---

[2] This is consistent with the framework set out by Porter (1979) for examining industry structure in terms of five key competitive forces: the rivalry among existing competitors; the threat of new entrants; the bargaining power of suppliers; the bargaining power of buyers; and the threat of substitute products or services.

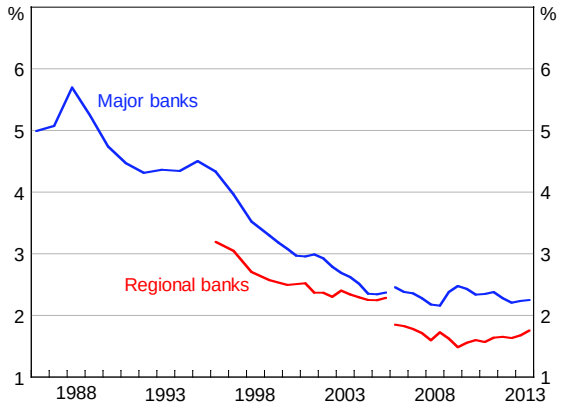
[3] Banks' net interest margins are affected by a number of factors in addition to movements in lending rates and funding costs, including the extent to which banks fund themselves with equity, their holdings of liquid assets, and gains or losses on derivatives (RBA 2010, pp 20–21).

Graph 6.1
Major Banks' Funding Costs
Cumulative change since June 2007



Sources: APRA; Bloomberg; RBA; UBS AG, Australia Branch

Graph 6.2
Banks' Net Interest Margin*
Domestic operations**



* From 2006 data are on an IFRS basis; prior years are on an AGAAP basis
** Semi-annual from 1999
Sources: RBA; banks' annual and interim reports

Box 6A Regulation and Competitive Neutrality

Authorised deposit-taking institutions (ADIs) require authorisation from the Australian Prudential Regulation Authority (APRA) to conduct banking business in Australia.[1] APRA must determine that, on an ongoing basis, the institution will be able to comply with its prudential standards, including requirements for governance, capital, liquidity, risk management and information systems. Foreign-owned institutions also need to demonstrate that they are adequately supervised in their home jurisdiction.

The existence of a strong regulatory framework can act as a barrier to entry to the banking market, although one that is judged necessary by regulatory authorities and governments globally, in part to protect depositors and reduce systemic risk (Chapter 4). Ensuring a clear distinction between those entities that fall within the prudential perimeter and those that do not helps to inform consumers about the level of risk in their investments.

Moreover, some barriers to entry – such as the costs involved in gaining authorisation to conduct banking business – may add to 'brand' or 'charter values'. This can encourage banks to be more cautious about taking on risk, because the value of this goodwill can disappear if they cease to be a 'going concern' (Vives 2001). Barriers to entry have also been found to lower funding costs and provide incentives to develop relationship banking (Rajan 1992; Peterson and Rajan 1995).

Even so, an overly burdensome regulatory framework may encourage financial institutions to move activities away from intensive supervisory oversight into the 'shadow banking' sector; this may result in a less scrutinised build-up in risk, as occurred in a number of North Atlantic countries leading up to the financial crisis. In Australia, the non-prudentially regulated sector's share of total financial system assets is low by international standards, at around 10 per cent (Schwartz and Carr 2013).

[1] More generally, institutions providing financial products (whether they be licensed banks or not) are also subject to ASIC's financial services licensing regime.

Consistency of prudential regulation across banks

All ADIs are subject to minimum levels of prudential regulation and supervisory scrutiny to ensure they are soundly managed. Some ADIs are subject to tougher rules and more intense supervision because of their greater risk profile and complexity, or for financial stability reasons.[2] Broadly stated, larger institutions tend to be subject to more intensive supervision. This could reduce some of the incumbency advantages of larger banks, although that is not its purpose. Furthermore, the four major banks are classified as systemically important in the domestic market and, as a result, need to meet an additional capital requirement by 2016 (Chapter 3; Chapter 4).

Many of the costs of complying with prudential regulation have a fixed component and therefore represent a proportionately greater cost to smaller institutions. These include building the necessary IT systems, as well as establishing risk management and internal control functions. The costs to the larger banks of the stricter requirements and more intensive supervision may or may not offset the economies of scale.

Consistent capital frameworks

In Australia, the four major banks and Macquarie are currently approved by APRA to use model-driven methods – known as Internal Ratings-based (IRB) approaches – to derive the risk weights of their exposures and thus their minimum capital requirements (Chapter 4; Gorajek and Turner 2010). APRA grants approval to use this approach only after a bank has met strict governance and risk modelling criteria. All other banks currently use a standardised approach, whereby the risk weights are prescribed by APRA.

While the difference in approaches is consistent with the major banks' more complex asset portfolios, it may also reflect the costs of developing and maintaining the necessary models, as well as integrating the models into their risk management processes. Although no regulation prevents smaller ADIs from developing these models and having them approved by APRA, the fixed costs and data availability requirements associated with developing the models could represent a barrier for smaller lenders in some market segments.

Model-based approaches tend to produce lower risk weights (and therefore capital requirements) on some lending exposures than those prescribed under the standardised approach, including for residential mortgages. The differences can be smaller in Australia than in many other countries because APRA has imposed a more conservative set of minimum requirements on the modelling choices of banks than the Basel rules. For example, APRA sets a 20 per cent floor on the loss-given-default assumption for residential mortgages that can be used in the model-based approach (compared with the 10 per cent floor under the Basel Framework; IMF 2014). Model-based approaches can also produce higher risk weights for some institutions and exposures.

Resolution

The resolution regime applies to all locally incorporated ADIs. The Financial Claims Scheme (FCS) includes a government guarantee of deposits at locally incorporated ADIs. The guarantee aims to provide certainty to depositors that they will recover their deposits (up to a limit of $250 000 per account holder per ADI) in the event that an ADI fails. Because FCS coverage is currently provided at no direct cost, it is not sensitive to the risk profile of the ADI. Lenders with riskier portfolios therefore arguably derive a greater benefit from it. Even so, the perceived safety of some banks, and the belief by many that they are 'too big to fail', may provide them with a funding benefit.

---

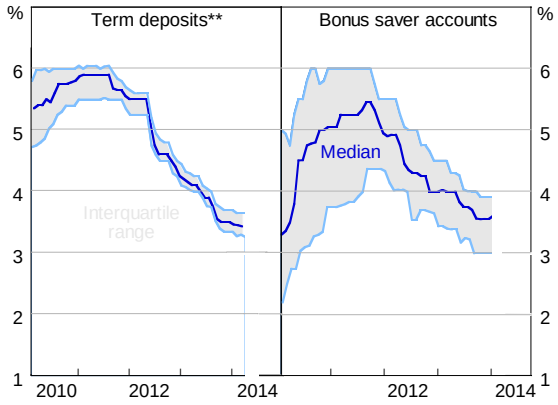
[2] This is consistent with the Basel Committee on Banking Supervision's Core Principle Number 8 for Effective Banking Supervision.

6.3.1 Deposits

Competition for deposits has intensified since the Wallis Inquiry. Providers of deposits still face barriers to entry, such as the costs associated with obtaining a licence from APRA and establishing brand recognition. However, developments in information technology have lowered entry costs – by removing the need for foreign entrants to establish physical branches, for instance. Greater access to the internet has enabled more customers to 'look around for a better deal', which has aided price competition; this may have partly contributed to the decline in dispersion of deposit rates in recent years (Graph 6.3). Even so, the market for deposits is concentrated: the major banks account for roughly three-quarters of total deposits in Australia.

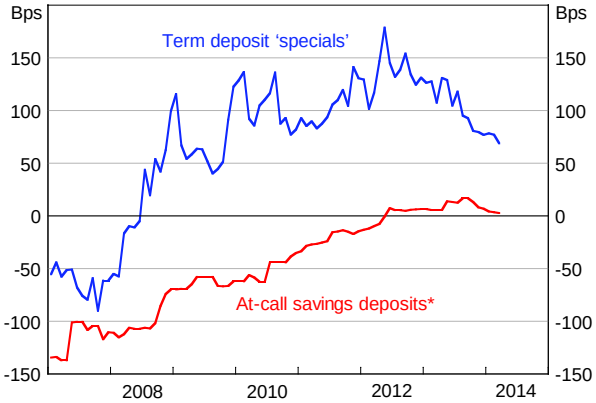
Although the structural features of the deposit market have been important, financial market conditions have strongly influenced competition for deposits in Australia. The decade following the Wallis Inquiry was characterised by readily available wholesale funding for financial institutions at low cost, which reduced the incentive to compete for deposits. Banks offered interest rates on savings and term deposits that were well below the yields on market instruments of equivalent maturities (Graph 6.4).

Graph 6.3
Distribution of Deposit Rates*



* Based on $10 000 deposits
** 3-month term deposits 'specials'
Sources: CANSTAR; RBA

Graph 6.4
Major Banks' Deposit Rates
Spreads over money market rates of equivalent maturity



* Spread to cash rate; existing customers only; excludes temporary bonus rates
Sources: Bloomberg; RBA

Since the financial crisis, however, banks, investors, rating agencies and regulators globally have reassessed the risks of various funding instruments. Banks' demand for deposit funding has increased, and competition has intensified. Interest rates on term and saving deposits have consistently exceeded the interest rates on market instruments of equivalent maturities.

Some of the intensification of competition reflects regulatory reforms such as the Basel III liquidity standard (Chapter 3). At the same time, the reassessment of funding risk by banks, investors and ratings agencies has also played a role; there are many forces pushing in the same direction. The introduction of a deposit guarantee via the FCS may also have bolstered competition to the extent that this reduced perceptions that deposits at some institutions were safer than others.

Competition for deposits over recent decades has fostered product innovations. For example, foreign banks introduced online saver accounts as a way of competing for deposits without having a large physical presence. Regulatory changes have also led to innovation; for instance, the forthcoming tightening of liquidity rules has induced higher rates for notice-of-withdrawal (NOW) accounts where the funds cannot be accessed for at least 30 days.

6.3.2 The mortgage market

The competitive dynamics in the mortgage market have changed considerably in recent decades. New participants, known as mortgage originators, entered the market and gained considerable market share throughout the late 1990s and early-to-mid 2000s. They took advantage of innovations in the packaging and pricing of risk by funding themselves primarily in securitisation markets. They employed mobile lenders to circumvent the need for the costly branch networks employed by the banks. And the banks' funding advantage that arose from access to low-cost deposits was eroded as nominal interest rates declined (Ryan and Thompson 2007). This enabled mortgage originators to undercut the banks' mortgage rates. The banks responded, and spreads on mortgages declined markedly (Davis 2011).

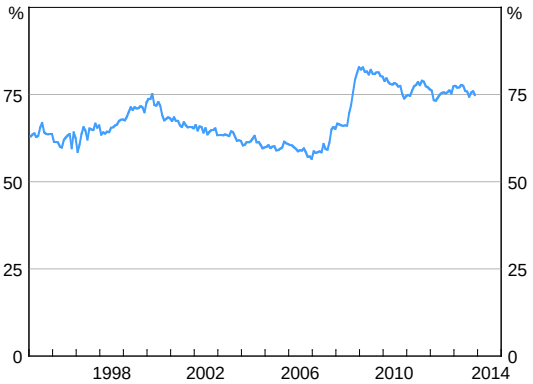
Lenders also competed for new business through product innovations, including:

- **Home-equity loans**, which provide a line of credit against residential property;
- **Low-doc loans**, which enable self-employed borrowers, or those with irregular incomes, to access housing finance;
- **100 per cent offset accounts**, which allow borrowers flexibility in paying down their loan ahead of schedule while having access to costless (or low cost) withdrawals.

Beyond the expanded product range, competition also contributed to a gradual easing in credit standards (albeit not to the extent that occurred in some other countries). There was a relaxation of permissible debt-servicing caps and genuine savings requirements, an increase in maximum loan-to-valuation ratios and the introduction of less onerous property valuation techniques. Recently there has been some tightening in standards, though this has only partially retraced the easing in standards that occurred over the past couple of decades since the sector was deregulated.

Following the onset of the US sub-prime crisis, there was a reappraisal of the risks associated with investing in securitised products. The Australian RMBS market suffered through association even though Australian RMBS had (and have) continued to perform very well. The funding costs of mortgage originators rose markedly and their lending was curtailed, prompting Government support via direct purchases of RMBS in the primary market through the Australian Office of Financial Management (Chapter 5). The major banks continued to expand their mortgage lending and thus gained market share (Graph 6.5; Commonwealth Bank's acquisition of Bankwest in 2008 also contributed to the rise in concentration).

Graph 6.5
Major Banks' Loan Approvals*
Share of total



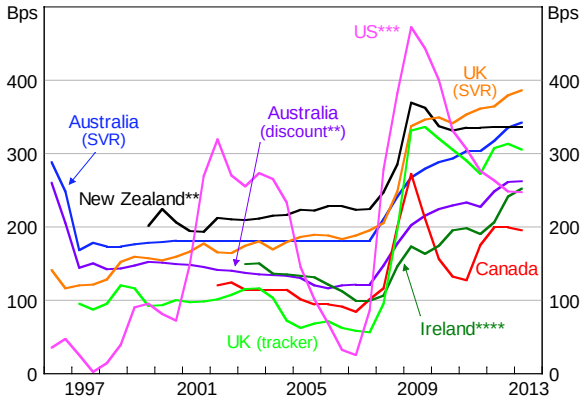
* Housing loans; excludes refinances and investor loans; includes BankWest from December 2008; seasonally adjusted
Sources: ABS; APRA

In recent years, the household sector has adopted a more prudent approach to their finances and credit growth has slowed. In response, banks have competed more aggressively for the existing loans of their rivals. Lenders have offered fee waivers and cash back offers, lowering switching costs. These dynamics were influenced to some extent by the prohibition of early termination fees from July 2011 (on new loans).

Despite the increase in market concentration, a number of the structural changes to the mortgage market that arose out of the entry of mortgage originators in the 1990s have endured. For instance, brokers continue to reduce the search costs for many mortgage customers in comparing the available products. These services, combined with greater access to the internet, have supported price competition (and non-price competition).

International comparisons of interest margins on housing loans are difficult, partly because the typical mortgage product differs across countries and the size of discounts to posted rates is often unobserved. Moreover, the features offered on mortgages can differ significantly across countries; for example, loans with redraw facilities and flexible repayment structures are common in Australia but are relatively scarce in most European countries. Despite these difficulties, the available evidence suggests that the average spread to the policy rate on variable-rate mortgages in Australia is within the range of those in other advanced economies (Graph 6.6; Heath, Robertson and Stewart 2013).

Graph 6.6
Interest Margins on Variable-rate Mortgages
New loans, spread to policy rate, six month rolling average*



* First mortgage interest rate on housing loans to first time customers
** Package loans only
*** 1 year adjustable rate mortgages
**** Floating rates and fixed rates of up to 1 year maturity
Sources: APRA; Bank of Canada; BOE; Central Bank of Ireland; Federal Reserve; FHLMC; ING Canada; Perpetual; RBA; RBNZ

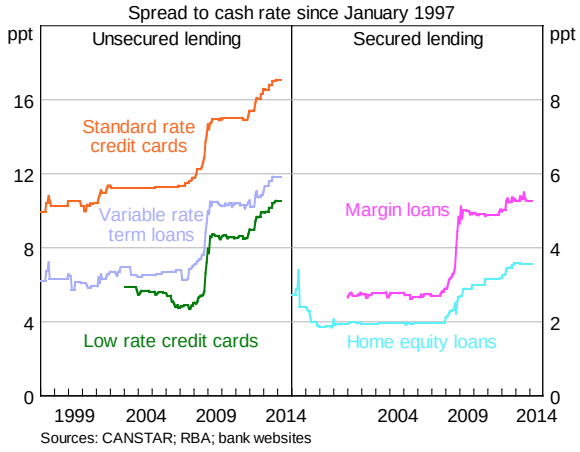
Since 2007, there have been nine parliamentary inquiries into the Australian financial sector, a number of which have focused on the mortgage market. The main conclusion from these was that, while some indicators of competition have decreased since the financial crisis, the supply of credit to households in Australia remained adequate. Several inquiries focused directly on competition: Senate Economics References Committee (2008, 2011). They found that a reassessment of risk increased the cost of funds for lenders that rely on securitisation, which, together with a tightening in lending standards, reduced the number of lenders and products available in the market. There were a number of recommendations to increase competition, including initiatives to encourage activity by smaller participants. Several of these, including the removal of early termination fees on mortgages, were adopted in the Federal Government's Competitive and Sustainable Banking System package that was announced in December 2010 (Commonwealth of Australia 2010).

6.3.3 Personal lending

As with the mortgage market, the adjustment to financial deregulation and the ensuing competitive pressures have increased Australians' access to personal finance. Search costs for potential borrowers fell due to gains in technology, aiding price competition. And foreign banks increased their presence as the cost of distribution declined. At the same time, borrowers have substituted towards cheaper financing – shifting the composition of their borrowing towards mortgage finance. Recent efforts to improve lenders' access to borrower information will reduce information asymmetries and hence may facilitate a more efficient pricing of risk.

The reassessment of credit risk following the onset of the crisis was particularly pronounced in the personal lending space: spreads to the cash rate on all forms of personal loans rose considerably (Graph 6.7). This partly reflects the increase in funding costs relative to the cash rate. But, as with the other lending markets, it is difficult to determine the extent to which the higher spreads reflect lesser competition or simply more prudent pricing of risk.

Graph 6.7
Personal Lending Rates



Interest rates on credit cards have continued to increase relative to the cash rate in recent years. Competition in the credit card market is influenced by specific factors such as the effect of interchange fees that apply in four-party card schemes (Chapter 8).[4] Competition focuses on influencing cardholders' behaviours via reward points and loyalty schemes. These are typically funded by increasing interchange fees, the costs of which are often passed on to merchants through higher service fees. The service fees were subsequently being passed on to users of credit cards and other payment instruments through higher merchant prices. In 2003, the Reserve Bank placed a cap on interchange fee arrangements in the major card schemes to address this – initially counterintuitive – result of competition driving prices up.

[4] Competition in card payment systems is also observed in measures undertaken by card schemes to be the primary or only 'brand' on the card, which may involve incentive payments to the card issuers.

At the same time, the Reserve Bank also took measures to promote greater efficiency and competition in the payments system, including through the removal of certain restrictive practices in card scheme rules – such as 'no-surcharge' rules (Bullock 2010; Chan, Chong and Mitchell 2012; Chapter 8). This has resulted in the increased availability of credit cards, including low-rate and low-fee cards, alongside rewards-based products.

6.3.4 Large business lending

Large businesses tend to have access to a range of financing options, which may aid price competition for loans. Large businesses can overcome, to some extent, many of the informational barriers that necessitate borrowing via traditional bank credit. For example, larger institutions often have greater reporting requirements and are more closely scrutinised by investors.

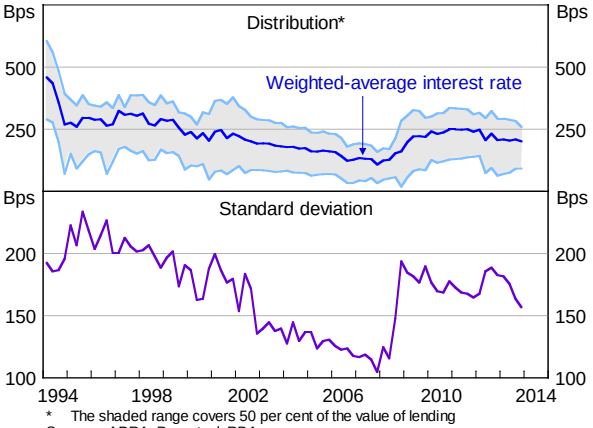
The level and the distribution of large business lending spreads narrowed over the decade preceding the financial crisis (Graph 6.8). The extent to which these trends reflected an underpricing of risk (and an undesirable level of competition) is unclear. Since the crisis, both the level and the variation of these spreads have increased, which has at least partly reflected a reassessment of the risks by lenders. Even so, the average spread on large business loans is around its level of a decade ago.

Many large businesses are able to access loans that are provided jointly by two or more lenders – a process known as syndicated lending. Both Australian-owned and foreign-owned banks participate in the Australian syndicated loan market. The competitive pressures in the market, including developments in loan volumes and pricing, can therefore be influenced by international developments. Since 2007, Asian institutions have increased their involvement in the syndicated lending market – especially in resource-related sectors – as European lenders have retreated (Graph 6.9). Moreover, Australian large businesses have increasingly issued corporate debt in offshore markets (see 'Box 5A: Australia's Corporate Bond Market').

Graph 6.8

Large Business Interest Rates

Spread to 3-month moving average of 90-day bank bill rate



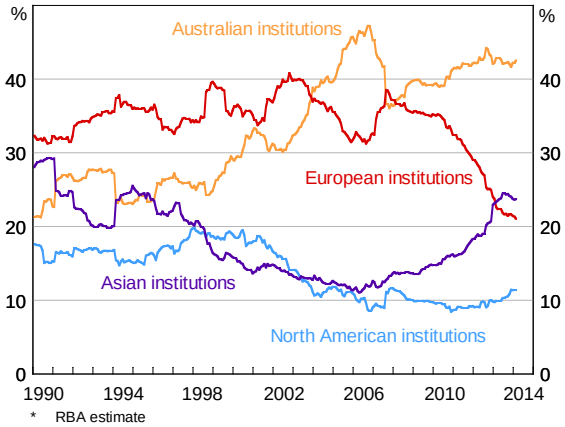
* The shaded range covers 50 per cent of the value of lending

Sources: APRA; Perpetual; RBA

Graph 6.9

Australian Syndicated Lending

Share of total outstanding lending*



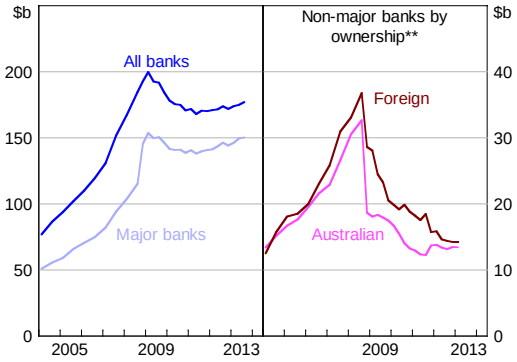
* RBA estimate

Sources: RBA; Thomson Reuters

6.3.5 Commercial property

Competition in the market for commercial property lending has a strongly procyclical element, in part reflecting the lengthy construction lags (Owens 1994). Prior to the financial crisis, the provision of finance to the commercial property sector grew strongly, with foreign-owned and regional Australian banks expanding their market shares. Since the crisis, however, a re-evaluation of funding risks and expected losses saw the smaller banks reduce their exposures to commercial property (Graph 6.10). Although competition for commercial property lending appears to have eased somewhat from its pre-crisis levels, there is little evidence to suggest that this has unduly constrained activity.

Graph 6.10
Banks' Commercial Property Exposures*
Consolidated Australian operations



* Quarterly from September 2008; some banks report only on a semiannual basis
** Final observation is for March 2013
Source: APRA

The commercial property market is a notable example of how competition and lending standards are linked. Most commercial property lending is for specific projects, where loans are frequently syndicated, making it easier for new entrants to expand more quickly than other types of lending. Moreover, new entrants often end up with the more marginal, riskier, borrowers. The consequences of these forces are borne out in Australia through the difference in non-performance rates on commercial property loans across bank types. For example, a number of foreign banks expanded their commercial property lending briskly prior to the crisis and have since incurred high impairment rates (Ellis and Naughtin 2010).

6.3.6 Small business lending

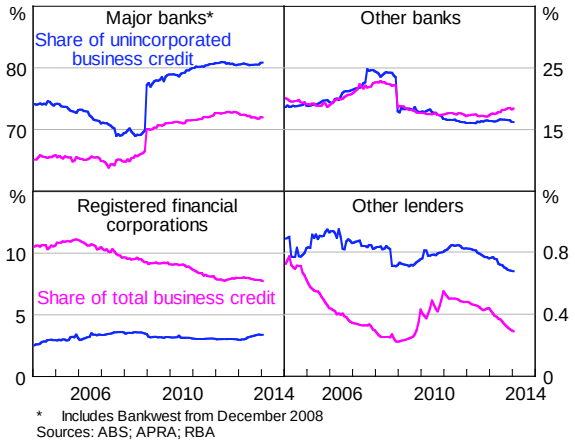
Small businesses tend to have access to fewer sources of financing than large companies because the information asymmetries make it more difficult and costly for small businesses to directly access capital markets. As noted in Chapter 5, there may be some scope for small businesses to substitute trade credit – essentially loans from suppliers – for traditional bank credit (Fitzpatrick and Lien 2013). And recent innovations, such as peer-to-peer lending, may be another option for small business financing. However, overall, the available range of funding sources tends to be more restricted than for large companies.

Small businesses may also lack the expertise and resources to identify financing to meet their needs at the lowest cost (East & Partners 2011). The increased presence of brokers over recent decades has lowered search costs for some small businesses and supported price competition. Survey responses suggest that the use of brokers is particularly attractive when sourcing equipment financing, though it has declined somewhat since the financial crisis. The decline may reflect banks' tightening of lending practices, as credit risk can be more difficult to assess through the broker channel.

The market for small business lending in Australia is more concentrated than that of large business lending (Graph 6.11); this may be due to greater economies of scale in monitoring and assessing potential borrowers. The major banks' share of outstanding loans rose following the financial crisis as they continued to lend while other financial institutions scaled back. Commonwealth Bank's acquisition of Bankwest also contributed to the rise in concentration.

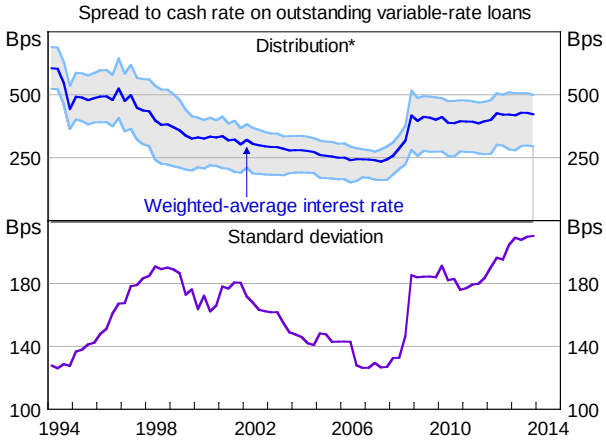
The average spread on small business loans narrowed markedly in the decade following the Wallis Inquiry, and price dispersion declined (Graph 6.12). These trends were reversed, however, following the onset of the financial crisis. The average spread to the cash rate widened as banks' funding costs rose. And price dispersion increased as loan pricing became more sensitive to the perceived risks of individual borrowers. This is one illustration of the procyclical nature of competition for small business lending. Arguably, the risk inherent in some of these loans was underpriced as competition intensified prior to the crisis.

Graph 6.11
Lenders' Shares in Business Credit



* Includes Bankwest from December 2008
Sources: ABS; APRA; RBA

Graph 6.12
Small Business Interest Rates



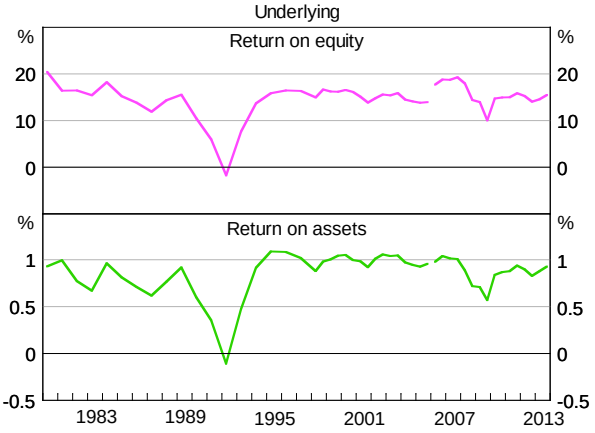
* The shaded range covers 50 per cent of the value of lending
Sources: APRA; Perpetual; RBA

Overall, the available data and liaison by the Reserve Bank, including through its Small Business Panel, suggest that small businesses in most industries had tighter but still reasonable access to funds throughout the financial crisis, albeit at higher cost. This is broadly consistent with the findings of a number of Inquiries that have addressed small business finance in recent years (Senate Economics References Committee 2011, 2012). Both Inquiries found that a reassessment of risk partly explained the tightening in financial conditions faced by some small businesses since the crisis. The Inquiries also concluded that there had been some reduction in competition since the crisis.

6.4 Bank Profitability

The Australian banking system has remained profitable since the mid 1990s despite a temporary fall in profits during the financial crisis. Since 1997, the profits of the major banks have grown at an average annual rate of around 10 per cent, the return on equity has averaged around 16 per cent and the return on assets has averaged around 0.9 per cent (Graph 6.13). These returns are similar to those for banks in other countries prior to the financial crisis (Graph 6.14), and to those of other major companies in Australia.

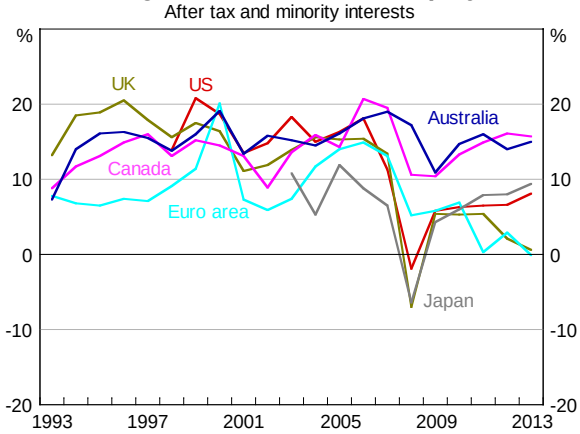
Graph 6.13
Major Banks' Profitability*



* Excluding abnormal items; in 2006 the banks began reporting on an AIFRS rather than an AGAAP accounting basis; data prior to 1998 are on a yearly basis

Sources: RBA; banks' annual and interim reports

Graph 6.14
Large Banks' Return on Equity*



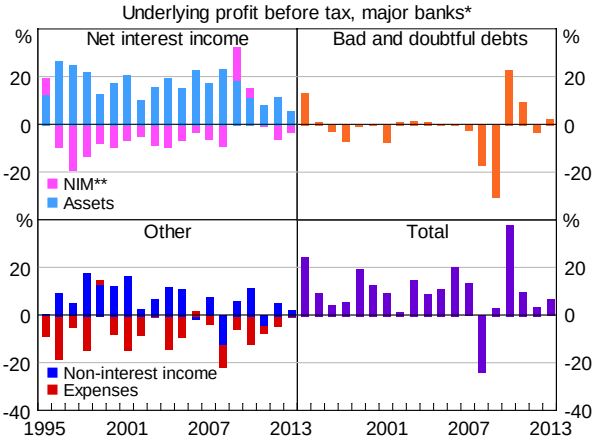
* Includes six US banks, seven euro area banks, four UK banks, three Japanese banks, six Canadian banks and four Australian banks; adjusted for significant mergers and acquisitions; reporting periods vary across jurisdictions

Sources: Bloomberg; RBA; SNL Financial; banks' annual and interim reports

Profitability during the decade prior to the crisis was supported by strong growth in net interest income, which was driven by a rise in interest-earning assets (Graph 6.15). The rapid increase in assets was partly offset by a sustained contraction in net interest margins (Graph 6.2).

