

Financial Stability Review

OCTOBER 2015

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Reserve Bank

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Overview

Risks in the global financial system have shifted in the past six months. Advanced country banking systems have recorded improving asset quality and capital positions. The recent rise in premia in some financial markets suggests that investors are becoming more discerning about risk, but search for yield behaviour is still evident in a range of asset markets where prices remain elevated. Although concerns about Greece came to a head in the middle of the year during the protracted negotiations with its creditors, there was little spillover to other countries' financial systems partly because European bank exposures to Greece have been wound back.

Attention has instead shifted to China and other emerging market economies. The growth outlook for a number of these economies has deteriorated against a backdrop of higher debt; in addition, lower commodity prices, fiscal pressure and political instability are compounding the situation in some cases.

These concerns have precipitated a pick-up in financial market volatility in emerging and advanced economies. There have been sizeable fluctuations in some equity and currency markets, with the large run-up in Chinese equity prices that began in 2014 now substantially reversed. The price movements in some financial markets, including in advanced economies, have, on occasion, been amplified by short periods of trading disruption, underlining concerns that some investors might be under-pricing liquidity risk. With the US Federal Reserve's first tightening since 2006 in prospect, the

risk is that this combination of factors could trigger a sharp repricing in markets. However, while adding volatility to some markets in Australia, to date these global factors have not had a material impact on Australia's financial system.

The domestic risks to financial stability in Australia continue to revolve mainly around developments in some local property markets. The risks surrounding housing and mortgage markets seem higher than average at present. Housing markets have been buoyant in Sydney and Melbourne over much of the year, with very strong price growth and a historically large role being played by investors. The recent enhanced scrutiny of lending practices following reviews by the Australian Prudential Regulation Authority (APRA) and the Australian Securities and Investments Commission (ASIC), along with substantial data revisions by banks, has shown that the level of investor activity was in fact higher over recent years than had originally been thought.

For several years, overall mortgage lending standards have been tighter than they were in the lead-up to the global financial crisis: 'low-doc' loans are rare; genuine savings are expected to fund at least part of the deposit; and it is now common practice to apply a buffer to the interest rate when calculating allowable loan sizes. However, lending standards appear to have been somewhat weaker around the turn of this year than had been apparent at the time, or would be desirable in the current risk environment. Standards have since been tightened. This was in part necessary because nominal housing price growth might be expected

to be slower on average – and periods of absolute price declines to be more common – now that the earlier transition to a low-inflation, higher-debt state has been completed. The recent tightening should therefore be understood as addressing the need for a permanently stronger level of lending standards, as well as reversing some of the slackening in serviceability standards that had started to occur in response to strong lending competition.

Risks have been growing in commercial lending related to property, which historically has been a common source of financial instability both domestically and abroad. Building approvals for new apartments have remained very strong over 2015, even though rental markets already look soft in some areas and the projected growth of net international student arrivals has been revised down. The divergence between commercial property valuations and rents has widened further, with strong local and foreign investor interest for new and existing office buildings in particular, even though vacancy rates are quite high. At the same time, falling commodity prices are weighing on the profitability of many resource-related companies, though the rest of the business sector looks to be in fairly good shape. In this context, the deterioration in New Zealand's dairy sector in response to low global milk prices will be an area to watch, given the size of the Australian bank subsidiaries' exposures to that sector.

These risks appear to be comfortably manageable at this stage, but they underscore the need to maintain sound lending standards and the resilience of the financial and non-financial sectors. As noted, most banks have now strengthened the serviceability metrics used in their mortgage lending and taken steps to slow the pace of growth in investor lending towards APRA's expectations. Banks also report that they are becoming increasingly wary of lending to property developers

in markets that look oversupplied. The large banks have enhanced their resilience recently by raising substantial amounts of fresh capital in advance of new prudential requirements. Many households have likewise been bolstering their resilience in a number of ways, including paying down their debt faster than contractually required and increasing their offset account balances.

Nonetheless, competition among lenders remains strong in the owner-occupier part of the mortgage market and in parts of the business lending market. Looking ahead, a key challenge will be to ensure that, in an environment of low interest rates, lending standards at both Australian and foreign-owned banks do not weaken materially from here. Over the medium term, it will also be important to monitor how banks respond to the wide range of ongoing international and domestic regulatory changes.

The responses of banks to the housing-related prudential measures announced last December have evolved over the course of the year, and the effects of some of the most recent actions undertaken by the banks, such as increasing pricing on some types of housing loans, will not yet be fully apparent in published data. Nonetheless, some indicators of housing demand, including the growth of investor credit, have moderated of late; in particular, there are a few tentative signs that sentiment may be turning in the housing markets of the two largest cities. Assuming that these early signs of a better risk profile in the housing market are borne out in future data, this would imply that the household and banking sectors are becoming better placed to manage the risk environment than they were a year or so ago. ✎

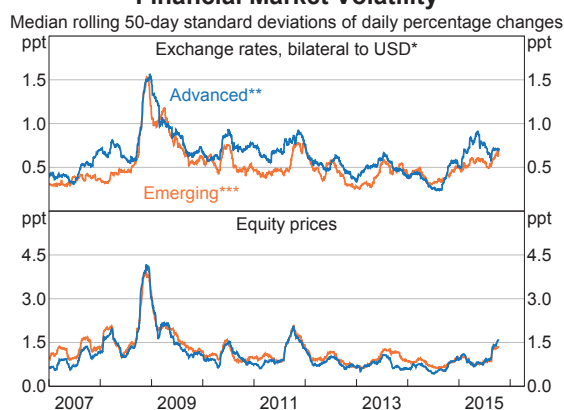
1. The Global Financial Environment

The focus of global financial stability risks has been shifting to emerging market economies and their potential to contribute to destabilising adjustments in financial markets. Volatility has picked up in global financial markets, following a lengthy period of very low volatility and compressed risk premia (Graph 1.1). Concerns about the prospects for economic growth in China, against the backdrop of a significant run-up in debt in recent years, helped trigger the downward revaluation of global equity prices and higher financial market volatility. These concerns weighed on investors' expectations for growth in a number of emerging market economies, particularly commodity exporters given lower

commodity prices. Higher debt, fiscal pressure and political instability have been compounding factors for some emerging markets. With the first US Federal Reserve policy interest rate increase since 2006 in prospect in the period ahead, the risk remains that this combination of factors could trigger a sharp repricing in markets where for several years investors have been searching for yield. Recent price movements in some financial markets, including in advanced economies, have, on occasion, been amplified by short periods of market dislocation, underlining concerns that liquidity risk might be underpriced by some investors.

The global banking sector has continued to improve its resilience, which should help mitigate the risks to broader financial system stability arising from these developments. In the major advanced economies, bank profitability has been supported by further improvements in asset quality, particularly in the United States. In the euro area, near-term concerns about Greece have abated following the rescue package agreement reached in August. Gradual improvements in economic conditions in most euro area economies have supported bank profits, although there continues to be slow progress in reducing the large stock of non-performing loans. Key banking indicators in emerging markets have generally remained sound to date, including in more vulnerable markets; however, some banking systems face very challenging operating environments, which could entail a future weakening of asset performance.

Graph 1.1
Financial Market Volatility



* Exchange rate data for China from August 2010

** Australia, Canada, euro area, Japan, New Zealand, Switzerland, United Kingdom and United States

*** Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hong Kong, Hungary, India, Indonesia, Malaysia, Mexico, Philippines, Poland, Russia, Saudi Arabia, South Africa, South Korea, Taiwan, Thailand and Turkey

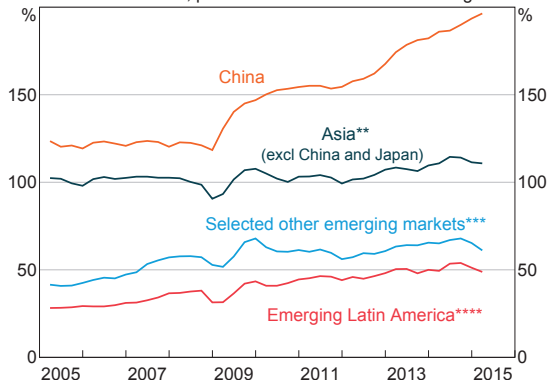
Sources: Bloomberg; RBA

Emerging Market and Non-Japan Asia Financial Systems

China

China has been an engine of growth for Australia and the world in the post-crisis period, yet financial stability risks have been building. Credit grew rapidly alongside strong asset price growth and there was apparent over-investment in some sectors of the Chinese economy such as real estate and heavy industry (Graph 1.2). Debt provision spilled beyond the heavily regulated banking system to the more opaque shadow banking sector. If economic growth continues to slow from the very strong pace in recent years, any past excesses may be exposed.

Graph 1.2
Total Debt of the Private Non-financial Sector*
 Selected economies, per cent to GDP at market exchange rates



* Loans and other debt funding provided by domestic and non-resident sources
 ** Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan and Thailand
 *** Czech Republic, Hungary, Poland, Russia, Saudi Arabia, South Africa and Turkey
 **** Argentina, Brazil and Mexico

Sources: BIS; CEIC Data; RBA; Thomson Reuters

Risks in China are particularly prominent for highly leveraged firms, including some firms in the oil and gas industries that are exposed to a decline in energy prices and construction firms that have raised significant foreign currency denominated bond funding in recent years. Similarly, many local governments have large debts, and land sales account for a sizeable share of their revenues. Links between the formal banking sector and the shadow

banking sector could be another channel for risks to emerge and amplify a macroeconomic downturn.

Policy challenges from the heavily controlled financial system in China have become more evident, highlighting the difficulty the authorities face in promoting financial liberalisation while supporting financial stability and economic growth. Recent developments in the Chinese stock market associated with leveraged investors, and the measures adopted to address them, provide an example of such challenges. Chinese equity prices have fallen by around 35 per cent from their June 2015 peak, after rising by 150 per cent over the previous year (Graph 1.3).¹ Initial price falls were contained by a range of policy actions by the Chinese authorities, which included direct purchases of shares. Price falls continued as policymakers reportedly stepped back from these efforts, though prices have been more stable in recent weeks.

Graph 1.3
Chinese Share Prices
 Shanghai A shares, 2 January 2014 = 100



Source: Bloomberg

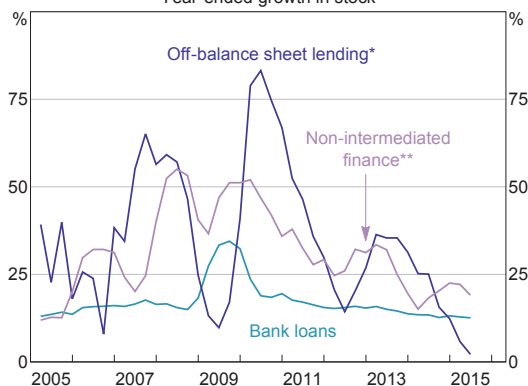
The policy challenges facing the Chinese authorities were further underscored by the volatility in international financial markets that followed the People's Bank of China's announcement of reforms to make the renminbi (RMB) exchange rate more market determined. While this policy is likely to be

¹ See RBA (2015), 'Box A: The Recent Decline in Chinese Equity Prices', *Statement on Monetary Policy*, August, pp 28–29.

beneficial for macroeconomic stability, the reform's announcement prompted widespread concern about the potential for further depreciation of the RMB and added to near-term pessimism over Chinese economic conditions and private capital outflows.

Since the previous *Review*, the Chinese authorities have continued to implement a range of measures to ameliorate financial risks and reduce some market restrictions. For example, a debt swap program has allowed local governments to use lower-yield bonds to refinance existing borrowings raised off-balance sheet via financing vehicles. A range of measures have also been implemented to address other distortions that have encouraged growth of the shadow banking sector. Official data suggest that these measures – which include restricting banks' interbank investments, further liberalising interest rates and insuring bank deposits – have helped slow growth in off-balance sheet lending in China (Graph 1.4).

Graph 1.4
China – Total Social Financing
Year-ended growth in stock



* Entrusted loans, trust loans and bank accepted bills
** Corporate bond and non-financial corporate equity issuance
Sources: CEIC Data; PBC; RBA

Despite ongoing policy challenges, the Chinese authorities have supported growth and financial stability to date, and in many ways remain well placed to continue to do so. They have many levers given the ongoing large role of the state in the economy and the heavily regulated financial system. Capital

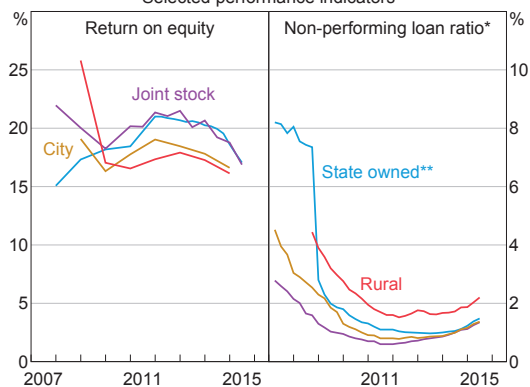
account controls limit the potential for pressure to arise from foreign creditors, and foreign exchange reserves are large, despite falls in recent months. The measured central government fiscal position is also very strong, though the overall public sector fiscal position is considerably less so given the build-up in debt among local governments and state-owned enterprises.

The main financial risks to the rest of the world from an economic downturn in China are likely to be indirect, through the implications for world trade volumes, commodity markets and the associated effect on sentiment in financial markets. Direct financial links are much less significant because China's capital account is still relatively closed. That said, there are growing direct financial linkages with the rest of the world that could reverberate in particular jurisdictions in the event of difficulties in China: these include large exposures to China by banks located in Hong Kong and Chinese banks' lending overseas, particularly if overseas lending by other Asian banks were to slow as well.

Banking system in China

The profitability of Chinese banks continued to decline in the first half of 2015, though the banks reportedly remain highly profitable overall (Graph 1.5). State-owned and joint stock commercial banks, which account for 60 per cent of banking system assets, continued to be more profitable than many smaller Chinese commercial banks. The moderate decline in aggregate profitability reflected lower growth in both net interest income and non-interest income, as well as increased provision expenses. The outlook for profitability remains pressured by expectations of a further deterioration in banks' asset quality in conjunction with slower rates of credit growth and the potential for net interest margins to narrow if the liberalisation of interest rates increases price competition for funding. Though Chinese banks continue to report low non-performing loan (NPL) ratios, these ratios and associated loan-loss expenses have risen as

Graph 1.5
Chinese Commercial Banks
Selected performance indicators



* Share of loans
** Decline in non-performing loan ratio in 2008 due to removal of policy-related loans from Agricultural Bank of China

Sources: CEIC Data; RBA; SNL Financial

economic growth has slowed. Loans to the manufacturing and the wholesale & retail trade sectors have primarily driven these increases; loans to these sectors appear to be less well collateralised than other categories of lending.

Several factors have raised concerns that Chinese banks' asset quality could deteriorate more markedly: existing corporate leverage is high and there are signs that economic activity has slowed further recently. In addition, the share of loans classified as 'special mention' – where there are some doubts surrounding repayment but loss is not yet expected – has picked up. A sizeable share of bank lending is to the construction industry. Relevant to collateral values in this segment, national property prices in the residential property market have risen in recent months, primarily in the largest cities, which has partly unwound earlier declines. The pace of annual growth in land prices slowed through 2014, but has shown signs of improvement over 2015.

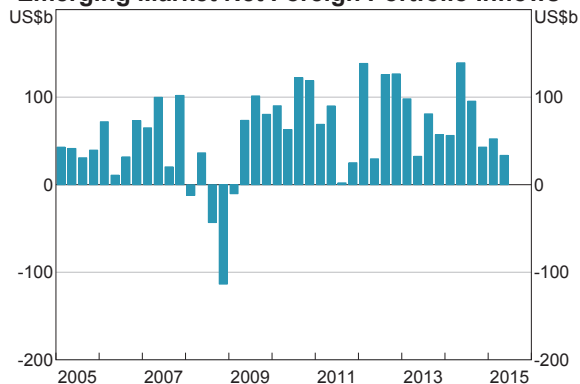
Large Chinese banks' capital ratios increased marginally during the six months to June 2015, supported by preference share offerings by two of the large banks. Large Chinese banks' Common Equity Tier 1 (CET1) capital ratios also increased over the half year and currently range between 9.2 and 12.2 per cent of risk-weighted assets, compared to

the end-2015 transitional CET1 regulatory minimum of 7.3 per cent and global systemically important bank (G-SIB) surcharge of 1 per cent (where applicable). The aggregate CET1 capital ratio for the broader banking system was stable at 10.5 per cent over the half year. As of June 2015, each of the five largest Chinese banks was reported to be compliant with the Liquidity Coverage Ratio on a fully phased-in basis.

Other emerging market and non-Japan Asia financial systems

For emerging markets more broadly, capital inflows have been strong in the years following the global financial crisis, supported by low interest rates in the advanced economies, relatively strong economic growth and high commodity prices (Graph 1.6).² However, portfolio capital inflows have slowed significantly and appear to have reversed for some economies more recently. This has occurred alongside interrelated concerns about economic growth prospects in China, weaker domestic growth outlooks, commodity price falls and expectations

Graph 1.6
Emerging Market Net Foreign Portfolio Inflows*



* Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hong Kong, Hungary, India, Indonesia, Malaysia, Mexico, Philippines, Poland, Russia, Saudi Arabia, South Africa, South Korea, Taiwan, Thailand and Turkey

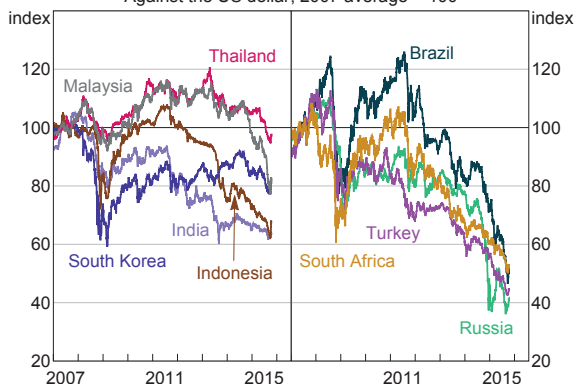
Sources: CEIC Data; IMF; National Sources; RBA; Thomson Reuters

2 There are various definitions of emerging markets. The definition used in Graph 1.6 and elsewhere is based on the fairly broad group of economies in the MSCI Emerging Markets Index (which includes countries such as Korea that are excluded from narrower definitions, such as that used by the International Monetary Fund). Hong Kong is also added to this group given its close financial linkages with China.

that the US Federal Reserve would soon increase its policy interest rate for the first time since 2006.

These developments have been reflected in sharp depreciations of several emerging market currencies, especially for economies that are reliant on commodity exports and/or where there is political instability, such as Brazil, Russia and Turkey (Graph 1.7). Equity prices have generally fallen in these economies, and for some corporate bond spreads have widened significantly.

Graph 1.7
Emerging Market Currencies
Against the US dollar, 2007 average = 100



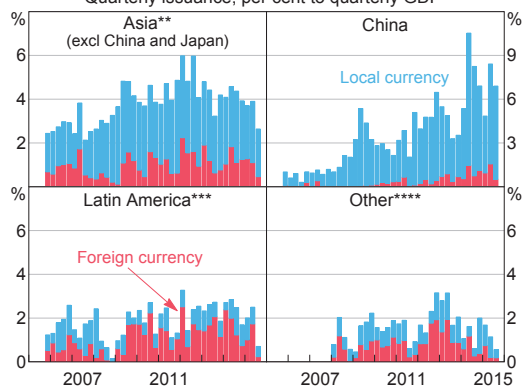
Source: Bloomberg

The shift in capital flows and lower economic growth expectations have raised concerns about vulnerabilities associated with emerging market corporate sector leverage, which has increased significantly in some economies since the financial crisis. While most emerging market corporate debt has continued to be intermediated by banks, corporations have increasingly sourced funding directly from markets, partly because financing conditions in global markets have been so favourable in recent years. This pattern reversed in the September quarter, when corporate bond issuance dropped sharply across most emerging markets.

Some of the increase in emerging market corporate borrowing in recent years reflects financial deepening in these economies and available evidence suggests currency and rollover

risks – which have been associated with past financial crises – may be low in aggregate. While bond issuance by emerging market corporations has increased – especially in Asia – the ratio of foreign currency bond issuance to nominal GDP has been broadly stable (Graph 1.8). In addition, an increasing share of debt funding has been raised via long-term bond issuance, which may have lengthened aggregate maturity profiles and reduced rollover risk.

Graph 1.8
Emerging Market Corporate Bond Issuance
Quarterly issuance, per cent to quarterly GDP*



* Includes financials and non-financials; September 2015 GDP based on IMF forecasts

** Hong Kong, Indonesia, India, Malaysia, Philippines, South Korea, Taiwan and Thailand

*** Argentina, Brazil, Chile, Colombia and Mexico

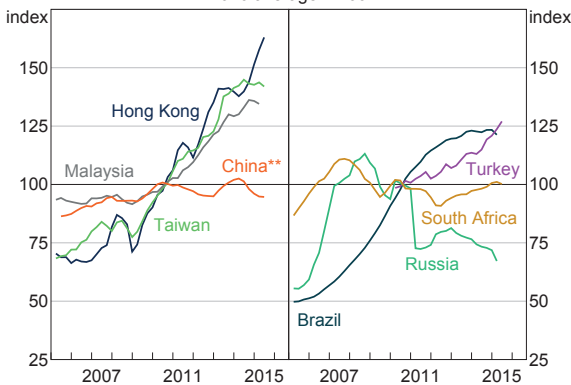
**** Czech Republic, Hungary, Poland, Russia, Saudi Arabia, South Africa and Turkey

Sources: Dealogic; RBA

Nevertheless, corporations in some sectors – such as construction and energy – and in some countries – such as Brazil, India, Indonesia and Turkey – have increased their foreign currency borrowings in recent years. Depending on whether and how they hedged, the profits of some corporations might come under pressure because of domestic currency depreciations and slower economic growth. More generally, increased exposures of advanced economy investors to emerging market corporations and sovereigns in recent years may be a channel through which financial stresses in emerging markets spill over to advanced economies.

In the low-yield environment, residential property prices have appreciated considerably over recent years in a number of economies, including Brazil, Malaysia and Taiwan. More recently, however, price growth has moderated in these economies (Graph 1.9). Housing prices in Hong Kong have risen especially quickly, partly as a result of the accommodative monetary policy setting associated with its fixed exchange rate system. In response to a further increase in prices – particularly for residential apartments – and a historically high household debt-to-GDP ratio, the Hong Kong Monetary Authority tightened macroprudential policies in February. While growth in loan approvals has decelerated somewhat since these measures were implemented, housing price growth remains rapid.

Graph 1.9
Real Housing Prices*
 2010 average = 100



* Deflated using consumer price indices
 ** Average of new residential property prices
 Sources: BIS; CEIC Data; RBA

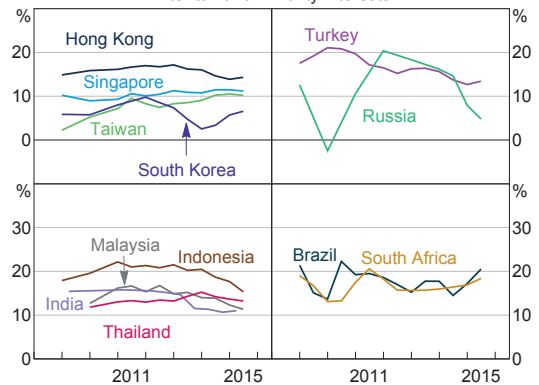
Banking systems in other emerging and non-Japan Asia markets

Weaker economic growth and the build-up in debt imply that banking systems in emerging markets face a more challenging near-term operating environment, but key banking indicators remained sound in the first half of 2015 even across the more

vulnerable emerging markets, such as Brazil and Turkey. Russian banks continue to be pressured by a combination of rouble depreciation, contracting economic activity, economic sanctions and rising NPLs.

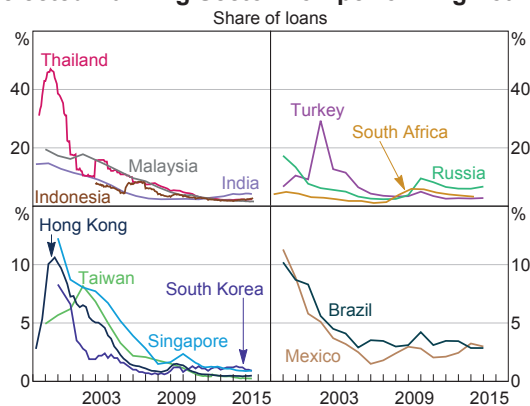
Key banking indicators in east Asian economies generally remained sound in the first half of 2015. Most large banks in the region remained highly profitable, despite some moderation in the profitability of banks in Indonesia, Malaysia and Thailand associated with increased loan-loss expenses and slower growth in net interest income (Graph 1.10). Korean banking system profitability continued to recover in the six months to June 2015 following significant losses for some banks in 2013, but remains pressured by lower non-interest income and higher provisioning expenses than east Asian peers. All banking systems in Asia continue to report low aggregate NPL ratios, and aggregate capital ratios are well above regulatory minimums (Graph 1.11).

Graph 1.10
Selected Banks' Return on Equity*
 After tax and minority interests



* Number of banks: Brazil (11), Hong Kong (19), India (39), Indonesia (37), Malaysia (34), Russia (22), Singapore (3), South Africa (7), South Korea (16), Taiwan (29), Thailand (22) and Turkey (25); adjusted for significant mergers and acquisitions
 Sources: Bloomberg; RBA; SNL Financial

Graph 1.11
Selected Banking Sector Non-performing Loans*



* Definitions of non-performing loans differ across jurisdictions
 Sources: CEIC Data; National Banking Regulators; RBA; SNL Financial; World Bank

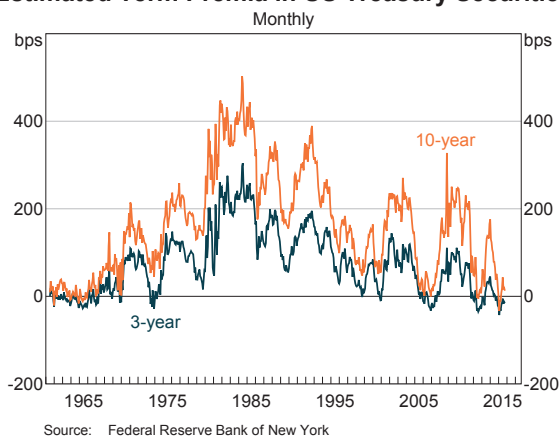
Advanced Economy Financial Systems

Since the previous *Review*, heightened concerns about growth in China and other emerging market economies has led to a broad reassessment of risk in financial markets, causing a moderate tightening in financial conditions in the advanced economies. In advanced economy equity markets, where valuations had been relatively high by historical standards, prices are around 10–15 per cent lower than their recent peaks. Similarly, corporate bond spreads have widened to be around historical averages, with spreads widening further for lower-rated bonds.

Monetary conditions in the major advanced economies are expected to be very accommodative for some time, even though economic conditions in these economies have generally improved and the US Federal Reserve is expected to start raising its policy interest rate in the period ahead. For example, sovereign bond yields remain around historically low levels, though they have increased slightly since the previous *Review*. Thus, although investors appear to have become more discerning about risk, search for yield behaviour continues to be supported by accommodative monetary policy and is evident in a range of asset markets where prices remain elevated.

Low interest rates support economic growth and economic risk taking but, if persistent, can encourage investors to increase financial risks in an attempt to maintain expected nominal returns. For example, term premia in US Treasury securities are estimated to have fallen to be around zero, indicating that investors are receiving minimal compensation for bearing the risk that interest rates do not evolve as expected – which is larger for a given maturity when yields are low (Graph 1.12). Low yields can be particularly challenging for insurance firms and defined benefit pension plans, which typically rely on financial asset returns to meet their long-term liabilities (see ‘Box A: Effects of Low Yields on Life Insurers and Pension Funds’).

Graph 1.12
Estimated Term Premia in US Treasury Securities

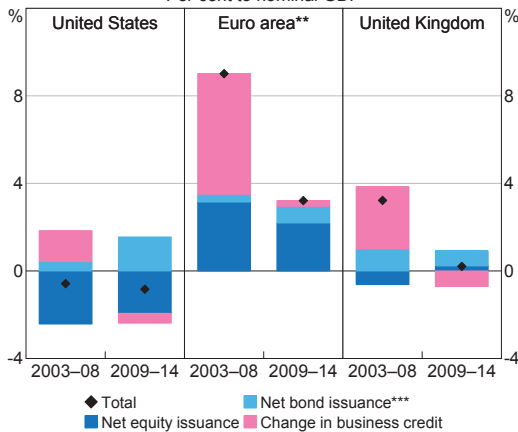


The low-yield environment has been reflected in buoyant activity in a range of markets. Commercial real estate prices have increased in a number of countries in recent years to be near or above pre-crisis peaks, and credit standards appear to have eased for commercial property lending in the United States. Residential real estate prices have also increased in many advanced economies over recent years, such as Germany, Sweden and the United Kingdom. Corporate bond issuance in major advanced economies has also remained solid in the period since the previous *Review*, including for sub-investment grade issuers. A significant share

of proceeds appears to have been used to fund mergers and acquisitions and share buybacks, rather than new investments.

The strong pace of bond issuance reflects the growing importance of financial intermediation through markets and asset managers, rather than banks, in the post-crisis period as banks' business models and the regulatory environment in which they operate have changed (Graph 1.13). This has focused attention on the potential for a sell-off in bond markets to have disruptive effects on the broader economy, possibly exacerbated by rapid redemptions by bond fund investors and a structural decline in bond market liquidity in recent years.

Graph 1.13
Private Non-financial Corporates' Net External Funding*
Per cent to nominal GDP

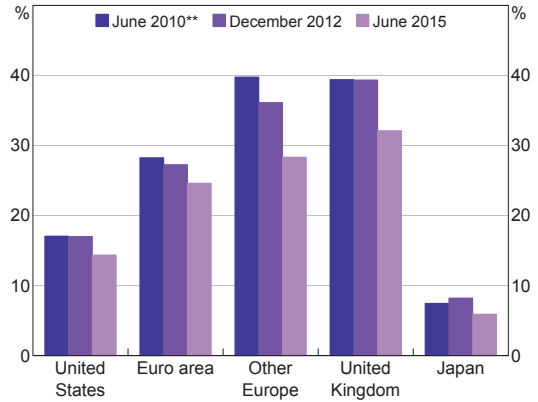


* Definitions differ across jurisdictions
 ** Includes unincorporated non-financial enterprises
 *** Includes commercial paper in the United States and United Kingdom; includes all debt securities in the euro area
 Sources: BOE; ECB; RBA; US Federal Reserve

The structural decline in bond market liquidity is mostly attributable to reduced market-making activities by banks, and is reflected in a range of indicators including the declining share of trading assets on the balance sheets of the G-SIBs (Graph 1.14).³ The decline in market making by banks reflects regulations that were designed to shift some risks from banks to end investors, as well as changes

³ See Cheshire J (2015), 'Market Making in Bond Markets', RBA Bulletin, March, pp 63-73.

Graph 1.14
Advanced Economy G-SIBs' Trading Assets*
Per cent of total assets



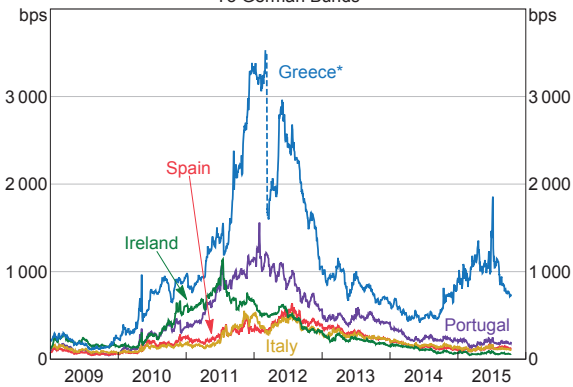
* Includes banks classified by the Financial Stability Board as G-SIBs as of November 2014; excludes ING and Standard Chartered
 ** December 2010 for the euro area and June 2011 for Japan
 Sources: RBA; SNL Financial

in financial institutions' own risk preferences. Both of these factors are expected to add to overall financial system resilience.

While equity market volatility picked up in recent months, bond markets were relatively stable, even as outflows accelerated from some bond funds. However, concerns persist about broader market resilience to large shocks. Challenges in equity markets on 24 August, and prior episodes of bond market turbulence, such as the 'flash rally' in US Treasuries on 15 October 2014, have shown that the implications of developments such as growth in exchange-traded funds and algorithmic trading may not be fully understood.

In the euro area, immediate concerns associated with Greece were allayed when agreement over a third bail-out package was reached. In contrast to the situation in 2011, market reactions to uncertainty prior to the agreement were muted. For example, Greek sovereign bond spreads rose but widening in other peripheral European sovereign bond spreads was limited relative to what was observed during previous episodes (Graph 1.15). This reflected a number of factors that have reduced channels for contagion including significantly lower private-sector exposures to Greece, increased

Graph 1.15
Euro Area 10-year Government Bond Spreads
 To German Bunds



* Break on 12 March 2012 due to the first private sector debt swap
 Sources: Bloomberg; RBA

support from the European Central Bank (ECB), and further advances in the European framework for financial regulation.

Nevertheless, longer-term challenges to the Greek Government and banking system remain, and deposit withdrawals and international transfers continue to be restricted. It is unclear if Greece can implement all of the extensive commitments in the agreement or what their economic impacts might be; a slow recovery would exacerbate vulnerabilities in the banking system and reduce the Greek Government's ability to reduce its debt to a more sustainable level. Greek banks remain burdened by a large volume of NPLs, are undercapitalised and continue to be reliant on Emergency Liquidity Assistance funding from the ECB. Up to €25 billion of the €86 billion rescue package has been earmarked for Greek bank resolution and recapitalisation, which will include the bail-in of senior bondholders. The recapitalisation of Greek banks is likely to occur before year-end, after the conclusion of asset quality reviews and stress tests in October, but before the Single Resolution Mechanism becomes fully operational on 1 January 2016.

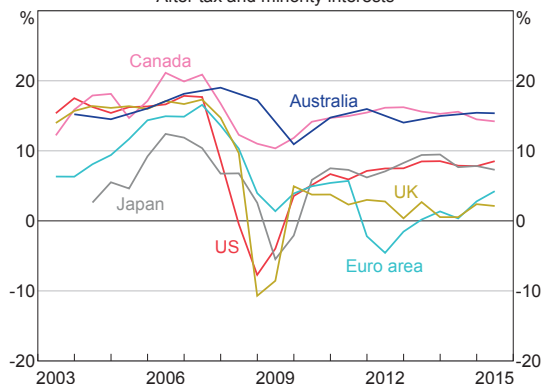
Although broader euro area financial market contagion from recent developments in Greece was limited, if difficulties were to again arise, confidence in the euro area could be undermined

and risk in financial markets reassessed more broadly. More generally, the euro area remains susceptible to financial stress because the gradual economic recovery and low inflation continue to weigh on bank profits and the debt-servicing capacity of highly indebted sovereigns.

Bank profitability

Profitability of the major banking systems increased somewhat in the six months to June, primarily in the United States and the euro area where profits were supported by improving asset quality and stronger credit growth; profitability was generally stable in other banking systems. Returns on equity remain below pre-crisis levels in most countries, however, because equity funding has increased and returns on assets are lower (Graph 1.16). Returns on assets have been weighed down by factors including compressed net interest margins associated with low interest rates and flat yield curves, litigation expenses and, mainly for some euro area banks, stubbornly high levels of NPLs. These factors continue to dampen the outlook for bank profitability, which is reflected in low share price to book value ratios (Graph 1.17). Bank share prices have fallen in the major advanced economies since the previous *Review*, generally in line with, or by less than, broader equity price falls.