Following the onset of the financial crisis, the profitability of Australian banks declined because of higher bad and doubtful debt charges, albeit by less than was experienced in many other countries (Graph 6.16). Since 2010, bad and doubtful debt charges of Australian banks have declined, supporting profits. The lower bad debt expenses of Australian banks partly explain why their return on equity has remained higher than rates achieved by overseas banks since the crisis.

Graph 6.15
Contribution to Change in Profit Growth

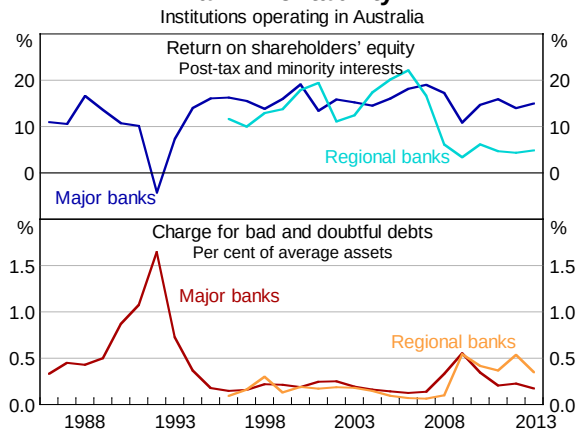


* From 2006 data are on an IFRS basis, prior years are on an AGAAP basis; 2009 data are adjusted for the acquisition of St George

** The NIM includes a cross-product term arising from the interaction between margin compression and growth

Sources: RBA; banks' financial reports

Graph 6.16
Bank Profitability*

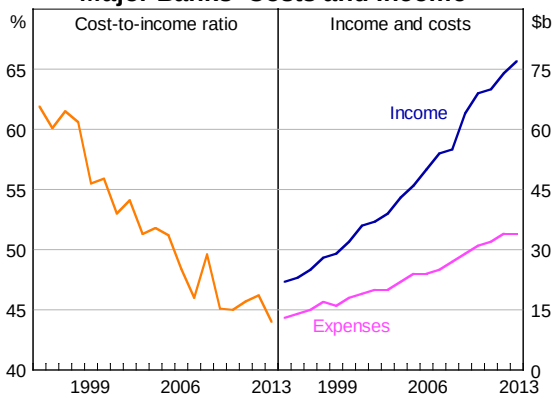


* From 2006 data are on an IFRS basis; prior years are on an AGAAP basis; includes St. George and, from 2009, Bankwest

Sources: RBA; banks' annual and interim reports

Gains in operational efficiency have also supported the profitability of Australian banks. The major banks' cost-to-income ratio – a common measure of efficiency – has trended downwards over the past couple of decades, falling by around 20 percentage points since the mid 1990s (Graph 6.17). The adoption of new technologies enabled banks to provide more streamlined banking services to customers and improve back-office processes. And a focus on reducing high-cost, low-value operations resulted in the closure of a large number of branches during the 1990s.

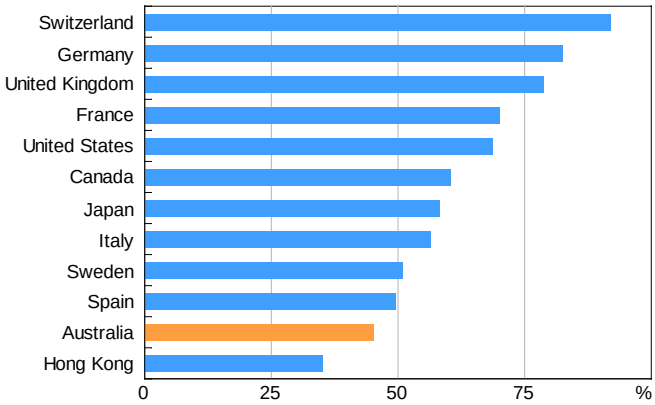
Graph 6.17
Major Banks' Costs and Income*



* Measured on an underlying basis; data from 2006 are on an IFRS basis, while prior years are on an AGAAP basis; includes St. George and, from 2009, Bankwest
Sources: Credit Suisse; Deutsche Bank; Nomura Equity Research; RBA; UBS Securities Australia; banks' annual and interim reports

At around 40–45 per cent, the major banks' cost-to-income ratios are currently at the bottom end of the range of their peers internationally (Graph 6.18). Cross-country differences in cost-to-income ratios may reflect differences in banks' business models. Banks with a greater focus on traditional lending activity (as proxied by the share of earnings derived from net interest income) tend to have lower ratios than those with a greater focus on other activities, such as investment banking or wealth management. The Australian major banks' cost-to-income ratio may also be relatively low because their loan books are more weighted towards mortgages; as mortgages are more homogenous than business loans, the cost of distributing them is likely to have benefited more from technological advances.

Graph 6.18
Large Banks' Cost-to-income Ratios*
Selected economies, 2012



* Includes four Australian banks, six Candian banks, three French banks, four German banks, three Hong Kong banks, three Italian banks, three Japanese banks, two Spanish banks, four Swedish banks, two Swiss banks, four United Kingdom banks and 10 United States banks
Sources: RBA; SNL Financial

6.5 Banking Competition and Financial Stability

There is an extensive body of literature on the relationship between competition for banking services and financial stability (Beck 2008; Freixas and Ma 2013). The links are complex, and there is no consensus in the literature as to whether competition reduces or increases financial stability. However, it is likely that causality will depend on the level of competition: for example, it would be reasonable to assume that once a certain threshold is reached, an increase in competition would have a negative effect on financial stability (OECD 2011).

Two key theoretical papers put forward contrasting views as to the effects of competition on financial stability: the 'charter value' view based on Keeley (1990), and the 'risk-shifting' view proposed by Boyd and De Nicolò (2005). The 'charter value' view focuses on the potential for competition to be destabilising: greater competition results in a decline in banks' market power, which reduces their franchise or charter value; this encourages banks to take on more risk to generate higher returns. Proponents of this view also argue that larger banks tend to be more diversified and have more sophisticated risk management systems (Chan, Greenbaum and Thakor 1986; Keeley 1990). They also argue that a smaller number of larger banks may be easier for regulatory authorities to monitor and regulate (Allen and Gale 2004).

In contrast, the 'risk-shifting' view focuses on the potential for competition to add to financial stability. According to this view, an increase in competition results in a decline in lending rates and therefore allows borrowers to earn higher returns on their investment, which in turn lowers their risk of default. Proponents of this view also point out that large banks may take excessive risk because of an implicit guarantee of support in times of crisis, and that large banks can be more complex and more difficult to monitor by regulators.

Although the literature is mixed, Australia's experience over the past two decades demonstrates that competition in the banking sector, and new entry in particular, can occur without compromising financial system stability. Over the past two decades, the Australian banking system has been subject to increasing levels of competition and market contestability; examples include new entrants using securitisation funding to enter the mortgage market and foreign banks using online distribution to enter the deposit market. The increase in competition aided market efficiency and provided important benefits to consumers, both in terms of increased choice through innovation and through lower prices for financial services. This positive outcome owed partly to the framework of strong prudential supervision and its application to the bulk of the financial system. The problems related to commercial property lending in the late 1980s, however, demonstrates the potential for intense competition to undermine financial stability (Macfarlane 1990, p 33–35).

References

Allen F and D Gale (2004), 'Competition and Financial Stability', *Journal of Money, Credit and Banking* 36(3), pp 453–480.

Beck T (2007), 'Efficiency in Financial Intermediation: Theory and Empirical Measurement', in B Balkenhol (ed), *Microfinance and Public Policy: Outreach, Performance and Efficiency*, Palgrave MacMillan.

Beck T (2008), 'Bank Competition and Financial Stability: Friends or Foes?', Policy Research Working Paper 4656, World Bank, Washington, DC.

Berkelmans L and A Duong (2014), 'Developments in Banks' Funding Costs and Lending Rates', RBA *Bulletin*, March, pp 69–75.

Boyd JH and G De Nicolò (2005), 'The Theory of Bank Risk Taking and Competition Revisited', *Journal of Finance*, 60(3), pp 1329–1343.

Bullock M (2010), 'A Guide to the Card Payments System Reforms', RBA *Bulletin*, September, pp 51–60.

Chan I, S Chong and S Mitchell (2012), 'The Personal Credit Card Market in Australia: Pricing over the Past Decade', RBA *Bulletin*, March, pp 55–64.

Chan Y-S, S Greenbaum and A Thakor (1986), 'Information Reusability, Competition and Bank Asset Quality', *Journal of Banking and Finance*, 10(2), pp 243–253.

Claessens S (2009), 'Competition in the Financial Sector: Overview of Competition Policies', IMF Working Paper No 09/45.

Claessens S and L Laeven (2004), 'What Drives Bank Competition? Some International Evidence', *Journal of Money, Credit and Banking*, 36(3), pp 563–583.

Commonwealth of Australia (2010), 'Competitive and Sustainable Banking System', Final Report, December. Available at <http://banking.treasury.gov.au/banking/content/reports/announcement/downloads/competitive_and_sustainable_banking.pdf>.

Davis K (2007), 'Banking Concentration, Financial Stability and Public Policy', in C Kent and J Lawson (eds), *The Structure and Resilience of the Financial System,* Proceedings of a Conference, Reserve Bank of Australia, Sydney.

Davis K (2011), 'The Australian Financial System in the 2000s: Dodging the Bullet', in H Gerard and J Kearns (eds), *The Australian Economy in the 2000s*, Proceedings of a Conference, Reserve Bank of Australia, Sydney.

East & Partners (2011), 'Use of Brokers in the Asset & Equipment Finance Space Declining', East & Partners Australian Asset and Equipment Finance Market report, 10 October.

Ellis E and C Naughtin (2010), 'Commercial Property and Financial Stability – An International Perspective', RBA *Bulletin*, June, pp 25–30.

Fitzpatrick A and B Lien (2013), 'The Use of Trade Credit by Businesses', RBA *Bulletin*, September, pp 39–46.

Freixas X and K Ma (2013), 'Banking Competition and Stability: The Role of Leverage', unpublished manuscript. Available at <http://www.tilburguniversity.edu/upload/097cd9fb-e65a-41ef-8fb9-4568545ac5bc_ma%20-%20Freixas_and_Ma_Competition_Leverage_Risk%2014102013.pdf>.

Gorajek A and G Turner (2010), 'Australian Bank Capital and the Regulatory Framework', RBA *Bulletin*, September, pp 43–50.

Heath A, B Robertson and C Stewart (2013), 'Trends in the Funding and Lending Behaviour of Australian Banks', RBA Research Discussion Paper No 2013-15.

IMF (International Monetary Fund) (2014), 'Australia: 2013 Article IV Consultation', IMF Country Report No 14/51, February.

Keeley MC (1990), 'Deposit Insurance, Risk, and Market Power in Banking', *The American Economic Review*, 80(5), pp 1183–1200.

Macfarlane I (1990), 'Credit and Debt: Part II', RBA *Bulletin*, May.

OECD (Organisation for Economic Co-operation and Development) (2010), 'Competition, Concentration and Stability in the Banking Sector', Policy Roundtables. Available at <http://www.oecd.org/regreform/sectors/46040053.pdf>.

OECD (2011), 'Bank Competition and Financial Stability', Report prepared for the G20 Workshop 'The New Financial Landscape', sponsored by Australian Treasury and the Reserve Bank of Australia. Available at <http://www.oecd.org/finance/financial-markets/48501035.pdf>.

Owens R (1994), 'Commercial Real Estate Overbuilding in the 1980: Beyond the Hog Cycle', Federal Reserve Bank of Richmond Working Paper No 94-6.

Peterson M and R Rajan (1995), 'The Effect of Credit Market Competition on Lending Relationships', *The Quarterly Journal of Economics*, 110(2), pp 407–443.

Porter ME (1979), 'How Competitive Forces Shape Strategy', *Harvard Business Review*, 57(2), 137–145.

Rajan R (1992), 'Insiders and Outsiders: The Choice between Informed and Arm's-Length Debt', *Journal of Finance*, 474, pp 1367–1400.

RBA (Reserve Bank of Australia) (2010), 'Submission to the Inquiry into Competition within the Australia Banking Sector', November.

RBA (2014), *Financial Stability Review*, March.

Ryan C and C Thompson (2007), 'Risk and the Transformation of the Australian Financial System', in C Kent and J Lawson (eds), *The Structure and Resilience of the Financial System*, Proceedings of a Conference, Reserve Bank of Australia, Sydney, pp 84–113.

Schwartz C and T Carr (2013), 'Shadow Banking: Australia and International Experience around Times of Financial Stress and Regulatory Reform', *JASSA: The Finsia Journal of Applied Finance*, Issue 3, pp 30–38.

Senate Economics Reference Committee (2008), 'Competition in the Banking and Non-banking Sectors', House of Representatives Standing Committee on Economics, November.

Senate Economics Reference Committee (2011), 'Competition within the Australian Banking Sector', Senate Economics References Committee, May.

Senate Economics Reference Committee (2012), 'The Post-GFC Banking Sector', Senate Economics References Committee, November.

Tirole J (1988), *The Theory of Industrial Organization*, The MIT Press, Massachusetts.

Vives X (2001), 'Competition in the Changing World of Banking', *Oxford Review of Economic Policy*, 17, pp 535–547.

7. Superannuation

This Chapter provides an overview of the role of superannuation in the Australian financial system, including the ways in which it differs from pension fund systems internationally. There are several features of Australia's superannuation system that define its importance in the financial system:

- The superannuation and banking sectors combined dominate the Australian financial system. Superannuation assets as a share of GDP have more than doubled since the completion of the Wallis Inquiry in 1997, to be currently over 100 per cent.
- Superannuation forms an important part of household and national saving given its objective to provide income in retirement.
- The Australian superannuation sector appears to have supported the stability of the financial system by adding depth to financial markets, and providing a stable source of finance for other sectors, particularly since the global financial crisis.

There are a number of issues that would be noteworthy for further study by the Inquiry panel:

- The role of the superannuation system has expanded with the growth of superannuation assets: while the superannuation system generally views itself as being in the asset management business, it is also, and increasingly so, in the intermediation business, taking savings and investing in a range of assets. Because of portability requirements and the ability of fund members to change their asset allocation, superannuation funds are exposed to liquidity risk. This risk will also increase as more members draw down their superannuation saving. Superannuation funds will need to balance the management of their liquidity risk with their investment profile.
- There has recently been discussion in international forums about ways to boost funding for infrastructure investment. Some have proposed superannuation as a potential pool of funding to assist in this regard. It would not be appropriate to mandate superannuation funds to invest in particular assets to meet broader national objectives. Rather, trustees need to manage their investments in the best interest of the membership.
- In addition to recent attention on the role of superannuation in financing infrastructure, several other developments warrant close monitoring in terms of their potential risks to the financial system and/or individuals' retirement incomes. These include self-managed superannuation funds (SMSFs) undertaking leveraged investment and the potential for superannuation funds to 'search for yield' in the current low interest rate environment.
- The operating costs of Australia's superannuation funds are higher than in many other Organisation for Economic Co-operation and Development (OECD) countries, partly due to the defined contribution (DC) nature of Australia's superannuation system. While part of this is likely to flow through to relatively high fees, disengagement among members, as well as complexity and difficulty in making comparisons of fees across funds are also likely to play a role. Accordingly, consideration should be given to ways that competitive pressure may be placed on the fees charged by superannuation funds to end users.

- Given the majority of Australia's superannuation fund assets are held in defined contribution schemes, individuals rather than employers or governments directly bear the majority of the risks (such as longevity, investment and inflation) associated with their retirement incomes. Accordingly, it will be important to ensure that the arrangements enable households to tailor their superannuation savings to suit their risk preferences and investment horizons at a reasonable cost.

7.1 Structure of the Australian Superannuation System

Australia has a three pillar approach to retirement saving that involves:

- compulsory saving in superannuation funds via the Superannuation Guarantee (SG)
- voluntary saving via contributions to superannuation or other investments held outside the superannuation system
- a means-tested age pension.

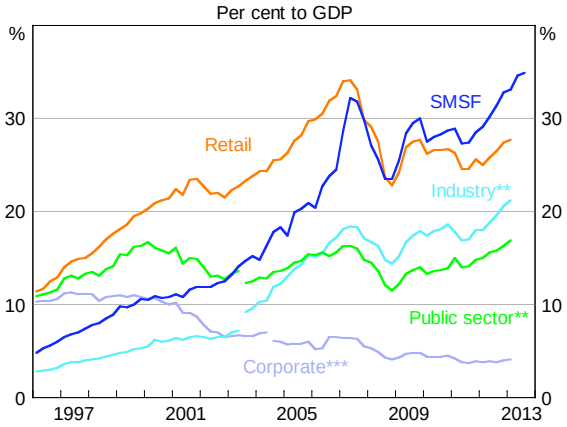
The superannuation system is an important part of individuals' finances and the broader financial system. The compulsory savings pillar was introduced in 1986 to employees under industrial awards and was later extended to cover most employees via the SG, as provided for in the *Superannuation Guarantee (Administration) Act 1992.* The Act requires employers to contribute a fixed portion of employees' salaries (currently at least 9.25 per cent and scheduled to increase to 12 per cent by July 2019) into a superannuation fund. Individuals may also choose to supplement this with voluntary contributions. Both compulsory and voluntary contributions are invested on the member's behalf and (except in certain hardship circumstances) only become accessible once the individual reaches the legislated preservation age.

Individuals can invest their savings into a number of different fund types (APRA 2014; Graph 7.1):

- **corporate funds** have more than four members and are established for the benefit of employees of a particular entity or a group of related entities, with joint member and employer control
- **industry funds** have more than four members and have historically provided for employees working in the same industry or group of related industries. Many industry funds now offer membership to the public
- **public sector funds** have more than four members and provide benefits largely for government employees or employees of statutory authorities, or are schemes established by a Commonwealth, State or Territory law
- **retail funds** have more than four members and offer superannuation products to the public on a commercial basis
- **'small APRA funds'** have less than five members and are regulated by the Australian Prudential Regulation Authority (APRA; this segment is small with around $2 billion in total assets)
- **SMSFs** have less than five members, all of whom are trustees or directors of the corporate trustee.

The first five of these fund types are prudentially regulated and supervised by APRA. SMSFs are subject to compliance regulation and are overseen by the Australian Taxation Office (ATO). A small number of public sector funds are exempt from regulation by APRA and are instead subject to government supervision. All superannuation funds, including SMSFs, are set up as trusts with the sole purpose of providing retirement income. Trustees of funds as well as financial advisors to funds are overseen by the Australian Securities and Investments Commission (ASIC).[1]

Graph 7.1
Superannuation Assets by Fund Type*



* Excludes the balance of statutory funds of life offices; the assets of small APRA funds are negligible
** Series break in December 2003 due to coverage changes; public sector excludes some exempt schemes
*** Reclassification of superannuation entities and data revisions resulted in material changes for corporate funds from December 2004
Sources: APRA; ATO; RBA

The Australian superannuation system differs from pension funds of many of its OECD counterparts in two important respects. First, the majority of superannuation fund assets are held in DC schemes; that is, the benefit the member receives at retirement is dependent on the level of contributions, the time over which the contributions were made and the return on their investment. By contrast, the systems in some other countries are dominated by defined benefit (DB) schemes, where a sponsor (typically an employer or government) guarantees a certain benefit upon an employee's retirement based on factors such as salary and time employed at the employer. Second, other than a few public sector schemes, Australian superannuation funds are provided by the private sector. Many countries have a mix of DB and DC assets, and private and public sector provision.[2]

While DC schemes and private sector provision have become increasingly common in other countries, the introduction of compulsory superannuation encouraged this shift sooner in Australia (Broadbent, Palumbo and Woodman 2006; OECD 2009, 2013b). A key implication of moving to a mainly DC system is a shift in the burden of risks (such as longevity, investment and inflation) from the employer or government (in the case of public provision) to the individual. In countries that are dominated by DB schemes, an ageing population can expose employers or governments to shortfall risk, if growth in pension liabilities outpaces that of employers' revenue or the tax base.[3]

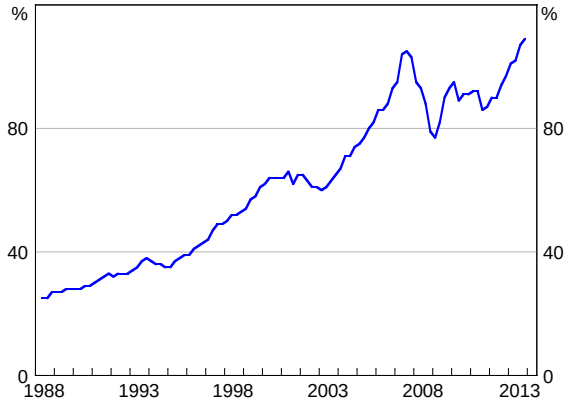
1 ASIC only oversees SMSF trustees if the fund is set up with a corporate trustee.
2 For more information on the structure of pension systems around the world, see OECD (2013b).
3 For more information on the distribution of risks for employers and employees under DB and DC systems, see Broadbent *et al* (2006).

7.2 Recent Trends in the Australian Superannuation Sector

7.2.1 Growth of superannuation

Since the completion of the Wallis Inquiry in 1997, superannuation assets as a share to GDP have more than doubled to be over 100 per cent as at December 2013 (Graph 7.2). This is the result of many factors, including the compulsory SG, tax incentives and a change in expectations of retirement lifestyles.

Graph 7.2
Superannuation Assets
Per cent to GDP



Sources: ABS; RBA

The composition of the superannuation system has changed significantly over this period. As noted above, there has been a broad shift away from DB schemes toward DC schemes, with DB schemes' share down from about 15 per cent of superannuation assets in 1996 to less than 5 per cent in June 2013 (APRA 2004, 2014).[4] The decline in DB schemes has coincided with a decline in the share of superannuation assets held by public sector funds (most of the remaining DB funds in Australia are public sector funds). Throughout most of this period, the shares of assets held by corporate and retail funds fell, while those of industry funds and SMSFs rose; SMSFs accounted for around 30 per cent of superannuation assets at the end of 2013.

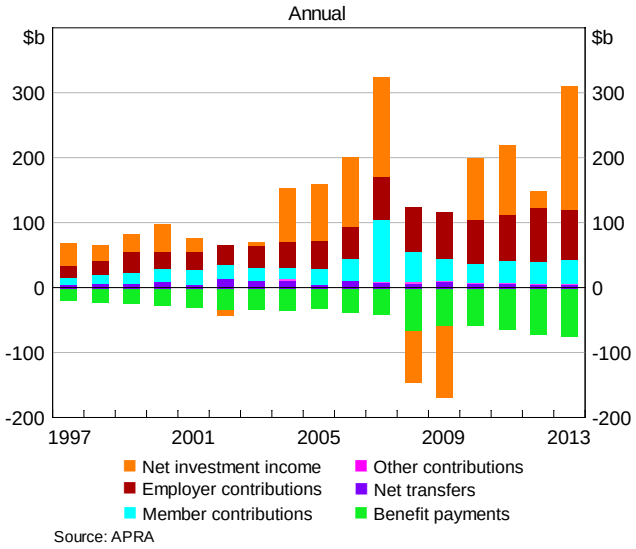
The growth in SMSFs has been particularly rapid, encouraged by legislative changes that have supported the strong growth in superannuation, especially SMSFs, over the past decade. In particular:

- from 2005 individuals were permitted to choose which fund, including an SMSF, their employer's SG contributions are paid into
- prior to the introduction of the Simplified Superannuation system in 2007, there was a transition period in which the after-tax contribution cap was temporarily lifted to $1 million. This drove a sharp rise in member contributions in 2006/07
- from 2007, funds were permitted to borrow to purchase an asset under limited recourse conditions, increasing the accessibility and attractiveness of property investment via an SMSF. There are also a range of small business tax concessions that may influence small business owners to transfer business property into an SMSF (discussed below). These factors may have encouraged some, particularly younger individuals, to set up an SMSF.

[4] Excludes the DB component of hybrid funds.

The main driver of superannuation asset growth since the Wallis Inquiry has been contributions, which have generally exceeded investment earnings (APRA 2014; Graph 7.3). Similar to a number of other countries, both compulsory and voluntary superannuation contributions receive concessional tax treatment, which has influenced contribution inflow into superannuation funds; in particular, there is no tax payable on earnings and benefit payments for those aged over 60 years. For APRA-regulated funds, contributions have been largely driven by the employer SG. By contrast, for SMSFs, voluntary contributions have driven asset growth, particularly during the transition period prior to the introduction of the Simplified Superannuation system, as noted above.

Graph 7.3
Superannuation Fund Flows



Source: APRA

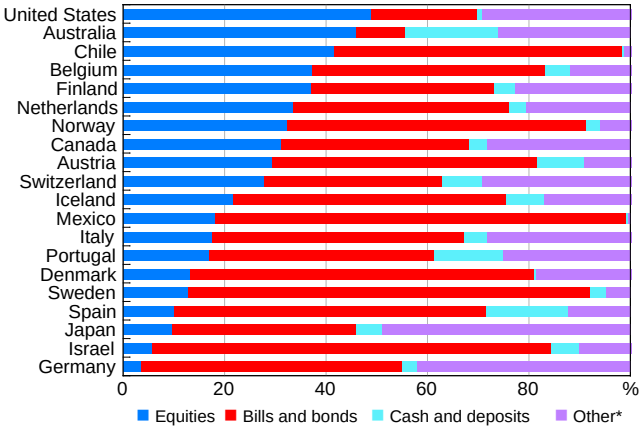
The effect of contributions on superannuation asset growth is partly offset by benefit payments. Prior to the introduction of the Simplified Superannuation system there were restrictions on the amount of benefits that could be paid at concessional tax rates. In 2007, these restrictions were removed, eliminating the tax payable on retirement benefits from a taxed source (where tax on contributions and earnings has been paid) for those aged 60 years or over.

The choice of benefit payment is an important determinant of growth in superannuation assets. In particular, if benefit payments are taken in the form of an account-based income stream (pension), then assets will stay within the superannuation system for longer, whereas benefit payments taken as a lump sum will remove assets from the system more quickly. Since 2007, members have increasingly chosen income stream benefit payments. This is one area where there appears to be a different preference between fund types: for SMSFs, around 70 per cent of benefit payments are in the form of an income stream; whereas for other funds, income streams currently account for 40 per cent of benefit payments (ATO 2013). Consequently, if the share of superannuation assets held in SMSFs increases, then it is likely that the proportion of benefit payments taken as an income stream will also continue to increase.

7.2.2 Asset allocation

The asset allocation of Australian funds reflects their efforts to balance risk, return and liquidity requirements. Equities accounted for nearly half of Australian superannuation assets in 2012, which is high relative to other OECD countries (OECD 2013a; Graph 7.4).

Graph 7.4
Pension Fund Asset Allocation
Share of total assets, selected OECD countries, 2012



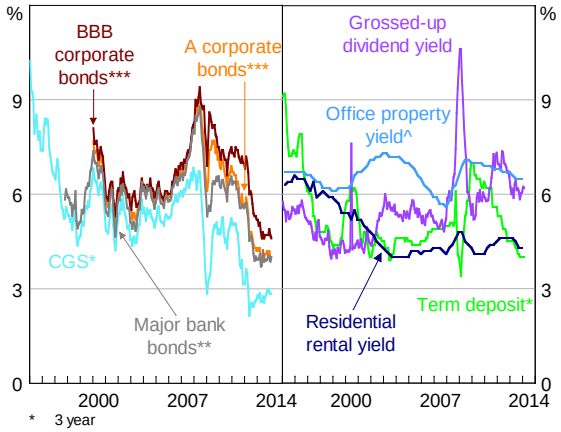
* Includes real estate and land, hedge funds, private equity funds, structured products, loans, unallocated insurance contracts, other mutual funds (not invested in cash, bills and bonds, equities, real estate and land) and other investments
Source: OECD

By contrast, Australian superannuation funds have a much lower allocation to fixed income than many of their OECD counterparts. This lower allocation appears to be mainly due to low demand from funds, given that the size of Australia's bond market is in line with a number of other OECD countries as a share of GDP. Within the bond market though, there is a relatively limited supply of non-financial corporate bonds, as discussed in Chapter 5. This, alongside the relative risk-return and liquidity characteristics of the non-financial corporate bonds on offer may partly explain the tendency of superannuation funds to purchase equity of non-financial corporations rather than bonds. More generally, reasons for the current lower allocation to fixed income include:

- performance and availability of equities. The introduction of superannuation coincided with a sustained increase in the share market and a number of privatisations targeted at retail investors (for example, Telstra), as well as demutualisations.
- the relatively high dividend yield offered on Australian shares. This is the result of Australia's dividend imputation system that removes the double taxation of company profits for Australian shares. Most other developed countries tend to provide only partial or, in some cases, no relief to shareholders from this double taxation.
- for SMSFs, limited access to, as well as lack of familiarity with fixed income products, particularly as similar yields are available on more familiar investment types, such as equity, property and deposits (Graph 7.5). The recent introduction of exchange-traded Commonwealth Government Securities (CGS) as well as fixed income exchange-traded funds (ETFs) may work to alleviate both these issues (although demand for exchange-traded CGS has been limited to date and investment in fixed income ETFs remains small compared with other asset classes).

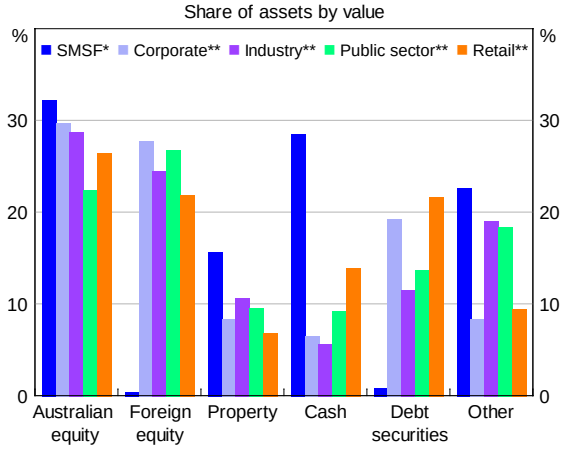
- SMSFs, compared with other fund types, have a large share of cash investments (including deposits), but a negligible share of debt securities (RBA 2013; Graph 7.6). Given that cash investments and some fixed income investments may be considered substitutes, this allocation may reflect the ease of investing in cash and term deposits compared with debt securities (SMSFs also have a low allocation to and have difficulty accessing foreign equities).

Graph 7.5
Australian Investment Rates



* 3 year
** 3–5 year
*** Non-financial corporations only; 1–5 year
^ Yield on premium office property
Sources: Jones Lang LaSalle Research; MSCI; Property Council of Australia; REIA; RP Data Rismark; RBA; UBS

Graph 7.6
Asset Allocation by Fund Type
Share of assets by value



* ATO estimates as at December 2013; direct holdings only except for the 'Other' category, which is predominantly in listed and unlisted trusts and other managed investments; likely to exclude purchases under limited recourse arrangements for some assets
** Allocation of default strategies as at June 2013; direct and indirect holdings; public sector figures exclude some exempt schemes
Sources: APRA; ATO

The share allocated to fixed income in the superannuation asset portfolio can have important implications for the returns on and risks to superannuation portfolios. While equities present members with the possibility of higher rates of return, they can leave them exposed to timing and market risks as the equity market may be underperforming at the time of, or during, retirement (Deloitte Access Economics 2012). By contrast, fixed income assets, particularly those with longer terms, provide a stable income stream that assists in protecting retirees from longevity and market risk, but typically carry credit, reinvestment and inflation risk. It is possible, therefore, that as the population ages, superannuation funds will look to allocate towards fixed income.