Graph 1.16
Large Banks' Return on Equity*
 After tax and minority interests

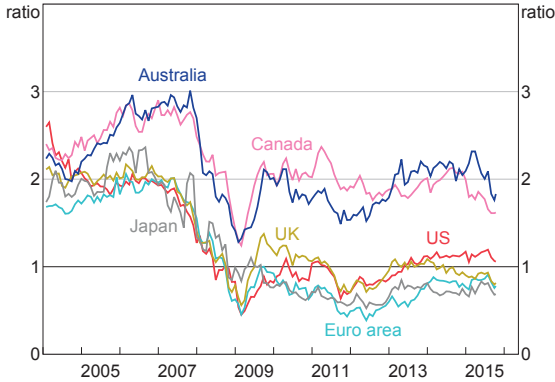


* Number of banks: Australia (4), Canada (6), euro area (41), Japan (4), United Kingdom (4) and United States (18); adjusted for significant mergers and acquisitions; reporting periods vary across jurisdictions
 Sources: Banks' Annual and Interim Reports; Bloomberg; RBA; SNL Financial

Graph 1.17

Banks' Share Price to Book Value Ratios

Monthly*

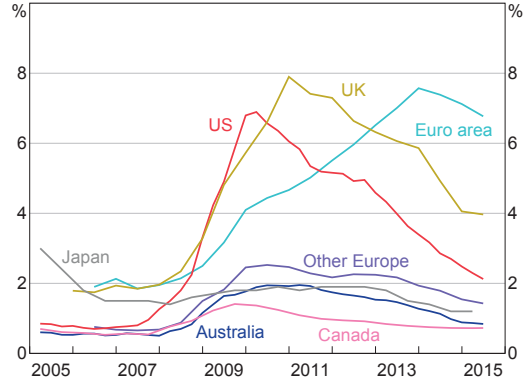


* End of month; October 2015 observation is based on latest available data
Sources: Bloomberg; RBA

Graph 1.18

Large Banks' Non-performing Loans*

Share of loans



* Definitions of 'non-performing loans' differ across jurisdictions; number of banks: Australia (4), Canada (6), euro area (41), Japan (5), other Europe (10), United Kingdom (4) and United States (18)
Sources: APRA; Banks' Annual and Interim Reports; Bloomberg; FSA; RBA; SNL Financial

Asset performance and exposures

NPLs continue to vary widely across jurisdictions and are a factor explaining some of the variation in bank profitability and valuations. For most jurisdictions outside the euro area, loan-loss provisions amongst large banks have returned to be around pre-crisis levels. The decline in provisions has been associated with improving asset performance, with NPL ratios continuing to decline over the first half of 2015. However, these ratios remain above pre-crisis levels in most jurisdictions (Graph 1.18).

In the United States, further declines in NPL ratios for residential real estate loans continued to underpin asset quality improvements, which have been supported by better economic conditions and a small pick-up in credit growth. NPL ratios continued to fall in the euro area – most notably in Ireland and Spain – but remain high in most euro area countries compared with both pre-crisis levels and relative to other banking systems. The aggregate NPL ratio in the United Kingdom has declined to be at its lowest level since 2008, though the pace of improvement has slowed more recently.

Some international banks have significant exposures to emerging markets (Table 1.1). As a proportion of global consolidated assets, banks headquartered in the United Kingdom have the largest exposures

to Asia, most notably to China and Hong Kong. Japanese banks also have large exposures to this region and have been actively expanding their overseas activities recently. Exposures to emerging markets outside of Asia are generally smaller.

As discussed in the previous *Review*, banks in the advanced economies do not appear to have large direct exposures to the energy sector and commodity producers, so their profitability seems unlikely to be adversely affected by the falls in commodity prices. Nonetheless, lower commodity prices could indirectly reduce bank profitability in commodity-exporting economies if economic growth were to slow in these countries. Some banks in the United States and Canada are reported to have undertaken actions to mitigate the risk of losses associated with loans to oil and natural gas producers, including reducing credit lines, tightening credit standards and restructuring existing loans.

Capital

The majority of large banks in the advanced economies increased their CET1 ratios over the first half of 2015 (Graph 1.19). This was mainly achieved through an increase in retained earnings,

Table 1.1: Advanced Economy Banks' International Exposures^(a)
 Claims by BIS reporting banks, ultimate risk basis, March 2015

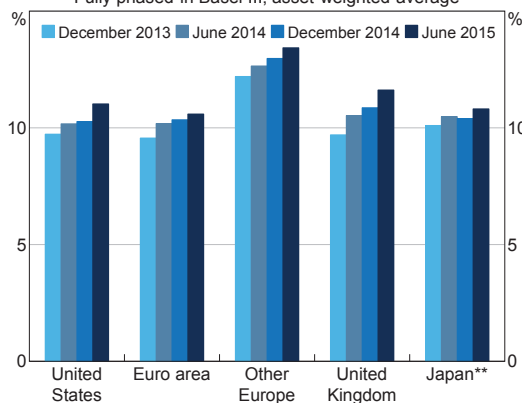
	Share of global consolidated assets (per cent)			
	Euro area ^(b)	Japan	United Kingdom ^(b)	United States
Emerging Asia and Pacific	1.1	3.5	4.8	2.3
China	0.4	0.8	1.8	0.6
India	0.2	0.3	0.7	0.5
Indonesia	0.0	0.3	0.2	0.1
Malaysia	0.0	0.2	0.5	0.1
South Korea	0.2	0.6	0.7	0.6
Thailand	0.0	0.8	0.1	0.1
Asian Offshore Financial Centres	0.5	1.3	4.3	0.8
Hong Kong	0.2	0.7	3.3	0.4
Singapore	0.3	0.5	0.9	0.4
Emerging Europe	2.9	0.3	0.5	0.5
Russia	0.3	0.1	0.1	0.1
Turkey	0.5	0.1	0.3	0.1
Latin America and Caribbean	1.8	0.8	1.2	1.5
Brazil	0.7	0.4	0.6	0.5
Mexico	0.6	0.2	0.4	0.7
Africa and Middle East	0.6	0.4	1.9	0.5

(a) Regional totals for emerging markets are equivalent to the BIS totals for 'developing' economies; selected individual economy exposures do not sum to regional totals

(b) Global consolidated assets are as at 30 June 2014

Sources: BIS; BoJ; ECB; FDIC

Graph 1.19
Advanced Economy G-SIBs' CET1 Ratios*
 Fully phased-in Basel III, asset-weighted average



* Includes banks classified by the Financial Stability Board as G-SIBs as of November 2014; excludes Standard Chartered

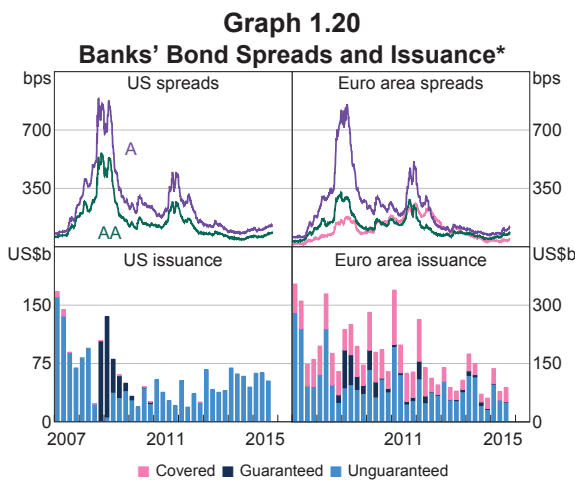
** Japanese banks' CET1 ratios are based on transitional Basel III requirements

Sources: Banks' Annual and Interim Reports; Bloomberg; RBA; SNL Financial

though a modest increase in CET1 issuance and a fall in risk-weighted assets in the United Kingdom also contributed. All of the G-SIBs that report fully phased-in Basel III CET1 ratios continued to exceed the minimum Basel III targets including the capital conservation buffer and G-SIB surcharge, even though full phase-in does not occur until 2019. Issuance of Additional Tier 1 (AT1) and Tier 2 capital declined somewhat over the first half of 2015, although this followed very strong issuance in the second half of 2014; under Basel III, banks have been required to report non-risk weighted leverage ratios since 1 January 2015, which can be met with CET1 or AT1 capital. Most G-SIBs in the major advanced economies report leverage ratios that are either close to meeting, or exceed, the fully phased-in Basel III and supplementary requirements.

Funding and liquidity

Bank funding conditions generally remained favourable in the first half of 2015, despite a modest widening in bond spreads and increased deposit competition in the euro area (Graph 1.20). The volume of bank bond issuance has slowed somewhat, with maturities continuing to exceed issuance in the euro area; in the major banking systems, balance sheets continue to be increasingly funded with deposits and, to a lesser extent, equity.



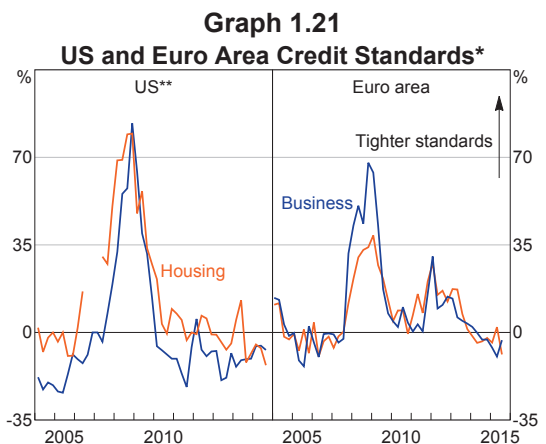
* Spread to equivalent government bonds
Sources: Bank of America Merrill Lynch; Bloomberg; Dealogic; RBA

The phase-in of the Liquidity Coverage Ratio (LCR) commenced in most of the major banking systems during 2015. The LCR requires banks to hold a sufficient amount of high-quality liquid assets to cover expected net cash outflows over a 30-day stress period. Banks have generally been active in positioning their balance sheets to meet the new liquidity requirements ahead of regulatory deadlines; most G-SIBs in the major advanced economies already report LCRs that exceed the fully phased-in Basel III requirements. As discussed in previous *Reviews*, some banks have achieved this, in part, by reducing deposits of large institutional customers, which are treated less favourably under the new liquidity requirements.

Credit conditions and lending standards

Lending standards in some of the major advanced economies continued to ease in the first half of 2015, with banks citing increased competition as the primary driver. Across the major markets, improving economic conditions and accommodative monetary policies, in conjunction with easier lending standards, have supported moderate increases in loan demand and credit growth. Lending surveys in the United States, euro area and Japan noted in particular further easings in household lending standards (Graph 1.21).

Though growth in domestic bank lending has recently picked up in Japan, overseas lending continues to be the key driver of the expansion of the large Japanese banks' loan portfolios. The Bank of Japan has continued to highlight foreign currency liquidity risk arising from Japanese banks' overseas operations – a significant proportion of foreign currency lending is funded via short-term money markets – as well as increased interest rate risk mainly associated with Japanese banks' accumulation of euro-denominated bonds with long maturities.



* Net percentage of respondents reporting tighter standards
** US housing is total housing before 2007, a simple average of prime and non-traditional mortgage loans from June 2007 to December 2014, and an average of government-sponsored enterprise eligible, qualified and non-qualified mortgage loans from January 2015; business series represents large and medium respondents only

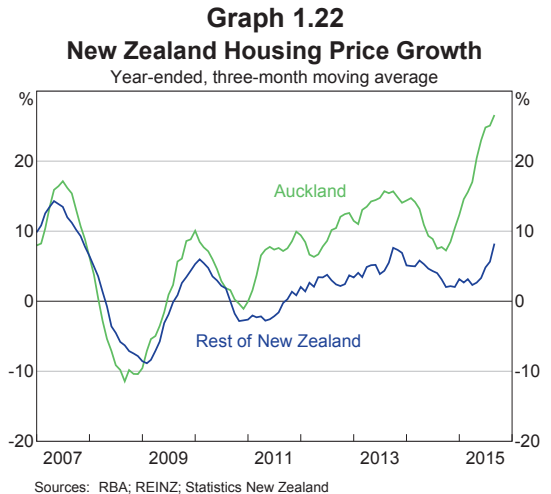
Sources: ECB; RBA; Thomson Reuters

In the United Kingdom, buy-to-let (investor) mortgage lending has continued to grow more rapidly than lending to owner-occupiers. With little available evidence that underwriting standards of major UK lenders have fallen, the Bank of England's Financial Policy Committee (FPC) has judged that there is no immediate case for additional prudential measures specifically for the buy-to-let mortgage market. However, the FPC has said that it remains alert to the potential risks that the sector could pose to broader UK financial stability, both through credit risk to banks and the potential amplification of movements in housing prices, especially given already high levels of household debt. The FPC was granted Powers of Direction over mortgage lending for owner-occupied properties earlier in 2015 and HM Treasury is expected to consult on FPC Powers of Direction for buy-to-let lending later in 2015.

New Zealand

Australia's major banks have significant operations in New Zealand, making its banking system of particular interest. The housing and dairy sectors continue to be key areas of focus for New Zealand financial stability.

For some time, the Reserve Bank of New Zealand (RBNZ) has been concerned about rapid housing price inflation given already elevated levels of mortgage debt relative to household income. While housing price inflation slowed significantly following the implementation of restrictions on high loan-to-value ratio (LVR) lending in late 2013 and increases in the official cash rate in 2014, house price growth in Auckland has subsequently picked up sharply (Graph 1.22). The RBNZ attributes this to ongoing supply constraints, increased demand driven by high net immigration, stronger investor participation and low mortgage interest rates; the RBNZ has cut interest rates by a cumulative 75 basis points in the period since the previous *Review*. In May, the RBNZ announced that most mortgages on investment properties in the Auckland Council



area will soon be required to have maximum LVRs of 70 per cent. Banks will also be expected to hold additional capital against all investor housing loans in New Zealand. The stated aims of these policies are to moderate the cyclical role of residential investors in the Auckland housing market and to strengthen the resilience of banks against any future housing market downturn.

The RBNZ has also raised concerns about the fall in dairy incomes associated with lower international milk prices. The dairy sector is both important to the New Zealand economy and highly indebted. Lending to the dairy sector accounts for around 10 per cent of New Zealand bank lending, with around half of all dairy sector debt held by one-tenth of dairy farmers. International milk prices have fallen by around 50 per cent since their 2013 peak and are below the estimated industry average break-even point. The RBNZ estimates that one quarter of New Zealand dairy farmers had negative cash flow in the 2014–15 season. To date, dairy land prices have held up, but a scenario where both agricultural land prices and income are falling would place highly leveraged farmers under significant pressure. ❖

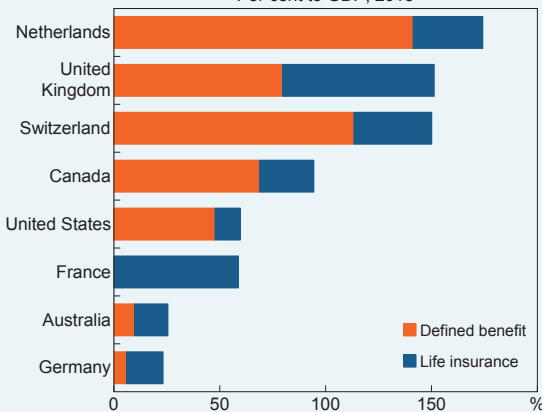
Box A

Effects of Low Yields on Life Insurers and Pension Funds

Life insurance firms and defined benefit pension funds are important participants in the global financial system. They provide insurance against mortality risks and help fund retirements, as well as channelling significant funding to banks, corporates and governments. Their combined assets of around US\$23 trillion in Organisation for Economic Co-operation and Development (OECD) economies as at 2013 represented around 8 per cent of total financial assets of financial firms in these countries.

This box outlines the effects of the low-yield environment that has prevailed since the financial crisis on the life insurance and defined benefit pension fund industries and the measures that some firms have taken in response. Australia is less affected than some other countries because these sectors are small here (Graph A1).

Graph A1
Financial Sector Assets
Per cent to GDP, 2013

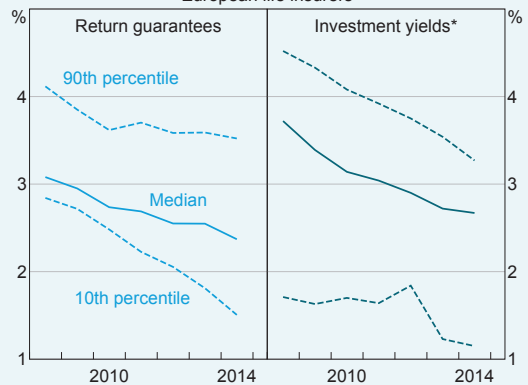


Sources: APRA; BIS; OECD; RBA

Impact of Low Interest Rates

Low interest rates can present challenges for life insurance firms and defined benefit pension funds if they had previously offered to pay guaranteed benefits to policyholders based on the higher interest rates, and hence asset yields, prevailing at the time. Recent data suggest there are some European life insurers whose return guarantees to policyholders now exceed their own investment returns (Graph A2).

Graph A2
Return Guarantees and Investment Yields
European life insurers



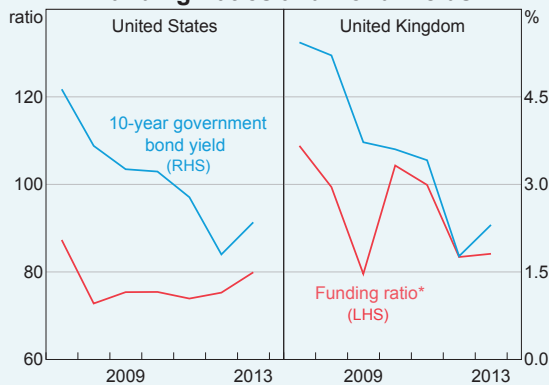
* Based on a sample of 43 European life insurance companies
Sources: European Insurance and Occupational Pensions Authority; SNL Financial

These promised benefits – which represent liabilities on pension funds' and life insurers' balance sheets – are typically expected to become payable long into the future, with maturities that are much longer than those of many financial assets. The resulting maturity gap has meant that the decline in interest rates following the financial crisis often increased the present value of these firms' liabilities by more than the present value of their assets;

the ratio of the two, termed the 'funding ratio', has therefore tended to decline. Other factors have probably exacerbated this effect, including increased longevity and reduced policy 'surrenders' (cancellations) that have lengthened the duration of liabilities, and regulatory changes that have required greater use of market interest rates when calculating assets and liabilities.¹

Funding ratios for defined benefit pension funds in the United States and the United Kingdom illustrate some of these concerns. With the onset of the financial crisis, these ratios fell sharply (Graph A3), driven by falls in equity prices. Since then, funding ratios in these countries have generally remained below 100 per cent, weighed down by declining interest rates. Funding ratios below 100 per cent typically indicate underfunding and, if persistent, can signal that business models need to change to ensure that liabilities can be met when they fall due.

Graph A3
Defined Benefit Pension
Funding Ratios and Bond Yields



* Ratio of the present value of assets to liabilities. US data includes private and publicly funded occupational pensions; UK data includes privately managed occupational pensions

Sources: European Insurance and Occupational Pensions Authority; Federal Reserve Board; RBA

In other jurisdictions where data are available, funding ratios for defined benefit pension funds remain lower than before the crisis but have generally remained above 100 per cent, in some cases because regulation requires this.² That said, aggregate funding ratios can disguise funding challenges at individual funds and in many cases are not directly comparable across countries.

Changes in Business Models in Response to Lower Interest Rates

In response to the persistent low-yield environment and the associated pressures on their funding ratios and cash flows, life insurance firms and defined benefit pension funds have altered their business models significantly. Sponsors of some defined benefit pension plans are reported to have increased age and contribution requirements for current and future employees, reduced benefit promises for new employees (including closing defined benefit plans) and, in some cases, sold pension liabilities to third parties. Insurance firms have made efforts to improve operating efficiency, increased offshore investments and expanded offerings of flexible return guarantee products and protection policies that do not entail interest rate risks.

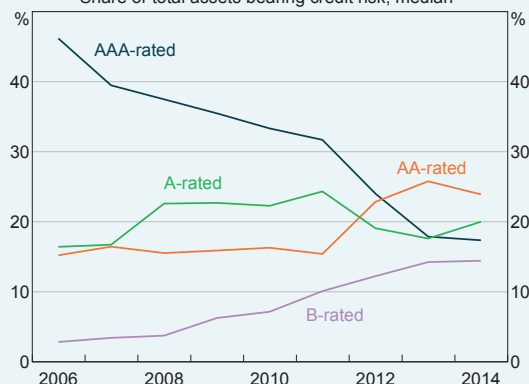
Firms in both industries have also adjusted their asset allocations in response to the low-yield environment. Aggregate data indicate that investment in fixed income assets has increased, equity allocations have fallen and bond durations have been lengthened to reduce duration gaps.³ There has also been evidence of 'search for yield', with some institutions increasing allocations to lower-rated securities (Graph A4) and alternative investments, such as private equity and real estate. These shifts in asset allocation may have increased expected returns at the cost of greater exposure to credit risk, liquidity risk and asset price volatility.

1 In addition, existing maturity gaps tend to widen as yields fall because of 'negative convexity' effects. For more details, see Domanski D, Shin H S and Sushko V (2015), 'The Hunt for Duration: Not Waving But Drowning?', BIS Working Paper No. 519.

2 For example, in the Netherlands the minimum funding ratio is 105 per cent.

3 Japan is a notable exception to this trend, with government policy resulting in increasing equity allocations in public pension funds.

Graph A4
Life Insurers' Assets by Credit Rating
 Share of total assets bearing credit risk, median*



* Based on a sample of 42 European life insurance companies
 Source: SNL Financial

Financial Stability Considerations

Insurance firms and pension funds promote financial stability because they have long investment horizons and fund themselves with premium contributions, which are less susceptible to bank-style runs and associated asset 'fire sales'.⁴ Nonetheless, their large size, concentration and interconnectedness within the broader financial system mean that problems with these institutions could still pose risks to financial system stability.

Funding problems with defined-benefit pension funds can be transferred onto sponsors, such as corporate entities and governments. For corporations, this risk potentially creates a heightened level of uncertainty about funding their regular business operations, distracts management from their core responsibilities and can raise firms' costs of capital. For governments, which can include state and municipal authorities, defined benefit pension funding shortfalls could place additional pressure on budgets. If this was to occur during a

time of reduced revenues, it could narrow the scope for counter-cyclical fiscal policies.

More generally, problems at insurance firms and pension funds could harm confidence if a significant share of the population became concerned about the security of their wealth held in these institutions. That said, such risks are mitigated in some jurisdictions by insurance mechanisms that protect policyholders if a life insurance firm or defined benefit pension plan should fail.⁵ For example, seven small and mid-sized Japanese life insurance firms failed between 1997 and 2008 because low interest rates, combined with declines in equity and real estate prices, rendered them unable to meet return promises. However, these failures had little effect on broader financial stability. These firms were resolved in an orderly manner with support from policyholder protection schemes, although return promises had to be lowered and policy surrenders were suspended for a time.

Life insurance firms and defined benefit pension funds have adjusted their business models in recent years, increasing their resilience to low yields. And life insurers have generally remained profitable, in part because capital gains on existing asset holdings partly offset lower interest income. Nevertheless, pressure from the low interest rate environment and other structural forces, such as increasing longevity, remain. Firm managers and regulators need to ensure that funding positions are resilient to a range of possible future interest rate scenarios. ❖

⁴ Life insurance products can be subject to liquidity risk through policyholders exercising their surrender option. Historically, large-scale policy surrenders have not occurred when interest rates have increased, but have occurred in some situations in which the parent entity was near failure.

⁵ In Australia, the Financial Claims Scheme provides a form of insurance cover for general insurance policyholders in the event of an insurance firm insolvency. However, there is no formal scheme in place to protect life insurance policyholders.

2. Household and Business Finances

Risks posed to the Australian household sector continue to stem largely from the housing and mortgage markets. Investor demand has remained high in an environment of ongoing strong growth in housing prices in Sydney and Melbourne and vigorous competition among lenders. As noted in previous *Reviews*, heightened investor activity and borrowing can amplify the upswing in housing prices and increase the risk of significant price falls later on. It can also lead to excessive housing construction, especially given the typical lags involved in completing new apartment buildings; the risk of oversupply is rising in some apartment markets. While housing lending standards have been better in recent years than in the years leading up to the financial crisis, recent investigations by regulators have revealed that standards were somewhat weaker than had originally been thought. As a result, some borrowers have had less of a safety margin against unexpected falls in income, increases in expenses or increases in interest rates.

However, in response to the supervisory actions undertaken by the Australian Prudential Regulation Authority (APRA) and the Australian Securities and Investments Commission (ASIC) in 2015 to date, many lenders have changed their price and non-price lending terms and conditions. Lending practices and standards have therefore strengthened and there are now tentative signs of a slowdown in the pace of growth in investor credit. Furthermore, although the gross household debt-to-income ratio has risen to new highs, households continue to build up mortgage buffers

and indicators suggest that financial stress in the household sector remains low.

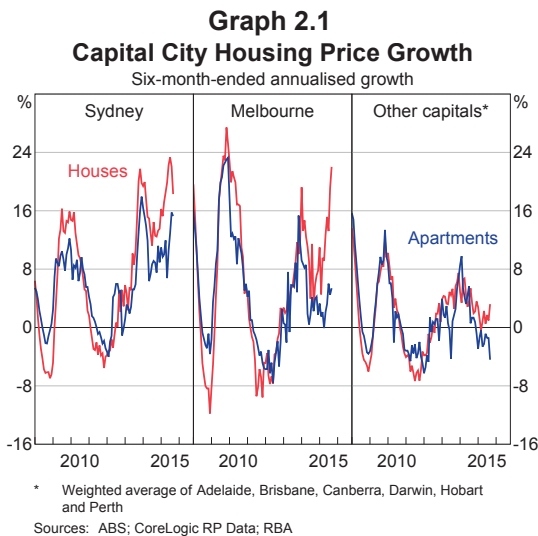
Risks are rising in the commercial property sector. Yields have fallen to low levels, due to continued strength in offshore and local investor demand, despite generally soft leasing conditions. Oversupply is also evident in the Perth and Brisbane office markets. The risk that prices might fall in the future has therefore increased, particularly if global interest rates were to rise or foreign investor demand was to weaken. The possibility of a downturn in some apartment markets has also increased risks for residential property developers. Any such fall in prices would reduce developers' equity in projects underway and increase the likelihood of settlement failures on pre-sold apartments in these areas. Nonetheless, the risks to the domestic financial system have been lessened by the significant decline since the financial crisis in banks' exposures to the commercial property sector, as a proportion of their assets, although growth in such lending has started to pick up again in recent years.

Other parts of the business sector continue to pose little near-term risk to the financial system. While the sustained falls in commodity prices have weighed on resource-related companies' ability to service their debts, particularly for smaller resource producers and mining-services companies, the domestic banks' exposure to this sector is fairly limited. In the non-mining sector, business finances generally remain in good shape and indicators of financial stress are low.

Household Sector

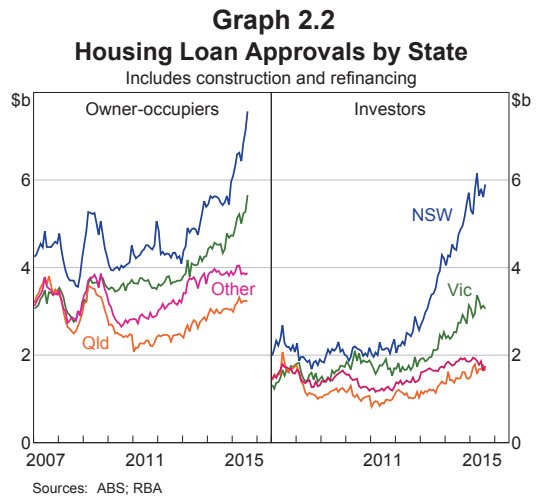
Housing market developments

Housing price growth has picked up to a very rapid pace in Sydney and Melbourne over the past six months, particularly for detached houses (Graph 2.1). Growth in apartment prices has been slower, as strong demand from investors has in part been met by a large increase in new apartment supply in these cities. Outside of Sydney and Melbourne, investor demand has remained more modest and housing price growth has been much slower and generally more similar across houses and apartments. Recently there have been tentative signs of some slowing in the Sydney and Melbourne housing markets: auction clearance rates have fallen and price growth has eased in Sydney of late.



At the time of the previous *Review*, APRA and ASIC had recently announced a range of measures in response to risks relating to lending for housing. These included guidance from APRA that it may take supervisory action where an individual authorised deposit-taking institution's (ADI's) investor housing loan portfolio grows by materially more than 10 per cent a year. While annual growth in investor housing credit nationwide has since stabilised at slightly above 10 per cent, after picking up through 2014,

loan approvals data suggest that the overall level of investor demand has remained strong, especially in New South Wales and Victoria (Graph 2.2). Loan approvals for owner-occupiers have reportedly increased sharply in the past month or so. Large data resubmissions by several banks also indicate that the level of investor lending over recent years has been higher than had initially been reported. Over recent months, lenders have announced changes to a range of price and non-price lending terms and conditions to strengthen lending practices and respond to supervisory expectations (for details, see 'The Australian Financial System' chapter). Since then, there have been tentative signs that investor demand has started to cool.

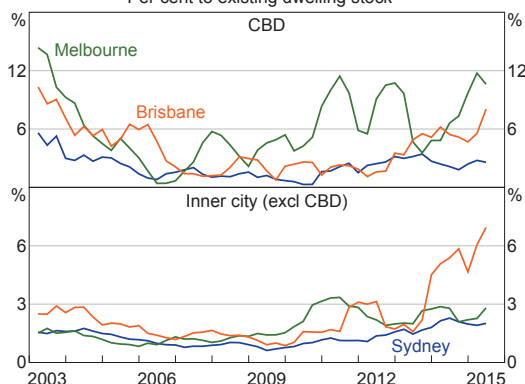


As discussed in previous *Reviews*, the main risk from a high level of investor activity arises from its potential impact on housing prices and its interaction with leverage. Specifically, this activity can amplify the run-up in housing prices and hence increase the risk of prices falling significantly later on. Investors are more likely to contribute to the run-up in prices than owner-occupiers because the rationales for their purchases differ: capital gains are likely a greater motivating factor for investors, and rising prices can induce even more investor demand by increasing expectations for future price rises. Investors also tend to face fewer barriers to exit when the market turns down. Because most home buyers, whether

owner-occupiers or investors, purchase with leverage, a sizeable price fall could induce financial distress for some households. More generally, it could affect financial stability indirectly, by weighing on wealth and spending across the household sector and thereby dampening the broader economy and labour market. Furthermore, the risk to the stability of financial institutions increases the longer the elevated rates of investor lending and housing price growth persist.

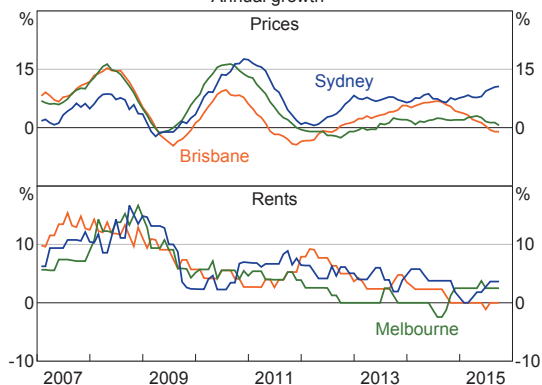
Another risk arising from robust investor activity is that speculative demand could lead to an excessive increase in construction activity and future supply overhang. While the housing market remains a long way from oversupply nationwide, some geographic areas appear to be reaching that point, particularly the inner-city areas of Melbourne and Brisbane. Apartment approvals remain at very high levels in these areas, even though these rental markets already look soft; apartment prices have been little changed in the past year, rental vacancy rates are relatively high and growth in rents is subdued (Graph 2.3 and Graph 2.4). If prices were to fall significantly in these areas due to oversupply, the main risk to financial stability would be through negative effects on the financial health of residential developers (see the 'Commercial Property' section below).

Graph 2.3
Residential Building Approvals*
Per cent to existing dwelling stock**



* Four-quarter rolling sum
** Dwelling stocks estimated by RBA
Sources: ABS; CoreLogic RP Data; RBA

Graph 2.4
Inner City Apartments*
Annual growth**



* SA4 regions: Sydney – City and Inner South, Melbourne – Inner and Brisbane – Inner City
** Rolling 12-month average growth rate
Sources: CoreLogic RP Data; RBA

Investment in residential property by self-managed superannuation funds (SMSFs) continues to grow quickly. According to Australian Taxation Office data, borrowing for such investment also continues to increase, with the level of borrowing recently revised significantly higher, although it still amounts to less than 3 per cent of SMSFs' total assets. As noted in previous *Reviews*, borrowing by SMSFs for property investment could, at the margin, introduce new vulnerabilities in the financial system, because it provides a vehicle for potentially speculative property demand that did not exist in the past. This is one reason why the Reserve Bank, in its submissions to the Financial System Inquiry, recommended that borrowing by superannuation funds be restricted.¹

Housing lending standards

Recent investigations by regulators have revealed that housing lending standards in recent years have been somewhat weaker than had originally been thought (though still better than in the years leading up to the global financial crisis). In some cases, practices have not met prudential expectations, potentially placing lenders at risk of breaching their responsible lending obligations under consumer

¹ See RBA (2014), *Supplementary Submission to the Financial System Inquiry*, August, pp 19–20.

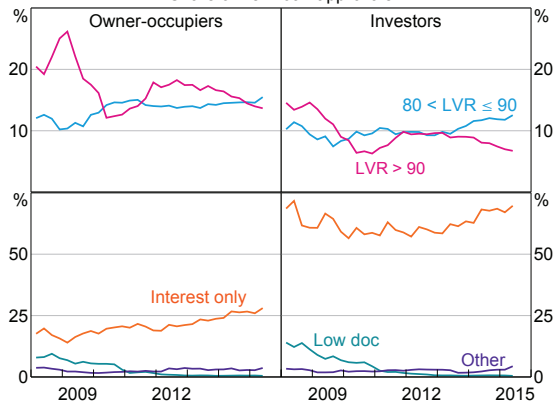
protection laws.² In particular, poor documentation and verification by lenders in many instances suggests that some borrowers may have been given interest-only loans that were not suitable for them. Serviceability assessments also seem to have been especially problematic: the common (and prudent) practice of applying a buffer to the interest rate used when calculating the allowable new loan size had in some cases been undermined by overly aggressive assumptions in other parts of the serviceability calculations (for details, see 'The Australian Financial System' chapter). As a result, some borrowers have had less of a safety margin against unexpected falls in income, increases in expenses or increases in interest rates than it had appeared.

Banks have tightened lending standards across the residential mortgage market over recent months in response to this regulatory scrutiny, including through stricter loan serviceability assessment criteria, lower maximum loan-to-valuation ratios (LVRs) for investor loans and shorter interest-only periods for owner-occupiers. These changes will increase the resilience of the household sector, as new borrowers will be somewhat better placed to withstand possible negative shocks such as lower income or a fall in housing prices. This is particularly important at a time when risks in the housing market are already heightened, interest rates remain at historic lows, and competition in the owner-occupier lending market remains strong (especially as lenders focus less on investor loans).

Because many of these changes took effect within the past few months, they had little impact on the June quarter data on the characteristics of new housing loans. Recent data revisions have revealed that loans with LVRs above 80 per cent and interest-only loans to owner-occupiers were somewhat less common than previously reported. These revised data show that the share of lending with LVRs above 90 per cent edged down over the first half of 2015, while the

share of interest-only lending to owner-occupiers drifted up further (Graph 2.5).

Graph 2.5
ADIs' Housing Loan Characteristics*
Share of new loan approvals



* Series are break-adjusted for reporting changes; 'Other' includes loans approved outside normal debt-serviceability policies and other non-standard loans

Sources: APRA; RBA

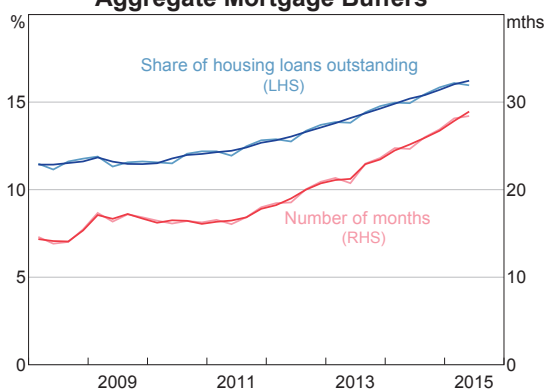
The increased prevalence of interest-only lending has been a concern for regulators; these loans can involve greater risk than principal and interest loans because borrowers need not pay down any principal during the interest-only period. For example, ASIC noted in their recent review of interest-only lending that, in the first five years of a principal and interest loan, a borrower making scheduled repayments at current interest rates would typically pay down about 10 per cent of the principal, establishing a sizeable cushion against any fall in housing prices. Anecdotal information also suggests that some owner-occupier borrowers may be using interest-only loans as a means of affording a larger loan. Nonetheless, ASIC found that interest-only loans made in recent years have been less risky in some other respects: they have tended to be taken out by higher-income borrowers, have lower LVRs at origination, and on average have been paid down more quickly than a typical principal and interest loan when balances in offset accounts are taken into account. Looking ahead, the challenge for lenders will be to ensure that the risk profile of these loans does not deteriorate.