The high asset allocation to equities and relatively low allocation to fixed income is common across all superannuation fund types, but in other respects asset allocations differ noticeably. Retail funds typically have a higher allocation to cash and, along with corporate funds, a higher allocation to debt securities than other APRA-regulated funds. APRA-regulated funds tend to have similar allocations to property; however, retail funds typically have a lower allocation to unlisted property than other funds.

SMSFs directly hold a larger share of property assets than other fund types, at 16 per cent of their assets. The bulk of SMSF property holdings are in commercial property, which is likely due to a range of incentives for small businesses to hold property through an SMSF. In particular, the tax arrangements provide an incentive for a small business owner to transfer their business property (and other business assets) into their SMSF. Once the property is in the fund, the fund can lease the property to the business owner at a commercial rate and the rent paid by the business owner can be claimed as a business expense, reducing the taxable profit of the business, while the income to the SMSF will generally be taxed at a lower rate.

7.3 The Cost of Superannuation Services

7.3.1 The drivers of costs

Though international comparisons are not straightforward, the operating costs of Australian superannuation funds are higher than in many other OECD countries (Graph 7.7). This reflects a number of interrelated factors:

- **Defined contribution structure and economies of scale.** According to the OECD, countries with privately managed DC systems and a large number of small funds typically have higher operating costs than countries with a few relatively large funds offering DB schemes (OECD 2013b). Larger superannuation funds can achieve economies of scale, reducing operating expenses as a share of total assets: larger not-for-profit superannuation funds in Australia tend to realise lower expense ratios compared with smaller comparable funds (Cummings 2012). The ongoing consolidation among superannuation funds should lead to greater economies of scale.

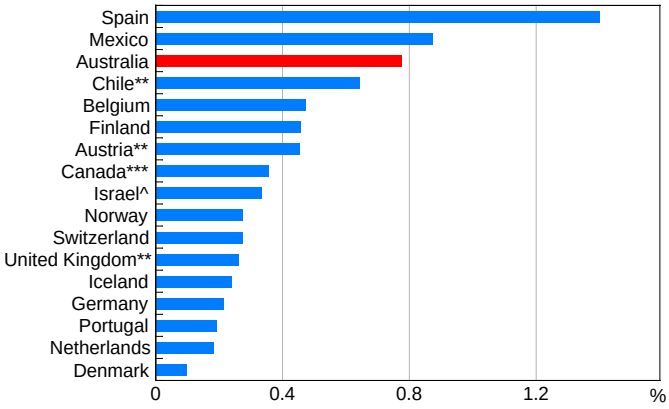
- **Investment strategies.** In Australia, superannuation funds generally pursue more active investment strategies, leading to higher investment management costs compared with most other countries (Deloitte Actuaries and Consultants 2009). Active investment strategies are also common for DC pension funds in the United States for which costs tend to be relatively high (Ashcroft 2009). In principle, more expensive, active investment strategies could potentially yield higher returns to compensate for higher costs, although empirical evidence that active investors outperform the broader market over the longer term is limited (Fama and French 2010; Dyck, Lins and Pomorski 2013; Standard & Poor's 2013).

- **Asset allocation.** The asset allocation of Australian superannuation funds is more heavily weighted in growth and some alternative asset classes compared with most other countries. Higher allocations to these types of assets, which are relatively expensive to manage, contribute to relatively high investment management costs for Australian superannuation funds.

Graph 7.7

Pension Funds' Total Operating Expenses*

Share of total assets, selected OECD countries, 2012



* Includes administrative and investment management costs unless otherwise indicated
** Data are for 2011
*** Data refer to administrative costs only
^ Data refer to investment management costs only
Source: OECD

7.3.2 Fees to end users

The extent to which the relatively high costs of Australian superannuation funds flow through to higher fees is difficult to gauge. Similar to costs, fees for superannuation funds are not directly comparable internationally due to differences in the structure of superannuation systems (for example, the prevalence of DB versus DC schemes in different countries) and in fee-charging methods. In a comparison of DC superannuation fund fees in Australia, Ireland, the United Kingdom and the United States, Ashcroft (2009) finds that average fees among cheaper non-retail public offer funds in Australia were in line with or slightly higher than comparable funds in the United Kingdom, while fees charged by Australian retail funds were considerably higher. Fees for DC pension funds in the United States were also found to be relatively high. Overall, having a commercial provider of superannuation services, and being in a fund with an active investment strategy appear to be the major drivers of superannuation fund fees.

Another factor that may contribute to higher superannuation fees is the lack of engagement among fund members.[5] While the long-term nature of superannuation saving might make beneficiaries somewhat disengaged from the system, complexity and difficulty in making comparisons of fees across funds is also likely to play a role. Disengagement can lead to inefficiencies and increased fees in the superannuation system, due to a lack of competition and the opportunity costs associated with asset allocations and investment strategies that are not appropriate to individuals' risk-return profiles.

To address some of these issues, the Cooper Review into Australia's superannuation system suggested that there was scope to reduce costs and fees, as well as inefficiencies in superannuation funds' administrative procedures (Commonwealth of Australia 2010). Following these recommendations, the Commonwealth Government introduced the MySuper initiative on 1 July 2013.[6] MySuper:

- requires private sector funds to offer a simple, low-cost product suitable for the majority of workers who are currently in the default option of their superannuation fund
- provides greater transparency about fund performance and fees
- aims to encourage consolidation among superannuation funds.

The Review also identified an overreliance on manual processing. In response, a package of measures was introduced – known as SuperStream – aimed at improving superannuation funds' back-office efficiency through encouraging greater use of technology.

While the above measures address some of the drivers of member fees, a potential remaining issue is whether the current fee structure itself promotes efficiency and competitive pressure in the superannuation system. One reason why normal competitive forces do not generally bear on superannuation fees is that member disengagement means the majority of individuals accept their employer's nominated fund and do not seek out information about fund fees. Superannuation funds may therefore have limited incentive to lower their fees to attract members, since the usual decision-maker – the employer – does not benefit from lower fees and is therefore less likely to be influenced by them.

---

5 The level of disengagement in Australia can be gauged from data that suggest that of the majority of workers who are in the default option of their current superannuation fund, only a small share made an active choice for that option (Commonwealth of Australia 2010).

6 Superannuation funds have been able to offer a MySuper product from 1 July 2013. Since 1 October 2013, employers have been required to pay contributions to a fund that offers a MySuper product for employees who are in a default fund. Superannuation funds offering MySuper products will need to transfer the existing balances of their default members to a MySuper product by 1 July 2017.

7.4 Household and National Saving

7.4.1 Retirement income management

The superannuation system plays an important role in channelling household saving and supporting an individual's income in retirement. There are two related challenges in achieving these goals:

- increasing life expectancies imply that individuals will be spending longer in retirement and thus require a larger amount of retirement savings (longevity risk)
- the ageing of the population more generally means that proportionally fewer people of working age are available to support retirees.

Both of these factors contribute to pressure on government spending in many countries via the provision of age pensions (or, in some cases, government-provided DB schemes).

Treasury estimates suggest that the Australian retirement income system is adequate to meet these challenges (Rothman 2007). For example, progressively increasing the SG contribution rate to 12 per cent will increase the percentage of the individual's pre-retirement income paid out in superannuation upon retirement. However, while individuals are expected to become more reliant on their superannuation savings as their primary source of retirement income, it is expected that most individuals will continue to rely on the age pension for a portion of their retirement income, especially if they are still exposed to substantial market risk in the drawdown phase; this will remain true even after the system fully matures, which is projected to occur after 2030. Continued reliance on the age pension as the system matures reflects in part that, due to increased life expectancies, older individuals may require the age pension in the later years of retirement.

A report published by Deloitte Actuaries and Consultants (2013) also suggests that longevity risk is a concern for both the government and individuals. The findings suggest that currently the average 65 year old does not have sufficient superannuation to fund a modest or comfortable standard of living in retirement.[7] According to Deloitte's projections, the average younger Australian (who will receive SG contributions for a full lifetime) will have enough superannuation to fund a modest living standard in retirement with a life expectancy of up to 94 years, and a comfortable living standard if they have a life expectancy of up to 77 years.[8] This compares with a current average life expectancy (at birth) of almost 80 years for a male and 84 years for a female (ABS 2013).

7.4.2 Supporting demographic change

Australia, like other countries, is undergoing a demographic shift. Specifically, the baby boomer generation has largely reached preservation age, meaning an increasing proportion of fund members are moving into drawdown phase. The DC nature of Australia's system means that it is important to ensure that the current incentives and retirement products work to manage the risks faced by retirees, and the risks to the government (through the provision of the age pension). Two key risks for an individual's retirement income management are longevity risk (discussed above) and investment risk (that invested retirement savings perform poorly because of market fluctuations – market risk – or are not appropriately diversified, leading to lower-than-expected retirement income or volatile income streams at the time of retirement).

---

7 Benchmarks for modest and comfortable living standards are based on the Association of Superannuation Funds of Australia's (ASFA's) Retirement Standards. The ASFA defines a modest living standard as better than the age pension but lacking some of the luxuries associated with a comfortable lifestyle, such as occasional travel.

8 These projections assume a worker currently aged 30 with a salary of $60 000 and a current balance of $27 000.

An important part of ensuring that individuals are able to appropriately manage the risks they face is the availability of appropriate retirement products. Currently, most retirees choose to take their superannuation either as a lump sum or an account-based pension. Taking superannuation as a lump sum may mean that individuals exhaust their funds within the early years of retirement, while for account-based pensions, the individual is fully exposed to investment risk, but may mitigate longevity risk, at least in part, by staging the withdrawal of their account balance.

One alternative product that could provide greater protection from longevity and investment risk is annuities. Traditional annuities, which provide a guaranteed income stream over a specific term, life expectancy, or lifetime, can be purchased from prudentially regulated life insurers. In the case of a lifetime annuity, the longevity and investment risk faced by retirees can be transferred to the insurer. In contrast, term or life expectancy annuities hedge against investment risk, but may only partially mitigate longevity risk depending on the term chosen.

Despite these benefits, the current annuity market in Australia is quite small. While the market has never been particularly large it has shrunk substantially since the early 2000s, possibly because a number of incentives to buy annuities rather than take lump sums or account-based pensions (such as more attractive asset test exemptions and, in some cases, tax discounts) were removed.[9] More recently, the low interest rate environment globally may have reduced the attractiveness of annuities for potential buyers. There may also be a mismatch between retirees' needs and the income stream of the annuity – for instance, retirees may wish to spend more of their money in the early part of retirement (Commonwealth of Australia 2009). However, most annuities have limited flexibility with early withdrawals often incurring a penalty. There are some insurers that have begun to offer hybrid products with features of both account-based pensions and annuities. They usually provide some form of guaranteed income over a fixed term or lifetime.

7.4.3 Importance in national saving

Besides ensuring adequate retirement income, another motivation behind the introduction of the SG was to boost national saving, which had been declining from a peak in the mid 1970s. The importance of superannuation to national saving has grown since the introduction of the compulsory superannuation system in 1986, rising from a bit under 20 per cent of gross national saving in 1989 (the earliest data available) to 35 per cent today (Graph 7.8).[10] This reflects the gradual increase in the compulsory contribution rate, an increase in employee coverage from around 40 per cent of total public and private sector employees in the mid 1980s to more than 90 per cent a decade later, as well as increases in voluntary contributions (Gruen and Soding 2011). The contribution of superannuation to national saving is likely to increase further in the next few years as the contribution rate gradually increases.

The impact of (compulsory) superannuation on aggregate household and national saving depends on the extent to which households offset increases in saving through superannuation by reducing other forms of saving. Compulsory superannuation would be expected to increase aggregate saving if there are households that are financially or liquidity constrained and thus unable to offset their superannuation contributions by reducing other savings or increasing borrowing (Edey and Simon 1996; Gruen and Soding 2011). Additionally, compulsory superannuation might lead to increases in voluntary saving for retirement by alerting households to the importance of retirement planning or

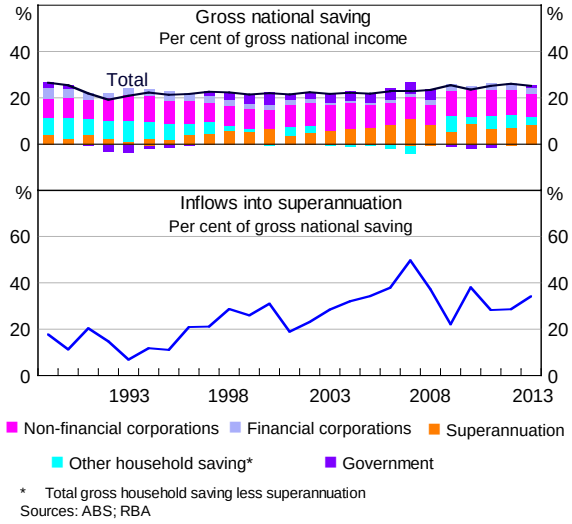
---

9 For a discussion of the development of the annuity market in Australia, see Bateman and Piggot (2010).

10 Household, government, non-financial corporation and financial corporation saving are measured directly as net acquisitions of financial and non-financial assets less net incurrence of liabilities (from the financial and capital accounts). Gross national saving is measured as the sum of saving from these four sectors. The net flows data include compulsory and voluntary contributions into funded superannuation less withdrawals from these funds.

making it more convenient for households to save (Connolly 2007). Superannuation might also increase household saving by resolving uncertainty around the adequate level of saving for retirement, particularly for those households that are myopic and underestimate the need to finance consumption in old age (Connolly and Kohler 2004). Several empirical studies have found that increased saving through superannuation is not entirely offset by reductions in other forms of saving, and thus increases household saving overall. Using aggregate data, Connolly and Kohler (2004) find that less than half of the increased saving through superannuation has been offset by a reduction in voluntary saving, thus increasing households' saving rate, other things being equal.[11]

Graph 7.8
National Saving and Superannuation



* Total gross household saving less superannuation
Sources: ABS; RBA

7.5 Interrelationship with the Banking Sector

Together, the superannuation and banking sectors dominate Australia's financial sector. The two industries are interconnected through a number of channels including: retail superannuation funds that are part of banking groups' wealth management businesses; banking groups' provision of services to other funds; superannuation funds' role in the funding of banks; and banks' lending to superannuation funds.

7.5.1 Retail superannuation funds

Over recent decades, Australian banking groups have diversified into the wealth management sector, prompted by the changes in retirement savings arrangements and the associated growth of superannuation. From the late 1990s, the four major banking groups achieved this by acquiring prominent life insurance/funds management businesses (Hall and Veryard 2006; Ryan and Thompson 2007). Consequently, a number of retail superannuation funds are part of banking groups: about 55 per cent of retail superannuation funds' assets are held in funds run by banking groups.[12] Banking groups benefit from these funds both through the fees they earn as well as the potential cross-selling of products to their superannuation customers.

---

11 FitzGerald and Harper (1992), FitzGerald (1993), Covick and Higgs (1995) and Gallagher (1997) estimate offset coefficients between 30 and 50 cents per dollar. Morling and Subbaraman (1995) find a much larger offset coefficient for net superannuation contributions of 75 cents per dollar; although their results are not strictly comparable to the other studies (see Connolly and Kohler (2004) for further details).

12 Around 80 per cent of financial conglomerates containing a smaller licenced bank are included.

Apart from the direct ownership of funds, banking groups also earn fees through the provision of services to other superannuation funds. For instance, a large proportion of not-for-profit, and to a lesser extent some for-profit, superannuation funds outsource aspects of funds management including asset management, asset custody, advice and insurance to outside firms such as banking groups (Liu and Arnold 2010; Donald *et al* 2013). In particular, banks' focus on the provision of financial advice, trading platforms and other services to SMSFs has increased recently.

Income from aggregate wealth management represented about 10 per cent of the major banking groups' total income in 2013.[13] As a share of income, most major banking groups' wealth management income fell following the crisis and remains low relative to pre-crisis levels.

7.5.2 Provision of bank funding and borrowing from banks

Another way superannuation funds are connected to the banking sector is through their provision of funding to Australian banks. About 25 per cent of superannuation funds' assets are claims on banks in the form of deposits, shares and debt securities (Graph 7.9). Over the last decade the share of banks' funding provided by superannuation funds has increased significantly to around 15 per cent. Part of this increase is likely due to increased demand for assets from superannuation funds as growth in superannuation assets has outstripped growth in bank assets over this period. It may also result from a shift in asset allocation by superannuation funds. In particular, as highlighted in Chapter 5, superannuation funds' allocation to bank deposits has increased significantly over the last decade, to be higher than many OECD countries (OECD 2013a). Growth in deposits held by superannuation funds has likely been driven by a number of factors including:

- increased market volatility exhibited by other assets, particularly equities, following the financial crisis
- fund members moving into different life stages and requiring different investment strategies – as the population ages, a higher proportion of members are approaching retirement and are increasingly likely to demand conservative assets with steady cash flows such as deposits. This is partly evident in the high allocation to deposits by SMSFs, who have a higher proportion of members in, or near, retirement, than other fund types (though, as discussed above, part of this high allocation may be due to the ease of investing in term deposits)
- the liquidity needs of superannuation funds – the introduction of portability requirements in 2004 may have increased funds' demand for relatively liquid assets such as deposits[14]
- relative asset returns – following the crisis, banks have offered returns on term deposits that are similar to those on other assets.

Banks are also exposed to superannuation funds through their lending activity. As noted above, the ability to borrow to purchase an asset under limited recourse conditions has appealed to SMSFs since the introduction of legislative changes in 2007.[15] The value of SMSFs' direct property holdings has increased quite rapidly over this period (Graph 7.10). However, available data suggest the exposure of the banking sector to SMSFs through this channel is small.

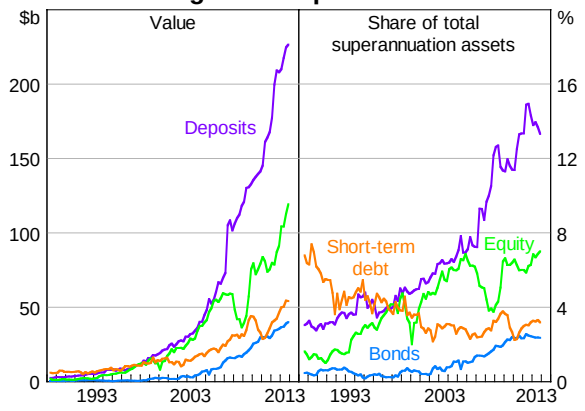
---

13 Wealth management includes superannuation, insurance and other funds management income.

14 In 2004 trustees were required to transfer funds within 90 days; this was reduced to 30 days in 2007.

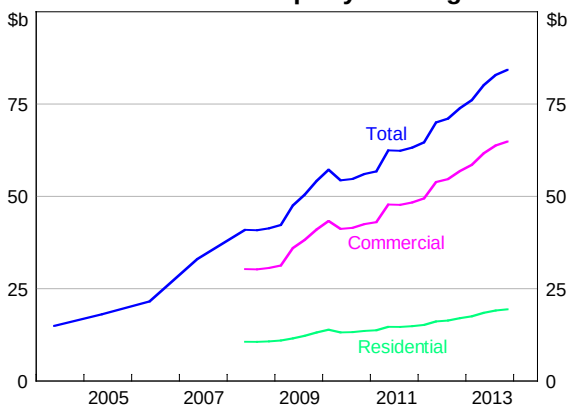
15 While APRA regulated funds can borrow from banks under certain conditions, this does not appear to be a common practice amongst funds.

Graph 7.9
Bank Funding from Superannuation Funds



Sources: ABS; RBA

Graph 7.10
SMSF Direct Property Holdings*



* ATO estimates; likely to exclude some property purchased under limited recourse arrangements

Source: ATO

7.5.3 Financial stability implications

The superannuation sector has grown significantly over the past couple of decades and become an increasingly important component of household assets and Australia's financial system. Despite this growth, Australia's superannuation system is more likely to play a stabilising role in the financial system, rather than a destabilising one, particularly compared with the banking sector. There are several reasons for this:

- Unlike banking liabilities, the majority of superannuation liabilities have **little or no leverage**, which substantially reduces the risk of superannuation funds' default, and a subsequent wealth shock to households. Superannuation funds are also not typically reliant on debt funding and so their funding, unlike banks, is not vulnerable to dislocations in funding markets (although superannuation funds' asset holdings may still be vulnerable to dislocations in funding markets).

- While the **size** of Australia's superannuation sector is large, the degree of concentration in the industry is low: the five largest and ten largest superannuation funds by assets in 2013 accounted for 16 per cent and 27 per cent of total industry assets, respectively.[16] Although – as noted above – it likely raises operating costs, the low level of concentration in the superannuation industry reduces the risk that the asset allocation choices of one or two relatively large superannuation funds could have wider implications for the superannuation industry or the financial system more broadly.

- **Interconnectedness** between superannuation funds is much lower than in the banking sector. Superannuation funds do not engage in trading with each other, whereas interbank borrowing and lending is significant. Given the low level of interconnectedness, the effects of financial distress of an individual superannuation fund are likely to be largely confined to that fund, and there is limited potential for the impact to spread to other funds and propagate through the broader financial system. It is important to note, however, that while superannuation funds are generally not linked directly, funds often share the same service providers such as custodians (Donald *et al* 2013).

[16] Total industry assets include the assets of APRA-regulated funds (except for pooled superannuation trusts), SMSFs, exempt public sector superannuation schemes that report to APRA, and life office statutory funds.

- Although direct interconnections are small, superannuation funds that have common asset allocation strategies are exposed to the same shocks, leading to **correlation** of fund performance. Correlation among superannuation funds could exacerbate financial market volatility if funds seek to reduce their exposure to certain securities or asset classes during a crisis, which could in turn encourage further selling. The low level of concentration in the industry, noted above, may somewhat mitigate this.

The Australian superannuation sector appears to have supported the stability of the financial system by adding depth to financial markets, and providing a stable source of finance for other sectors. In particular, since the global financial crisis Australian superannuation funds have provided an alternative source of finance to Australian firms and banks, allowing them to raise equity in the domestic share market, and alleviating some of the funding pressures associated with the increase in global risk aversion and the pull-back from domestic and global debt markets. Around half of net equity financing for banks and private non-financial corporations since the financial crisis has been sourced from superannuation funds.

Despite the above factors, the fact that the pool of superannuation savings is large and provides a source of funding for other sectors in the economy means that the system should continue to be carefully monitored. In particular, superannuation funds can be exposed to liquidity risk, although potentially to a lesser extent than the banking sector, which could have implications for financial system stability in some circumstances. Choice of fund regulations and portability requirements mean that superannuation funds are required to be able to transfer a member's assets within 30 days of receiving a request to do so.[17] This could be difficult for funds with relatively large allocations to illiquid assets, particularly if a fund receives multiple requests at the same time. Liquidity risk may also arise from members simultaneously shifting their asset allocations or withdrawing funds in response to a shock in asset markets. While this risk is partially mitigated by preservation rules, portfolio shifts could become more pronounced over the longer term as an increasing share of workers reach preservation age and potentially become more engaged and active in asset allocation decisions.

There are three specific recent developments in the superannuation system that bear close monitoring. First, as SMSFs increase in importance within the sector, the fact that they can leverage raises concerns about SMSF members being exposed to greater financial risks (including excessive concentration in a single asset) than they understand they are taking. To the extent that banks are lending to SMSFs, they appear to be managing the potential risks of limited recourse borrowing arrangements by their frequent requirements for personal guarantees from SMSF members, minimum fund net asset requirements, and lower maximum loan-to-valuation ratios than often imposed on their other property lending.

Second, given the low interest rate environment globally in recent years, investors are increasingly 'searching for yield'. Superannuation funds, seeking higher returns without exposure to excessive volatility, may shift their asset allocation away from assets such as cash, bonds and equities and further towards higher risk and alternative asset classes such as private equity, hedge funds, unlisted property and infrastructure, in order to increase returns or meet performance benchmarks. This could potentially increase the exposure of individuals' retirement savings to a higher level of risk than may be desirable. In addition, increased demand for alternative assets could potentially lead to asset prices outstripping market fundamentals. Similarly, at least some of the increase in property investment by SMSFs is a new source of demand that could potentially exacerbate property price

[17] There are some exceptions to the 30-day portability requirement for illiquid assets.

cycles. It should be noted, however, that DC funds have less incentive to 'search for yield' than DB funds as they do not offer a guaranteed income stream (Antolin, Schich and Yermo 2011).

Third, with the increasing pool of superannuation funds, some have proposed that those funds may be better tapped into for productive investments in the economy, such as infrastructure. This highlights the potential for an increase in the maturity transformation role of superannuation funds: taking the savings of individuals, which may be called upon at short notice under portability requirements, and investing in longer-dated assets. This function of the superannuation system needs to be balanced with appropriate liquidity management for the reasons discussed above (Debelle 2013).

Therefore, while overall the near-term risks of the fast-growing superannuation system appear limited, the increased demand of superannuation funds for different asset types warrants ongoing monitoring. In particular, given the large pool of superannuation savings, investment allocation choices have the potential to influence asset price cycles and also raise liquidity management issues for superannuation funds.

7.6 Investment in infrastructure

The potential for the superannuation sector to play a greater role in financing infrastructure projects has gained considerable attention in recent years. This has been driven by the more general attention by international forums, such as the Group of Twenty (G20), on how to fund long-term investment given the fiscal constraints faced by many governments, particularly in developed countries. While superannuation funds have a pool of funds that could potentially be used to assist funding for productivity-enhancing projects, it is unlikely that this pool of funds will be the sole solution to financing infrastructure investment in Australia. Given the risks inherent in infrastructure investment, funds need to manage these risks against the benefits infrastructure assets provide, bearing in mind that the purpose of superannuation is to act as a vehicle for building retirement savings for members.

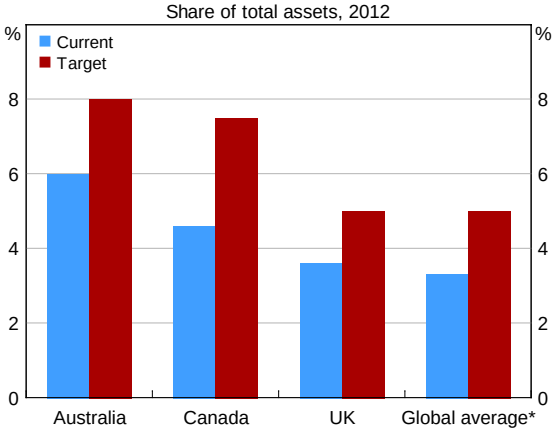
In any case, as discussed in Chapter 5, Australian superannuation funds already have relatively high allocations to infrastructure assets compared with other countries (albeit largely indirect investment via equity funds; Graph 7.11). This has been enabled by the significant number of privatisations in Australia since the early 1990s, and less restrictive regulations on Australian pension funds' investments in illiquid assets compared with many other countries (Inderst and Della Groce 2013).

There are several characteristics of infrastructure assets that superannuation funds could potentially find attractive. As discussed in Chapter 5, brownfield infrastructure assets are seen as a good fit for superannuation funds because of their potential to provide maturity matching with liabilities and hedge inflation (through inflation-linked assets), as well as to provide a stable real income stream. Unlisted infrastructure equity investments are generally less correlated with other financial market assets, and hence may provide diversification benefits to superannuation funds. Infrastructure assets – often being natural monopolies – face limited competition, although the sector is exposed to regulatory risk.

Compared with most other assets though, infrastructure investments, particularly direct investments, are relatively expensive to manage. Infrastructure projects are inherently complex and superannuation funds often lack the expertise to make infrastructure investment decisions themselves. While some funds have made the decision to build this capability in-house, most have traditionally had to pay external asset managers to manage the asset and advise them on the investment process. The scale of infrastructure projects also means that investors generally have to form consortiums to invest directly, with the cost of liaising, coordinating and negotiating between

investors being significant. The scale of the transactions in Australia also tends to be relatively high compared with Canada and the UK where financing tends to be through smaller and more structured investment products (Deloitte Access Economics 2013).

Graph 7.11
Pension Funds' Current and Target Allocations to Infrastructure Assets
Share of total assets, 2012



* Sample of 619 pensions funds
Source: Preqin

The unlisted nature of many infrastructure investments means that there tends to be a lack of transparency and accessibility compared with exchange-traded assets. Consequently, information on infrastructure projects is not readily available and has to be sought out, valuations are often infrequent, and there can be considerable uncertainty associated with some infrastructure investments.

The degree of liquidity of infrastructure assets also varies considerably, and superannuation funds investing in relatively illiquid assets could face a potential mismatch between the long-term nature of infrastructure investments and the need to maintain sufficient liquidity to accommodate any adjustments beneficiaries make to their investment portfolios, as discussed above. This liquidity risk may increase over time as an increasing share of the population reaches preservation age and withdraws funds from the system.

References

Antolin P, S Schich and J Yermo (2011), 'The Economic Impact of Protracted Low Interest Rates on Pension Funds and Insurance Companies', *OECD Journal: Financial Market Trends*, Volume 2011 – Issue 1, pp 1–20.

Ashcroft J (2009), 'Defined-Contribution (DC) Arrangements in Anglo-Saxon Countries', *OECD Working Papers on Finance, Insurance and Private Pensions*, No 35.

ABS (Australian Bureau of Statistics) (2013), 'Deaths, Australia, 2012', ABS Cat No 3302.0, November.

APRA (Australian Prudential Regulation Authority) (2004), *Superannuation Trends,* September. Available at <http://www.apra.gov.au/Super/Publications/Documents/Superannuation-Trends-PDF.pdf>.

APRA (2014), *Annual Superannuation Bulletin*, June 2013, revised 5 February 2014. Available at <http://www.apra.gov.au/Super/Publications/Documents/Revised%202013%20Annual%20Superannuation%20Bulletin%2005-02-14.pdf>.

ATO (Australian Taxation Office) (2013), 'Self-managed Superannuation Funds: A Statistical Overview 2011–2012'. Available at <http://www.ato.gov.au/Super/Self-managed-super-funds/In-detail/Statistics/Annual-reports/Self-managed-superannuation-funds--A-statistical-overview-2011-2012/>.

Bateman H and J Piggot (2010), 'Too Much Risk to Insure? The Australian (non-) Market for Annuities,' UNSW Discussion Paper No 01/10.

Broadbent J, M Palumbo and E Woodman (2006), 'The Shift from Defined Benefit to Defined Contribution Pension Plans – Implications for Asset Allocation and Risk Management'. Available at <http://www.bis.org/publ/wgpapers/cgfs27broadbent3.pdf>.

Commonwealth of Australia (2009), 'Australia's Future Tax System', Final Report to the Treasurer, Part Two: Detailed Analysis, December. Available at <http://www.taxreview.treasury.gov.au/content/downloads/final_report_part_2/AFTS_Final_Report_Part_2_Vol_1_Consolidated.pdf>.

Commonwealth of Australia (2010), 'Super System Review: Final Report to the Minister for Financial Services, Superannuation and Corporate Law: Part 1: Overview and Recommendations', June.

Connolly E (2007), 'The Effect of the Australian Superannuation Guarantee on Household Saving Behaviour', RBA Research Discussion Paper No 2007-08.