2 See Byres W (2015), 'Sound Lending Standards and Adequate Capital: Preconditions for Long-term Success', Speech to the COBA CEO & Director Forum, Sydney, 13 May; and ASIC (2015), 'Review of Interest-only Home Loans', Report No. 445, August.

Financial position and indicators of stress

Household credit growth overall has remained moderate, because new lending for purposes other than investor housing has been fairly subdued, although it looks to be picking up. Many existing borrowers also continue to take advantage of lower interest rates to effectively pay down their mortgages faster than required. This includes building up balances in offset accounts, which continue to grow rapidly.³ Aggregate mortgage buffers – as measured by balances in offset and redraw facilities – remain around 16 per cent of outstanding loan balances, equivalent to more than two years of scheduled repayments at current interest rates (Graph 2.6).

Graph 2.6
Aggregate Mortgage Buffers*

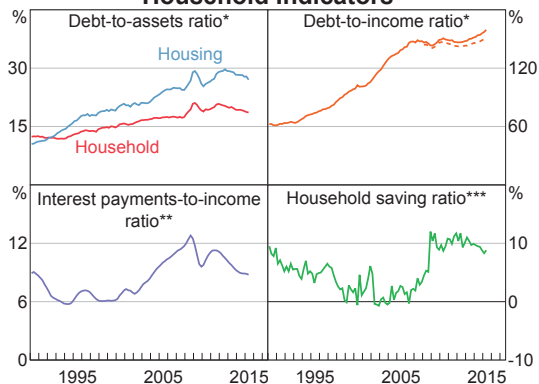


* Data are adjusted for reporting changes; darker lines are seasonally adjusted

Sources: APRA; RBA

An increased willingness by some households to take on more debt, coupled with slow wage growth, has resulted in a further pick-up in the gross debt-to-income ratio, which has now reached new highs. Net of balances in offset accounts, though, the increase has been quite moderate (Graph 2.7). While still at high levels, the debt-to-assets ratio has declined over the past few years as the value of household assets has grown faster than household debt. Households with higher debt-to-assets or

Graph 2.7
Household Indicators



* Debt to the financial sector; dashed line is net of offset account balances

** Excludes unincorporated enterprises

*** Net of depreciation

Sources: ABS; APRA; RBA

debt-to-income ratios also tend to have higher incomes, suggesting that leverage is concentrated among households that are more able to service it. The current low level of interest rates is also aiding households' ability to service their debts, and as the latest reductions in the cash rate flowed through to mortgage rates, the proportion of income required to meet interest payments has fallen further over the year to date. Households also continue to save a greater share of their income than in the decade or so prior to the financial crisis, though the saving ratio has fallen a little in the past couple of years.

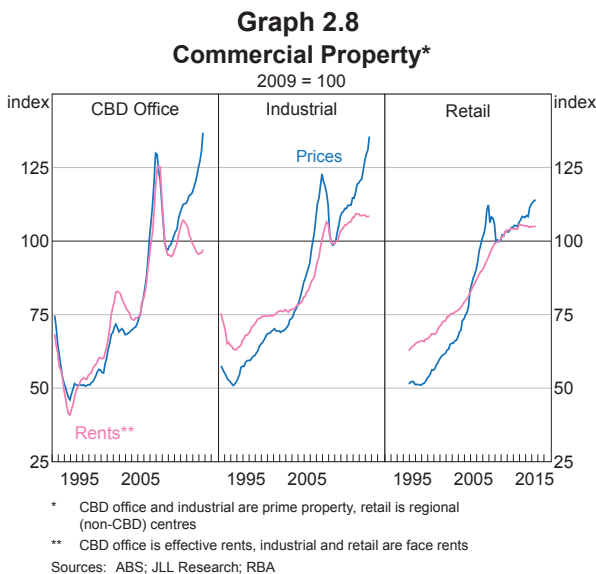
Indicators suggest that household financial stress remains fairly benign, despite measures of unemployment being somewhat elevated. While the share of banks' housing loans that are non-performing has edged higher recently, it remains low. As a share of the dwelling stock, applications for property possessions have declined in the four largest states since 2011. Similarly, non-business related personal administrations as a share of the adult population continue to trend lower, and nationally are around the lowest level in more than a decade. Labour market conditions, which strongly influence the extent of household financial stress, have improved so far this year. However, forward-looking indicators are more mixed.

³ For further details on the impact of offset account balances on net housing debt, see RBA (2015), 'Box E: Offset Account Balances and Housing Credit', *Statement on Monetary Policy*, August, p 56.

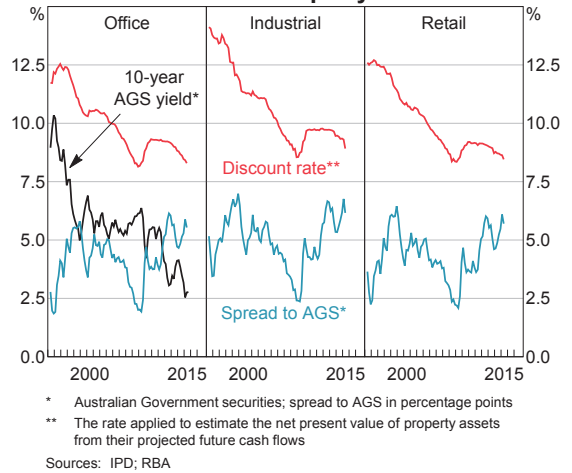
Commercial Property

In a global environment of low interest rates and ample liquidity, investor demand for commercial property has been strong, particularly from foreign investors, which has pushed prices sharply higher. However, leasing conditions have generally been soft, creating a growing divergence between prices and rents (Graph 2.8). As a result, commercial property yields have fallen to low levels (Graph 2.9). The spread of these yields to that for long-term government bonds remains relatively wide, suggesting that the decline in commercial property yields might not be excessive. Current prices could seem less justifiable, however, were global interest rates to increase. Prices could also fall if foreign demand were to weaken significantly. Given that commercial property lending has historically been a key source of financial sector losses during episodes of financial instability, both in Australia and overseas, it is important that lenders and regulators remain alert to the risks in this market.

The strength in investor demand has been broad based across property types and most pronounced in the eastern seaboard capitals. The total value of office, retail and industrial property transactions has increased considerably over recent years, to be



Graph 2.9
Commercial Property Yields

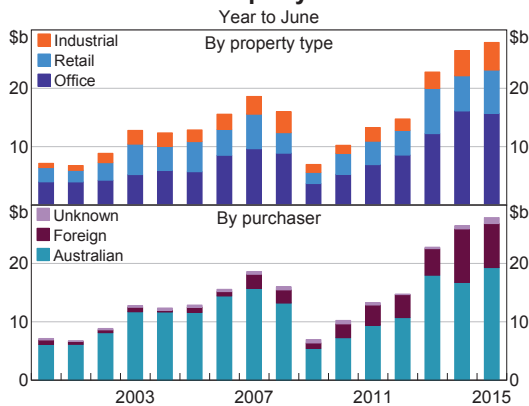


50 per cent higher in the year to June 2015 than its pre-crisis peak (Graph 2.10). Foreign buyers have become more prominent, directly accounting for around one-third of purchases during the past two years. Investors from Asia, especially China, have driven much of this increase. Foreign capital has also been flowing into the residential property development sector across the eastern seaboard capitals, particularly inner-city Melbourne.

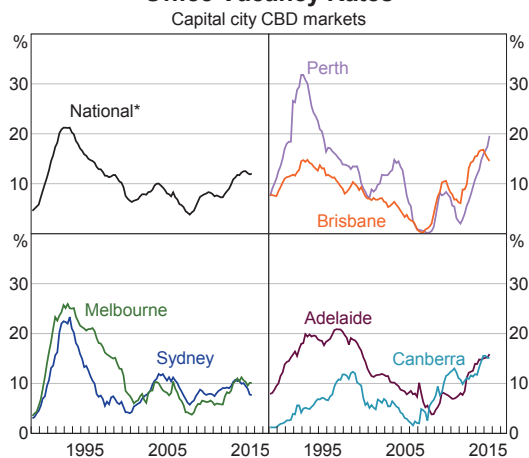
In the office property market, the risk of a fall in prices appears most pronounced in Brisbane and Perth, where signs of oversupply are most clearly visible. Lower tenant demand from resource-related companies and, in Brisbane, the public sector, has put downward pressure on rents and pushed vacancy rates to high levels (Graph 2.11). The large amount of space under construction in both cities is likely to see vacancy rates rise even further as projects are completed, though relatively few developments in earlier stages of planning are expected to proceed in coming years.

Conditions are noticeably firmer in the Sydney and Melbourne office leasing markets. Vacancy rates have remained lower than in other capital cities and have recently fallen due to a pick-up in tenant demand. Effective rents have also risen of late, after being stagnant for a number of years. While significant

Graph 2.10
Commercial Property Transactions*



Graph 2.11
Office Vacancy Rates



construction is either underway or mooted in both cities, this new supply is likely to be more easily absorbed than in other cities. Consistent with these more positive leasing conditions, investor demand has been strongest in Sydney and Melbourne, and prices there have grown rapidly. The recent sale of a large portfolio of office properties in these cities at low yields points to further strong price growth and yield compression.

Reflecting these differences in risk across cities, banks have expressed caution about lending into

the Brisbane and Perth office markets. Similarly, liaison suggests that developers would require much higher precommitment rates before commencing office projects in Brisbane and Perth (reportedly around 80 per cent) than in Sydney and Melbourne (around 50–60 per cent).

Yields have also fallen in industrial and retail property markets, as prices and rents have diverged. Tenant demand for industrial space has been weak, although supply-side factors – namely limited construction and the significant withdrawal of space for redevelopment into apartments – have moderated the impact on leasing conditions. This has resulted in a modest decline in rents over recent years. At the same time, prices have risen sharply on the back of strong growth in investor demand, including from foreign investors. Similarly, subdued leasing conditions contrast with robust investor demand in the retail property market. While price growth has been more modest than for office and industrial property, it has recently picked up, in part due to increased interest from offshore.

As noted, risks to residential property developers appear to have increased over the past six months. The large volume of apartment construction currently underway and planned has continued to grow, and the price of development sites has increased rapidly due to strong developer demand. Foreign developers have contributed to this dynamic, and are reportedly willing to pay more for development sites than many local developers.

The risk of a downturn in apartment markets is greatest in the inner-city regions of Melbourne and Brisbane, which look susceptible to potential oversupply. While investor demand appears strong at present, including from foreign investors, apartment markets in these areas already look soft, and future tenant demand, including from international students, is uncertain. Highlighting this uncertainty, recent international student net arrivals were less than the Department of Immigration and Border Protection's forecasts, and the Department's forecasts for coming years have been revised down

significantly. More generally, population growth has slowed noticeably of late.

Any downturn in apartment market conditions would weigh directly on the developers' equity in projects underway, and would increase the risk of off-the-plan sales falling through. In liaison, some banks have expressed concern about this settlement risk on pre-sold apartments, particularly in light of the recent regulatory measures aimed at moderating investor demand, though they have also noted that pre-sale defaults have been very limited so far. A number of banks have responded to this, and the risk of oversupply more generally, by tightening lending standards to apartment developers in the more at-risk areas.

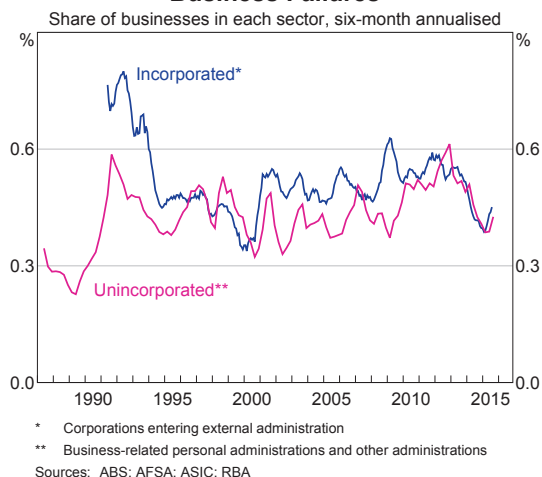
So far, the near-term risks to the domestic financial system from the commercial property sector appear modest, but they are rising. Although banks' commercial property exposures declined as a share of their total assets after the financial crisis, growth in this type of lending has picked up in recent years, driven by the major Australian banks and by Asian-owned banks (see 'Box B: The Recent Growth in Banks' Commercial Property Exposures'). Competition among lenders is strong, putting considerable pressure on lenders' margins, so the commercial property sector will require continued close monitoring for some time yet.

Other Business Sectors

Business conditions and finances

Outside the property sector, risks to the financial system from non-financial businesses remain low and the sector's finances are generally in good shape. Business failure rates have fallen significantly across most industries and states over recent years and, in aggregate, are close to decade lows, although business failures have picked up a little in recent months (Graph 2.12). The share of banks' business loans that are non-performing has also continued to decline across most industries.

Graph 2.12
Business Failures



The sizeable deleveraging of the business sector following the financial crisis has contributed to these trends, as has the low level of interest rates. Further, the large depreciation of the Australian dollar over the past year or so will have benefited businesses in a number of industries, although the increased volatility in currency markets could expose any instances of poorly designed hedging practice (or lack of hedging altogether).

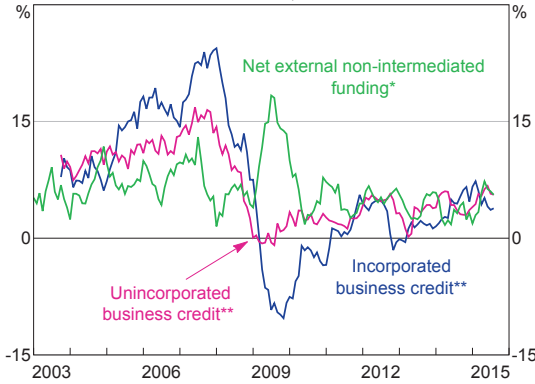
Business demand for new intermediated credit has been fairly soft over much of 2015, despite the low level of interest rates, consistent with subdued non-mining investment (Graph 2.13). At the same time, implied repayment rates on existing loans are high, as some businesses use surplus cash to deleverage. The current environment of low demand for intermediated business debt creates a risk that banks may further relax lending standards in order to attract customers. As discussed in 'The Australian Financial System' chapter below, price competition for business lending has continued to strengthen over the past six months, and loan covenants have also been relaxed in some instances.

Overall, the business sector appears well placed to service its debt. The aggregate gearing ratio of listed corporations increased recently, but remains

Graph 2.13

Non-financial Business Funding Growth

Six-month-ended, annualised



* Excludes equity raisings by unlisted businesses

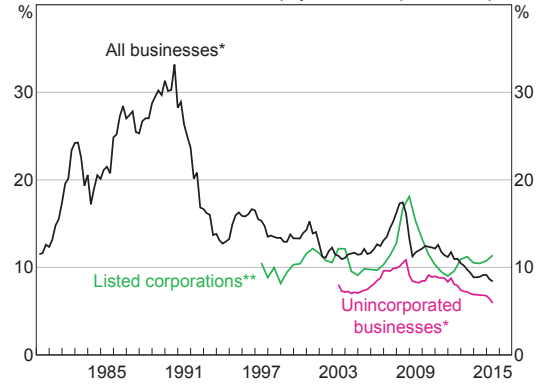
** Excludes securitised loans

Sources: ABS; APRA; ASX; Austraclear; Morningstar; RBA

Graph 2.15

Debt-servicing Ratio

Non-financial businesses' interest payments as a per cent to profits



* Gross interest paid on intermediated debt from Australian-located financial institutions

** Net interest paid on all debt; excludes foreign-domiciled corporations

Sources: ABS; APRA; Bloomberg; Morningstar; RBA

within the range seen since the crisis, as do gearing ratios in the more vulnerable tail of the distribution (Graph 2.14). The sector's aggregate debt-servicing ratio also increased recently, but remains fairly low (Graph 2.15). In addition, the share of debt owed by businesses in the more vulnerable tail of the distribution has declined over recent years. The aggregate debt-servicing ratios for unlisted corporations as well as unincorporated businesses have fallen steadily since 2008 as interest rates have declined.

Resource-related sector

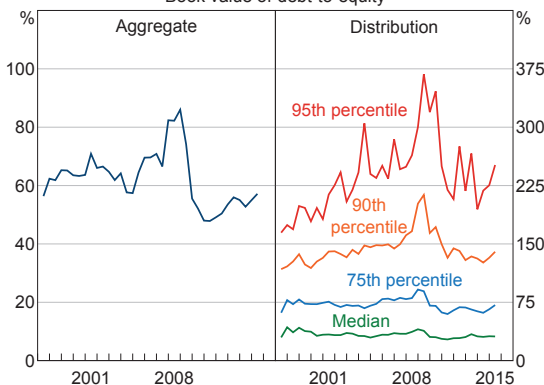
In contrast to the benign overall conditions in much of the business sector, risks appear to have increased further in the resource-related sector over the past six months. The sustained falls in coal, iron ore and oil prices are weighing heavily on the earnings and cash flow of producers of these commodities, particularly those higher up the cost curve. Most smaller producers are struggling to cover costs at current prices, with many already reporting losses. Where producers have been cutting costs to preserve profit margins, further cuts could prove progressively harder. The dwindling investment pipeline and ongoing cost-cutting by resource producers have in turn reduced the output and earnings of mining services companies. Overall, the earnings of businesses in the resource-related sector have fallen sharply over the past two years, although consensus analyst forecasts point to some recovery in earnings over the coming years (Graph 2.16).