Connolly E and M Kohler (2004), 'The Impact of Superannuation on Household Saving', RBA Research Discussion Paper No 2004-01.

Covick O and B Higgs (1995), 'Will the Australian Government's Superannuation Initiatives Increase National Saving?', Paper presented at the 24th Conference of Economists, Adelaide, 25–27 September.

Cummings J (2012), 'Effect of Fund Size on the Performance of Australian Superannuation Funds', APRA Working Paper, March.

Debelle G (2013), 'Remarks on Liquidity', Address to the Australasian Finance and Banking Conference, Sydney, 17 December.

Deloitte Access Economics (2012), 'Out on a Limb? Domestic Fixed Income Assets in Australia,' Report prepared for the Australian Securitisation Forum, October.

Deloitte Access Economics (2013), 'Maximising Superannuation Capital', Final Report prepared for The Association of Superannuation Funds of Australia, June.

Deloitte Actuaries and Consultants (2009), 'International Superannuation and Pension Fund Fees', Report for the Investment and Financial Services Association, September.

Deloitte Actuaries and Consultants (2013), 'Dynamics of the Australian Superannuation System: The Next 20 Years: 2013–2033', September.

Donald S, B Arnold, H Bateman, R Buckley and K Liu (2013), 'The Implications of Complexity for Systemic Risk in the Superannuation System', CLMR Working Paper No 13-3.

Dyck A, K Lins and L Pomorski (2013), 'Does Active Management Pay? New International Evidence', *The Review of Asset Pricing Studies*, June.

Edey M and J Simon (1996), 'Australia's Retirement Income System: Implications for Saving and Capital Markets,' NBER Working Paper 5799, October. Available at <http://www.nber.org/papers/w5799.pdf?new_window=1>.

Fama E and K French (2010), 'Luck versus Skill in the Cross-Section of Mutual Fund Returns', *Journal of Finance*, 65(5), pp 1915–1947.

FitzGerald V (1993), *National Saving: A Report to the Treasurer*, Australian Government Publishing Service, Canberra.

FitzGerald V and I Harper (1992), 'Superannuation Preferred or "Level Playing Field"? Implications for Saving and the Financial System', Australian Tax Forum, 9(2), pp 193–258.

Gallagher P (1997), 'Assessing the National Saving Effects of the Government's Superannuation Policies: Some Examples of the New RIMGROUP National Saving Methodology', The Fifth Colloquium of Superannuation Researchers, University of Melbourne, Conference Paper 97/3. Available at <http://rim.treasury.gov.au/content/pdf/CP97_3.pdf>.

Gruen D and L Soding (2011), 'Compulsory Superannuation and National Saving', Paper presented to the Melbourne Institute/*The Australian* 2011 Economic and Social Outlook Conference, 1 July.

Hall K and D Veryard (2006), 'Recent Trends in Australian Banking', *Economic Papers*, Special Edition, December, pp 6–25.

Inderst G and R Della Croce (2013), 'Pension Fund Investment in Infrastructure: A Comparison between Australia and Canada', *OECD Working Papers on Finance, Insurance and Private Pensions*, No 32.

Liu K and B Arnold B (2010), 'Australian Superannuation: The Outsourcing Landscape,' APRA Working Paper, July.

Morling S and R Subbaraman (1995), 'Superannuation and Saving', RBA Research Discussion Paper No 9511.

OECD (2009) (Organisation for Economic Co-operation and Development), 'OECD Private Pensions Outlook 2008', February.

OECD (2013a), *Pension Markets in Focus*, OECD Publishing.

OECD (2013b), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing.

RBA (Reserve Bank of Australia) (2013), 'Box D: Self-managed Superannuation Funds', *Financial Stability Review*, September, pp 54–57.

Rothman G (2007), 'The Adequacy of Australian Retirement Incomes – New Estimates Incorporating the *Better Super* Reforms', Paper presented to the Fifteenth Colloquium of Superannuation Researchers, University of Sydney, July. Available at <http://rim.treasury.gov.au/content/pdf/CP07_1.pdf>.

Ryan C and C Thompson (2007), 'Risk and the Transformation of the Australian Financial System', in C Kent and J Lawson (eds), *The Structure and Resilience of the Financial System*, Proceedings of a Conference, Reserve Bank of Australia, Sydney.

Standard and Poor's (2013), 'S&P Indices versus Active Funds (SPIVA®) Scorecard', June. Available at <http://www.spindices.com/documents/spiva/spiva-us-mid-year-2013.pdf>.

8. Developments and Innovation in the Payments System

A safe, competitive and efficient payments system is essential to support the day-to-day business of the Australian economy. Following the recommendations of the Wallis Inquiry, the regulatory structure around the payments system was updated with the aim of improving competition and efficiency in the payments system, while ensuring that stability and confidence in the system were not compromised. Central to this was the creation of a dedicated payments regulator, the Payments System Board (PSB).

This Chapter discusses the regulatory structure put in place following the Wallis Report and the approach to regulation that the PSB and the Reserve Bank have taken, describing the key reforms implemented by the PSB and the Bank, the effects of those reforms, and how the methods Australians use to make payments have changed since 1997. As innovation in payments was a particular focus of the Wallis Inquiry and is identified as a theme for the current inquiry, this Chapter also discusses the PSB's *Strategic Review of Innovation in the Payments System* and recent industry progress on objectives identified by the Strategic Review.

The key points of the Chapter are as follows.

- The Wallis reforms to payments system regulation were innovative and have proved effective. The approach of the PSB has been to encourage industry to undertake reform, only using its powers when it judges this to be necessary for managing risk and promoting efficiency, competition and stability. For example, shorter clearing times in the cheque system and the proposal for the New Payments Platform (NPP) were introduced by industry with the encouragement of the PSB. In contrast, the Bank's reforms to card payment systems were only introduced after it became clear that a self- or co-regulatory solution was unlikely to emerge.
- The Bank's reforms to card payment systems have realigned incentives and enabled market mechanisms to work better, as well as making fees and the costs of payments more transparent for users. Many other jurisdictions have since undertaken payments system reforms along the lines of those implemented by the PSB and the Bank.
- As foreshadowed in the Wallis Report, there has been a gradual decline in the relative importance of cheques and cash, and strong growth in electronic payments, such as via debit and credit cards and direct debits and credits. This has been supported by considerable customer-facing innovation in the payments system, with electronic transactions becoming faster, more convenient, more widely accepted and available via a greater range of devices.
- To facilitate greater collaborative innovation in the payments system, the PSB undertook a Strategic Review of Innovation over 2010 to 2012 and established strategic objectives for the payments system. In response, industry is now working on enhanced governance and a project that will provide the capacity for consumers and businesses to make payments with real-time funds availability to the recipient on a 24/7 basis.

- The Wallis Report promoted a number of reforms to the design and regulation of financial market infrastructures (FMIs) that have contributed to financial stability. The introduction of real-time gross settlement (RTGS) in 1998, as supported by the Wallis Inquiry, has dealt with the bulk of domestic settlement risk. More recently, the commencement of same-day settlement of direct entry (DE) payments in 2013 has mitigated much of the remaining settlement risk. Inclusion of the Australian dollar in CLS Bank International (CLS) has addressed the bulk of foreign exchange settlement risk. Such reforms, along with a strong regulatory regime for clearing and settlement (CS) facilities introduced under the *Corporations Act 2001*, ensured that FMIs continued to operate soundly and remained a source of stability during the global financial crisis.
- Looking ahead, the increasing systemic importance of FMIs, as well as competition and cross-border provision of FMI services, present regulatory challenges. Key recommendations from the Council of Financial Regulators (CFR) arising from its 2011 review of FMI regulation (following the rejection of the proposed merger of ASX and the Singapore Exchange) should be progressed as a matter of priority (CFR 2012c). In particular, with reforms in over-the-counter (OTC) derivatives markets increasingly concentrating activity in central counterparties (CCPs), it is crucial that the official sector has the power to deal with problems in FMIs should they arise. Further, with increased cross-border provision of FMI services, there may be circumstances in which it is desirable to bring an overseas facility under the primary regulation of ASIC and the Bank, under Australian law, and within the scope of a prospective FMI resolution regime. Should these recommendations be progressed, in the Bank's view the regulatory framework will provide a sound foundation to deal with foreseeable challenges.

8.1 The Wallis Inquiry and New Powers for the Reserve Bank

A key theme in the Wallis Committee's Final Report was the need to achieve the right balance between increasing the efficiency of the payments system through promoting contestability and the public policy objective of maintaining financial stability.

The Committee recognised the potential for innovation in payments to deliver efficiency and competition benefits, while noting the importance of ensuring that deposit-like funds of customers were appropriately protected. The Report noted that the Australian payments system at that time could be characterised by relatively high overall costs and that there was scope for substantial efficiency gains, including greater use of electronic payments and reduced use of cash and cheques. It noted that cheques – at the time used extensively – were a much more expensive means of making payment than electronic credits or debits, and that public policy should seek to ensure that pricing and regulation did not impede a shift to lower-cost payment instruments. It also noted, however, that the card payment systems were characterised by opaque fee arrangements, distortionary incentives for certain cardholders and restrictive entry criteria and trade practices.

The Committee supported progress being made in implementing RTGS in Australia, identifying the importance of RTGS in decreasing settlement risk associated with large value payments, and endorsed legislative action to address some legal uncertainties relating to payment and settlement systems. It further noted that subject to cost-benefit considerations, there was scope for extending real-time settlement to other payments.

The Committee noted that the existing governance arrangements for the payments system had not resulted in the setting of appropriate performance benchmarks for the system, so that a revised approach was needed, with a greater emphasis on efficiency. The Report recommended new regulatory arrangements for the payments system, including the creation of a second board at the

Reserve Bank, the PSB, which would focus on payments system issues. It also identified some specific issues for the PSB and the Australian Competition and Consumer Commission (ACCC) to focus on as part of their work. In particular, the Report recommended that the Bank and the ACCC undertake a review of interchange fee arrangements in the card systems, and that access arrangements in the payments system be liberalised, including access to Exchange Settlement Accounts (ESAs) at the Bank and access to clearing systems managed by the Australian Payments Clearing Association (APCA).

In 1998, the government implemented a range of reforms that were generally in line with the broad structure and powers recommended by the Committee. The responsibility for oversight of the payments system was entrusted to the PSB. The PSB's responsibilities and powers are set out under four key pieces of legislation: the *Reserve Bank Act 1959*, the *Payment Systems (Regulation) Act 1998* (the PSRA), the *Payment Systems and Netting Act 1998* (the PSNA), and Part 7.3 of the Corporations Act. The Bank's policy-making role is one of the four different roles of the Bank in the payments system (see 'Box 8A: The Roles of the Reserve Bank in the Payments System').

Box 8A The Roles of the Reserve Bank in the Payments System

The Bank has several distinct roles in the Australian payments system.

- It owns, operates and participates in Australia's RTGS system, the Reserve Bank Information and Transfer System (RITS). This system was put in place in the late 1990s, with the objective of reducing systemic risk posed by the build-up of interbank settlement obligations under the then existing deferred net settlement arrangements. RITS also settles batches of transactions where the underlying payments are netted, or settled simultaneously, and it provides access to ESAs for approved holders. The Bank's Payments Settlements Department has responsibility for this function.
- It is a provider of transactional banking services to the Australian Government and its agencies. Banking Department has responsibility for this function. The Bank's activities in this role are pursuant to the Reserve Bank Act, which provides for the Bank to serve as banker to the government insofar as it is required to do so. The Bank provides the government with access to a broad range of different payment and collection services. Where required by the government's guidelines and regulations, the Bank's transactional business services are offered on a commercial basis, in line with the principle of competitive neutrality.
- Under the Reserve Bank Act, the Bank has responsibility for the issue, reissue and cancellation of Australia's currency notes. The Bank manages its banknote responsibilities through Note Issue Department, which arranges for Australia's banknotes to be printed by Note Printing Australia Limited (NPA), a separately incorporated wholly owned subsidiary of the Bank.
- It is the principal regulator of the payments system through the PSB. Payments Policy Department has responsibility for providing advice to the PSB. This Chapter focuses on the Bank's policy role in the payments system.

While these functions of the Bank are conceptually distinct, their existence may give rise to concerns about actual or perceived conflicts of interest. To ensure appropriate management of any such conflicts, the Wallis Report recommended that the Bank's payments system regulatory powers be vested in a separate board, with a majority of independent directors.

The PSB and the senior management of the Bank take very seriously the possibility of any perception that the Bank's policy and operational roles may be in conflict, especially since this could undermine public confidence in the regulatory and policy process. Accordingly, the Bank has policies in place for avoiding conflicts and addressing them when they do occur. The main way this is achieved in the Bank's organisational structure is through the separation of Payments Policy Department from the operational departments. The PSB has formally adopted a policy on the management of conflicts of interests, compliance with which is audited each year.

The Reserve Bank Act (as amended) formally establishes the PSB, with a mandate to direct the Bank's payments system policy to the greatest advantage of the people of Australia. The Act specifies that the PSB's powers under the PSRA and PSNA are to be exercised in a way that will best contribute to:

- controlling risk in the financial system
- promoting the efficiency of the payments system

- promoting competition[1] in the market for payment services, consistent with the overall stability of the financial system.

The PSRA sets out the main powers of the Bank in respect of payments system policy and the factors that the Bank must take into account in determining the public interest. These include that payments systems should be financially safe, efficient and competitive, and that the Bank's actions should not contribute to increased risk to the financial system. Part 3 of the PSRA allows the Bank, among other things, to:

- 'designate' a particular payment system as being subject to regulation
- impose an access regime for any designated system (an access regime is a regulation that seeks to ensure that new participants are able to access a network on fair and reasonable terms)
- set standards with which participants of a designated system must comply.

The PSNA is concerned with the legal enforceability and certainty of settlement in payment systems. It grants the Bank the power to approve RTGS systems and multilateral netting arrangements in order to provide a level of legal protection and certainty to transactions settled through approved systems.

As is discussed further in Section 8.6, the Reserve Bank Act states that the powers and functions of the PSB under the Corporations Act are to be exercised in a way that will best contribute to the overall stability of the financial system. Reflecting the importance of CS facilities to the payments system and for financial system liquidity and stability more generally, the Corporations Act gives the Bank a regulatory role alongside ASIC. The Bank, under the governance of the PSB, is responsible for setting and overseeing financial stability standards for CS facilities and advising the Minister on decisions relating to CS licences.

Some other jurisdictions have established or proposed regulatory arrangements similar to the framework implemented following the Wallis Report. Most recently, the United Kingdom has announced a new framework after an extended review. This review was prompted by a dissatisfaction with previous governance arrangements, including the role of the industry-dominated Payments Council. The UK Government has recently announced the establishment of the Payments System Regulator (PSR), a separate body under the Financial Conduct Authority, with a mandate to promote competition, innovation and the interests of end users, while having regard to the stability of the UK financial system. To address the latter, the Bank of England and the Prudential Regulation Authority will have powers of veto over PSR decisions. Alongside this, the Bank of England retains its oversight responsibilities for systemically important interbank systems and FMIs. Under the new legislative framework, all retail systems active in the UK will be within the potential scope of regulation and the PSR will have very strong powers, more extensive than those of the PSB in Australia.

8.2 Payments System Trends since 1997

Payment systems in Australia can be broadly divided into retail payment systems, which settle a large number of relatively low-value payments, and wholesale payment systems, which settle a relatively small number of high-value payments.

---

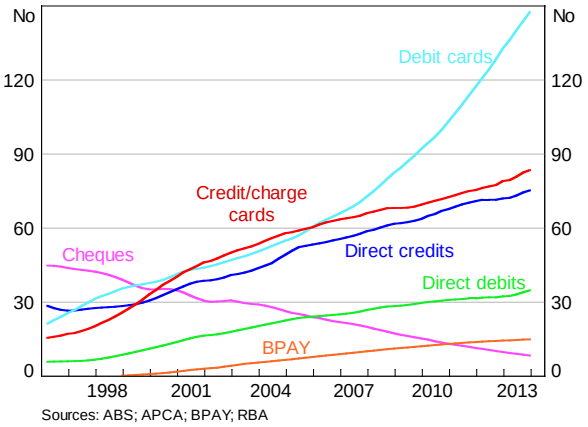
[1] While the Australian Competition and Consumer Commission (ACCC) has broad responsibility for competition and access issues in all industries under the Competition and Consumer Act 2010, the Bank and the ACCC have entered into a Memorandum of Understanding (MoU) to ensure appropriate coordination between the two agencies in the payments system. The legislation and MoU are designed to ensure that there is no regulatory overlap between the two agencies.

8.2.1 Retail payments

In recent decades there have been significant changes in the way that individuals, businesses and government agencies make and receive retail payments. As anticipated by the Wallis Report, technological and business innovations have contributed to strong growth in various types of electronic payments, with end users able to choose between a wider range of options for their payments than they could in 1997. Consequently, use of paper-based cheques has fallen, and there is some evidence that in recent years individuals are reducing their use of cash.

For non-cash payments, since 1997 there has been a marked increase in the absolute and relative use of debit and credit/charge cards (Graph 8.1; Table 8.1). Credit card use grew strongly in the late 1990s, before moderating somewhat over the past decade. Use of debit cards has grown particularly strongly since 2007; in addition to use in in point-of-sale purchases, cardholders can also use these cards to obtain cash-out at the point of sale, and certain types of debit cards can now be used in a card-not-present environment (e.g. online). Card networks play an important role in determining the overall efficiency of the payments system, given they account for over 60 per cent of the number of non-cash payments (though only around 3 per cent by value when higher value payments by businesses and government are included).

Graph 8.1
Non-cash Payments per Capita



Sources: ABS; APCA; BPAY; RBA

Table 8.1: Non-cash Retail Payments

	2013		1997–2013	
	Per cent of total		Average annual growth, per cent	
	Number	Value	Number	Value
Direct entry	30.2	87.4	9.1	15.1
Direct debits	*9.6*	*37.8*	*12.4*	*17.0*
Direct credits	*20.7*	*49.6*	*8.0*	*13.9*
Debit cards	40.5	1.3	11.7	11.9
Credit/charge cards	22.9	1.7	10.8	12.4
BPAY	4.1	1.8	33.7[(a)]	45.8[(a)]
Cheques	2.3	7.8	–8.3	–8.8
Total	**100.0**	**100.0**	**8.3**	**5.3**

(a) Average annual growth since 1998.
Sources: APCA; BPAY; RBA

Since 1997, consumers and billing businesses have also rapidly adopted BPAY, an electronic bill payment system. In fact, in 2013, the value of payments processed through BPAY exceeded the value of credit/charge card payments, partly reflecting the high average value of bill payments for services such as utilities, education and investments. More generally, growing online access to banking services and commerce has been a key driver of change in the way individuals and businesses pay and receive payments (including the growth of BPAY). Consumers have a number of options to make internet-based payments: they can enter their card details directly into a merchant website, or can use internet banking to initiate 'pay anyone' or BPAY payments.

In recent years, a number of specialised online payment providers (such as PayPal, Paymate and POLi) have emerged; these systems facilitate individuals' online purchases by funding the transaction through the established card schemes (with individuals' details stored with the online payments provider), by accessing stored-value balances held with the payments provider, or by providing easier access to online banking transfers. As discussed later in this Chapter, in the last few years consumers have increasingly been using smart phones for payments, with financial institutions and a number of non-financial institutions offering mobile applications, or 'apps', for making payments via the internet.

Direct entry payments are a key part of the Australian payments landscape. A DE payment is an instruction from a bank account holder to their bank to pay (or collect) an amount directly to (from) another bank account. These payments continue to account for the bulk of the value of non-cash retail payments (87 per cent in 2013). In addition to consumer-initiated 'pay anyone' internet payments and the direct debit arrangements consumers establish with service providers, DE payments are extensively used by businesses, corporations and governments for payments such as wages, bill collection and welfare benefits.

Another trend evident in Graph 8.1 is the ongoing decline in the use of cheques, which were a major part of the payments landscape in 1997. The number of cheque payments per capita has fallen from 42 per year in 1997 to 8 in 2013.[2] A significant share of remaining cheque use is related to business payments and financial institution ('bank') cheques, which are typically used for certain types of transactions (e.g. property settlements). Even though their use has declined, cheques still play an important role in the payments system; while now accounting for only 2½ per cent of the total number of non-cash payments, they account for nearly 8 per cent of the value of non-cash payments – more than debit cards, credit cards and BPAY combined.

One of the early initiatives of the PSB was to encourage the industry to shorten the clearing cycle for cheques, in line with a recommendation in the Wallis Report. APCA has continued work in this area and the industry is looking to move to digital cheque clearing and to end the physical transport of cheques in 2015. Further decline in the importance of cheques is expected given use among younger Australians is very low. In addition, innovative alternatives to cheques are likely to continue to emerge. For example, as discussed in Section 8.4.3 the NPP will potentially allow businesses to attach more detailed information to payment instructions, and electronic property settlement systems are emerging that will provide an alternative to existing paper-based (bank cheque) arrangements. As the use of cheques continues to fall, both the unit cost of cheques and the price to end users are likely to continue to rise.

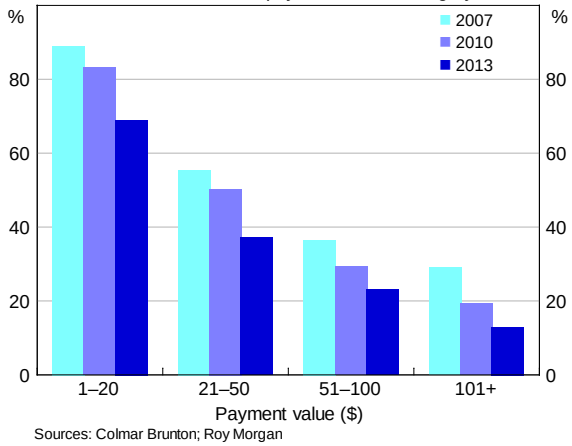
[2] An early contribution to this decline was made by the introduction of RTGS in 1998, which allowed the clearing and real-time settlement of high-value payments with richer data, thereby replacing a range of high-value cheques.

The use of cash remains widespread, though trends are difficult to measure because most cash transactions typically take place directly between payers and payees, without intermediaries being involved. However, one good source of data on the use of cash by individuals is the Reserve Bank's Consumer Payments Use Study. The study was first undertaken in 2007 and was repeated in 2010. The results of the third study in late 2013 are expected to be published shortly. Preliminary results of the 2013 Study indicate that cash remains the most important payment method for low-value transactions (around 70 per cent of payments under $20) and is still widely used for payments up to around $50 (Graph 8.2). The latest study shows, however, that the use of cash has declined relative to other means of payments, with cash accounting for 47 per cent of the number, and 17 per cent of the value of all payments recorded by individuals in the 2013 Study, down from 70 per cent and 38 per cent, respectively, in 2007. Part of the substitution away from cash reflects Australians' adoption of new technologies such as contactless card payments and mobile banking/payment apps.[3]

Graph 8.2

Cash Use by Payment Size

Share of number of payments within category

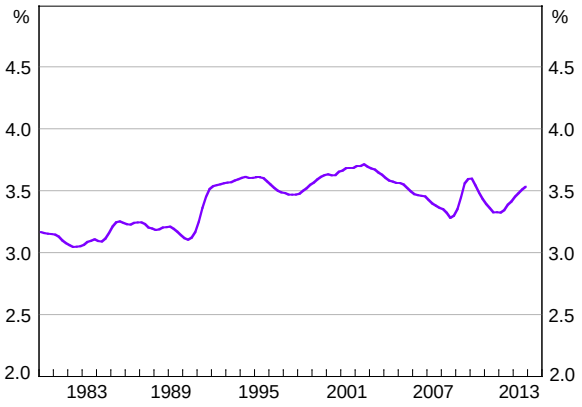


Sources: Colmar Brunton; Roy Morgan

While the use of cash in transactions may be declining, there are no signs that holdings of cash are doing so. An alternative indication of the trend in the relative importance of cash can be obtained by comparing the growth of currency on issue with the growth in the broader economy. This suggests a role for cash that is broadly unchanged, with currency in circulation fairly steady for the past several decades in the range of 3–3¾ per cent of annual GDP (Graph 8.3). The contrast between the data for *use* of cash and for *holdings* of cash suggest that it has maintained its role as a store of value and there is some evidence – from demand for larger denomination notes – that this increased following the global financial crisis (Cusbert and Rohling 2013). A number of other countries have had a similar experience.

[3] Other proxies for cash usage for which longer-run data are available suggest that the substitution away from cash is a longer-run phenomenon. For example, ATM withdrawals as a share of nominal GDP have been declining since the early 2000s.

Graph 8.3
Currency
Per cent of nominal GDP



Sources: ABS; RBA

Even though its use in transactions has declined in recent years, cash is likely to remain an important part of both the payments system and the economy more broadly for the foreseeable future. While cash's traditional benefits of speed of transaction and immediate settlement of obligations are being challenged by new technologies, it has a number of attributes that are likely to continue to underpin demand. Cash is fungible – cash received from one person can immediately be used to settle an obligation with another person. This means that cash is a good back-up in situations where electronic payment methods may not be available. It also retains a role as a store of value – unlike some new e-cash systems, its value does not vary significantly over short time periods. Finally, it remains the only anonymous payment mechanism and is therefore likely to remain in demand in particular segments of the population.

The trends evident in Australia since 1997 are broadly similar to international developments. For example, in countries such as the United States, France, Canada and the United Kingdom, use of card payments has also grown rapidly while cheque use has contracted significantly (Table 8.2). Cross-country data suggest that Australians are among the most frequent users of payment cards. Australia is more towards the middle of the pack in terms of cheque usage, with less use than in the four other countries shown in Table 8.2, but more than in most of the northern European countries where cheques have historically been little used or have been phased out. More comprehensive data on payment systems in a range of countries are published by the Bank for International Settlements (CPSS 2013).

Table 8.2: Selected Non-cash Payments By Country
Number of payments per capita

	Australia		Canada		France		United Kingdom		United States	
	1997	2012	1997	2012	1997	2012	1997	2012	1997	2012
Card Payments	52	210	65	216	39	130	45[(a)]	167[(a)]	63	248
– Debit cards	*31*	*132*	*33*	*126*	*na*	*na*	*25*	*129*	*15*	*165*
– Credit cards[(b)]	*20*	*78*	*32*	*90*	*na*	*na*	*19*	*32*	*48*	*84*
Cheques	42	10	58	22	82	43	52	13	174	58
Credit Transfers	28	72[(c)]	13	28	31	47	28	58	9	28
Debit Transfers	7	32	11	20	24	54	27	54	5	42
Total	**128**	**324**	**147**	**286**	**175**	**275**	**152**	**293**	**251**	**376**

(a) Includes charge debit cards
(b) Includes charge cards
(c) Includes BPAY
Sources: ABS; BIS; RBA

8.2.2 Wholesale payments

A key development since the Wallis Inquiry has been the introduction of RTGS for high-value payments through RITS and payment-versus-payment settlement for foreign exchange transactions through CLS. The use of these payment systems allows participants to control for settlement risk, consistent with a recommendation of the Wallis Report.

8.2.2.1 The Reserve Bank Information and Transfer System (RITS)

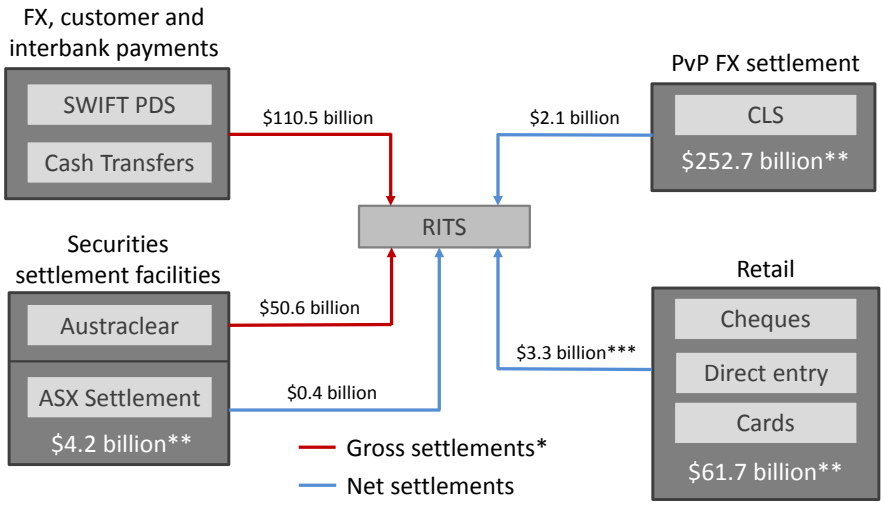
RITS is Australia's RTGS system and is operated by the Bank. In RTGS systems, which are viewed internationally as best practice, individual payments are processed and settled continuously and irrevocably in real time. RITS was launched in 1998 and replaced a deferred net settlement system under which interbank obligations accumulated throughout the day and were not settled until 9.00 am the following day. In contrast, since RITS is an RTGS system, it prevents the build-up of unsettled obligations, significantly reducing interbank settlement exposures.

RITS settles transactions across participants' ESAs held at the Bank. Settlement across ESAs, and therefore in central bank money, is a service that only the Bank can provide. Accordingly, RITS sits at the heart of the payments system. In addition to settling individual RTGS payments, it also facilitates the settlement of interbank obligations arising from a number of linked payment systems and FMIs (Figure 8.1).

- Debt securities transactions arising in the Austraclear system operated by ASX are settled on a delivery-versus-payment basis – that is, the transfer of title to the security is contingent on the final settlement of the associated funds payment – with the funds payment settled in RITS. The ASX CCPs' margin payments are also submitted via Austraclear and settled in RITS.
- Australian dollar-denominated obligations arising in the foreign exchange settlement system operated by CLS are also settled in RITS.

- The funds payments associated with cash equity transactions that settle in ASX Settlement are settled in RITS in a multilateral net batch at around noon each day (known as the CHESS batch).
- The interbank obligations that arise in retail payment systems are also settled on a deferred net basis in RITS.

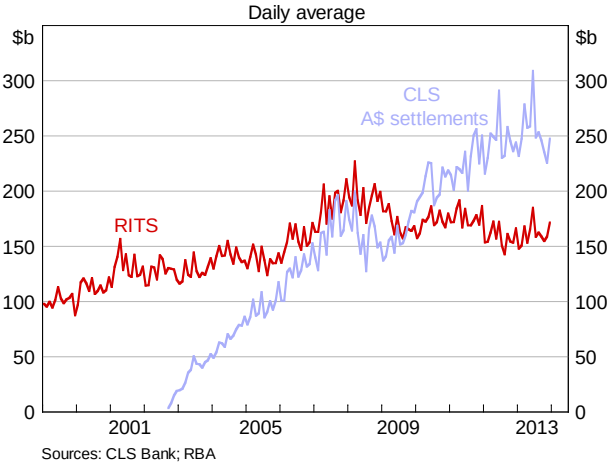
Figure 8.1: Payments Settled in RITS
2013, daily average



Source: CLS, RBA
* Gross settlements are submitted directly through RITS feeder systems; payments can also be entered into RITS directly as cash transfers
** Gross value of payments
*** A small proportion of retail payments are settled on a gross basis

Reflecting the central role played by RITS, around 70 per cent of the value of non-cash payments in Australia is settled on an RTGS basis in RITS. In 2013, RITS settled on average around 41 000 RTGS transactions each day, with an aggregate daily value of around $161 billion (Graph 8.4).

Graph 8.4
Wholesale Payment Settlements
Daily average



Sources: CLS Bank; RBA

8.2.2.2 CLS Bank International (CLS)

CLS is an international payment system for settling foreign exchange trades in 17 currencies, including the Australian dollar. CLS began operations in 2002, with the Australian dollar one of its seven initial currencies. Since its inception, Australian dollar settlements in CLS have grown strongly to be on average around $250 billion per day in 2013 (Graph 8.4).

By operating a PvP settlement mechanism, CLS allows participants to eliminate foreign exchange settlement risk (the risk that one party settles its obligation, while the other subsequently does not), a risk that was highlighted in the Wallis Report. Payments submitted to CLS are settled on a gross basis across accounts on CLS's book, but members only receive or pay a net settlement amount vis-à-vis CLS in each currency. Members meet any net Australian dollar-denominated payment obligation (known as a CLS pay-in) by making payments to CLS via RITS. CLS pays out net Australian dollar receipts in a similar way. The effectiveness of netting is illustrated by the fact that the value of these pay-ins and pay-outs is only around 1 per cent of the gross value of trades involving the Australian dollar that are settled by CLS.

8.3 The Payments System Board's Work on the Retail Payments System

Following the introduction of RTGS in 1998 and the accompanying reduction in settlement risk, much of the PSB's work over the past 15 years has related to retail payment systems and its mandate to promote efficiency and competition. Over this period the Bank has consulted widely and undertaken a range of studies to shed light on the functioning of the payments system. This section outlines the Bank's activities in documenting various aspects of the payments system and the regulatory initiatives that have followed.

8.3.1 Research into the Australian payments system

The Bank closely monitors trends and developments in the payments system. It collects regular data on payments activity from financial institutions and payments system operators and publishes these monthly on its website. It also provides an overview of domestic and international trends in the PSB's Annual Report. The Bank's staff conduct regular liaison with industry – especially APCA, the industry's self-regulatory organisation – and with end users. In addition, the Bank has regular contact with overseas regulatory bodies, in particular with other central banks via its membership of the Committee on Payment and Settlement Systems (CPSS). It has also conducted a number of major studies, as outlined in the remainder of this section.

Some early work of the Reserve Bank and the PSB involved a detailed analysis, together with the ACCC, of the pricing, rules and access arrangements of card payment systems. This work had been suggested by the Wallis Report and culminated in the publication of the 'Joint Study' in October 2000 (RBA and ACCC 2000).

The Joint Study found that there was very little transparency in the arrangements underlying card payment systems. It found that the card systems, exercising market power, tended to have arrangements that detracted from the efficiency and competitiveness of Australia's payments system:

- Relative prices to cardholders for card payments in Australia did not generally reflect relative costs. In particular, the resource costs (the cost of 'producing' a payment) of a $100 credit card transaction were around 201 cents, but the cardholder usually faced a negative price for this transaction – an interest-free period and reward points to the value of around 90 cents.

Meanwhile, the resource costs of a transaction in the domestic debit (i.e. eftpos[4]) system were around 41 cents for that same transaction, but the cardholder faced a positive price of up to 60 cents. The effect of these relative prices was that it was likely that consumers were using credit cards more frequently, and eftpos less frequently, than they would if prices more closely reflected costs. Consequently, the overall cost of making payments was higher than it might otherwise have been.

- Restrictions on merchants impeded competition and efficiency. Specifically, the card schemes had rules in place that: (a) prohibited merchants from charging more for accepting their cards than for other payment instruments – the 'no-surcharge' rules; and (b) required merchants to take all cards associated with a particular scheme's brand – the 'honour-all-cards' rule.

- Access arrangements for a number of payment systems were more restrictive than necessary to ensure the stability of those systems. In the Bankcard, MasterCard and Visa systems, participation was restricted to authorised deposit-taking institutions (ADIs), and rules discouraged 'specialist acquirers' (i.e. firms specialising in providing card acceptance to merchants and not issuing cards to cardholders). In addition, access to the eftpos system was complicated by the bilateral infrastructure and institutional arrangements that applied in the system, meaning that new entrants were required to negotiate and establish connections with multiple entities in order to gain effective access.

- Information on pricing and access in the card systems was not always available. In particular, there was no transparency of interchange fee rates, nor were there publicly available criteria for access for prospective system participants.

In 2007–08 the Bank conducted a review of its earlier card payments reforms and undertook two further studies. The first gathered detailed information into household payment patterns in Australia – a study of how consumers use various payment methods (Emery, West and Massey 2008). This study provided particular insight into the use of cash by consumers for transaction purposes. The study also gathered demographic, payments channel and merchant information, providing a very detailed picture of how Australians make payments. Follow-ups to this study were undertaken in 2010 (as an input to the Bank's Strategic Review of Innovation) and in late 2013 – detailed results of the third consumer study are expected to be published shortly.[5]

As noted above, preliminary results from the 2013 study indicate that the trends identified between 2007 and 2010 have continued, with Australians using less cash, fewer cheques and making more card and other electronic transactions.

The second of the studies undertaken in the 2007–08 Review was a payments cost study, which was a broader and more detailed study of resource costs in the payments system than the study done for the Joint Study with the ACCC (Schwartz *et al* 2008).

The key findings of the study were as follows:

- In aggregate, the costs incurred by financial institutions and merchants in processing the payments of individuals were equivalent to at least 0.8 per cent of GDP. This aggregate cost

[4] References in this document to eftpos are to the domestic debit scheme, now operated by eftpos Payments Australia Limited (ePAL), rather than to the broader concept of electronic funds transfer at the point of sale. Prior to the formation of ePAL, 'the EFTPOS system' referred to the series of bilateral arrangements which governed the relationships between participants in the domestic debit system. For consistency, this document adopts the lower-case usage.

[5] See Bagnall, Chong and Smith (2011) for the 2010 study.

estimate is around the middle of the estimates from studies in a number of European countries done in the years before and after the Bank's study. The study did not include business-to-business payments, so the total costs involved in the payments system as a whole would have been higher.

- In terms of the average cost of point-of-sale payments, the ranking of the various payment instruments was reasonably clear, with cash being the lowest cost, followed closely by eftpos (i.e. the domestic debit network), with more of a gap to credit cards and then cheques. The cost of cash payments, however, increases with the value of the transaction, so that for larger payments, eftpos payments had a lower cost.
- For all transaction sizes, credit card payments were more costly than for eftpos payments. This not only reflected the higher costs associated with the extension of credit and the operation of reward schemes, but also higher fraud costs, scheme fees and the higher capital costs associated with operational risk.
- While cash was a relatively low-cost payment instrument for the bulk of transactions for which it was used, a significant share of the total costs of the payments system arose from cash payments. This reflected the fact that cash remained the predominant payment instrument in the economy, accounting for around 70 per cent of all payments by individuals.
- For payment methods not used at the point of sale, the DE system had the lowest cost, followed by BPAY, credit cards and cheques.

The Bank is currently consulting with financial institutions and retailers about a new cost study which is expected to be completed in late 2014. It will take account of the significant change to payment patterns and technologies since the 2007 study, for example the growth of contactless and mobile payments and in Visa and MasterCard's debit card networks. The study will update the 2007 data, provide a new benchmark for the cost of providing payments in Australia and will help guide the Bank's thinking about the efficiency of the Australian payments system.

Over 2010–2012, the Bank undertook the Strategic Review of Innovation in the Payments System, a wide ranging review of the degree of innovation in the payments system and of factors influencing innovation. The Strategic Review followed an earlier study of payments technology and architecture discussed in the PSB's 2006 Annual Report. This review is discussed in more detail in Section 8.4.2.

8.3.2 The Bank's regulatory reforms in retail payments

In general, payment systems in Australia operate without regulatory intervention. The PSB has not opted for regulation as a first resort but initially seeks to encourage industry initiatives to address areas of concern; only intervening on public interest grounds when the industry is clearly unable to do so.

However, one area where the PSB has implemented wideranging reforms is to Australia's card payment systems and its ATM system. Broadly speaking, these reforms aimed to address the PSB's concerns regarding pricing in and access to these systems, as well as restrictions on merchants that hindered competition in the case of cards. Most of this work has derived from the PSB's responsibilities under the PSRA (described above). In the case of the reforms to interchange fees in the credit card systems, the Bank's work was in response to the recommendation in the Wallis Report that the PSB and ACCC should review interchange arrangements. This reflected the Wallis Report's finding that *ad valorem* interchange fees on credit cards meant that the cost (to merchants) of providing credit card acceptance to consumers could be very high. The report noted that the cost of interchange fees was not transparent and was ultimately borne by consumers in the form of higher

prices. The Bank's decision to invoke its new regulatory powers reflected the assessment that there was little prospect of voluntary measures by industry to address the concerns of the PSB and the Bank. Indeed, the PSB's initial reforms were challenged in court by both MasterCard and Visa, with the Federal Court upholding the Bank's actions.

The remainder of this section summarises some of the more important regulatory reforms implemented by the Bank.[6]

8.3.2.1 The Bank's reforms to card payment systems

The Bank's approach to regulatory reform of the card payments market has been holistic and has included a range of measures directed at improving the efficiency of the payments system, such as reforms to interchange payments and to various aspects of the rules of the card schemes that had placed restrictions on merchants and financial institutions.

Interchange reforms

Interchange fees are wholesale fees paid between a merchant's financial institution and a cardholder's financial institution when a cardholder undertakes a transaction (see 'Box 8B: Interchange Fees'). The Bank's reforms in this area reflected concerns about the lack of transparency around these fees. The Bank also considered that the large gaps that existed between the fees charged in the eftpos, scheme debit[7] and credit card systems were not justified by costs and sent inefficient price signals to customers and merchants.

In April 2001, the PSB designated the Bankcard, MasterCard and Visa credit card schemes, enabling it to set standards for these schemes.[8] In August 2002, the PSB decided that from July 2003 the schemes would be subject to a standard which set an interchange fee benchmark for each scheme and increased transparency of these fees. The benchmark was based on the average costs of the issuers of each scheme. Since November 2006, there has been a common cost-based average interchange fee benchmark of 50 basis points for both MasterCard and Visa.

Reforms of the debit card systems began in 2004, with the PSB designating the Visa Debit system in February and the eftpos system in September. In July 2006, the PSB introduced interchange standards for each system and in 2013 a new standard took effect for the eftpos system to reflect structural changes to that system. The current standards set a common benchmark of 12 cents. The Debit MasterCard system has not been formally designated but MasterCard has given a voluntary undertaking to comply with the standards applying to Visa Debit.

The standards on interchange fees for the MasterCard and Visa systems set benchmarks for the average interchange fee that can be paid in those systems. In practice, the schemes have set a large number of different interchange fee rates for different types of transactions, with the weighted average interchange rate subject to the benchmark. The standards require that every three years, or at the time of any other reset of interchange fees, the average of the new interchange rates does not exceed the benchmark, with weights based on the transactions of the most recent financial year. In practice, reflecting the backward-looking compliance calculation, the setting of the international schemes' interchange fee schedules and the issuance strategies of financial institutions, the weighted-average interchange fees for the two schemes have tended to be a little above the benchmarks, albeit well below the average levels of before the reforms.

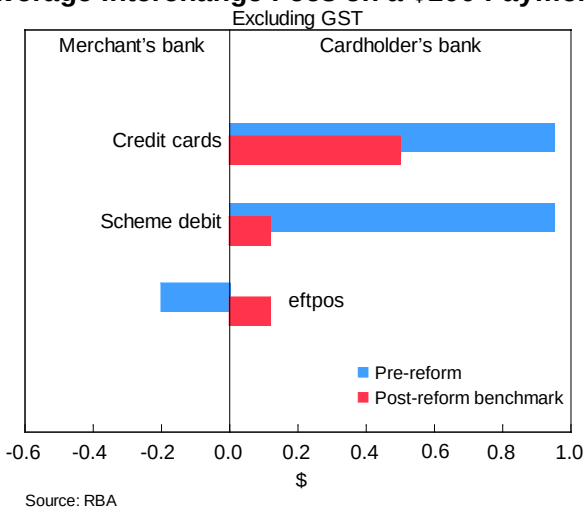
---

6 Further discussion of the Bank's reforms can be found in Bullock (2010).
7 The term 'scheme debit' refers to the debit card schemes of MasterCard and Visa.
8 With the closure of the Bankcard scheme, the Bank revoked its designation and regulations in 2007.

For the eftpos system, prior to the reforms interchange rates were around 20 cents per transaction, paid by the cardholder's bank to the merchant's financial institution – that is, in the opposite direction to the MasterCard and Visa schemes. With the creation of a scheme to govern the eftpos system and interchange regulation now in line with that applying to the MasterCard and Visa debit systems, eftpos interchange fees now typically flow to the issuer, the highest rate being 5 cents – well below the 12 cents cap.

Taken together, the interchange fee reforms have brought down the average interchange fees paid in the international systems and have reduced the gap between interchange fees in the credit card, scheme debit card and eftpos systems (Graph 8.5). The broader effects of the interchange reforms are discussed below.

Graph 8.5
Average Interchange Fees on a $100 Payment

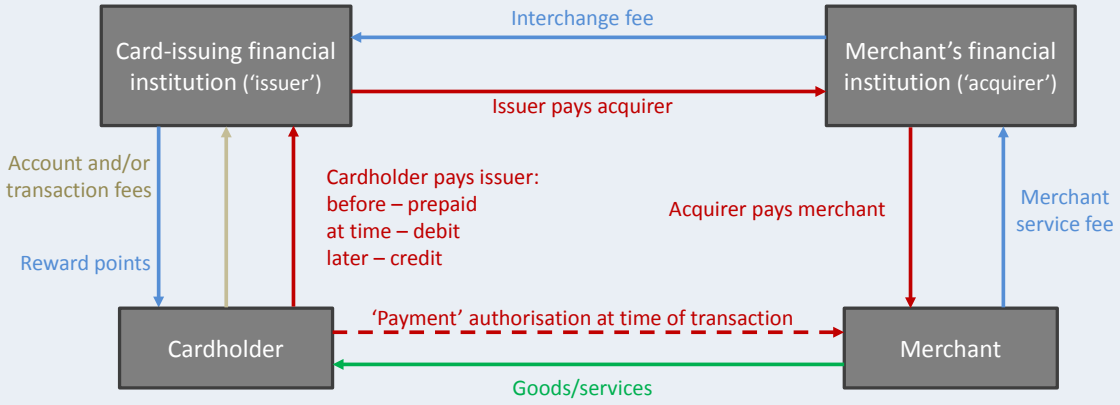


Source: RBA

Box 8B Interchange Fees

A typical card transaction (Figure 8B.1) involves four parties – the cardholder, the cardholder's financial institution (the issuer), the merchant, and the merchant's financial institution (the acquirer). The Bank's reforms address interchange fees (typically paid by acquirers to issuers). These fees can have important implications for the prevalence and acceptance of different cards as well as the relative costs faced by consumers and merchants. In contrast to normal markets for goods and services, competition in payment card networks can actually drive fees higher.

Figure 8B.1: Flows in a Stylised Card Transaction



Financial institutions typically charge fees to their customers for payment services. Cardholders are charged by their financial institution in a variety of ways. In the case of payments from a deposit account such as debit cards, financial institutions typically charge a monthly account-keeping fee and, sometimes, a fee per transaction (or for transactions above a certain number). In the case of payments using a credit card, financial institutions usually charge an annual fee rather than a per-transaction fee, and interest is charged on borrowings that are not repaid by a specified due date.

Merchants receiving payments are also typically charged by their financial institutions. The fees paid by merchants usually depend on the payment method. For credit and debit cards (the focus of the Bank's reforms) merchants are usually charged a 'merchant service fee' for every card payment they accept. Some merchants are also charged a fee by their financial institution to rent a terminal to accept cards.

In addition to cardholders and merchants paying fees to financial institutions, arrangements have evolved whereby there is payment of a fee between financial institutions on each card transaction. These fees are known as 'interchange fees'. Interchange fees are often not obvious – cardholders and merchants do not typically see them. But they have an impact on the fees that cardholders and merchants pay.

Prior to the Bank's reforms, interchange fees in Australia worked differently in the international (MasterCard and Visa) credit and debit card schemes than in the domestic debit card system (eftpos).

In the MasterCard and Visa card schemes, interchange fees are paid by the merchant's financial institution to the cardholder's financial institution every time a payment is made using a MasterCard or Visa card. This has two effects. First, the merchant's financial institution will charge the merchant for the cost of providing it with the acceptance service plus the fee that it must pay to the card issuer (the interchange fee). The higher the interchange fee that the merchant's financial institution must pay, the more the merchant will have to pay to accept a card payment.

Second, since the card issuer is receiving a fee from the merchant's financial institution every time its card is used, it does not need to charge its customer – the cardholder – as much. The higher the interchange fee, therefore, the less the cardholder has to pay. In effect, the merchant is meeting some of the card issuer's costs which can then be used to subsidise the cardholder. Indeed, with rewards programs, the cardholder may actually be paid to use his/her card for transactions.

Where the market structure is such that there are two payment networks whose cards are accepted very widely (i.e. merchants accept cards from both networks), and where consumers may hold one network's card but not necessarily both, competition tends to involve offering incentives for a consumer to hold and use a particular network's cards (typically, loyalty or rewards programs). A network that increases the interchange fee paid by the merchant's bank to the cardholder's bank enables the cardholder's bank to pay more generous incentives, and can increase use of its cards. However, the competitive response from the other network is to increase the interchange rates applicable to its cards: as a result, unfettered competition in well-established payments card networks can lead to the perverse result of *increasing* the price of payment services to merchants (and thereby leading to higher retail prices for consumers). This phenomenon has been most clearly observed in the United States credit card market, which has not been subject to any regulation, with a 2009 United States Government Accountability Office Report documenting a significant increase in interchange fees over the previous two decades (United States Government Accountability Office 2009).

Until recently, in contrast to the fees charged in the international card schemes, in the eftpos system the cardholder's financial institution paid the merchant's financial institution a fee for each eftpos transaction. This also had two effects. First, it increased the cost to the cardholder's bank and, potentially, the fee paid by the cardholder to use eftpos. Second, since the merchant's financial institution received a fee from the card issuer, it did not need to charge the merchant as much – if the fee was high enough, the merchant could even receive a fee from its financial institution. In effect, in this case, the cardholder was meeting some of the costs of the merchant's financial institution.

When one compares the incentives for cardholders and merchants and for their financial institutions the implications of the different interchange flows described above are clear. Other things equal – in particular assuming no regulatory intervention and no surcharging by merchants to offset the differences in their costs – cardholders will have a preference to use a card from a network where interchange payments flow to the card-issuing financial institution, while merchants will prefer to receive cards from a network where interchange flows in the opposite direction. In circumstances where multiple card networks are widely accepted by merchants (as in Australia and many other developed countries), the consumer typically decides which means of payment is tendered and used in a transaction. Given this, financial institutions will have an incentive to issue cards from networks where interchange flows from the merchant's financial institution to the cardholder's institution, and competition may lead networks to increase the size of such fees. The generosity of cardholder rewards programs will rise as will the cost of payments to merchants.

Scheme rules

The PSB has also introduced regulation to address several scheme rules that it considered acted to hinder competitive forces. One such rule was the 'no-surcharge' rule, which prevented merchants from passing on the costs of accepting cards to consumers. Another was the 'honour-all-cards' rule, which required merchants that accepted one of a scheme's payment cards (e.g. credit cards) to also accept all that scheme's other products (e.g. their debit cards). The effect of these rules was to lessen the ability of market forces to place downward pressure on the cost of payments to merchants.

To address these concerns, the PSB introduced a standard that came into force in January 2003 which has the effect of enabling merchants, if they choose, to charge customers for Visa and MasterCard credit card transactions: American Express and Diners Club subsequently agreed voluntarily to comply with this standard. In January 2007, the PSB introduced an additional standard which extended the right of merchants to charge for the use of Visa Debit cards, and which also allows merchants to choose whether to accept Visa Debit cards independently of their choice to accept Visa Credit cards (and vice versa): MasterCard has undertaken voluntarily to also comply with this standard.

In 2012, the PSB decided to amend the standards relating to surcharging (the amendments took effect in March 2013). The decision reflected the PSB's concerns about surcharging practices that had developed over the period since no-surcharge rules were removed. In particular, the PSB was concerned about the increase in cases where charges appear to be well in excess of card acceptance costs or where surcharges are 'blended' across card schemes even though merchants' acceptance costs may be higher for some cards than others. The amended standards allow card scheme rules to limit charges to the reasonable cost of card acceptance, while continuing to ensure that merchants can fully recover their card acceptance costs. The Bank issued a guidance note to assist schemes, participants and merchants to determine the acceptance costs that might be considered reasonable.

Removal of the honour-all-cards rule has given merchants another tool to use in negotiations over merchant service fees. A merchant can, for example, decline to accept debit cards from MasterCard and Visa while continuing to accept their credit cards, and vice versa. To date, only one large merchant has carried through with action to decline acceptance of MasterCard and Visa debit cards, although the possibility of such action being taken has likely been used in negotiations in other cases.

Access

As noted above, the Wallis Report identified several areas of the payments system where there was scope for liberalisation of access. Following the Joint Study and subsequent work, the Bank identified some restrictions on participation imposed by the card schemes that unnecessarily inhibited competition and could not be justified as protecting the safety of the system. The PSB therefore established an access regime for the Visa and MasterCard credit card schemes in February 2004. The regime required that a new class of financial institutions, specialist credit card institutions (SCCIs), be eligible to apply for membership in the schemes on the same basis as other ADIs. The Access Regime also required the removal of certain restrictions and penalties regarding the credit card acquiring activity of members of the two systems. Soon after the reforms, two entities gained access to the MasterCard and Visa systems as SCCIs. One of these has specialised in providing card acceptance services to merchants, a business model that was prohibited under the previous scheme policies.

In May 2013, the Bank announced a public consultation on whether the existing access regimes for the Visa and MasterCard systems remain appropriate, given the change in the ownership structures of the schemes (from member associations to listed companies) and the interest shown by some niche players, which might not warrant full prudential regulation, in seeking access to the card systems. In March 2014 the PSB announced a decision in principle that will allow the systems greater flexibility to

expand membership. The implementation of this decision will be contingent upon changes to the *Banking Regulations 1966* and consultations with APCA.

The PSB also implemented an access regime for the eftpos system in September 2006. This aimed to address problems that arose when new entrants had to undertake bilateral access negotiations with multiple incumbents who might prefer to prevent the entry of new competitors: for example, the Wallis Report noted that regional banks had been frustrated in their efforts to become direct participants in the eftpos system. The Bank's reforms facilitated access by constraining the scope for existing participants to offer unfavourable bilateral interchange fees to new entrants and by limiting the charge that existing participants could levy for establishing a new connection. This was the result of cooperative work between the Bank and APCA over several years. Recently, however, the establishment of a common network (the Community of Interest Network or COIN) has removed the need for new eftpos entrants to establish a series of physical bilateral connections. Furthermore, business arrangements (such as for common multilateral interchange fees) have been centralised in an eftpos scheme. Access will be further facilitated by the introduction of a genuinely hub-based architecture for the eftpos system. Accordingly, the PSB made an in-principle decision in November 2012 that it will revoke the Access Regime if the scheme puts satisfactory access arrangements in place.

In recent years the PSB has also noted concerns relating to 'dual-network' debit cards, i.e. ATM/debit cards issued by banks and other financial institutions with point-of-sale debit functionality from two payment networks. The PSB has viewed the longstanding practice of issuing dual-network cards as providing convenience for cardholders and enabling stronger competition between networks at the point of sale. The PSB was concerned that actions by particular networks with respect to these cards had the potential to inhibit competition, limit consumer choice and increase costs. Accordingly, it encouraged the industry to work towards voluntary agreement on principles relating to dual-network cards, and in August 2013 welcomed the outcomes of discussions between ePAL, MasterCard and Visa regarding the PSB's concerns. The outcome will safeguard the rights of Australian card-issuing banks and institutions to maintain existing dual-network arrangements in the contactless environment. Where an issuer wishes to include applications from two networks on the same card and chip, the networks have agreed to work constructively with the issuer to allow this. The networks have also agreed not to prevent merchants exercising choice in the networks they accept, in both the contact and contactless environments.

8.3.3 Effects of the Bank's card payment systems reforms

When the Bank announced its regulation of the credit card schemes in August 2002, it indicated it would conduct a review of its reforms after five years. The review, which was released in 2008 and covered the Bank's reforms to the credit card and debit card systems, as well as interchange fees and access arrangements in other payment systems, concluded that the reforms had been beneficial to the Australian economy. In particular, the PSB was of the opinion that the reforms had increased transparency, improved competition by removing restrictions on merchants and liberalising access, and promoted more appropriate price signals to consumers. With the benefit of further evidence from the past five years, the Bank's view remains that the reforms have been in the public interest and helped contribute to a more efficient and competitive payments system. The importance of these reforms is reinforced by the major role of card payments in the Australian economy, with total card transactions growing to around $480 billion in 2013. The reforms put in place by the Bank have been followed by similar reforms in a large number of other jurisdictions (see 'Box 8C: Retail Payments Reforms in Other Jurisdictions').

Box 8C Retail Payments Reforms in Other Jurisdictions

At the time the Wallis Committee made its recommendations on the card systems it was unusual for central banks or other authorities to take action focused on retail payments efficiency; restrictions on interchange fees and actions against scheme arrangements such as 'no-surcharge' rules were uncommon. However, subsequent to the reforms in Australia, an increasing number of countries have undertaken or proposed similar reforms.

In the case of *interchange and merchant service fees*, tables compiled by the Federal Reserve Bank of Kansas City list 31 jurisdictions as having undertaken action and a further six countries as having initiated investigations (Hayashi 2013). This includes recent actions in Europe and the United States.

In July 2013, the European Commission (EC) released a package proposing significant reforms to retail payment regulations in the European Economic Area (EEA). The proposals take a similar regulatory approach to that of the PSB over the past decade, and the explanatory memoranda to the package made a number of references to Australian payments system reforms to support the EC's proposed actions.

The proposed reforms include a cap on interchange fees on cards that are widely used by consumers and therefore difficult for retailers to refuse. Interchange fees on all such transactions would be capped at the lower of 7 euro cents or 20 basis points for debit cards and 30 basis points for credit cards. While caps of 20 and 30 basis points have previously been agreed to by MasterCard and Visa for cross-border transactions in the EEA, implementation has been mixed, so the EC has decided that there is a need for an EC-wide regulatory cap applying to all transactions involving international and domestic four-party schemes. These caps would initially apply to all cross-border European transactions and two years later would be extended to all domestic transactions. The Commission argued that a failure to regulate would risk the disappearance of (typically cheaper) domestic card schemes and stymie the entry of new payments technologies and players.

The documentation to the reforms notes that caps of 20 and 30 basis points are consistent with the 'merchant indifference (tourist) test' (the fee a merchant would be willing to pay rather than take cash or other non-card payment). They also appear to be 'reasonable benchmarks that have already been implemented without calling into question the operation of international card schemes'. The EC considered a zero interchange fee for debit and noted that eight EU member states currently have very low or zero debit interchange fees and these tend to be markets with high card issuance and usage. The option of eliminating debit interchange fees will be considered subsequently.

In the United States, interchange fees have also been subject to recent regulatory action. Debit card interchange fees (on cards issued by institutions with more than $10 billion in assets) have been subject to a cap since October 2011. This follows the passage of the *Dodd-Frank Wall Street Reform and Consumer Protection Act 2010*, which required the Federal Reserve Board to develop rules for debit card interchange fees and network routing restrictions. Credit card interchange fees in the US are not at present subject to interchange regulation but are currently the subject of a number of legal challenges by merchants.

In the period since the implementation of the Wallis reforms, provisions such as *'no-surcharge' and 'honour-all-cards' rules* have also come under increasing scrutiny by central banks and other authorities. As at August 2013, the Federal Reserve Bank of Kansas City listed 36 jurisdictions as having taken action in relation to surcharges and discounts alone (a majority of these allow or enable surcharging, but in some cases surcharging has been prohibited but discounts allowed).

In Europe, the package proposed by the EC includes the regulation of scheme rules covering a wide variety of topics. 'Honour-all-cards' and 'no steering' rules must be removed, so that merchants have greater choice in accepting or rejecting individual card products, including categories within a product range (e.g. accepting standard but not premium products). Any rules preventing merchants from disclosing to customers the interchange or merchant service fees that they are charged for payment services will be prohibited.

The EC's proposals also appear to harmonise rules on surcharging and remove the scope for national authorities to ban surcharging. However, surcharging would be prohibited for payment methods which have regulated interchange fees: the EC argues that the interchange fee cap and changes to scheme rules (which will increase transparency on costs and allow merchants to limit the cards they accept) sufficiently reduce the costs faced by merchants for these transactions. For other transactions (including corporate cards and three-party scheme cards, but also credit transfers, direct debits and cheques), surcharges must not exceed the costs borne by the merchant for the use the payment instrument, in line with the recently enacted Consumer Rights Directive.

Reforms in a range of other countries have also established the right of merchants to surcharge for more expensive means of payments. Most recently, in December 2013 the New Zealand Commerce Commission noted that the ability of retailers to surcharge has provided benefits to the consumer because it is now 'a user pays system'. That is, customers using more costly payment methods are not being effectively subsidised at the expense of customers who use cheaper payment methods.

It is important to note that the Bank's reforms, while consisting of a series of individual measures, were designed to work as a package:

- a benchmark was established for interchange fees so that prices faced by merchants and consumers more closely reflect relative costs
- transparency of these interchange rates, plus the capacity for merchants to charge for the use of particular cards and the ability to not accept all types of cards, gives merchants negotiating power that can help ensure that lower interchange fees are reflected in lower merchant service fees
- the expansion of eligibility to participate in the card systems promotes competition in providing card acceptance services to merchants
- reductions in interchange rates have reduced the scope for issuers to offer incentives for consumers to use high-interchange, high-cost cards, shifting payments behaviour towards lower resource cost methods.

A decade after the reforms it is clear that the Australian cards market has remained vibrant, contrary to the arguments by the international schemes that the reforms could send the cards market into a 'death spiral'.[9] Innovation has continued: the adoption of contactless payments, PIN authorisation and EuroPay, MasterCard and Visa (EMV) security are all far ahead of the United States, for example.

[9] Frankel (2008) evaluates both claims in some theoretical literature that interchange fees play a beneficial and necessary role in card payment systems and claims that lower interchange fees would result in cardholders abandoning their cards and the eventual 'death spiral' of schemes. The author throws doubt on many such claims, concluding that payment systems '… can instead work well without interchange fees …' (as is the case in a number of European card networks).

Furthermore, the value of card transactions has grown by an average of 8.8 per cent per annum over the past decade, significantly above the 5.9 per cent average growth in the value of household spending over this period. Within this total, growth in debit cards has outpaced growth in credit cards (average growth of 11.9 and 6.9 per cent, respectively), which is not surprising given the broader trend towards more prudent household behaviour, as witnessed by the increase of around 10 percentage points in the household saving ratio over this period.