Bank lending to the resource sector has increased rapidly in recent years, and large resource producers have increased their issuance of debt into financial markets, especially offshore, even as they cut investment spending. Higher debt and the steep fall in profits have resulted in a significant rise in the debt-servicing ratios of smaller resource producers;

Graph 2.14

Listed Corporations' Gearing Ratios*

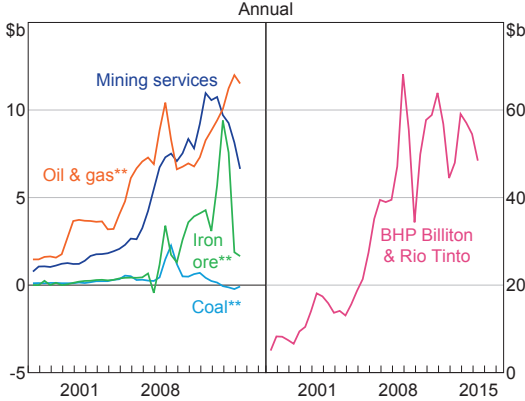
Book value of debt-to-equity



* Excludes financial and foreign-domiciled corporations

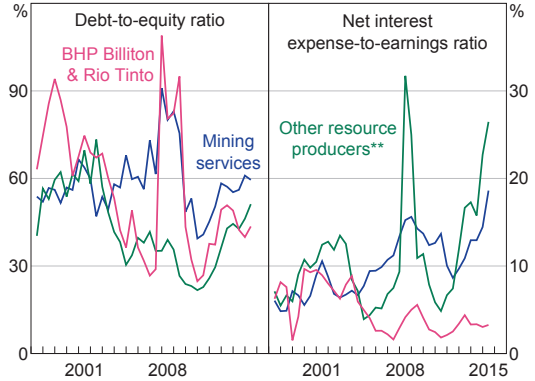
Sources: Bloomberg; Morningstar; RBA

Graph 2.16
Resource-related Corporations' Earnings*



* Listed corporations' EBITDA; excludes foreign-domiciled corporations
 ** Excludes BHP Billiton & Rio Tinto
 Sources: Bloomberg; Morningstar; RBA

Graph 2.17
Listed Resource-related Corporations' Financial Position*



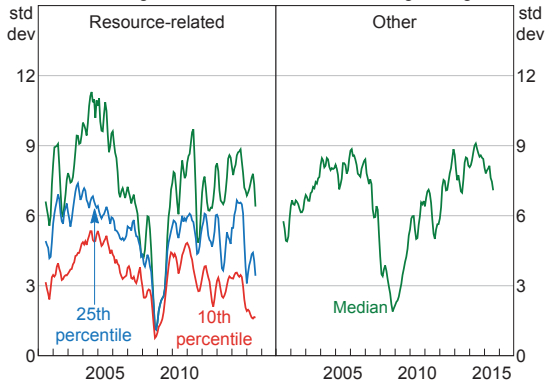
* Excludes foreign-domiciled corporations; book value
 ** Includes listed junior explorers
 Sources: Bloomberg; Morningstar; RBA

the aggregate debt-servicing ratio of listed mining services companies has also risen (Graph 2.17). Although the debt-servicing capacity of many of the smaller resource producers has been supported by strong liquidity positions to date, continued low commodity prices would erode these positions in time. Indeed, some smaller resource producers have come close to breaching debt covenants and a range of firms have had their credit ratings downgraded. Putting further pressure on their debt-servicing ability, resource-related companies may face difficulty rolling over their debt, with the bonds of some companies currently trading at very high yields. Despite the low business failure rate, banks indicated in liaison that the performance of their resource-related loans had deteriorated somewhat. They also noted that the low level of interest rates could be masking underlying stress in this sector.

In line with these developments, a market-based measure of default risk for listed corporations – derived from equity prices and reported liabilities – suggests that the financial health of some parts of the resource-related sector has deteriorated noticeably as commodity prices have fallen. Over the past year, the distance-to-default

estimated for the more vulnerable (and usually smaller) resource producers and mining services companies have fallen to their lowest levels since the financial crisis (Graph 2.18).⁴

Graph 2.18
Distance-to-Default of Listed Corporations*
Debt-weighted, three-month centred moving average



* Excludes financial and foreign-domiciled corporations
 Sources: Bloomberg; Morningstar; RBA

⁴ Distance-to-default measures the expected difference between the market value of firms' assets and the book value of their liabilities at some horizon, in this case one year, expressed in terms of the asset return volatility. For further details on this measure, see Robson M (2015), 'Default Risk Among Australian Listed Corporations', RBA Bulletin, September, pp 47–54.

In contrast, the continued financial strength of the largest resource producers has limited the decline in the median distance-to-default. As a result, the sector's implied debt-at-risk – measuring the stock of debt expected to be defaulted on – has been fairly stable over recent years at very low levels.

Consistent with the low levels of debt-at-risk, risks to the domestic banks arising from the resource-related sector are limited because their exposure to the sector is fairly low, though it has increased in recent years. Most of the sector's debt outstanding is sourced from corporate debt markets rather than domestic banks; foreign banks are also an important source of funding. RBA staff estimate that only around 2 per cent of the Australian banking system's consolidated group exposures are to resource-related businesses, and this is reportedly skewed towards the more highly rated or lower-cost resource producers. ↘

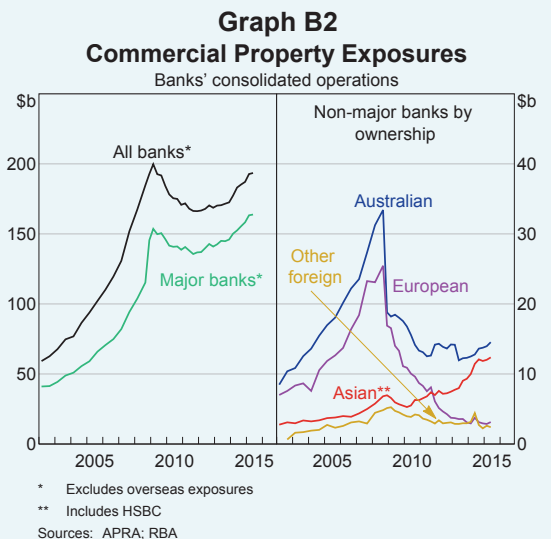
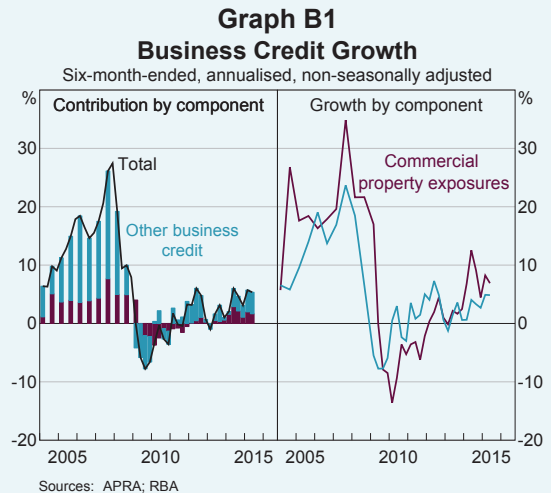
Box B

The Recent Growth in Banks' Commercial Property Exposures

Growth in commercial property lending has picked up in recent years, while demand for business credit outside of the property sector has remained more moderate (Graph B1). Indeed, commercial property exposures, which constitute around one-quarter of the *stock* of business credit outstanding, have accounted for around two-fifths of the *growth* in business credit over the past two years.¹ Commercial property lending comprises loans provided to businesses for the development, acquisition or improvement of property, where repayment is dependent on the subsequent proceeds from sale or the rental income generated from these, or other, properties. Because downturns in commercial property markets have triggered a number of past episodes of financial instability (both domestically and overseas), growth in banks' commercial property exposures warrants particular attention.

The growth in commercial property lending over recent years has been driven by the major banks and by a strong increase in lending from local Asian-owned banks (Graph B2). The major banks pulled back from commercial property lending after the market turned down during the financial crisis, but since 2012 they have steadily grown their commercial property exposures by more than 5 per cent a year. The local Asian-owned banks have increased their exposures particularly quickly over this period, albeit from a low base, growing by a bit less than 20 per cent a year. This has accompanied an increase in residential development activity

¹ These figures are broad estimates given the compositional differences between the business credit and commercial property exposures series. Business credit data include the on-balance sheet claims on banks' and non-bank financial institutions' domestic books, whereas commercial property exposures include both the on-balance sheet and credit-equivalent off-balance sheet exposures of banks' consolidated Australian operations.



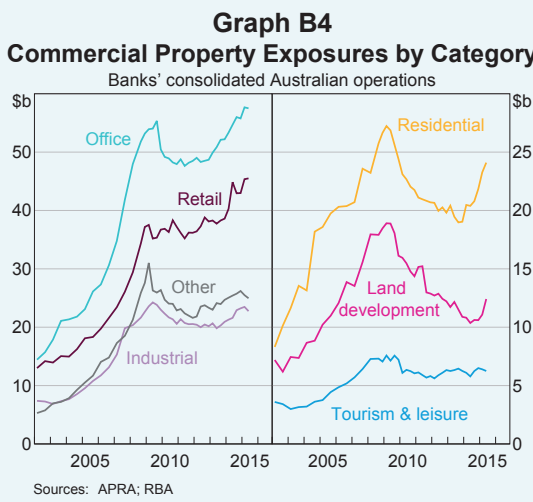
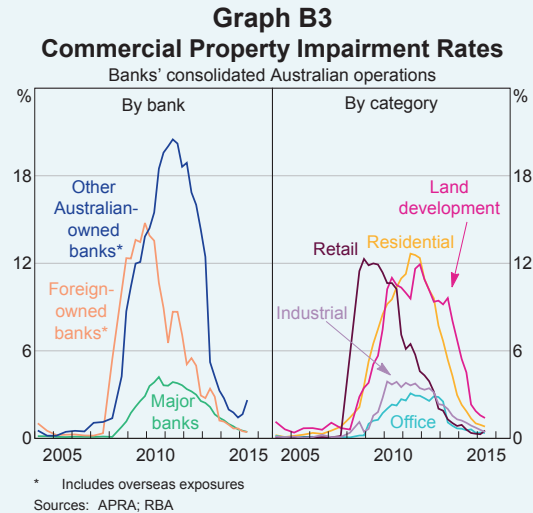
in Australia, by both domestic and foreign firms, particularly in the inner-city apartment markets of Melbourne, Sydney and Brisbane. Liaison suggests that local Asian-owned banks have a prominent role in funding many foreign developers. Asian investment in existing commercial property assets in

Australia has also increased strongly in recent years. The increase in lending by local Asian-owned banks has not, however, been confined to the commercial property sector; they have increased their Australian activities more broadly over recent years, consistent with growing trade and financial linkages between Australia and the Asian region.

In contrast, the commercial property lending of the non-major Australian and European-owned banks has remained relatively subdued in recent years, after these banks reduced their exposures sharply after the 2009 property market downturn. This pull-back followed a very sharp run-up in their exposures prior to the financial crisis, and was likely a reaction to the high impairment rates experienced on their commercial loan portfolios and, in the case of some European banks, to difficulties in home markets (Graph B3). This experience highlights that banks' commercial property lending can be very procyclical, contributing to the build-up of risks during property market upswings and aggravating the fallout during subsequent downswings.

Although commercial property exposures increased significantly across all loan categories in the lead-up to the financial crisis, before levelling out or declining, the timing of the post-crisis recovery has varied (Graph B4). Exposures for many segments have been rising steadily for a number of years, and office and retail exposures have now surpassed their pre-crisis peaks. The growth in office property lending has been driven by strong investor demand for these properties as well as a pick-up in office building construction.

The post-crisis decline in residential and land development exposures was larger and more prolonged than for other categories, as banks tightened lending standards for property development after recording significant loan losses during the crisis. As a result, the pick-up in lending for residential and land development has been more recent, and sharper, than for other categories, driven

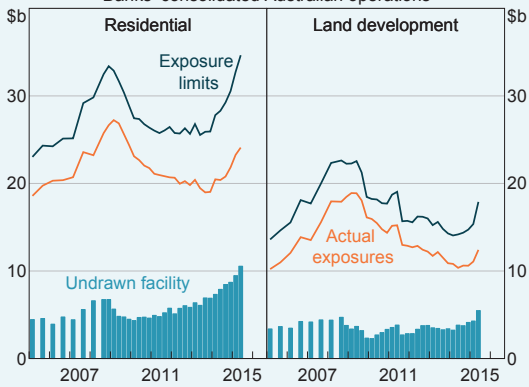


by increased housing development activity across the major east coast cities. Among the banks, Asian-owned banks have expanded their residential and land development lending rapidly over the past five years or so, while strong growth in the major banks' exposures began much more recently. While the recent growth in residential and land development exposures has been strong, increases in exposure limits – the total value of banks' lending facilities extended to borrowers – have been even more rapid. The resulting growth in undrawn facilities – the difference between exposure limits and actual

exposures, largely reflecting construction loans that will be drawn down over the life of the construction project – points to further increases in exposures in the near term (Graph B5). Given the current risks of oversupply in some inner-city markets – discussed in the ‘Household and Business Finances’ chapter – banks will need to remain vigilant in assessing the risks surrounding property development loans to ensure that this lending is prudent and appropriately covered by both capital and provisions. ✎

Graph B5 Commercial Property Exposures and Limits

Banks' consolidated Australian operations



Sources: APRA; RBA

3. The Australian Financial System

The Australian banking system continues to benefit from strong overall asset performance. Bad and doubtful debt charges are at historically low levels relative to assets, with losses on business lending having declined steadily over recent years and those for housing lending remaining very low. Nonetheless, as outlined in the previous chapters, banks are facing an environment of heightened, but manageable, risk in a number of key sectors.

Specifically, strongly rising housing prices in some cities and high levels of investor activity have raised some concerns about the banks' housing loan portfolios. Housing lending is particularly important to banking stability because it represents a large and rising share of Australian banks' credit portfolios. With this in mind, the Australian Prudential Regulation Authority (APRA) and the Australian Securities and Investments Commission (ASIC), in conjunction with other agencies on the Council of Financial Regulators (CFR), have implemented a number of initiatives over the past couple of years to help guard against housing market risks and reinforce sound housing lending practices. Since the previous *Review*, banks have taken steps to reduce the level of risk-taking in their housing lending. Tighter lending practices will, over time, leave the industry better placed to cope with any future deterioration in the housing market and the broader economy. Even so, it is necessary and prudent for banks to continue to review their lending standards and ensure they remain appropriate for their risk appetite and the prevailing external environment.

APRA also recently announced an increase in capital requirements for most Australian residential

mortgages. The change, which comes into effect from 1 July 2016, applies to large banks that use the internal ratings-based approach to credit risk. 'Box C: The Regulatory Capital Framework for Residential Mortgages' of this *Review* provides background on the capital framework for residential mortgages in Australia. More broadly, APRA has endorsed the Financial System Inquiry (FSI) recommendation that Australian bank capital positions be further strengthened to ensure that they are 'unquestionably strong'. The major banks have raised a significant amount of common equity over recent months, bolstering their resilience to possible future adverse shocks.

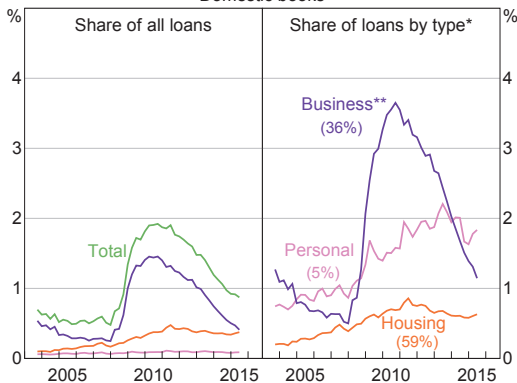
Risks to the Australian banking system have increased somewhat over the past six months from banks' lending to other sectors. The outlook for some commercial property markets has deteriorated further, and banks will need to be especially vigilant in their commercial property risk appetite and the maintenance of sound lending practices in the period ahead. Another area to watch is the four major banks' international exposures, especially housing and agricultural lending in New Zealand where the risks have continued to grow.

Profitability in the general insurance industry has fallen in recent quarters due to above-average weather-related claims, and the recent tightening in bank lending standards has reduced premium revenue for lenders mortgage insurers. With strong competition weighing on premium rates for general insurance, the adequacy of insurers' commercial product pricing warrants continued monitoring.

Bank Asset Performance and Lending Conditions

Asset performance is a key, albeit lagging, indicator of banks' stability. The asset performance of Australian banks has improved steadily over recent years and this trend continued over the first half of 2015. In banks' domestic loan portfolio, the overall ratio of non-performing assets to total loans was 0.9 per cent at June 2015, down from a peak of 1.9 per cent in mid 2010 (Graph 3.1).

Graph 3.1
Banks' Non-performing Assets
Domestic books



* Each category's share of total domestic lending at June 2015 is shown in parentheses

** Includes lending to financial businesses, bills, debt securities and other non-household loans

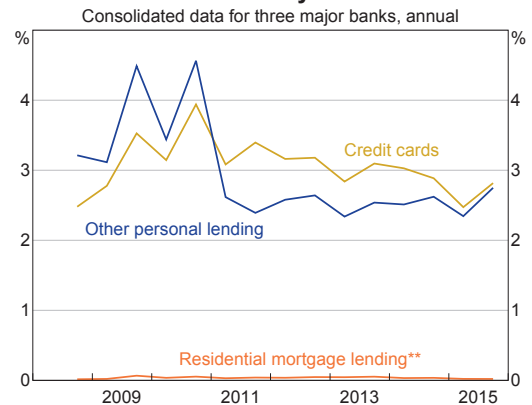
Source: APRA

Maintaining sound housing lending is important for Australian banks' total asset performance because it accounts for about 60 per cent of their domestic lending. The banks' housing non-performing loan (NPL) ratio edged higher over the six months to June 2015, to just over 0.6 per cent, but it remains below the peak of 0.9 per cent in mid 2011. According to disclosures by several major banks, housing loan arrears rates have risen in those states most exposed to weaker commodity prices.

However, historically only a small fraction of the stock of non-performing housing loans have resulted in actual losses for banks, because the value of the debt on most non-performing housing loans has been more than covered by the realisable value of the property. In recent years, the write-off rate

for the major banks' housing lending has therefore been comfortably below 0.1 per cent (Graph 3.2). In contrast, at around 2–3 per cent over recent years, write-offs on credit card debt and other personal lending have been higher, consistent with some portion of this lending being extended to borrowers with a relatively weak credit profile and on an unsecured basis. Although credit card and personal lending is riskier, it represents only a small share of banks' total domestic loans.

Graph 3.2
Credit Losses by Portfolio*



* Write-offs net of recoveries, as a share of on-balance sheet exposures

** After the effect of lenders mortgage insurance (LMI). LMI covers mortgage losses that account for an even smaller share of the major banks' exposures

Source: Banks' Pillar 3 Reports

While the overall stress in banks' housing loan portfolios remains low, banks are currently facing an environment of heightened risk in their housing lending (as discussed in the 'Household and Business Finances' chapter). In view of this, APRA has intensified its supervision of banks' housing lending practices over the past couple of years. As outlined in the previous *Review*, in December 2014 APRA announced a number of additional supervisory measures to reinforce sound housing lending standards at authorised deposit-taking institutions (ADIs). These measures include expectations that: ADIs should not be increasing their share of higher-risk housing lending; annual growth in ADIs' investor housing lending should not be materially above 10 per cent; and ADIs' serviceability assessments should include an interest rate 'buffer'

of at least 2 percentage points above the loan rate, with a minimum 'floor' assessment rate of at least 7 per cent.

APRA also undertook a 'hypothetical borrower exercise' in early 2015 to investigate the range of housing lending standards. The survey required a number of lenders to provide serviceability assessments for four hypothetical borrowers – two owner-occupiers and two investors. The results revealed large variations in serviceability practices across the industry and some cases where practices were less prudent than is desirable.¹ Specifically, some lenders' serviceability assessments were based on: a lower level of living expenses than declared by the borrower; optimistic judgements of the reliability of borrowers' income; and/or implicit assumptions that interest rates on a borrower's existing debts would not rise. ASIC's recently released review of lenders' interest-only housing lending included similar findings, and also noted instances where the lender did not make reasonable enquiries that the interest-only loan was suitable for the borrowers' circumstances and their capacity to repay.² Overall, the findings of these reviews suggest that banks' lending practices, at least those relating to serviceability assessments, were somewhat looser than had been previously understood (although lending standards overall were still better than in the years leading up to the financial crisis).

Over recent months many banks have taken steps to strengthen their housing lending practices and respond to regulatory expectations.

- General housing loan serviceability criteria have been tightened. In particular, many banks have increased the interest rate buffer used to test that borrowers could continue to service the loan if interest rates were to rise. It is now typical for banks to have an interest rate buffer of at

least 2.25 percentage points above the actual loan rate, together with a floor assessment rate of at least 7.25 per cent. Some banks have also corrected their processes for collecting and recognising a borrower's declared minimum living expenses, while most are altering their minimum living expense assumptions so that they increase with borrower income.

- Serviceability criteria specifically for investor housing loans have been tightened. The prudent practice of applying an interest rate buffer to the prospective borrower's existing mortgage debt has been implemented by those banks that were not doing so, although practices still vary on how these buffers are applied. Negative gearing benefits are no longer being considered in some cases.
- Maximum allowable loan-to-valuation ratios (LVRs) have been lowered for investors by some banks. In addition, several banks have reduced LVR caps for higher-risk loans, such as those to certain locations, including mining-exposed regional towns and some metropolitan postcodes.
- Interest-only lending practices have been adjusted. Some lenders have reduced the maximum term of the interest-only period for owner-occupiers, while others have tightened their serviceability assessment by considering a borrower's capacity to make principal and interest payments over the residual term (i.e. the period after the interest-only loan expires) rather than the full life of the loan.

In addition to the adjustments to non-price loan terms, most banks have increased interest rates on their investor housing loans over the past few months. For new investor loans, fixed rates have been raised and discounts to advertised variable rates wound back. Interest rates on existing variable-rate investor housing loans have been lifted by between 20 and 50 basis points (although one major bank instead increased pricing for interest-only loans). There is now a differential between the indicator rates for owner-occupier and

1 For a more detailed discussion of the results, see Byres W (2015), 'Sound Lending Standards and Adequate Capital: Preconditions for Long-Term Success', Speech to the COBA CEO & Director Forum, Sydney, 13 May.

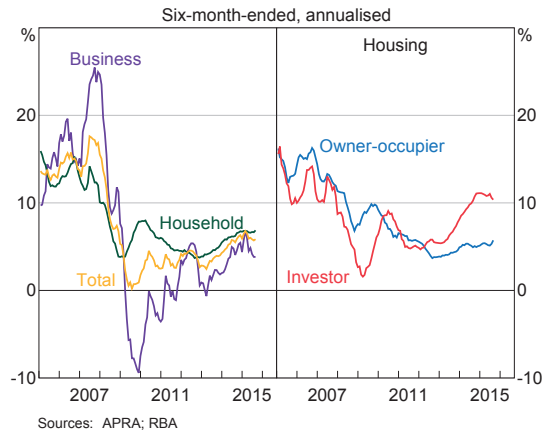
2 For further detail, see ASIC (2015), 'Review of Interest-only Home Loans', Report No. 445, August.

investor housing loans for the first time since 1996.³ Consequently, borrowers now have an incentive to seek reclassification of their loans as owner-occupier rather than investor lending where there has been a change to their living arrangements. Moreover, price competition for new and lower-risk owner-occupier borrowers remains strong, despite the forthcoming increase in the indicator rate announced by Westpac.

It remains too early to tell how much these changes will affect growth in investor housing lending. Annualised growth at the end of August 2015 remained above APRA's 10 per cent benchmark across the banking industry, including at some major banks (Graph 3.3). Ongoing revisions to banks' investor and owner-occupier lending data are adding volatility to these credit aggregates. Looking through this volatility, growth in aggregate investor housing credit slowed over the two months to August, and investor loan approvals have declined moderately recently. It is possible that some banks may need to further adjust their lending practices for growth to slow below 10 per cent, although, for an individual lender, any changes to headline pricing could have less of an effect than desired if competitors also move their pricing to avoid attracting a higher share of investors.

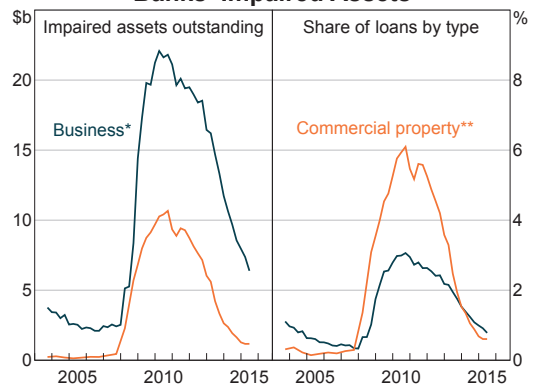
More generally, as lending practices tighten, banks' housing loan portfolios should, over time, become better placed to cope in the event of weaker economic and property market conditions. The serviceability measures also provide more assurance against the risk that new borrowers would be unable to service the loan at interest rates well above current levels. Even so, it is necessary and prudent for banks to continue to review their lending practices and ensure they remain appropriate for their risk appetite and the prevailing external environment. This includes segments of owner-occupier lending where competition among banks remains strong.

Graph 3.3
Credit Growth



After deteriorating during the economic slowdown of 2008–09, the performance of banks' domestic business lending has improved steadily over recent years. This has partly reflected the strong recovery in commercial property prices, where exposures previously accounted for a large (and disproportionate) share of impaired business loans (Graph 3.4). The tightening in business lending standards around 2008–09 has also probably strengthened the underlying quality of banks' business loan portfolios. However, in recent periods some banks have reported slightly higher 'collective provisions' because credit quality has deteriorated in

Graph 3.4
Banks' Impaired Assets



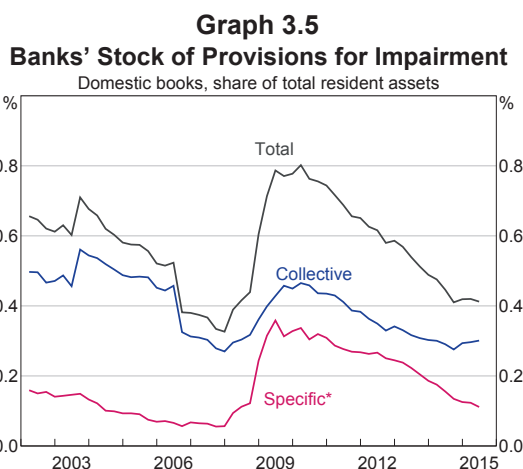
³ Lenders typically charged a 1 percentage point higher interest rate for investors until 1996. For a discussion of historical developments, see RBA (2002), 'Innovations in the Provision of Finance for Investor Housing', RBA *Bulletin*, December, pp 1–5.

* Domestic banks; includes lending to financial businesses, bills, debt securities and other non-household loans

** Consolidated Australian operations

Source: APRA

their agricultural and mining-related loan portfolios, reflecting declines in global commodity prices (Graph 3.5).

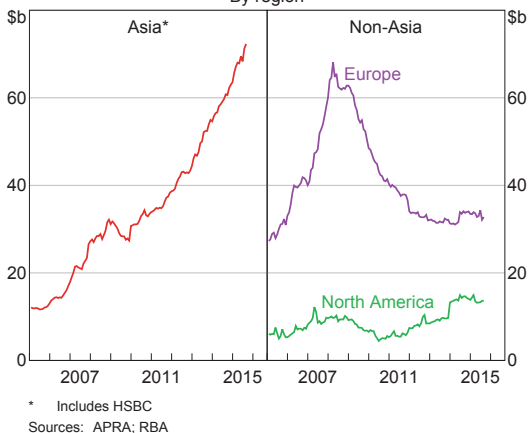


* Excludes portion of collective provision treated as specific provision for regulatory purposes
Source: APRA

Business lending conditions have continued to ease in an environment of subdued demand for such credit. According to industry liaison, over recent quarters margins on loans to large businesses have declined to low levels, while more favourable non-price terms – such as longer loan tenor and weaker covenants – continue to be obtained by some borrowers. Vigorous competition for new large corporate loans is being induced by the narrow spreads available on market-based funding, as well as the growing presence of a number of foreign banks, particularly Asian-owned banks, in the Australian business loan market (Graph 3.6).

Competition among lenders appears especially acute in the commercial property loan market, where price and non-price lending conditions are generally under significant pressure. However, liaison contacts report a rise in bank margins and tightening of lending criteria for residential property development over recent months. These changes are a response to strong growth in banks' exposures to this segment and concerns about an oversupply of apartments in some locations; settlement risk on apartments purchased 'off-the-plan' may have

Graph 3.6
Foreign Bank Business Lending in Australia
By region



* Includes HSBC
Sources: APRA; RBA

also increased because of the stricter criteria that banks are now applying to investor housing loans. Despite the recent targeted adjustments, banks will need to remain vigilant in ensuring that their risk appetite and lending practices are appropriate: risks in residential property development and other commercial property markets continue to build, and this area of their lending has been a key source of bank loan losses in the past (see the 'Household and Business Finances' chapter).

International Exposures

Australian-owned banks' international exposures arise from their direct cross-border activities, as well as the operations of their overseas branches and subsidiaries. International exposures account for around one quarter of Australian-owned banks' consolidated assets (Table 3.1).

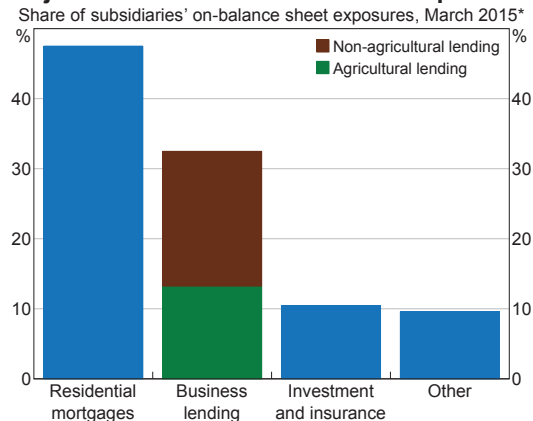
Australian-owned banks' largest international exposure is to New Zealand, where all four major banks have sizeable banking operations. As is the case in their Australian businesses, housing lending represents a substantial share (a little under half) of the major banks' credit exposures in New Zealand (Graph 3.7). The performance of their housing lending has been strong recently – the NPL ratio was 0.4 per cent in early 2015, down from a peak of 1.3 per cent

Table 3.1: Australian-owned Banks' International Exposures
Ultimate risk basis, June 2015

	Value \$ billion	Share of international exposures Per cent	Share of global consolidated assets Per cent
New Zealand	330	35	9
Asia ^(a)	183	19	5
– China	45	5	1
United Kingdom	176	19	5
United States	140	15	4
Europe	58	6	1
– Greece	0	0	0
Other	59	6	2
Total	945	100	24

(a) Asia includes offshore centres Hong Kong and Singapore
Sources: APRA; RBA

Graph 3.7
Major Banks' New Zealand Credit Exposures
Share of subsidiaries' on-balance sheet exposures, March 2015*



* Data for CBA are end-June 2015 and data for Westpac are end-September 2014

Sources: New Zealand Subsidiaries' Annual Reports; RBA

in mid 2010. However, rapid housing price growth in Auckland, along with strong investor activity, has heightened the risk of a future fall in housing prices and associated bank loan losses. Housing lending in New Zealand is quite geographically concentrated, with about half of the stock of debt secured against properties in Auckland. The Reserve Bank of New Zealand recently announced further measures to curb investor housing lending at high LVRs in Auckland, but relaxed LVR restrictions a little in other regions of New Zealand (see 'The Global Financial Environment' chapter).

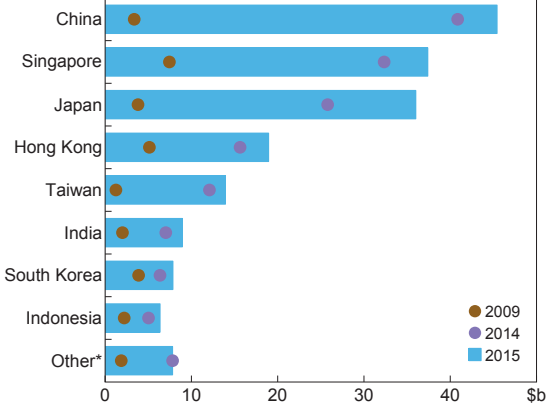
The major banks also have substantial exposures to the agriculture sector in New Zealand, reflecting the economic importance of the dairy industry there. Specifically, the major banks' exposures to the agriculture sector are around 13 per cent of their credit exposures in New Zealand, around two-thirds of which (roughly \$30 billion) are to the dairy industry. Although a much smaller share of assets than housing lending, dairy exposures are riskier in terms of both their probability of default and likely losses in that event, and the risk of loss is currently higher than usual given the low level of global milk prices. There is also a risk that stress in the dairy sector might exacerbate the rural property price cycle.

Australian-owned banks continue to expand their exposure to several jurisdictions in Asia, including China (Graph 3.8). Financial market volatility in the Asian region has increased markedly over recent months in association with concerns about economic growth in China. At this point, the direct risk to the Australian banking system from a possible deterioration in economic and financial conditions in China appears limited. Exposures to China and the broader Asian region are only a small share of Australian-owned banks' assets, and many of these are shorter-term and trade-related, factors which should lessen credit and funding risks. That said, operational and legal risks could be relatively high,

Graph 3.8

Australian-owned Banks' Exposures to Asia

Consolidated global operations, ultimate risk basis, as at June



* Cambodia, Laos, Malaysia, Philippines, Thailand and Vietnam
Sources: APRA; RBA

as some operations in Asia are new or dissimilar to those in Australia. Any material impact on the Australian banking system from developments in Asia is more likely to be due to indirect effects, such as those stemming from a sustained period of turbulence in global funding markets and/or softer economic growth across the Asia-Pacific region.

Funding and Liquidity

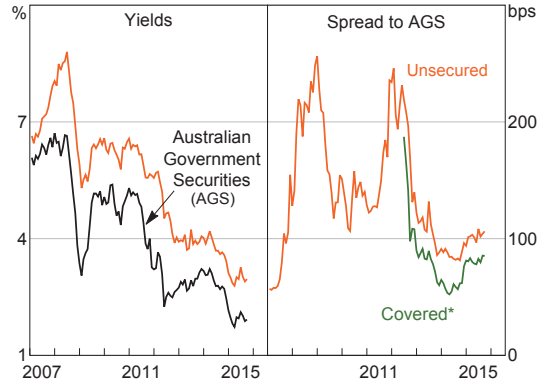
Global bank wholesale funding markets have been less affected by recent international volatility than equity markets. Australian banks generally retained good access to a range of foreign currency bond markets, and were able to issue bonds offshore in June and July, around the time of heightened concerns about Greece exiting the euro area. Spreads on the major banks' bonds have widened since early 2015 but remain well below those seen over 2008–12 (Graph 3.9).

The direct effect of higher wholesale funding costs on the *overall* cost of funding for the large Australian banks is less than five years ago because wholesale funding is now a smaller share of their balance sheets. Over recent years banks' share of domestic deposit funding has increased, while their bond issuance has only been in line with their maturities (Graph 3.10). Australian banks have issued about \$85 billion in bonds since the start of 2015; around

Graph 3.9

Major Banks' Bond Pricing

3–5 year residual maturity, A\$ bonds

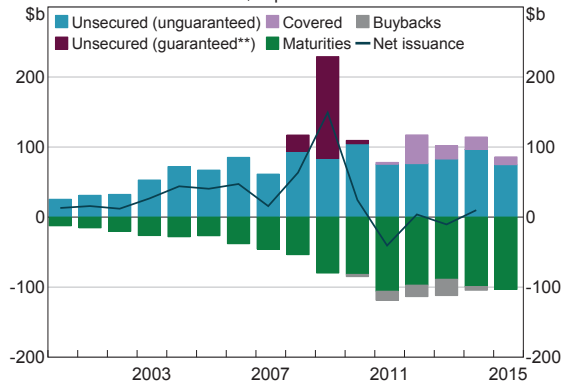


* Covered bond pricing interpolated to a target tenor of 4 years using bonds with a residual maturity between 2 and 10 years
Sources: Bloomberg; UBS AG, Australia Branch

Graph 3.10

Banks' Bond Issuance and Maturities*

A\$ equivalent



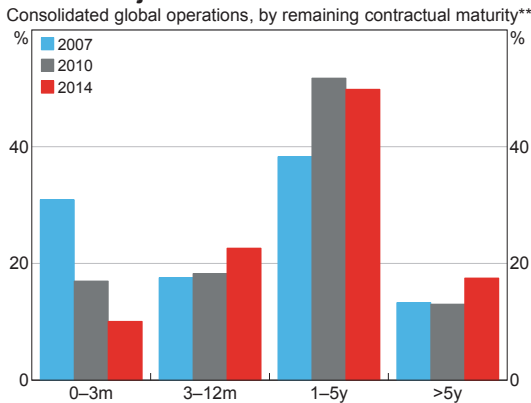
* 2015 issuance is year-to-date
** Guaranteed by the Commonwealth of Australia
Source: RBA

70 per cent was issued in offshore markets, similar to the share in the preceding few years. The recent depreciation of the Australian dollar against the major currencies should moderately reduce the need for Australian banks to use global wholesale funding markets, as less foreign currency issuance is required to fund the same amount of Australian-dollar-denominated lending. Depreciation of the Australian dollar also tends to add to banks' liquidity because they then receive collateral inflows from counterparties to their derivative transactions for hedging foreign-currency-denominated debt.