The reforms to interchange fees and the various reforms to strengthen the rights of merchants have had the effect of bringing down the cost of payments services to merchants. Without the Bank's reforms, it is likely that the perverse incentives discussed in 'Box 8B: Interchange Fees' would have led to an increase in interchange rates, and it is possible that credit card interchange rates in Australia could instead have risen close to the much higher levels seen in the unregulated US market (Table 8.3 shows some indicative rates).[10]

Table 8.3: Selected Interchange Fees on a $100 Credit Card Transaction[(a)]
Average for MasterCard and Visa, January 2014

	Australia[(b)]	United States
Rate for most-preferred merchants (applies to all their transactions)[(c)]	0.21	1.20
Typical rate for non-preferred merchants (applies to transactions on non-premium cards)	0.30	1.76
Rate for non-preferred merchants on transactions using highest-level of premium/rewards card[(d)]	2.00	3.20

(a) Local currency
(b) Excludes GST
(c) Lowest rate applicable to 'strategic merchants' (Australia) or supermarkets (US)
(d) 'Standard' interchange rates in the US
Sources: MasterCard, Visa

Looking across the different card systems:

- Average merchant service fees for MasterCard and Visa transactions have fallen by around 60 basis points relative to their levels prior to the reforms (Graph 8.6). This is a larger fall than the reduction in interchange fees for the MasterCard and Visa credit card systems.
- Despite there being no direct regulation of the 'three-party' schemes, American Express and Diners Club, merchant service fees in these systems overall have fallen by slightly more than for MasterCard and Visa.[11]
- Average merchant service fees for eftpos transactions have risen by around 12 cents (or by 0.21 per cent of transaction value) from their levels prior to the 2006 eftpos interchange fee reforms, though eftpos remains the lowest-cost scheme for merchants in terms of average merchant service fees. The increase in the cost of eftpos reflects the reversal of the direction of

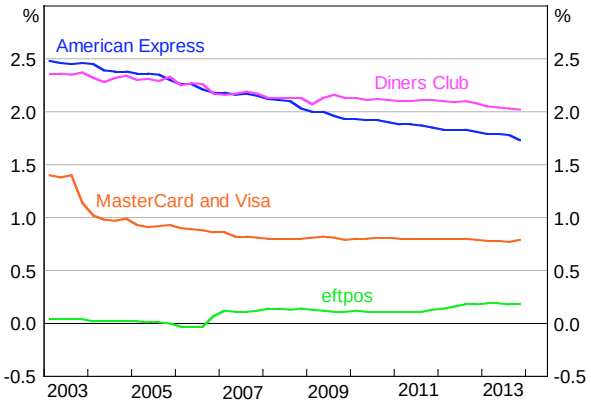
[10] The structure of the schemes' interchange fee schedules in the United States is a little different to their structure in Australia, making comparisons complicated; the US fee schedules are more complex and contain significantly more interchange fee categories.

[11] See 'Box 8B: Interchange Fees' for a description of how a 'four-party' credit card scheme operates. The transaction flows in a three-party scheme are similar, but the scheme fulfils the role of both issuer and acquirer, providing card acceptance services and charging merchant service fees to merchants while collecting funds from – and charging fees, interest (if applicable) and offering rewards to – cardholders. In such a three-party scheme, no interchange fees apply. However, three-party schemes have in recent years entered into 'companion' card arrangements with financial institutions to issue their cards. These arrangements have interchange-like fees, and – as with traditional four-party arrangements – may involve other incentive or marketing payments to issuers.

interchange payments in the eftpos system. While fees to merchants have risen, the change in interchange arrangements means – as would be suggested by 'Box 8B: Interchange Fees' – that fees to account holders for eftpos transactions have tended to fall. Previously, many account holders had monthly limits on the number of fee-free eftpos transactions they could make in a month: such transactions are now typically unlimited.

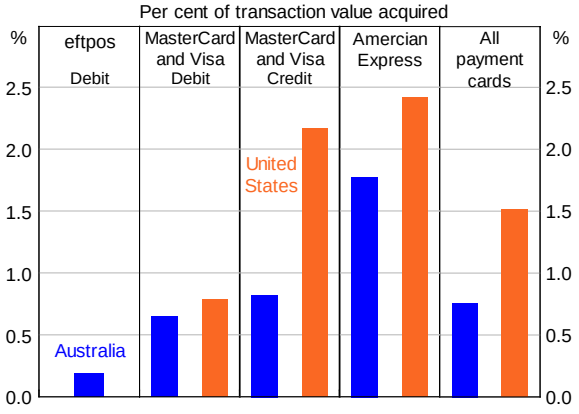
- Combining transactions across all card systems, average merchant service fees in Australia have fallen by around 37 basis points from their level prior to the Bank's reforms. Furthermore, the latest available annual data show that average merchant service fees are around 75 basis points lower than in the United States, where reforms to card systems have been much more limited (Graph 8.7).

Graph 8.6
Merchant Service Fees
Per cent of transaction values acquired



Source: RBA

Graph 8.7
Merchant Service Fees*
Per cent of transaction value acquired



* Latest available; Australia 2013; United States 2012
Sources: RBA; The Nilson Report

Overall, based on these data for average merchant service fees for the different schemes, the effect of the reforms has clearly been a reduction in merchant costs: one simple estimate of these savings is a total of $11 billion relative to the amount merchants would have paid over the past decade if

merchant service fees had remained at the rates existing prior to the reforms.[12] To the extent that interchange fees might have risen significantly in the absence of the Bank's reforms – for example towards the levels now existing in the United States – any estimate of the savings to merchants would be far larger.

It is impossible – given the imprecision in any econometric model of inflation – to measure exactly how these reductions in merchant service fees have flowed through into prices for consumers. However, just as with reductions in any other business costs – such as wages, taxes, the cost of energy etc – that influence the prices charged by business in other competitive industries, it seems reasonable to assume that they have mostly flowed through to lower retail prices for consumers, just as it is reasonable to assume that increases in merchant costs are similarly passed on to consumers over time. While the presumption that interchange rates influence the retail prices for goods and services faced by consumers has been questioned by the international schemes, it was certainly clear in the Wallis Report (see Financial System Inquiry (1997), p 396).

The caps on interchange in the credit card systems have, as would be implied by the discussion in Box 8B, led to some reduction in the generosity of cardholder rewards programs on average. Based on a sample of cards analysed by the Bank, the effective average rebate in a 'standard' rewards program – as calculated from the spending on a Visa/MasterCard required for a shopping voucher of a given amount – has fallen from around 0.81 per cent in June 2003 to 0.49 per cent in December 2013. Together with the reduction in interchange fees which will have fed through into lower prices charged by merchants, this implies that there has been a reduction in the extent to which those consumers that benefit from rewards programs are being subsidised by all other consumers.

While the benchmarks applying to weighted-average interchange rates have resulted in average interchange rates being much lower than prior to the Bank's reforms, the past decade has seen an evolution in the range of credit card products offered, as card-issuing financial institutions have responded to the introduction of new higher interchange rate categories by MasterCard and Visa. These new categories provide card issuers with considerably greater interchange fee revenue for 'platinum' (or equivalent) card transactions than for standard or 'gold' card transactions, which can be used to fund more generous rewards programs. Consequently, there has been significant growth in the premium segments of the credit card market. The growth in higher interchange categories has been accompanied by a reduction in some other interchange categories, including the introduction of lower 'strategic' rates applying to the transactions of some favoured classes of merchants. The cost to a merchant's financial institution (ultimately passed on to the merchant) of the highest fee category is now nearly double the rate applying in November 2003.

The PSB noted in its 2013 Annual Report that the cost of these higher interchange categories tends to fall on medium-sized and smaller merchants and other merchants that do not benefit from preferred rates. Given the operation of the hierarchy of the interchange fee schedules, a premium card will always carry an interchange fee as low as 0.20 or 0.23 per cent when presented to a merchant with the lowest strategic rate, but will have an interchange payment of up to 2.0 per cent for a merchant that doesn't benefit from preferential arrangements. The Bank will be reviewing this aspect of the operation of the credit and debit interchange systems in the period ahead. It will also be reviewing the issuance of American Express companion cards by financial institutions and considering whether

[12] Similar estimates can be obtained from comparing total merchant service fees paid between November 2003 and December 2013 for observed transaction volumes to two counterfactuals which both assume that average merchant service fees had remained at their starting level: the first scenario assumes that each scheme's share of the total value of card transactions was the same as actually occurred; while the second scenario assumes that schemes' market shares remained at their starting levels.

some change to the regulatory treatment of these cards (or those of any other scheme that is not currently designated) might be warranted.[13]

With respect to surcharging, the removal of the no-surcharge rules in 2003 appears to have had many of the expected effects:

- Survey data show that the proportion of merchants surcharging for transactions on American Express and Diners Club cards, which tend to be more expensive for merchants, is higher than for transactions on MasterCard and Visa cards.
- Although the level of surcharge varies across merchants, the average level of surcharge (for those merchants that surcharge) is higher for American Express and Diners Club. Calculations by the Bank for the PSB's 2013 Annual Report indicated that American Express and Diners Club surcharges averaged around 2.7 per cent, compared to around 1.5 per cent for surcharged MasterCard and Visa transactions.
- Within each scheme, there is a tendency for surcharging behaviour to reflect cost differences to merchants: for example, the large supermarkets and other preferred merchants which benefit from lower strategic interchange rates tend not to surcharge, while other merchants that face higher payments costs due to higher interchange rates on premium cards are more likely to surcharge.
- The ability of merchants to surcharge has made the cost of particular payment methods more apparent to consumers and enabled merchants to encourage the use of lower-cost payment methods. The Bank's 2010 Consumer Payments Use Study found that around half of consumers that hold a credit card would seek to avoid paying a surcharge by paying with a debit card or cash, payment methods that typically do not incur a surcharge. The survey indicated that a surcharge was actually paid on only around 4 per cent of transactions.

Overall, the Bank's assessment is that the removal of no-surcharge rules and the reduction in costs to merchants has applied downward pressure on prices in a range of industries, to the benefit of all consumers. Similarly, a recent study by the Commonwealth Consumer Affairs Advisory Council (CCAAC 2013) concluded that 'Credit card surcharges that reflect the reasonable costs of card acceptance are generally beneficial to consumers as they support wider acceptance of payment options that are convenient for Australian consumers while facilitating efficient outcomes within the payments system. CCAAC notes that since the removal of the "no-surcharging" rules in 2003, there has been a significant reduction in the service fees applied to merchants upon a consumer's use of their credit card.'

The Bank notes, however, that there is so far only limited evidence of an effect from the recent regulatory changes to allow card schemes to limit surcharges to the reasonable cost of card acceptance. While there have been a few high-profile reductions in surcharges, surcharging in the taxi industry remains very high, and there appear to be cases where surcharging in some other industries (most notably air travel) is excessive. In addition, surcharges (like some other 'service' or 'ticketing' charges on transactions) are often poorly disclosed. The Bank considers that the solution is not to ban all surcharges: some means of payment (e.g. high interchange/high rewards credit cards) can be very expensive for merchants and merchants should be able to recover their costs on such transactions.

---

[13] The combined American Express and Diners Club share (by value) of all credit and charge card transactions has risen by around 4½ percentage points from its 2003 level. Since 2010, this share has been broadly stable at 19–20 per cent. The share of these two schemes in all (debit, credit and charge) card transactions is unchanged since 2003, and is below the share observed in the US market.

The PSB will, however, be studying this issue over the coming year, with a view to whether further action by the Bank, ACCC or ASIC may be appropriate.

8.3.4 The Bank's reforms to the ATM system

In December 2008 the PSB designated the ATM system, following a request by industry. The Bank:

- had been concerned for some time about the role of interchange fees in this system, in particular that they were not transparent, were inflexible and bore little relationship to the cost of a transaction at a 'foreign' ATM transaction (an ATM not part of the network of the cardholder's financial institution)
- was of the view that a continuation of this inflexibility could over time result in the number of ATMs in Australia declining, if owners – most notably the independent non-bank deployers of ATMs – found it uneconomic to provide ATMs, particularly in high-cost and low-volume locations (e.g. rural and remote communities)
- was concerned about the difficulty that new providers faced in gaining access to the ATM system and the possible implications for competition.

In March 2009, the PSB implemented an access regime that caps the access charge (the one-off new connection cost) that can be levied on a new ATM provider by existing participants and in most cases eliminates interchange fees for ATM transactions. The Access Regime operates in conjunction with an access code developed by APCA with support from the Bank. In August 2012, the PSB amended the Access Regime to extend the Bank's powers to grant exemptions for ATM arrangements that would otherwise be counter to the Regime's interchange provisions. This was prompted by the work of a Reserve Bank–Treasury taskforce, which had looked at access to ATMs by residents of remote Indigenous communities. The PSB used its powers to grant an exemption to an arrangement proposed by ATM industry participants that will help reduce the high expenditure on ATM fees by residents of selected very remote Indigenous communities.

The Bank's ATM reforms have resulted in the elimination of fees charged by a cardholder's financial institution on 'foreign' ATM transactions (and typically notified only in the subsequent monthly statement). While cardholders may now be charged directly for transactions by the ATM owner, the charge must be notified and the cardholder given the the opportunity to cancel the transaction. A 2011 review of the reforms by the Reserve Bank–Treasury taskforce found that the reforms had resulted in changes in consumer behaviour, with cardholders shifting to making withdrawals from their own network and saving $120 million in fees in the year after the reforms were implemented. While the cost of 'foreign' transactions rose at some ATMs, it fell in others, with the average fee unchanged. The reforms have also made it easier for new deployers to participate in the ATM market and resulted in an increase in the growth rate of the number of ATMs in the two years following the reforms.

8.4 Retail Payments Innovation in Australia

The rapid advancement of information and communications technology has had a profound impact on many industries over the past two decades. It was inevitable that this would also be the case in the area of retail payments given its heavy reliance on these factors. Retail payment systems are currently the subject of substantial customer-facing innovation as well as an industry project that will deliver large increases in the speed and convenience of payments. If managed appropriately, these changes also have the potential to deliver greater security and increased competition.

This section provides further discussion of the nature of innovation in the Australian retail payments system, drawing on the work done in the Bank's Strategic Review of Innovation in the Payments System.

8.4.1 A framework for understanding retail payment systems and innovation

In order to understand innovation in retail payment systems, it is necessary to understand the nature of different types of payment systems and their implications for how innovation might occur.

In a country like Australia, with a well-developed financial system and a high proportion of the adult population holding bank accounts, many retail payments systems are so-called 'open-loop' systems.

- These typically involve the movement of customer funds at one financial institution to a customer account at another institution: for example, from a consumer's deposit or credit account to the account of a merchant when a purchase is made in a store. An open-loop system must provide a mechanism for both funds and information about payments to be exchanged between different financial institutions. Open-loop payment systems therefore require some form of coordination among financial institutions in order for this to occur; in other words, collaboration between entities that are otherwise competitors.
- The rules and telecommunications arrangements that support such systems can be provided in different ways. Many of the longer-standing payment systems in Australia (e.g. the cheque system, DE and eftpos) have traditionally been based on a combination of bilateral agreements and bilateral communication links between participant institutions, combined with some cooperatively agreed rules set via APCA. In contrast, other open-loop systems – for example, BPAY, MasterCard and Visa – are more centralised, with centrally set rules and a hub-based network as part of a commercial scheme.[14]

An alternative type of system is a 'closed-loop' system, where customers hold funds with a single system provider and payments occur by making transfers between customers' accounts within that system. This type of system is much simpler to operate and adapt because there is no need for cooperation across different entities. Of course, unless the system is very widely used and users are prepared to hold their savings in the system (equivalent to all Australians banking with one financial institution), funds need to be transferred in and out of the system to be readily usable.

Developments in the payments system over recent times suggest that innovation is easier the fewer parties there are involved in change decisions.

- Closed-loop systems tend to be able to innovate relatively easily because the degree of coordination required is limited relative to an open-loop system. And among open-loop systems, innovation is easier in a hub-based system than in one with many bilateral links. Indeed, the Wallis Report noted this problem with bilateral systems.
- The ease of innovation in an open-loop system depends on the level at which it is occurring. Individual institutions participating in a payment system typically can innovate freely in the way in which they interact with their own customers. For instance, Australian financial institutions have been very active in developing internet and mobile phone payment applications, in part because they can do this without the need to cooperate with any other financial institution. Financial

[14] eftpos is now also organised as a scheme and is transitioning to its own centralised or hub-based arrangements.

institutions have actively pursued this type of 'customer-facing' innovation in recent times, largely driven by competitive forces.

- By contrast, innovation in the cooperative elements of payment systems, where common rules, standards and network arrangements apply, is significantly more difficult because there are more parties and interests involved. As the Bank has noted previously, the Australian payments system was at the global forefront in the delivery of the eftpos system and a universal ATM system in the 1980s, but the difficulty of cooperative or collaborative innovation in those bilateral systems meant that further development of those systems (along with the DE system) was extremely slow over the ensuing decades. A commercial scheme, however, will often have a greater capacity to innovate at this level because the scheme can impose mandates on its members. For this reason, the eftpos system has now been established as a scheme, and significant innovation is currently underway.

The difficulties in ensuring successful collaborative innovation were seen a few years ago in the MAMBO (Me @ My Bank Online) project. This project was initiated in 2007 and involved the four major banks and was led by BPAY. The project was intended to extend the concept of BPAY identifiers to facilitate person-to-person and a wider range of person-to-business and business-to-business payments, including through payment requests. It would also have provided an increased capacity to exchange non-payment information. However, the combination of a number of factors – the complexity and high cost of the project, the challenges for banks that were already undertaking significant modernisation projects for their own internal systems, and the different investment cycles and commercial interests of the banks – led to the abandonment of the project in 2011.

8.4.2 The Strategic Review of Innovation in the Payments System

In recognition that cooperative innovation in the Australian payments system had lagged, and that as a result there were some increasingly apparent gaps in the services that the payments system could provide, the PSB announced a Strategic Review of Innovation in the Payments System in mid 2010. The Strategic Review involved an extensive consultation process, which included several published documents, opportunities for formal and informal input from interested parties and an industry roundtable. The conclusions from the Strategic Review were published in June 2012 and are highly relevant for the Financial System Inquiry in that the Review gave lengthy consideration to issues and trends associated with payments innovation and has set in train possibly the most significant changes in the Australian payments system since the immediate aftermath of the Wallis Inquiry.

The problems that the Bank has focused on in this area are important ones, as is witnessed by a similar initiative that is now underway in the United States. The Federal Reserve initiated a consultation in September 2013 where it shared its perspectives on some key gaps in the US payments system. The Fed plans to release a paper in the second half of 2014 which will define and prioritise initiatives to improve the speed, efficiency and security of payments.

8.4.2.1 Gaps in the payments system

The Bank sought to add some structure to the process of identifying current or prospective gaps in the payments system by setting out the factors that are valued by users of the system. Those factors included:

- timeliness: this may relate to the speed with which funds from a payment instruction are made available to the recipient. It may also relate to the speed with which confirmation is received that

a payment has been authorised and funds will be received, even if they will not be available until a later time; with this knowledge transactions can be completed and goods or services supplied.

- accessibility: this includes the ability to access the payments system when and where required and make payments to whoever required.
- ease of use: this can reflect factors such as the number of steps in the payment process, the amount of information that must be provided (such as account and BSB numbers), and the process by which it is provided. These factors are relevant for convenience, but may also influence the prevalence of errors that can be costly to correct.
- ease of integration with other processes: payments are often made as part of a process that requires some form of information exchange and reconciliation. Payment systems should ideally be able to integrate efficiently with these processes. Examples are the capacity of payment systems to carry additional information relevant to the payment and the ability of payments to be easily integrated with accounting systems.
- safety and reliability: end users of a payment system need to have confidence that the system will be available when expected and that payments will reach the intended recipient at the time promised. They also need to be confident that the system is secure, so that using it will not expose them to future losses due to fraud.

Based on its consultations and the attributes identified as being valued, the PSB identified the following gaps in the payments system, which it anticipated would become increasingly pressing in the years to come.

Real-time payments

The PSB noted the inability of individuals, government agencies and businesses to make retail payments with the recipient having visibility and use of those funds in near-to-real time. Currently, in cases where the sender and receiver have accounts with different institutions, Australian retail payment systems can at best guarantee next day availability of funds to recipients. The PSB considered this to be well behind international best practice and inconsistent with both public expectations and the needs of a modern economy.

Payments out of hours

The PSB also considered the lack of availability of payment systems out of normal banking hours to be out of step with broader developments in our society and economy, where more and more services are expected to be available both seven days a week and around the clock. In particular, it noted that the DE system, which underpins most business payments and internet banking transfers, did not (at the time of the review) operate out of hours. Therefore, while an internet banking transaction to a customer of another financial institution could be initiated on a Friday night, the recipient of those funds would not be able to access them until Monday at the earliest. Accordingly, the PSB considered that there should be the capacity to make payments (with quick availability of funds) to the recipient during evenings and on weekends. It further considered that this should be able to occur without generating credit risk between financial institutions; that is, there should be the capacity for interbank settlement out of hours as well.

Transmission of data with payments

The DE system allows only 18 characters of additional free-form information to be transmitted with a payment. This means that there is little capacity to provide an explanation of an electronic payment. While this is inconvenient for households, it can be much more significant for businesses. Businesses will often deal with this problem by avoiding electronic payments and sending a cheque with a

physical document attached. Alternatively, they may separate remittance information from a payment and rely on the recipient's capacity to reconcile them later.

Addressing of payments

A key element determining the ease of use of a payment system is the process by which the recipient's details are provided by the payer. Currently, in order for a payment to be made into a bank account, the recipient's BSB number and account number must be provided. In many cases, individuals will not remember these details and the need to correctly enter up to 15 digits means that there is a significant risk of error. A number of systems internationally are adopting identifiers that are more easily remembered, such as phone numbers or email addresses.

8.4.2.2 Conclusions of the Strategic Review of Innovation

At the end of the Strategic Review, the PSB concluded that removing some of the barriers to cooperative innovation in the Australian payments system had the potential to deliver significant public benefits over time. In its June 2012 Conclusions document it proposed two means by which to improve cooperative outcomes. First, the PSB would be more proactive in setting strategic objectives for the payments system. These would reflect services or attributes that the PSB believes the payments system should be able to provide by a specified time. The PSB would seek to establish these objectives from time to time and the industry would be expected to determine how they could be met most efficiently.

The initial set of strategic objectives set by the PSB reflected the gaps identified above:

- same-day settlement of all DE payments (by end 2013)
- the ability to make real-time retail payments (by end 2016)
- the ability to make and receive low-value payments outside normal banking hours (by end 2016)
- the ability to send more complete remittance information with payments (by end 2016)
- the ability to address payments in a relatively simple way (by end 2017).

The second proposal to improve cooperative outcomes was the establishment of an enhanced industry coordination body that could help to identify and achieve strategic objectives as well as providing coordination on other strategic issues for the industry. An appropriately constituted coordination body would in turn facilitate a more direct dialogue between the PSB and the industry.

8.4.3 Progress since the Strategic Review of Innovation

Good progress has been made in the period since the Strategic Review conclusions were released in June 2012.

The Bank and APCA have been consulting on the structure and scope of a new industry coordination body, to be known as the Australian Payments Council. The Council will be a senior-level body capable of taking a strategic perspective on issues of importance to the payments system, as well as engaging in a dialogue on those issues with the PSB. Reflecting its focus on improving industry coordination, the Council will be made up of diverse parties from within the payments industry, including financial institutions, payment schemes and other payment and service providers. However, the Bank considers it equally important that users of the payments system (consumers, merchants, businesses and government agencies) also have an effective mechanism for contributing to decisions about the payments system. Accordingly, in conjunction with the establishment of the Payments Council, the

Bank will also launch a new User Consultation Group. This will provide a more structured mechanism for users of the payments system to express views on payments system issues as an input to the Bank's policy formulation process. The Bank expects that both the Payments Council and User Consultation Group will begin to meet this year and looks forward to working with both bodies.

The first of the PSB's strategic objectives – same day settlement of DE payments – was achieved in November 2013 following an industry project coordinated by APCA and facilitating work carried out by the Bank. Previously DE payment files had been exchanged between financial institutions through the day, with settlement between banks occurring at 9 am the following business day. A benefit of the move to same-day settlement will be that funds can be made available to recipients on a timely basis without the receiving financial institution taking on credit risk.

The payments industry has decided to meet the remaining strategic objectives by establishing a completely new payment system – referred to as the New Payments Platform (NPP). This was agreed initially by an ad hoc industry committee, the Real-Time Payments Committee (RTPC), which has now been replaced by a broader committee (the New Payments Platform Steering Committee – NPPSC) to manage the design and implementation of the NPP.

- As requested by the PSB, the industry's NPP solution will be based on a hub infrastructure, which will be more efficient and access-friendly than the existing bilateral payments architecture. The hub will link ADIs and other approved entities and be capable of supporting the exchange of fast flexible payments messaging. It will be linked to a Settlements Service built by the Bank to provide real-time interbank settlement of each NPP payment. Both will be available on a 24/7 basis. This 'Basic Infrastructure' will be accessible by commercial 'overlay' services that can be tailored to particular payment needs of customers.
- While multiple overlay services could potentially be connected to the NPP in competition with one another, the first will be an 'initial convenience service' developed cooperatively by the industry. This might, for instance, be a system where funds can be exchanged between customers of different banks using a mobile phone 'app' and the recipient's phone number or email address, with the funds available for use by the recipient within seconds. While some banks currently provide a service like this, it is effectively only for customers of the same bank.
- The NPP will be one of a small number of retail payment systems in the world capable of providing real-time payments and one of an even smaller number to provide real-time settlement of those transactions, removing the need for financial institutions to deal with credit risk in settling payments. Its design is intended to make it a flexible and ready platform for future innovation in payments. The real-time nature of the system, combined with the flexibility of the payment messages, ability to carry additional remittance information and the easy addressing capability, will be a fertile platform for innovation and will help payments to be much better integrated with many other electronic systems. The Bank's expectation is that the NPP will ultimately allow business to achieve substantial efficiency gains and will offer significant improvements to the timeliness, accessibility and usability of the payments system for consumers.
- The NPP has broad industry support, with seventeen institutions initially funding the development phase, with participation from not only the large banks but also foreign banks, regional banks, service providers for the mutual sector, and PayPal. The design of the NPP – with core functionality provided by the Basic Infrastructure and value-added commercial features provided by 'overlay' services – means that the business requirements for the core service are not

excessively complicated, increasing the scope for a successful industry project. The project is expected to be completed in late 2016.

Reflecting the good progress that has been made following the Bank's Strategic Review of Innovation, the Bank does not consider that there are particular legal or structural issues for the Inquiry to address in the area of innovation or industry governance. The Inquiry may wish to encourage the payments industry to build on the strong progress made so far in the development of the NPP and the efforts made to address the PSB's strategic objectives.

8.5 Likely Trends and Issues in Retail Payments

As has already been noted, recent innovation in the customer-facing elements of retail payments has been relatively rapid. This can be seen in the shift to EMV (chip-based) card payments for point-of-sale transactions, followed quickly by the rapid roll-out and adoption of contactless payments. The latter technology is likely to be widely adopted on mobile phones in the relatively near future. More broadly the shift in mobile phones from an internet banking device to a point-of-sale payment device is likely to generate vigorous competition both between solutions and solution providers and between payment systems, including some not previously associated with point-of-sale transactions.

This section identifies some of the likely trends in retail payments over the next few years and considers whether any potential regulatory issues may arise. For the most part, the Bank considers that its existing powers leave it well placed to deal with most challenges arising from the likely future evolution of the payments system. The Bank notes, however, that it may be desirable for the Inquiry to consider the appropriateness of the current regulatory framework for purchased payment facilities.

8.5.1 Mobile payments

The term 'mobile payments' can be used to refer to a wide variety of financial transactions initiated with a mobile device (Flood, West and Wheadon 2013). These can include transactions with different economic purposes (e.g. purchases, remittances), technological interface (e.g. SMS, mobile internet, Near Field Communication (NFC)), funding source (e.g. deposit or credit account, stored value) and payment network (e.g. open-loop, closed-loop). The differences between them are important for understanding why mobile payments have tended to develop in different ways around the world and for understanding likely future trends in Australia.

Mobile payment systems have grown to be very important tools for financial inclusion in developing economies where handset ownership tends to be high but engagement with the formal financial sector is low. In many developing countries, systems where value is stored in accounts with a mobile phone operator, and transfers can be made between those accounts, have become *de facto* banking systems. The best known example is the M-Pesa system in Kenya, which has over 18 million account holders. Generally these are closed-loop systems, although there are examples where there is interoperability (or links) between systems or where the technology has been used to broaden access to traditional financial institutions, rather than a mobile network operator effectively holding deposits.

However, the developing economy 'mobile money' (stored-value) model seems far less relevant to Australia. Australia has a very highly banked population, with reasonably broad access to electronic payment systems. While mobile stored-value systems, such as those operating in developing countries, might offer some apparent benefits (e.g. immediacy of transfers) because they operate as closed-loop systems, this comes at the cost of customers holding transaction funds outside a supervised financial institution and having to periodically move funds into their mobile stored-value

account from their main savings account. Systems that facilitate electronic payments directly between financial institution accounts are expected to have greater appeal to customers in Australia, which (as discussed previously) will be made significantly more convenient by the NPP.

Two other types of mobile payments are expected to become increasingly important in Australia:

- Mobile banking 'apps' have already come into widespread use – effectively moving internet banking to a mobile environment. Payments (predominantly remote payments) are part of this process. A consumer, for instance, might pay a bill using BPAY or transfer funds to another person or business, with their financial institution processing this using the DE system. Alternatively a system such as PayPal might be used to make a payment, or card details might be entered directly into a merchant's website.

- A second model that is likely to become more prominent in the period ahead is the use of mobile phones for payment at the point of sale. In many cases this will occur through the use of contactless (NFC) chips either attached to or embedded in a phone. At one level this will simply replicate a contactless card payment, but it provides an opportunity for greater interactivity in the payment process. For instance, the consumer could choose which of several payment options to present to the merchant via the phone, while loyalty points or discount coupons could be managed as part of the same process. It is also likely that point-of-sale payment options that do not rely on NFC will be available; PayPal for instance has been offering a service that allows a customer to 'check in' at a merchant and make a web-based PayPal payment through an enabled POS terminal.

The current push to develop 'wallets' and 'mobile wallets' will be important for both of these models. 'Wallets' are systems that securely store a variety of customer payment details (for instance credit card, debit card or prepaid account details). Customers can use a password (or potentially other credentials) to make a payment using any one of those payment methods. This is effectively the model used by PayPal, but both MasterCard and Visa are now promoting their own wallets and it is likely that other wallets will emerge as well.[15] While initially these wallets will be largely focused on online transactions (websites will carry buttons branded for various wallets), it is likely that the wallets will also be able to initiate point-of-sale payments through NFC (or other means).

The potentially rapid evolution of mobile payments means that regulators will need to monitor developments closely. There are several potential areas where concerns could arise.

- Should 'mobile money' solutions gain traction in Australia (counter to the discussion above), there should be consideration of the regulatory status of the providers, given that they will be holding customer funds. Some broader issues with stored-value systems are discussed below.

- Mobile-based NFC systems may require the storage of payment information locally on a handset, and mobile payments require payments information to be transmitted in some form. The new technologies being used may bring new risks of payments data being compromised. Further discussion of security issues can be found below.

- Mobile payments are an area of active competition, with a number of competing models and many competing parties. For instance, financial institutions, payment schemes, telecommunications providers and handset manufacturers all have an interest in how mobile payments are rolled out. The array of varying interests is likely to delay the introduction of some forms of mobile payments (and probably already has). One question that should periodically be

[15] For instance, Google offers a wallet product in the United States.

asked is whether there are efficiency benefits that could be gained from greater coordination. To date, a strong case has not been made, though there are some initiatives overseas, such as that to create a single trusted service manager in New Zealand. Some newer smart-phone operating systems are reportedly enabling the secure remote storage and access of personal information, including payment card details, rather than storing it in the secure element on the handset. This may help overcome some of the coordination problems, reducing the need for trusted service managers to manage access to the handset's secure element.

8.5.2 Stored-value payment systems

The Wallis Inquiry anticipated the development of stored-value cards and 'smart' cards, including arrangements in which customers using smart cards for transactions could benefit from the sharing of data between various financial service providers that a cardholder had a relationship with: an example given at the time by Stan Wallis involved the purchase of whole-wheat bread and skim milk facilitating a discount on health insurance. The focus on stored-value cards was no doubt influenced by initiatives such as the Mondex and Visa Cash systems which were the subject of various pilots during the 1990s. It was anticipated that smart cards and stored-value systems would begin to displace cash and 'traditional' card usage over the ensuing years. Policy concerns at the time focused on the safety of the stored value, given its deposit-like nature and the fact that ADIs might not be involved. The enactment of the PSRA addressed such concerns by setting out, inter alia, a framework for the authorisation of 'holders of stored value' in a 'purchased payment facility' (PPF).

Stored-value systems have not taken off in Australia in the way anticipated, though there has been gradual adoption in some sectors discussed below. They have had more notable success in other countries, for instance the Octopus card in Hong Kong that has over 24 million cards issued and the 'mobile money' systems discussed above that are widely used in some developing countries. There appear to be at least two reasons for the limited success of such systems in Australia.

- First, Australia has a highly banked population and most adults hold payment cards linked to accounts that can be used both at the point of sale and online. A stored-value product would need to provide a demonstrable benefit over the customer's existing card products in order to gain widespread adoption, particularly given that an additional step is required to transfer funds into a stored-value account (although the latter might not be a large cost where a direct debit arrangement can be set up, as for example in electronic road-tolling systems).
- A second factor has been the relatively late development of smart-card-based transportation systems in Australia. Hong Kong's Octopus system was originally for public transport payments, but over time its use was broadened to encompass other types of purchases. This overcame the 'chicken and egg' problem often seen with payment systems; merchants had confidence in accepting the card because they knew it was already widely held by consumers. While smart-card systems for public transport are now becoming more common in Australia, the systems differ across states. In addition, card payment systems have also moved to chip and contactless technology, making the case for the extension of transport cards to general payments less obvious. Indeed, in some overseas cities, transportation systems are moving to accept contactless payment cards (e.g. MasterCard and Visa) in lieu of transit cards, rather than transit cards being used for general-purpose payments.

While a push to stored-value products has not occurred in Australia, many observers continue to see prepaid cards (which are likely to migrate to mobile devices) as a growth area. ePAL's 2013 Annual Report noted that there were over 1.5 million proprietary prepaid cards on issue in Australia, having grown at nearly 20 per cent from the previous year. Rather than being a general replacement for

either cash or existing card products, current prepaid products typically target particular niches. Some are gift cards issued by a particular merchant or group of merchants for use at those stores. Others, however, are general-purpose products, designed to operate through the eftpos, MasterCard or Visa systems. These may be marketed as gift cards, or issued as part of a promotion (e.g. as a cash-back on a purchase), by governments to cover emergency spending, or by businesses (or governments) as part of expenditure-control mechanisms. The products might also appeal to those worried about online security or anonymity, or to parents wishing to provide funds to children. Most recently, airlines and financial institutions have begun issuing stored-value products, largely targeted at foreign-currency spending, but nonetheless capable of allowing Australian dollar purchases.

While stored-value products are unlikely to emerge as a dominant part of the Australian payments system, it will be important to have an appropriate regulatory approach to the protection of consumers' funds held in PPFs. Currently, the Banking Regulations determine that providing a PPF that is widely available and redeemable upon demand for Australian currency constitutes 'banking business'. Therefore, the provider of such facilities must be an ADI, either a traditional ADI or an ADI within a special class that provide such facilities and do not conduct other banking business. Under the PSRA, any other holders of stored value in a PPF must be authorised by the Bank, unless they are granted an exemption. To date, the Bank has granted such exemptions to facilities where the stored value is guaranteed by governments or ADIs. It can also make declarations that the PSRA does not apply to specified facilities or classes of facilities. It has done so in relation to a range of facilities where either the total stored value is low (below $10 million) or where the facility is narrowly used, in that it can be used to make payments to no more than 50 persons. In most cases, the declarations operate in concert with ASIC class orders that exempt certain PPF providers from certain requirements under the *Corporations Act*. Current declarations cover loyalty schemes, gift-card facilities, electronic tolling and prepaid mobile phone accounts.

The combined effect of the Banking Regulations and the exemptions and declarations put in place by the Bank is that the Bank has not authorised any PPF providers to date. It is nonetheless possible that this could occur. A widely available general-purpose facility that was not redeemable for currency (and therefore not considered banking business) would need to be authorised by the Bank before stored value of over $10 million could be held.

The Bank believes that there is scope for the Inquiry to consider the suitability of the current framework for the regulation of PPFs for the following reasons.

- The involvement of three regulators (APRA, ASIC and the Bank) in the current framework seems unnecessarily complex.
- Should a PPF emerge that requires authorisation under the PSRA, the Bank would not be well placed to undertake the assessment and subsequent monitoring of the holder of stored value as it currently has no supervisory or enforcement capacity. Establishing and maintaining that capacity would be difficult and costly if were called upon only infrequently.
- A PPF that is considered to be undertaking banking business faces full prudential supervision as an ADI, with the associated regulatory costs. This creates an incentive for providers to structure their offerings in a way that avoids regulation, for example by making the product not redeemable for currency.
- In many cases consumers may not be aware of when the holder of stored value in a PPF is an ADI and when it is not.

- The definition of a PPF in the PSRA – a facility under which a holder of stored value makes payments to another person on behalf of the user of the facility – is a source of uncertainty, with terms that are potentially very wide or somewhat ambiguous, making enforcement difficult.
- Entities that at the time of the passage of the PSRA in 1998 issued travellers cheques were grandfathered so that they do not require authorisation. These instruments have largely evolved into card products providing the same service and are therefore very similar to other prepaid cards. Consideration should be given to whether this grandfathering remains appropriate.

The Bank believes that it is appropriate for there to be some regulation of general-purpose PPFs to ensure that consumers' funds are adequately protected. However, where the provider is not undertaking broader banking business and the value held by each individual is not high, APRA's ADI framework may be too onerous. The Bank believes that a lighter-touch framework, separate to the ADI framework, might be best suited to this purpose. An alternative to this arrangement would be to make it very clear to consumers which products are provided by ADIs and that *caveat emptor* applies to the remainder. The Bank sees this predominantly as a consumer protection issue.

8.5.3 Virtual currencies

Some attention has recently been focused on so-called 'virtual currencies' and the ways in which they can be used as a means of payment. These are essentially electronic transaction ledgers that record claims and changes to the ownership of each unit of the 'currency'. A virtual currency system can therefore be used to facilitate payments between people choosing to use that system. Currently, all issuers of virtual currencies are non-government entities and virtual currencies are not considered to be legal tender in any jurisdiction.[16]

One class of virtual currency is designed largely for purchases within a particular online 'ecosystem' such as Amazon Coins, Microsoft Points and (for a time) Facebook Credits. These allow funds to be transferred into the system from a card or bank account at an exchange rate (against a traditional national currency) determined by the operator, sometimes with the rate dependent on the amount converted; the quantity of virtual currency units within each virtual currency system is determined solely by the operator of that system.

A second class of virtual currency has been designed as a more general purpose means of exchange and store of value, often offering anonymity and low cross-border transaction costs. One example was run by Liberty Reserve, which was closed down by US authorities in mid 2013 due to money-laundering concerns. Some systems have exchange rates that are determined by the operator, while other systems have sought to remove any operator discretion in respect of exchange rates for the currency and have some form of market-determined rate. These tend to be decentralised 'peer-to-peer' systems in which the entire network takes part in processing transactions (see 'Box 8D: Cryptocurrencies').

Virtual currencies have been used in a range of contexts as a means of exchange, and can represent a store of value, although volatility in the price of some virtual currencies may make users reluctant to maintain holdings in these currencies. Virtual currencies have tended not to be used as a unit of account: rather, merchants typically price goods and services in another currency (e.g. the US dollar) and convert that price into a virtual currency amount at the time of the transaction (and then convert the receipts back into US dollars).

---

[16] However, the Canadian Mint has announced trials of MintChip, government-backed 'digital cash' for Canada that resembles a prepaid product.

Virtual currencies raise a number of potential concerns for policymakers. First, to the extent that they are a form of stored value, the safety of those funds is at risk in the event of fraud or the collapse of the system. Second, investor protection concerns may arise due to the potential for the value of the currency to significantly change – either through a decision of the provider in the case of operator-managed systems, or through market mechanisms. The wide fluctuations in Bitcoin values are an illustration of this. Third, the anonymity offered by some virtual currencies might make them a tool for money laundering, terrorist financing or tax evasion. Fourth, the cross-jurisdictional nature of these systems presents challenges, raising questions about how well they can be brought within the coverage of domestic legislation.

In Australia, use of virtual currencies is currently very limited, so risks posed by virtual currencies to the Australian payments system are therefore limited. Of those in use, most are usable only within closed systems such as merchant-specific loyalty programs or those created by merchants to encourage consumers to prepay for virtual goods (e.g. additional features within online games or applications). Very few Australian merchants currently accept open-loop virtual currencies such as Bitcoin as a means of payment. This presumably reflects the fact that they involve nascent technology and are a relatively untested means of payment. More generally, many payment attributes of virtual currencies are already available in the 'traditional' payments system so in many cases it is not clear what gaps these new currencies are filling. The Bank will continue to monitor developments in this area as part of its monitoring of the payments system. To the extent that there are indications that virtual currencies are becoming more widely used, the Bank will assess whether its powers in relation to payment systems and purchased payment facilities are able to address public interest issues arising from the operation of virtual currencies in Australia.

Box 8D Cryptocurrencies

While the concept of virtual currencies is not new, decentralised 'peer-to-peer' currencies such as Bitcoin have only developed in recent years as a result of advances in cryptography. Peer-to-peer currencies are processed by the entire network of end-users instead of a single entity (e.g. as is the case with card schemes). Accordingly, verification of transactions is not as straightforward as in a traditional centralised payment system. In particular, a mechanism is needed to ensure that a payer has used each virtual currency unit only once so that a recipient of the virtual currency can be assured of the legitimacy of the transaction. Bitcoin appears to be the first virtual currency to have addressed this problem for a decentralised system. It did so using a cryptographic solution along with incentives for users to verify transactions. The solution essentially involves a 'ledger' that publicly records all Bitcoin transactions and a reward (in bitcoins) for users that verify these transactions, a process that typically requires substantial computing power. This framework is aimed at ensuring that there are more incentives for users to uphold the integrity of the 'ledger' than to make fraudulent transactions within the system. Newer peer-to-peer virtual currencies, such as Litecoin and Dogecoin, have implemented a similar solution.

Because it essentially involves multiple users expending computing power to verify the same set of transactions, transaction processing in a 'cryptocurrency' system is arguably extremely inefficient compared with more traditional centralised systems in which a single entity verifies transactions. Moreover, third-party services that help users store and use these decentralised virtual currencies have tended to be far less secure than the cryptographic systems themselves; there have recently been a number of reports of Bitcoin 'banks' and 'wallets' being hacked. In February, MtGox (formerly the largest Bitcoin exchange) experienced a number of service disruptions attributed variously to hacking, software errors, and failure to secure relevant private keys to bitcoin storage, culminating in its closure and the apparent bankruptcy of its parent company in late February.

Despite these shortcomings, some users may prefer cryptocurrencies over more traditional means of payment because of how certain transfers are facilitated (e.g. the relative speed and cost of making a cross-border transaction using bitcoins). Some users may also have an incentive to hold a cryptocurrency because of expectations about its future value. Alternatively, users may have a preference for making transactions with a level of anonymity close to that enabled by cash (some commentators have described cryptocurrency transactions as 'pseudonymous' rather than necessarily anonymous, since the ledger of all transactions is publicly broadcast to the network and may facilitate the tracing of transactions to particular users). Indeed, various law enforcement agencies have looked into the potential use of cryptocurrencies in illicit transactions. Most notably, in October 2013, the US Federal Bureau of Investigation arrested the alleged operator of the 'Silk Road' website and confiscated a large number of bitcoins.

As with other types of virtual currencies, cryptocurrencies are currently not used to any material extent in Australia, with only a very limited number of merchants accepting bitcoins.[17]

[17] Transaction volumes for on-exchange Bitcoin-Australian Dollar trades averaged around 340BTC at a value of $160 000 per day on MtGox in the six months prior to its demise. This compares with Australian dollar foreign exchange turnover (AUD against all foreign currencies) averaging more than $350 billion per day in six major markets, according to the most recent semi-annual survey in October 2013.

8.5.4 Security issues

The threat of fraud is an ever-present issue in payment systems. It arises even in traditional payment instruments (e.g. counterfeiting of bank notes and forgery of cheques). In many cases, the lags in processing transactions in existing payment systems help to control fraud: for example, the relatively lengthy cheque clearing process allows for a cheque to be repudiated days after it has been presented. However, innovation can bring new fraud risks.

The changing nature of fraud as payment systems evolve can be seen in card markets.

- Traditionally most card payments were made at the point of sale and security measures largely involved the checkout operator physically comparing the signature on the card with the signature of the person making the payment. Card data were initially just embossed on the card and were subsequently also stored on a magnetic stripe; these were subject to the risk of copying for the manufacture of counterfeit cards. Over the years this risk has been reduced by the move to the much more secure EMV chips, while the risk of counterfeit signatures has fallen with the move to PIN authorisation.

- At the same time, online card payments have grown rapidly. Confirming that the transaction is being made by the authorised cardholder is significantly more difficult in this case; a signature cannot be verified nor is an EMV chip being presented, and the details exchanged for a payment can relatively easily be stolen and traded online. As a consequence, online card fraud has risen significantly in recent years. Australian issuers have attempted to address fraud rates by introducing their own risk-based anti-fraud mechanisms that identify when the pattern of card use changes (either for online or POS transactions), allowing a query to be raised with the cardholder or the card to be cancelled. In some jurisdictions, card schemes have introduced '3D Secure' solutions, which are designed to increase the security of online transactions, including through the use of an additional customer authentication step, most often the use of a password.

- Most recently, changes in point-of-sale technology (the move to contactless transactions with no customer authentication for transactions under $100) have again brought point-of-sale fraud into focus. At one level, consumers have expressed concern about contactless functionality allowing card data to more easily be stolen or fraudulent transactions to be made by scanning the chip while it remains in the customer's wallet or pocket. Card schemes and issuers argue that these are not significant risks given the application of security on an individual transaction basis. At the same time, however, these developments may have encouraged an increase in more low-tech fraud, in the form of stolen or intercepted cards, given the reduced requirements for cardholder verification.

Developments in other means of payment will also raise security issues. The move to mobile payments means that payments information may be exchanged by new channels, potentially including between the phone and the merchant via Bluetooth Low Energy (BLE) and sound waves, in addition to NFC and mobile data networks. These developments may raise new issues for the security of payment messages. Likewise the move to real-time clearing and settlement of payments via the NPP will mean that the time available to detect and address fraud will be very significantly reduced, requiring more of a focus on real-time fraud detection and other means of managing fraud risk. However, offsetting these risks, it is likely security technology will continue to advance over the coming years, for instance via the use of biometrics to authenticate the payer.

While in the past the Bank has pushed for greater transparency of fraud data (now published by APCA) the Bank has not directly intervened at a policy level in fraud issues. The Bank's view has been that regulatory intervention in this space should only occur if some form of market failure is preventing fraud from being properly addressed or if fraud is at a level that undermines confidence in the payments system. Two types of market failure have the potential to prevent efficient investment in anti-fraud mechanisms.

- Coordination problems might mean that a group of parties could collectively benefit from implementing anti-fraud mechanisms, but are unable to do so individually. For instance, online merchants tend to bear the cost of online card payment fraud and might benefit collectively from adopting additional authentication measures for online payments. However, doing so means that the transaction process will be slightly more complicated and if a merchant acts alone, the merchant might lose business to competing merchants that have not implemented the technology.
- The second type of market failure is where the costs of fraud and the ability to address fraud are not 'aligned' and reside with different parties. Where the cost of fraud and the means of addressing fraud reside with the same party, that party has an incentive to address the issue if its costs from fraud outweigh the cost of implementing fraud mitigation techniques. For instance issuing banks bear much of the cost of point-of-sale fraud and as a result have generally introduced real-time risk-based fraud monitoring systems to reduce the incidence of fraud. More generally, payment systems have generally been reasonably good at achieving the appropriate alignment, using 'liability shifts' to help achieve desired outcomes: for instance merchants that have not implemented a particular security measure (e.g. EMV terminals) might be made liable for fraud losses where they would not be otherwise. In some cases, this will occur via rule-based mandates.

Given the terms of reference for the Inquiry, it is appropriate to consider whether there is any case for regulatory change in relation to payments security issues, for example for the Bank to be more active in setting security standards for payment systems. The Bank notes, however, that the payments industry has made a range of efforts to reduce fraud; indeed, as liability typically does not fall upon the cardholder or other end-users of the payments system but is often borne by one of the financial institutions in the payments chain there are strong incentives in place for industry participants to take steps to reduce fraud and ensure high levels of payment security. Accordingly, the Bank considers that, provided that it is clear where the liability for fraud lies, there should be a presumption that regulation is not necessary. It is also likely to be the case that where technology is developing quickly it may be difficult to maintain appropriate regulation. However, should cases arise where the security of payments is not being adequately addressed due to a market failure, the Bank believes it has sufficient powers under the PSRA to set the necessary standards.

8.5.5 Operational resilience

In light of the continuing trend away from cash towards non-cash payments, the smooth functioning of retail payment systems is of increasing importance. This was highlighted in late 2010 and through 2011, when a number of retail operational incidents caused considerable disruption to customers of particular ADIs, as well as to other ADIs and their customers. While the senior management of individual institutions are primarily responsible for the operational resilience of their organisations, the Bank has reviewed how it can best strengthen its oversight of operational resilience in retail payment systems and contribute to the ongoing integrity of retail payments systems.

As part of this, in 2012 the Bank conducted an informal consultation on retail operational incidents. In general, the Bank observed an encouraging level of industry attention to operational resilience issues, with a number of payments system participants citing commercial pressures as a driver of increased investment in payments infrastructure. The consultation also indicated that payments operations are increasingly perceived as a strategic priority within financial institutions.

As a result, the Bank plans, at least for the time being, to limit its role to monitoring retail operational incidents and working with industry on initiatives around the disclosure of data on incidents. Since April 2012, RITS members have been obliged to notify the Bank on a timely basis of any retail incidents that meet specified criteria for severity. RITS members are also required to provide regular updates to the Bank during such an incident, and to deliver a post-incident report detailing the cause and follow-up actions taken. In addition, the Bank has more recently commenced a broader quarterly statistical data collection on retail payments incidents, covering both significant and less serious incidents. The Bank has also sought information on the system architecture supporting institutions' retail payment activities.

The data collected under this reporting framework will be used to identify trends and follow up with any payments system participant that is persistently underperforming. The Bank is also considering how aggregate data might be shared with industry to facilitate performance benchmarking by payments system participants. Aggregate data could also potentially be published to provide the public with reliable information on the prevalence of retail operational incidents. Over time the Bank expects that the analysis of information obtained from these sources will provide sound evidence as to whether further action is necessary.

8.6 The Bank's Oversight of High-value Payment Systems, Central Counterparties (CCPs) and Securities Settlement Facilities (SSFs)

Alongside its work on access, pricing and competition in retail payment systems, the PSB has in recent years focused increasing attention on its responsibility to promote stability in the Australian financial system.

Recognising the systemic importance of FMIs, as described in Chapter 4, the reforms that followed the Wallis Inquiry gave the PSB responsibility for determining payments system policy so as to best contribute to controlling risk in the financial system. The reforms also gave the Bank a formal role, under Part 7.3 of the *Corporations Act*, in the regulation of licensed CCPs and securities settlement facilities (SSFs). In accordance with these responsibilities, the Bank has for more than a decade carried out rigorous oversight of FMIs.

Chapter 4 observed that shortcomings in the design of FMIs, or interruption to critical FMI services could have systemic implications. This section describes the FMI landscape in Australia and illustrates how sound regulation and oversight can help to ensure that FMIs are a source of stability rather than a source of systemic risk. It goes on to describe how the Bank executes its oversight role in respect of both high-value payments and CS facilities, before highlighting some important areas of focus for the PSB in recent years and identifying some regulatory challenges stemming from changes in the market environment.

8.6.1 FMIs operating in Australia

The Bank has an oversight role in respect of three types of FMI that operate in Australia: high-value payment systems, CCPs and SSFs. High-value payment systems support wholesale funds transfers, while CCPs and SSFs – collectively known as CS facilities – clear and settle transactions in securities such as bonds and equities, and in derivative instruments such as options and futures.

8.6.1.1 High-value Payment Systems

High-value payment systems are systems that provide for the settlement of wholesale interbank payments. The principal domestic high-value payment system is the Reserve Bank Information and Transfer System (RITS). RITS, which is owned and operated by the Bank, sits at the heart of the Australian payments system (Section 8.2.2). The international foreign exchange settlement system, CLS, also plays an important role in Australia's financial system.

8.6.1.2 Central Counterparties

A CCP acts as the buyer to every seller, and the seller to every buyer in a financial market. It does so by interposing itself as the legal counterparty to all purchases and sales via a process known as novation. Following novation, the exposure of all parties – whether it be for the few days until an equity trade is settled, or for the several years of payment flows under a longer-term swap contract – is to the CCP, rather than the bilateral counterparty in the original trade.

These arrangements provide substantial counterparty risk management benefits to participants as well as greater opportunities for netting of obligations. At the same time, however, they result in a significant concentration of risk in CCPs. This risk would crystallise if a participant defaulted on its obligations to a CCP, since the CCP would have to continue to meet its obligations to all of the non-defaulting participants (Chapter 4). Accordingly, it is critical that CCPs identify and properly control risks associated with their operations and conduct their affairs in accordance with regulatory standards that promote the overall stability of the financial system.

Three CCPs are currently licensed under the Corporations Act to operate in Australia.

- ASX Clear Pty Limited (ASX Clear) provides CCP services for a range of financial products traded on the ASX and Chi-X Australia Pty Limited (Chi-X) markets, including cash equities, pooled investment products, warrants, certain debt products and equity-related derivatives.
- ASX Clear (Futures) Pty Limited (ASX Clear (Futures)) provides CCP services for derivatives traded on the ASX 24 market, including futures and options on interest rate, equities, energy and commodity products. In July 2013, ASX Clear (Futures) also began offering a clearing service for Australian dollar-denominated OTC interest rate derivatives.
- LCH.Clearnet Limited (LCH.C Ltd) was licensed in 2013 to provide CCP services for OTC interest rate derivatives and to act as the CCP for trades executed on a newly licensed derivatives exchange, FEX Global Pty Limited (FEX). FEX is not yet operational.

8.6.1.3 Securities Settlement Facilities

A SSF provides for the final settlement of securities transactions. Settlement involves transfer of the title to the security and transfer of cash. These functions are linked via appropriate delivery-versus-payment arrangements incorporated within the settlement process. Given their central role in the functioning of the markets they serve, it is critical that SSFs identify and properly control risks associated with their operations and conduct their affairs in accordance with regulatory standards.

Two SSFs (both part of the ASX Group) are licensed to operate in Australia:[18]

- ASX Settlement Pty Limited (ASX Settlement) provides for the settlement of cash equities, debt products and warrants traded on the ASX and Chi-X markets. ASX Settlement also provides a settlement service for non-ASX listed securities.
- Austraclear Limited (Austraclear) offers securities settlement services for trades in debt securities, including government bonds and repos.

8.6.2 The international framework applying to FMIs

Both in Australia and internationally, FMIs were a source of stability during the global financial crisis, operating reliably throughout this period. In part reflecting significant enhancements to the design of FMIs in the two decades prior to the crisis, market participants retained confidence in the infrastructure, allowing financial trading to continue even in an environment where financial institutions were reluctant to assume exposures to each other. Nevertheless, this period shone a light on potential issues that could arise in extreme stress. Accordingly, work on the international and domestic standards applying to CCPs and other FMIs has continued since the crisis, including on measures to ensure continuity of critical services in circumstances in which an FMI faces a threat to its ongoing financial viability.

8.6.2.1 Regulatory and oversight standards

Regulation and oversight promote the sound design of FMIs, helping to ensure that they act to mitigate systemic risk (Chapter 4). The Australian regulatory framework for FMIs is summarised in Sections 8.6.3 and 8.6.4, focusing primarily on the Bank's role and the standards to which it holds FMIs. These standards have drawn, after extensive consultation, on the international framework set out by the *Principles for Financial Market Infrastructures* (CPSS-IOSCO 2012; the PFMIs), which were published in April 2012 by the international standard-setters, CPSS and IOSCO (Chapter 3).

The PFMIs are a unified set of standards promoting sound risk management and operational resilience across the full range of FMI types. They have a broader scope and are more detailed than the standards that preceded them (CPSS 2001; CPSS-IOSCO 2001; CPSS-IOSCO 2004). Some international regulators have nevertheless expressed concerns that the PFMIs may be drafted at too high a level of generality (i.e. with insufficient 'black-letter' detail), and that this could lead to different interpretations and outcomes across jurisdictions. The Bank does not share this view and has argued in international groups that the PFMIs appropriately allow flexibility to adapt to the circumstances of particular FMIs or jurisdictions. An implementation monitoring exercise underway by CPSS and IOSCO aims to identify any inconsistencies in the implementation of the PFMIs across jurisdictions. An initial progress report was published in August 2013, reporting that at that time Australia had introduced measures to implement the PFMIs in all but one of the categories assessed (CPSS-IOSCO 2013).[19]

8.6.2.2 Continuity of services

To ensure continuity of critical FMI services, even in the event of extreme financial shocks, international regulators are developing guidance for the recovery and resolution of FMIs (Chapter 3; Section 8.6.4).

---

[18] There is also one other licensed SSF, IMB Limited, which operates a small SSF for settlement of its own securities.

[19] ASIC rules implementing the PFMIs for trade repositories had not yet been finalised at the relevant assessment date.

- CPSS and IOSCO have been working on guidance on *recovery planning*: actions that an FMI itself could take if, notwithstanding its adherence to international regulatory standards, it experienced a shock to its ongoing viability (Gibson 2013). The PFMIs require that an FMI establish plans to allocate any uncovered losses it may experience in the event of the default of one of its participants, promptly replenish its financial resources to restore regulatory minimums, and continue its operations uninterrupted. The guidance, once completed, will identify a range of tools that an FMI may use to meet these objectives.
- Recognising that, in some circumstances, even a comprehensive recovery plan may be difficult to fully implement in practice, international policymakers are encouraging jurisdictions to establish special *resolution regimes* for FMIs, with continuity of service a core objective. To support this work, the Financial Stability Board (FSB) has consulted on guidance as to how to apply its *Key Attributes of Effective Resolution Regimes for Financial Institutions* (Key Attributes) to FMIs (FSB 2013).

Both the guidance on recovery planning and that on FMI resolution are close to being finalised.

8.6.2.3 FMI design and risk management

Internationally, regulation and oversight of FMIs have delivered significant enhancements to their design and operation over the past two decades. These enhancements, promoted by international policy and standard-setting bodies such as CPSS and IOSCO, were instrumental in ensuring that by the time of the global financial crisis, participants were confident in FMIs' settlement models, risk management frameworks, and operational arrangements. Importantly, they regarded them as sources of stability rather than systemic risk.

- *Settlement models*. Perhaps the most fundamental change since the 1990s has been the introduction of RTGS in high-value interbank payment systems around the world (including Australia), replacing the pre-existing deferred net settlement model that allowed interbank credit exposures to build up during the settlement process. Acknowledging that RTGS systems require participants to hold sufficient liquidity in the settlement asset to be able to settle payments individually, the transition has been accompanied by measures to guard against liquidity risk. These include liquidity-saving features in the design of RTGS systems and the availability of central bank liquidity intraday (against eligible collateral). Enhancements have also been made to settlement models for securities and foreign exchange transactions: delivery-versus-payment, which makes the exchange of title to a security contingent on the simultaneous transfer of funds and ensures that principal risk does not arise in the securities settlement process; and payment-versus-payment in foreign exchange settlement (as in CLS), which similarly makes the transfer of a participant's settlement obligation in one currency contingent on the receipt of the foreign currency.
- *CCP risk management*. Crucial to the resilience of a CCP is its capacity to measure its risk exposure accurately and collateralise accordingly. In recent decades, industry-wide advances in risk modelling have been reflected in CCPs' margin methodologies and stress-testing capabilities, reducing the probability that a CCP would be left with a shortfall in financial resources in the event of a participant default.
- *Operational resilience*. Operational resilience standards for FMIs have risen over the years, in part reflecting more sophisticated information technology and a better understanding of the risks, but also due to lessons learned from practical experience of operational shocks (e.g. terrorist attacks and power failures). Enhancements have been observed in areas such as change-management protocols, information security, participant testing and business continuity planning.

8.6.3 The Bank's Oversight of High-value Payments

A key element of the PSB's responsibility for the safety and stability of payment systems in Australia is oversight of systemically important payment systems. To date, RITS is the only *domestic* system identified by the Bank as warranting oversight as a systemically important payment system. This reflects the fact that RITS is the principal system in Australia (by aggregate value of payments), mainly settles high-value and/or time-critical payments, and is used to effect interbank settlements arising in other FMIs (Section 8.6.2).

As part of its oversight of RITS, the Bank periodically conducts self-assessments of RITS against relevant international standards. These self-assessments are reviewed by the PSB and published on the Bank's website. Prior to the publication of the PFMIs, the relevant standards were the CPSS *Core Principles for Systemically Important Payment Systems*. Following the release of the PFMIs, the Bank committed to carrying out annual self-assessments against the PFMIs. In the most recent self-assessment, published in December 2013, the Bank concluded that RITS observed all of the relevant standards and committed to continuing work to ensure that RITS's operations remain in line with international best practice (RBA 2013b). The PSB also reviews any material developments occurring between assessments.

The Bank has also identified CLS as a systemically important international payment system. CLS is chartered in the United States and is regulated and supervised by the Federal Reserve. The Federal Reserve has established a cooperative oversight arrangement for CLS, in which the Bank participates.

8.6.3.1 ESA access

Linked to the PSB's oversight role in high-value payment systems is its responsibility for the Bank's policy on access to ESAs. One of the recommendations arising from the Wallis Inquiry was that access to ESAs should be liberalised, subject to appropriate conditions. Accordingly, in March 1999, the PSB widened access to ESAs to all providers of third-party payment services, irrespective of their institutional status, provided that an applicant could meet appropriate risk-based requirements. ADIs remained eligible with no additional risk-based requirements. In 2012, the Bank announced the creation of a specific category of ESA for Australian-licensed CCPs and SSFs that have Australian dollar settlement obligations.[20]

8.6.3.2 Payment Systems and Netting Act

The Bank, under the governance of the PSB, has powers under the PSNA to remove two important legal risks in the Australian payments system:

- the risk that a court may apply the 'zero hour' rule and unwind any payments that have settled since midnight of the day preceding a bankruptcy order
- the risk that a court may unwind net payment obligations, restoring gross obligations.

Practically, this is achieved through the Bank having the power to 'approve' an RTGS system or a netting arrangement. Any RTGS system approved under the PSNA is protected from zero hour risk, while any netting arrangement approved under that Act is protected from both zero hour risk and possible unwinding of netting. In assessing an application for approval, the PSNA sets out a number of tests including that, without such approval, the bankruptcy of a participant could cause systemic disruption. To date, the Bank has approved three RTGS systems, including RITS and Austraclear, and

[20] The Bank's *Exchange Settlement Account Policy* is available at <http://www.rba.gov.au/payments-system/esa/>.

six multilateral netting arrangements, including all of the retail payments clearing streams and the CHESS batch.

8.6.4 The Bank's Oversight of Central Counterparties and Securities Settlement Facilities

The Corporations Act establishes conditions for the licensing and operation of CS facilities in Australia and gives the Bank powers and responsibilities relating to these facilities. These powers are exercised under the governance of the PSB. The Bank and ASIC have joint responsibility for CS facilities under the Corporations Act, and have worked effectively together since the introduction of the regime. The regulators' respective roles under the Corporations Act are well defined and understood both by the regulators themselves and CS facility licensees.

- The Bank is responsible for ensuring that CS facilities comply with the Financial Stability Standards (FSS) that it has determined, and that facilities take any other necessary steps to reduce systemic risk.
- ASIC is responsible for ensuring CS facilities comply with other obligations under the Corporations Act, including for the fair and effective provision of services.

As cross-border provision of FMI services becomes more widespread, it will be increasingly important for regulators in different jurisdictions to work effectively together. Bilateral and multilateral cooperative oversight arrangements are important vehicles for host authorities to exert regulatory influence over FMIs that provide systemically important services in their jurisdictions. The Bank has established bilateral cooperative arrangements with the Bank of England to support its oversight of LCH.C Ltd, and sits on a Bank of England-led multilateral oversight group.

The remainder of this sub-section provides an overview of how the PSB has exercised its responsibilities as overseer of these facilities.

8.6.4.1 Financial Stability Standards (FSS)

In accordance with its responsibilities under the Corporations Act, the Bank first determined FSS for licensed CCPs and SSFs in 2003. The 2003 FSS were drafted at a high level, establishing an obligation for licensees to conduct their affairs 'in a prudent manner' so as to contribute to 'the overall stability of the Australian financial system'. Each FSS was supported by a set of measures and guidance that the Bank would take into account in assessing a licensee's compliance. Minor variations were made to the FSS in 2005 and 2009.

Following the release of the PFMIs, the Bank updated its FSS to bring them into line with the stability-related PFMIs, and ASIC took steps to implement measures relevant to its mandate (ASIC and RBA 2013). The new FSS also include some additional and varied requirements to reflect the Australian regulatory and institutional context. These include measures to ensure that regulators can maintain appropriate influence over cross-border facilities (Section 8.6.5).

Consistent with the higher level of detail of the PFMIs relative to the previous international standards, the new FSS are specified at a more detailed level than the earlier standards. They cover matters such as legal basis, governance, credit and liquidity management, settlement models, operational resilience, and management of business and investment risks. Reflecting standards introduced in the PFMIs, the new FSS include enhanced requirements for financial resources held to cover any losses incurred by CCPs in the event of a participant default, and a requirement to develop a comprehensive

and effective plan for the recovery or orderly wind-down of a CCP or SSF, in the event that it experienced a threat to its continued viability.

The Bank assesses CCPs and SSFs annually against the FSS. Given the growing systemic importance of these facilities, the Bank strongly supports high standards for the design and risk management of CS facilities operating in Australia. International consistency is also essential in light of the increasing cross-border provision of FMI services; cross-border recognition of regulatory rules is important where domestic institutions participate in overseas FMIs and where international institutions participate in Australian FMIs. Acknowledging the importance of international consistency, while at the same time recognising the need to ensure that regulatory settings fit the Australian context, the Bank continues to contribute to the development of relevant international standards and guidance through its representation on the CPSS.

8.6.4.2 Oversight of Domestic CS Facility Licensees

To date, the Bank's oversight of CS facilities has focused on the four licensed domestic CS facilities in the ASX Group. These facilities have been operated by the ASX Group since the merger of ASX and the Sydney Futures Exchange in 2006. The Bank carries out ongoing monitoring and assessment of these facilities through regular meetings and the collection of data and other information on the facilities' activities. Since 2006/07, the Bank has published its annual assessment of each licensed CS facility against the applicable FSS.

The first assessments against the new FSS were approved by the PSB in August 2013, and published in September 2013 (RBA 2013a). All four ASX facilities were found to have either observed or broadly observed all relevant requirements under the standards in the assessment period. The Bank did, however, make a number of recommendations to strengthen the ASX facilities' observance with the relevant standards and encourage continuous improvement. During the assessment period, the Bank also examined closely two new services introduced by ASX: a new OTC derivatives clearing service launched by ASX Clear (Futures) and a centralised collateral management service, ASX Collateral.

The PSB also carries out specific reviews from time to time, reflecting live issues in the operation of the facilities, specific requests from government, or developments in underlying markets. In the past few years, such reviews have considered the appropriate level of participation requirements for Australia's licensed clearing facilities, settlement practices in the Australian equities market, and disclosure of equities securities lending. Some of the design and risk management enhancements arising from the Bank's oversight of domestic CS facilities are described in 'Box 8E: CS Facility Oversight'.

Box 8E CS Facility Oversight

In carrying out its oversight responsibilities for CS facilities, the Bank has influenced a number of key changes in risk management and settlement practices.

Review of settlement practices for Australian equities

Following significant delays in the settlement of Australian equities in January 2008, the Bank undertook an extensive review of settlement practices in the Australian equity market. The Bank identified several modifications to the batch settlement process for settling equities that might improve the robustness of the settlement process and improve market functioning. Following this review, and in consultation with the Bank, ASX made several modifications including:

- setting an earlier deadline for the removal of failed settlement instructions from the batch
- clarifying the lines of communication and deadlines for decisions, including by settlement banks
- modifying the settlement fails regime, including by increasing the penalty fees that apply to failed equity trades
- introducing routine reporting of equity securities lending activities.

In relation to the last of these steps, the Bank undertook a follow-up consultation that resulted in further measures to improve the transparency of equity securities lending activities. The Bank's response reflected recognition of the important role that securities lending transactions play both in ensuring that participants can meet their obligations to deliver securities in the settlement batch and in broader market functioning. In order to comply with these measures, in late 2009, ASX introduced new trade identifiers and reporting requirements for participants and began to publish aggregated securities lending data on a daily basis.

Review of participation requirements in central counterparties

In 2008 the Australian Clearing House (ACH, now ASX Clear) proposed raising minimum capital requirements for participants from $100 000 to $2 million from January 2009, and to $10 million from January 2010. Subsequently, the then Minister for Superannuation and Corporate Law requested that the Bank and ASIC provide advice on the appropriate capital requirement for participants in Australian CCPs. In response to the Minister's request, the Bank and ASIC undertook an extensive consultation process with market participants.

The Bank and ASIC concluded that there was a strong in-principle case for ACH to set a minimum level of capital for its clearing participants and that an increase from the previous level of $100 000 was appropriate on risk grounds. However, since the market for third-party clearing was not sufficiently deep to accommodate smaller brokers that might be unable to meet a $10 million minimum capital requirement, the Bank and ASIC recommended that the increase in minimum capital requirements be implemented more gradually.

In addition, the Bank noted that it would support moves by ACH to:

- introduce additional risk control measures such as capital-based calls for additional collateral
- set higher minimum capital requirements for participants clearing on behalf of other brokers
- review whether there was a longer term case for considering other risk controls.

ASX has since raised its minimum capital requirement to $5 million for all participants, or $20 million for those participants that clear on behalf of other brokers. While ASX originally intended to raise minimum capital requirements further to $10 million, it announced in late 2013 that it would no longer pursue this increase in view of improvements to its other risk controls, including the introduction of cash market margining (see below). In parallel, ASX announced its intention to introduce tiered requirements for participants clearing on behalf of other brokers, based on the number of entities for which they cleared.

Recommendations from annual assessments

In addition to conducting reviews on specific matters relevant to clearing and settlement, the Bank's annual assessments of CS facilities have influenced the way that these facilities manage their risks. Several of these are of particular significance.

- *Stress testing:* In its 2003/04 assessment of SFE Clearing Corporation (SFECC, now ASX Clear (Futures)), the Bank identified scope for further work to be done in the review of SFECC's stress-testing scenarios (used to determine the appropriate level of financial resources held to cover losses created by a participant default). After an extensive review, with input from the Bank, in 2007/08 SFECC implemented changes to its stress-testing scenarios that significantly strengthened its ability to withstand a participant default in extreme conditions.
- *Margin settlement:* In its 2007/08 assessment of ACH, the Bank noted potential issues with the prevailing settlement arrangements for margin. At the time, participants could elect to make margin payments through ASX's daily settlement batch for equities, meaning that a disruption to equities settlement could delay ACH's receipt of margin payments. In addition, ACH held a counterparty exposure to the commercial bank that it used to receive its margin payments from participants. During the 2009/10 assessment period ACH began settling all of its margin obligations across a newly opened ESA at the Bank, and required participants to settle these independently of the equities settlement batch.
- *Cash market margining:* In its 2008/09 assessment of ACH, the Bank noted the case in favour of routine margining of cash equity transactions, in light of the high volatility in the cash equity market at the time, and noting the extensive use of margin as a risk management tool by cash equities CCPs internationally. ACH had previously relied on pooled financial resources to cover replacement cost losses stemming from a participant default. Following an extensive process of consultation with participants and other stakeholders, ACH (by then re-named ASX Clear) introduced cash market margining in June 2013.

Financial Stability Standards

While the ASX CS facilities' pre-existing risk management arrangements were largely consistent with the requirements of the Bank's new FSS when they were introduced (Section 8.6.4), ASX has undertaken several major initiatives to pursue full observance of the new FSS.

- *Enhancements to financial resources*: In 2013 ASX undertook a major capital raising, in part to ensure that ASX Clear (Futures) held sufficient financial resources to meet the Bank's expectation that it be able to withstand the joint default of its two largest participants. ASX also set aside capital to cover non-default related losses in each of its CS facilities.

- *Risk review, stress testing and model validation processes*: During 2013 ASX made changes to its stress-testing models and began developing analytical tools to enhance its model review, margin backtesting, sensitivity analysis and reverse stress-testing capabilities. ASX also introduced a new internal standard under which all models that are critical to ASX will undergo a full annual validation.
- *Account segregation and portability*: ASX has taken steps to ensure that indirect users of its CCPs (known as clients) would be adequately protected if the direct participant through which they access the CCPs were to default. ASX Clear (Futures) will shortly launch a client clearing service for OTC derivatives that insulates client positions and associated margin from losses on the positions of the client's clearing participant or the participant's other clients. Similar account structures for exchange traded derivatives will be launched later in 2014. ASX Clear is also taking steps to strengthen protections for client positions in cash equities.
- *Recovery planning:* The FSS require that CS facilities make recovery plans to restore their financial soundness in the unlikely event that their pre-funded financial resources prove insufficient to fully address a threat to their continued service provision. ASX has prepared basic recovery plans for each of its CS facilities, and has set out a timetable for consultation and further enhancement of these plans once international guidance on recovery planning is released.

8.6.4.3 Oversight of Overseas-based CS Facilities

Section 824B(2) of the Corporations Act provides for an alternative licensing route for overseas-based CS facilities. 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 CS facility 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.

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 (see Section 8.6.5). Ensuring appropriate regulatory influence over cross-border CS facilities will be increasingly important given recent and likely future developments in the financial market infrastructure, both in Australia and overseas (see Section 8.6.5). These are likely to result in increased cross-border provision of clearing and settlement services. In 2013, the London-based CCP, LCH.C Ltd, became the first CS facility to be granted an overseas licence and fall within the scope of the CFR's cross-border regulatory influence framework. The PSB's first annual assessment of LCH.C Ltd as a licensee will be published later in 2014.

8.6.4.4 Review of FMI regulation

Cross-border issues and associated regulatory challenges featured prominently in the government's consideration of the proposed merger between ASX and the Singapore Exchange in 2010. Subsequent to the rejection of the merger proposal, the then Deputy Prime Minister and Treasurer asked the CFR to conduct a review of potential measures to strengthen the regulatory framework for FMIs. The CFR released a consultation paper in October 2011 and provided recommendations in February 2012

(CFR 2012c). Among the conclusions most relevant to the PSB's responsibilities for CS facilities, the CFR recommended that the Government:

- provide regulators with powers to deal with a distressed FMI and ensure the continuity of critical services
- streamline and clarify the application of 'location requirements' for FMIs operating across borders.

The recommendation on powers to deal with a distressed FMI reflected the CFR's observation that 'the absence of a specialised resolution regime for FMIs represents a gap in the current regulatory framework'. A Treasury-led working group of the CFR has since been developing proposals for a special resolution regime for FMIs consistent with the FSB's Key Attributes (see Section 8.6.2). In conjunction with this work, proposals for enhanced directions and enforcement powers are also being developed, including a proposal that the Bank be given independent directions powers in relation to its particular regulatory responsibilities.

As noted, continuity of FMI services is critical. The official sector should therefore be able to articulate clearly to market participants what actions would be taken in such circumstances so as to underpin market confidence in the ongoing reliable provision of FMI services. Furthermore, as international reforms to OTC derivatives markets increasingly concentrate activity in CCPs, it is particularly crucial that the official sector has the power to deal with problems should they arise. The Bank therefore encourages the Government to progress the CFR's proposals in this area as a matter of priority.

On location requirements, the CFR published a paper in July 2012 (CFR 2012b) setting out additional safeguards to ensure that ASIC and the Bank retain sufficient regulatory influence over cross-border clearing and settlement (CS) facilities operating in Australia. This framework is discussed further in Section 8.6.5.

8.6.5 Developments in the financial market infrastructure and the PSB's responsibilities

In recent years, a number of important trends have emerged in the financial market infrastructure, both domestically and internationally. These are having implications for the exercise of the PSB's responsibilities in the regulation of CS facilities. Notable among these trends are:

- *Competition between trading venues, also giving rise to competition and in some cases interoperable links between CCPs*. Over the past decade there has been an expansion in the number and types of trading venues both overseas and in Australia. In large part this trend reflects the increasing sophistication and declining cost of technology, the associated rise of automated trading strategies, and the continued globalisation of finance. As competition between venues has intensified and trading volumes have risen, market operators and participants have sought to lower costs of clearing. This has led to competition between CCPs, and in some overseas markets (most notably in European cash equity markets) has led to the creation of links or 'interoperability' between CCPs to facilitate trade between users of different CCPs.
- *Cross-border consolidation and cross-border provision of trading and post-trade services*. Where competition in both trading and clearing has emerged, it has often come from FMIs seeking to leverage capabilities in other markets. Participant demands have also been a relevant driver, with globally active financial institutions seeking to reduce costs by consolidating activity with fewer FMIs.

- *Over-the-counter (OTC) derivatives clearing*. Even before the 2009 commitment by the G20 to migrate all standardised OTC derivatives transactions to central clearing (Chapter 3), OTC market participants had already begun to make increasing use of CCPs. This trend has accelerated since 2009, with around half of the notional outstanding amount of all OTC interest rate derivatives globally now centrally cleared.

In light of the PSB's mandate to ensure that FMIs are operated in a way that promotes financial stability, the PSB has given close consideration to the potential stability risks arising from these changes in the market structure. An obvious stability risk is that competition, possibly through a 'race to the bottom', leads to lower-quality or less reliable provision of critical FMI services. ASIC and the Bank seek to address this through the due diligence that is conducted ahead of any recommendation to the Minister on licensing, and through ongoing oversight of licensees against regulatory standards.

There are at least three additional stability risks that could arise:

- materially reduced regulatory influence for Australian regulators over critical CS services in the Australian market
- materially increased complexity in the post-trade market structure that created opacity or introduced channels for contagion that could not be managed effectively
- greater likelihood of frequent and potentially disruptive entry and exit of CS service providers.

Accordingly, consideration has been given to how the powers of ASIC and the Bank could best be deployed to ensure changes in the market structure deliver efficiency and innovation without posing unacceptable risks to financial stability. In the Bank's view, subject to the recommendations arising from the CFR's 2011 review of FMI regulation being progressed, the regime for FMI regulation in Australia provides for effective oversight, an appropriate balance between efficiency and stability considerations, and a sound foundation to deal with the regulatory challenges arising from each of the themes identified.

8.6.5.1 Regulatory influence

Further to the review of FMI regulation discussed in Section 8.6.4, the CFR published a paper in July 2012 setting out additional safeguards to ensure that ASIC and the Bank retain sufficient regulatory influence over cross-border CS facilities operating in Australia. The paper develops a graduated framework for imposing 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 (CFR 2012b).[21] In response to a desire for further clarity from existing and prospective CS facility licensees the CFR recently released a further paper setting out how the regulators would expect to apply the framework in various alternative scenarios (CFR 2014).

One such additional measure is to require that any systemically important CCP use an ESA at the Bank to manage its Australian dollar-denominated obligations, and also that it maintain a portion of its liquid assets in Australian dollar-denominated liquid assets. A holder of an ESA with the Bank is entitled to central bank liquidity against eligible collateral assets, which may be important in some market circumstances.

[21] These measures would apply both where an overseas-based facility sought to provide its services in Australia and where a domestic facility sought to outsource certain operations offshore.

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 in Australia.

The policy is flexible and allows triggers for particular measures to be set on a case-by-case basis. It has already been applied in the case of LCH.C Ltd, and it will need to be applied in considering the appropriate regulation of any future cross-border licence applicant.

Importantly, however, there is at present no specific legal provision for imposing a requirement that a licensee incorporate locally and transition from an overseas to a domestic licence. Further to the CFR's recommendations to the government arising from the review of FMI regulation in 2011, a working group of the CFR has developed legislative proposals to remove this impediment. The Bank strongly encourages the government to progress these alongside proposals to introduce an FMI resolution regime.

8.6.5.2 Complexity

Multiple providers of clearing services for a given product class and the dynamic of competition inherently add complexity to the infrastructure landscape. A further potential source of complexity is interoperable links between FMIs – and, in particular, links between CCPs. As noted, a link between two CCPs allows a participant of one CCP to centrally clear transactions executed with a participant of the other CCP. A link therefore lowers the cost to traders of expanding their product range and their access to trading networks. At the same time, however, links could provide a direct channel for contagion between CCPs and careful risk management of financial risk exposures between linked CCPs is therefore essential.

A framework for managing the risks arising from FMI links has been developed and is reflected in the PFMIs. This framework has accordingly been written into the Bank's FSS and will form the basis for the Bank's assessment of any future proposal for an FMI link. Given the relative novelty of FMI link arrangements, it is likely that the PSB would apply a conservative interpretation of the relevant standards in the event that cross-border links were proposed.

8.6.5.3 Entry and exit

Frequent entry and exit of FMIs such as CS facilities is undesirable, given the high costs to market participants of transitioning between providers. Connecting to a new provider entails significant legal, technology and operational costs. It is also a time-consuming process, which for some participants can take several months. Should a provider subsequently exit, forcing participants to transfer to a new provider, these connection costs would be borne again. Also, in a competitive setting, participants may shift between competing providers at different times, potentially fragmenting liquidity and leaving a CCP with unnetted exposures.

Entry and exit was considered in a review by the CFR of competition in clearing and settlement of Australian cash equities. The CFR recommended that any competing providers be required to give the

regulators at least one year's notice of any planned commercially driven exit and maintain additional capital to cover operating expenses for that notice period. This would be expected to facilitate an orderly transition to a new service provider.

Also on the recommendation of the CFR, the government announced in February 2013 that no licence applications from competing CCPs for ASX-listed securities would be considered for two years, as feedback from consultation indicated that the transition to a competitive environment would impose high operational costs on an already stretched industry (CFR 2012a). In the meantime, ASX was called upon to develop a *Code of Practice* (the Code) for its cash equity clearing and settlement activities, based on a set of principles around user input to governance, transparent and non-discriminatory pricing, and access. The Code was published in July 2013. At the end of the two year period, the CFR will carry out a public review of the Code's implementation and effectiveness. At the same time, the CFR will review the prospect of granting a licence to a competing CCP, or of pursuing other regulatory outcomes. If competition were to be ruled out indefinitely, a regulatory response might be appropriate.

References

ASIC (Australian Securities and Investments Commission) and RBA (Reserve Bank of Australia) (2013), 'Implementing the CPSS-IOSCO Principles for Financial Market Infrastructures in Australia', February. Available at <http://www.rba.gov.au/payments-system/policy-framework/principles-fmi/implementing-principles-australia.html>.

Bagnall J, S Chong and K Smith (2011), 'Strategic Review of Innovation in the Payments System: Results of the Reserve Bank of Australia's 2010 Consumer Payments Use Study', Reserve Bank of Australia, June.

Bullock M (2010), 'A Guide to the Card Payments System Reforms', RBA *Bulletin*, September, pp 51–59.

CFR (Council of Financial Regulators) (2012a), *Council of Financial Regulators Advice on Competition in Clearing of the Cash Equity Market*, December. Available at <http://www.treasury.gov.au/PublicationsAndMedia/Publications/2013/competition-of-the-cash-equity-market>.

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

CFR (2012c), 'Review of Financial Market Infrastructure Regulation: Letter to the Deputy Prime Minister and Treasurer', February. Available at <http://www.treasury.gov.au/ConsultationsandReviews/Consultations/2012/CFR-Financial-Market-Infrastructure-Regulation>.

CFR (2014), 'Application of the Cross-border Influence Framework for Cross-border Central Counterparties', March. Available at <http://www.cfr.gov.au/publications/cfr-publications/2014/pdf/app-reg-influence-framework-cross-border-central-counterparties.pdf>.

CPSS (Committee on Payment and Settlement Systems) (2001), *Core Principles for Systemically Important Payment Systems*, Bank for International Settlements, Basel.

CPSS (2013), 'Statistics on Payment, Clearing and Settlement Systems in the CPSS Countries: Figures for 2012', Bank for International Settlements, Basel. Available at <http://www.bis.org/publ/cpss116.pdf>.

CPSS-IOSCO (Committee on Payment and Settlement Systems and Technical Committee of the International Organization of Securities Commissions) (2001), *Recommendations for Securities Settlement Systems*, Bank for International Settlements, Basel.

CPSS-IOSCO (2004), *Recommendations for Central Counterparties*, Bank for International Settlements, Basel.

CPSS-IOSCO (2012), *Principles for Financial Market Infrastructures*, Bank for International Settlements, Basel.

CPSS-IOSCO (2013), 'Implementation Monitoring of PFMIs: Level 1 Assessment Report', Bank for International Settlements, Basel.

Commonwealth Consumer Affairs Advisory Committee (2013), Credit Card Surcharges and Non-transparent Transaction Fees – A Study, July.

Cusbert T and T Rohling (2013), 'Currency Demand during the Global Financial Crisis: Evidence from Australia', RBA Research Discussion Paper No 2013-01.

Emery D, T West and D Massey (2008), 'Household Payment Patterns in Australia', in *Payments System Review Conference*, Proceedings of a Conference, Reserve Bank of Australia and Centre for Business and Public Policy at the Melbourne Business School, Sydney, pp 139–176.

European Commission (2012), 'Green Paper – Towards an Integrated European Market for Card, Internet and Mobile Payments'. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0941:FIN:EN:HTML>.

Frankel A (2008), 'Towards a Competitive Card Payments Marketplace', in *Payments System Review Conference*, Proceedings of a Conference, Reserve Bank of Australia and Centre for Business and Public Policy at the Melbourne Business School, Sydney, pp 27–69.

Financial Stability Board (FSB) (2013), 'Application of the Key Attributes of Effective Resolution Regimes to Non-bank Financial Institutions: Consultative Document', August. Available at <https://www.financialstabilityboard.org/publications/r_130812a.pdf>.

Financial System Inquiry (1997), *Financial System Inquiry Final Report* (S Wallis, chairperson), Australian Government Publishing Service, Canberra. Available at <http://fsi.treasury.gov.au/content/FinalReport.asp>.

Flood D, T West and D Wheadon (2013), 'Trends in Mobile Payments in Developing and Advanced Economies', RBA *Bulletin*, March, pp 71–79.

Gibson M (2013), 'Recovery and Resolution of Central Counterparties', RBA *Bulletin*, December, pp 39–48.

Hayashi F (2013), 'Public Authority Involvement in Payment Card Markets: Various Countries August 2013 Update' Payments System Research Department, Federal Reserve Bank of Kansas City. Available at <http://www.kansascityfed.org/publicat/psr/dataset/pub-auth_payments_var_countries_August2013.pdf>.

RBA (Reserve Bank of Australia) and ACCC (Australian Competition and Consumer Commission) (2000), *Debit and Credit Card Schemes in Australia: A Study of Interchange Fees and Access*, October.

RBA (2013a), *2012/13 Assessment of ASX Clearing and Settlement Facilities*, September. Available at <http://www.rba.gov.au/payments-system/clearing-settlement/assessments/2012-2013/index.html>.

RBA (2013b), *Self-assessment of the Reserve Bank Information and Transfer System*, November. Available at <http://www.rba.gov.au/payments-system/rits/self-assessments/2013/index.html>.

Schwartz C, J Fabo, O Bailey and L Carter (2008), 'Payment Costs in Australia', in *Payments System Review Conference*, Proceedings of a Conference, Reserve Bank of Australia and Centre for Business and Public Policy at the Melbourne Business School, Sydney, pp 88–138.

United States Government Accountability Office (2009), 'Credit Cards: Rising Interchange Fees Have Increased Costs for Merchants, but Options for Reducing Fees Pose Challenges', Report to Congressional Addressees, GAO-10-45, Washington, DC, November. Available at <http://www.gao.gov/assets/300/298664.pdf>.

Reserve Bank of Australia
31 March 2014

Abbreviations

ABA	Australian Bankers' Association
ABARES	Department of Agriculture, Fisheries and Forestry
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ADI	Authorised deposit-taking institution
AFMA	Australian Financial Markets Association
AIG	American International Group
AML	Anti-Money Laundering
ANZ	Australia and New Zealand Banking Group
AOFM	Australian Office of Financial Management
APCA	Australian Payments Clearing Association
APRA	Australian Prudential Regulation Authority
ASIC	Australian Securities and Investments Commission
ASX	Australian Securities Exchange
ATM	Automated Teller Machine
ATO	Australian Taxation Office
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BLE	Bluetooth Low Energy
BoE	Bank of England
CBA	Commonwealth Bank of Australia
CCAAC	Commonwealth Consumer Affairs Advisory Council
CCCB	Counter-cyclical capital buffer
CCPs	Central counterparties
CFR	Council of Financial Regulators
CGFS	Committee on the Global Financial System
CGS	Commonwealth Government Securities
CLF	Committed Liquidity Facility
CLS	CLS Bank International
CMBS	Commercial mortgage-backed securities
COIN	Community of Interest Network
CPA	Certified Public Accountant
CPSS	Committee on Payment and Settlement Systems
CS	Clearing and settlement
CTF	Counter Terrorism Financing
CUBS	Credit unions and building societies
DB	Defined benefit
DC	Defined contribution
DE	Direct Entry
DFA	Digital Finance Analytics
DNS	Deferred net settlements

D-SIBS	Domestic systemically important banks
DSR	Dent-servicing ratios
DvP	Delivery-versus-payment
ECB	European Central Bank
EMV	EuroPay, MasterCard & Visa
ePAL	eftpos Payments Australia Limited
ESA	Exchange Settlement Account
ESFS	European System of Financial Supervision
ESRB	European Systemic Risk Board
ETF	Exchange-traded funds
EU	European Union
FCIC	Financial Crisis Inquiry Commission
FCS	Financial Claims Scheme
FISM	Financial Intermediation Services Indirectly Measured
FMIs	Financial market infrastructures
FPC	Financial Policy Committee
FSA	Financial Services Authority
FSB	Financial Stability Board
FSI	Financial Stability Inquiry
FSOC	Financial Stability Oversight Council
FSS	Financial Stability Standards
G20	Group of Twenty
GDP	Gross Domestic Product
GFC	Global financial crisis
GLAC	Gone concern loss absorbing capacity
G-SIBs	Global systemically important banks
G-SIIs	Globally systemically important insurers
GTEs	Government Trading Enterprises
HLA	Higher loss absorbency
IAIS	International Association of Insurance Supervisors
ICR	Issuer Credit Ratings
IMF	International Monetary Fund
IOSCO	International Organisation of Securities Commissions
IPO	Initial Public Offering
IRB	Internal-Ratings based
LCH.C Ltd	LCH.Clearnet Limited
LCR	Liquidity coverage ratio
LMI	Lenders mortgage insurer
LVR	Loan-to-valuation ratios
MAGD	Macroeconomic Assessment Group Derivatives
MFAA	Mortgage & Finance Association of Australia
MMF	Money market fund
MOU	Memorandum of Understanding on Financial Distress Management
MSF	Merchant Service Fee
MYOB	Mind Your Own Business
NAB	National Australia Bank
NCCP	National Consumer Credit Protection
NDC	Notional defined contribution

NFC	Near Field Communication
NFF	National Farmers' Association
NOW	Notice of withdrawal
NPA	Note Printing Australia
NPP	New Payments Platform
NPPSC	New Payments Platform Steering Committee
NSFR	Net stable funding ratio
ODRG	Over-the-counter Derivatives Regulators Group
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-counter
PAIRS	Probability and Impact Rating System
PFMIs	Principles for Financial Market Infrastructures
PIN	Personal Identification Number
POS	Point of Sale
PPF	Purchased Payment Facility
PPP	Public-private partnership
PSB	Payments System Board
PSNA	*Payment Systems and Netting Act*
PSRA	*Payment Systems (Regulation) Act*
PTE	Public Trading Enterprise
RAP	Resolvability Assessment Process
RBA	Reserve Bank of Australia
RBNZ	Reserve Bank of New Zealand
RFC	Registered financial corporation
RITS	Reserve Bank Information and Transfer System
RMBS	Residential mortgage-backed securities
RTGS	Real-time gross settlement
RTPC	Real Time Payments Committee
SCCI	Specialist Credit Card Institution
SG	Superannuation Guarantee
SIFI	Systemically important financial institution
SIS	Superannuation Industry Supervision
SMS	Short Message Service
SMSF	Self-managed Superannuation Fund
SNA	System of National Accounts
SOARS	Supervisory Oversight and Response System
SSF	Securities settlement facilities
SVRs	Standard variable rates
TIBS	Treasury inflation-linked bonds
UCCC	Uniform Consumer Credit Code
WBC	Westpac Banking Corporation
WEO	World Economic Outlook