Banks can also lessen the impact of any deterioration in wholesale funding conditions by ensuring that the portion of their funding maturing in the near term is small. Since 2007 the major banks have significantly reduced the share of their wholesale debt with maturities of less than three months (Graph 3.11). Covered bonds have also enabled the major banks to issue at longer tenors, as well as attract new investors that have AAA mandates; liaison with the major banks indicates that their unsecured bond investor base has also become more diverse.

Graph 3.11

Major Banks' Debt on Issue*



* Short- and long-term debt securities, including bonds, notes, commercial paper, loan capital and bill acceptances

** As at end of financial year – 30 June for CBA and 30 September for ANZ, NAB and WBC

Sources: Banks' Annual Reports; RBA

Despite these changes, further lengthening of banks' funding maturity profiles is likely to be necessary for them to meet the Basel III Net Stable Funding Ratio requirement scheduled for introduction in 2018.

The cost of banks' domestic deposit funding has declined as competition for deposits has eased. Since the start of this year, the major banks' average outstanding deposit rate has fallen by around 60 basis points, compared with a 50 basis point decline in the cash rate over this period. Banks report that they continue to refine their deposit offerings and pricing to better reflect liquidity risk and adjust to the Liquidity Coverage Ratio (LCR) requirement that was introduced at the start of this year.⁴ A focus for banks in this regard has been wholesale deposits, such as those by financial institutions and large corporations, because of the large balances involved and their less favourable treatment under the LCR.

As at 30 June 2015, all locally incorporated banks subject to the LCR exceeded the 100 per cent minimum requirement. Banks' aggregate LCR was 119 per cent, with projected net cash outflows outweighed by holdings of high-quality liquid assets (HQLA) and collateral eligible for use with the Reserve Bank's Committed Liquidity Facility (CLF) (Table 3.2). Banks' HQLA was split roughly evenly between assets denominated in Australian dollars

Table 3.2: Components of the Liquidity Coverage Ratio^(a)

All currencies; June 2015

	Value \$ billion	Share of consolidated assets Per cent
Net cash outflows	529	14
– Cash outflows	650	17
– Cash inflows	121	3
High-quality liquid assets	376	10
Committed Liquidity Facility ^(b)	251	6

(a) LCR equals the sum of HQLA and CLF divided by net cash outflows. Only locally incorporated banks that are subject to the 100 per cent LCR requirement are included

(b) Amount of collateral eligible for use with the CLF

Sources: APRA; RBA

⁴ The LCR is a global prudential requirement for banks to hold high-quality liquid assets that at least cover their expected net cash outflows within a 30-day stress period. See RBA (2015), 'Box A: The Basel III Liquidity Reforms in Australia', *Financial Stability Review*, March, pp 32–34.

and foreign currency. Most Australian dollar HQLA holdings were state government securities ('semis') rather than Australian government securities, the other debt securities that are allowed to be included as Australian dollar HQLA.

Capital

Australian banks have increased their resilience to adverse shocks over recent years by strengthening their capital positions. In late 2014, the Final Report of the FSI recommended that Australian bank capital ratios be further strengthened to ensure they are 'unquestionably strong' by international standards. This view considered the importance of a well-functioning banking sector to the Australian economy and the trend towards higher regulatory capital settings in a number of other countries.

Assessing the capital strength of banks across jurisdictions is made difficult by, among other things, differences in national regulatory definitions and capital settings. To help inform the assessment in the Australian context, APRA recently released a study that provided internationally comparable capital ratios for the major banks and a large number of international peers as at June 2014.⁵ The study found that the major banks' aggregate Common Equity Tier 1 (CET1) capital ratio was around 300 basis points higher when reported on a comparable basis. This result highlighted APRA's conservative application of the Basel international capital framework, both for the definition of capital and the measurement of risk-weighted assets. The major banks' CET1 capital ratio sat a little above the median of international peers, while their total capital ratio was around the median; these rankings were below the 'top quartile' of the distribution that the FSI considered appropriate. APRA will use the results of the relative international bank comparisons to inform, but not determine, the appropriate capital settings in

Australia over the medium term. Directly linking domestic capital settings to a moving international benchmark could require frequent, and perhaps unnecessary, adjustment.

Within the Australian banking sector, the need for unquestioned capital strength is particularly relevant for the major banks. All four major banks have been designated domestic systemically important banks (D-SIBs) by APRA, because their dominant share of banking activity in Australia means that their distress could harm the real economy. Furthermore, they are internationally active on both sides of their balance sheets and are therefore subject to global market conditions and scrutiny. It is vital that the major banks are able to not only withstand severe external shocks, but also support the economy during such episodes by being able to secure new funding and extend new lending.

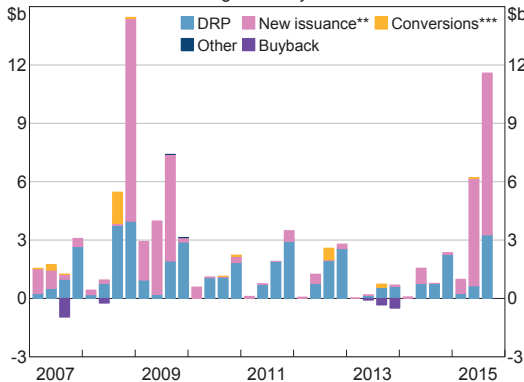
In July, APRA announced an increase in capital requirements for Australian residential mortgages of banks using the internal ratings-based (IRB) approach to credit risk – that is, the four major banks and Macquarie Bank. The change, which comes into effect from 1 July 2016, will increase the average risk weight of these exposures from about 17 per cent to at least 25 per cent (see 'Box C: The Regulatory Capital Framework for Residential Mortgages'). The announcement addressed a recommendation of the FSI to narrow the difference between banks' capital requirements when calculated under the IRB approach versus the standardised approach used by smaller ADIs. This will also increase the resilience of the banking system, given that housing lending represents a large share of credit portfolios and the IRB banks account for the bulk of Australian housing lending. Moreover, the additional capital is timely because banks are currently facing an environment of heightened risk in their housing loan portfolios.

The major banks have taken a number of actions since the previous *Review* to strengthen their capital positions. Around \$18 billion in common equity has been issued through a combination of discounted rights issues, share purchase plans,

⁵ Data limitations mean that the calculation of internationally comparable bank capital ratios is imprecise. For further details, see APRA (2015), 'International Capital Comparison Study', Information Paper, 13 July.

institutional placements and dividend reinvestment plans (DRPs) (Graph 3.12). In mid October, Westpac announced plans to issue a further \$3.5 billion in common equity. At this point the major banks have not cut their dividend payments, which would by definition accelerate the pace of their internal capital accumulation. Major bank capital positions have also been bolstered by asset divestment: ANZ sold its Esanda dealer finance business; NAB its commercial banking subsidiary in the United States; and Westpac part of its asset management business. NAB is also in the process of divesting its UK subsidiary, for which it was required to raise more than \$3 billion in capital to provision for legacy conduct issues.

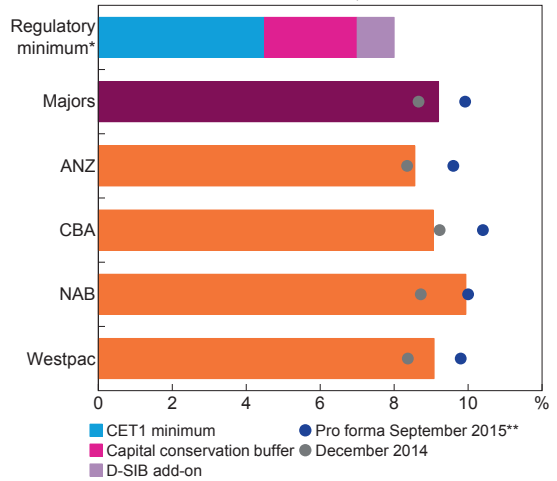
Graph 3.12
Banks' Common-equity Capital
Raisings and buybacks*



* Excludes capital raised as part of an acquisition
 ** Includes new placements, rights issues, share purchase plans and employee share schemes
 *** Conversions of banks' non-common equity capital instruments
 Sources: ASX; Banks' Annual Reports

The sizeable capital issuance drove a significant increase in the major banks' aggregate CET1 capital ratio over the six months to June 2015 to 9.2 per cent. Additional capital initiatives undertaken in the September quarter add a further 80 basis points of CET1 capital (Graph 3.13). Consequently, the major banks' capital ratios are now all well above the required regulatory CET1 ratio of 8 per cent (including the capital conservation buffer and D-SIB surcharge). Nonetheless, it is prudent for the major banks to maintain a larger-than-usual buffer above

Graph 3.13
Major Banks' CET1 Capital Ratios
APRA Basel III basis, June 2015



* The capital conservation buffer and D-SIB add-on will take effect on 1 January 2016
 ** Additional change to capital ratio from capital actions in the September quarter, all else equal
 Sources: APRA; Banks' Financial Disclosures; RBA

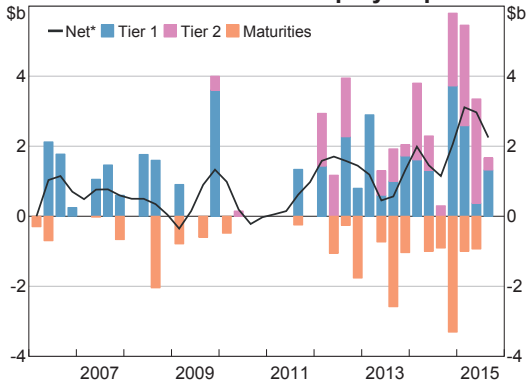
regulatory requirements at this juncture, in large part because, as noted earlier, capital requirements for their Australian mortgages are scheduled to increase from mid 2016 (which could subtract around 80 basis points from the major banks' aggregate CET1 ratio). A number of other potential capital policies on the international reform agenda might require Australian banks to further increase their capital positions.

Australian banks have also increased their issuance of non-common equity capital (Additional Tier 1 and Tier 2 instruments, sometimes called 'hybrids') in recent quarters (Graph 3.14). Issuance of around \$10½ billion in 2015 to date has been well above the level of maturities in the period, and thus has contributed to a rise in banks' total capital ratio. To help diversify their investor base, some of the major banks have issued Tier 2 foreign currency instruments in 2015, such as renminbi-denominated instruments in Hong Kong.

Spreads on banks' new Additional Tier 1 issuance drifted higher in the first half of 2015, and recent issues by the major banks have traded in the

Graph 3.14

Banks' Non-common-equity Capital



* 7-period Henderson trend; net change in capital can exceed net issuance if maturing instruments are not fully Basel III compliant
Source: RBA

secondary market at a substantial discount to their listing prices. These developments appear to have partly reflected a combination of market volatility and increased supply of hybrid instruments. Another factor could be that investors might be substituting into conventional common equity that has been offered at a discount to market prices.

Under the Basel III international capital framework, banks will be required to meet a non-risk-weighted ratio, or 'leverage ratio', from 2018. The Basel III leverage ratio is intended to be a backstop to the risk-based capital requirements. The ratio measures the size of a bank's Tier 1 capital base relative to its total on- and off-balance-sheet exposures, with a low ratio indicating greater use of non-equity funding. The largest Australian banks must begin disclosing their leverage ratio from their first reporting date after 1 July 2015. APRA expects to consult on the implementation of the leverage ratio in Australia after the calibration of the minimum international leverage ratio is finalised by the Basel Committee. The recent APRA study indicated that the major banks' aggregate ratio was about 4½ per cent at June 2014, well above the draft 3 per cent international leverage ratio requirement.

Disclosures of large global banks suggest that some have further work to do to comfortably meet their leverage ratio. There are indications that some

global banks are pulling back from financial market activities to help ensure that they meet the leverage ratio. Such balance sheet adjustments could have implications for the Australian financial system because global banks are major players in financial markets here, such as those for certain derivatives and securities financing. Because of the specialised and complex nature of these activities, it might be hard for other players to replace this activity, at least at short notice. Liquidity in some Australian financial markets could therefore be reduced; if so, market participants will need to adjust their behaviour accordingly.

Profitability

Strong profitability in recent years, driven by improving loan performance and solid income growth, has supported Australian banks' capital positions. In the six months to June 2015, banks' aggregate profit was \$20.2 billion, \$2.7 billion (15½ per cent) higher than in the previous half year (Table 3.3). Headline profit growth was supported by one-off items, as well as increasing revenues from market-based activities, such as trading and investment income. Net interest income was little changed despite solid asset growth, as the net interest margin narrowed due to strong competition in lending markets. As expected, the bad and doubtful debt charge rose from its historically low level as a share of total assets, with some banks disclosing higher collective provisions.

At the time of writing, equity market analysts expected the major banks' profitability to decline modestly in the near term (Graph 3.15). The major banks' return on equity was forecast to be around 14 per cent for the 2016 financial year, a little below the average of around 15 per cent over recent years. This reduction may reflect analysts' expectations of a small increase in bad and doubtful debts from their current low levels and/or that rises in average funding costs from higher capital levels will not be fully passed on to borrowers. Even so, a subsequent fall in the major banks' return on equity might be accommodated by investors if they were to adjust

Table 3.3: Banks' Half-yearly Profit Results^(a)
Consolidated global operations; \$ billion

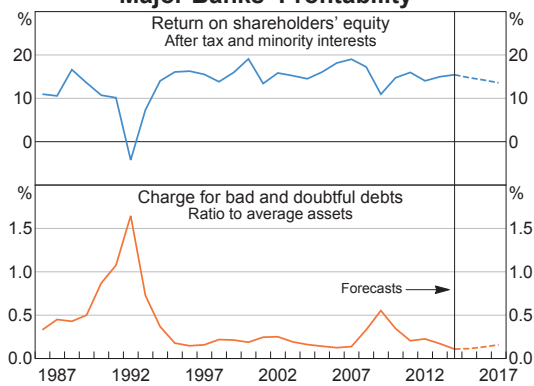
	Dec 2014	June 2015	Change	Average change since 2010 ^(b)
Income				
Net interest income	34.6	34.5	-0.2	0.8
Non-interest income	17.8	19.1	1.3	0.0
Expenses				
Operating expenses	25.4	24.3	-1.1	-0.1
Bad and doubtful debts	1.9	2.6	0.6	-0.3
Profit				
Net profit before tax	25.5	27.2	1.7	1.1
Net profit after tax and minority interests	17.5	20.2	2.7	0.9

(a) Includes all Australian-owned banks, as well as foreign subsidiaries and branches of foreign banks operating in Australia

(b) Average half-yearly change

Sources: APRA; RBA

Graph 3.15
Major Banks' Profitability*



* From 2006 data are on an IFRS basis; prior years are on an AGAAP basis; includes St. George and, from 2009, Bankwest; analysts' forecasts are for the 2014/15, 2015/16 and 2016/17 financial years

Sources: Banks' Annual and Interim Reports; Credit Suisse; Deutsche Bank; Morgan Stanley; RBA; UBS Securities Australia

their required returns to account for any decline in risk arising from stronger capital positions. If, on the other hand, banks continue to maintain their return on equity targets, it will be important that they do not pursue these through reducing resources devoted to risk management and operational capabilities.

Similarly, equity market investors appear to have revised their view of the major banks' earnings and dividend prospects downwards, with their share prices declining by 18 per cent since their peak in March 2015 (Graph 3.16). This fall in share prices

Graph 3.16
Banks' Share Prices
1 January 2007 = 100



Sources: Bloomberg; RBA

partly reflects the change in risk sentiment among financial market participants globally. The major banks' recent capital raisings have also been a factor, as their share prices have fallen further than the regionals and the broader market over recent months. As a result, the major banks' equity valuation – as measured by their price-to-book ratio – is now a little below its long-run historical average level, although it remains well above those of the major advanced-economy banking systems.

Shadow Banking

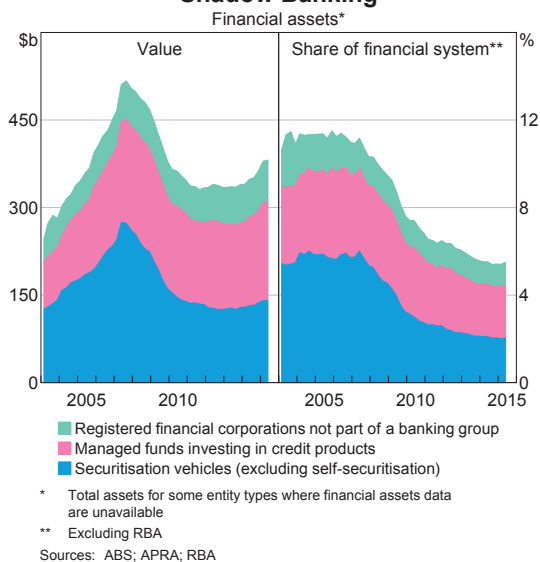
Addressing risks in shadow banking – defined as credit intermediation involving entities and activities outside the ‘regular’ banking system – has been a core area of international regulatory reform since the financial crisis. This has included assessing the potential risks that might arise from bank-like activities migrating to the shadow banking sector in response to the tighter post-crisis prudential framework for banks.

The shadow banking sector represents only around 5 per cent of financial system assets in Australia. This share is down from over 10 per cent in 2007 and well below that for a number of large economies. These estimates are based on the Financial Stability Board’s (FSB’s) ‘narrow definition’ of shadow banking, which in Australia includes securitisation vehicles, registered financial corporations that are not part of a banking group, and managed funds that invest in a range of short- and long-term credit products (Graph 3.17).⁶ Because of its small size and minimal credit and funding links to the regulated banking system, the shadow banking sector in Australia is judged to pose limited systemic risk. Nonetheless, the Reserve Bank and other Australian financial regulators continue to monitor shadow banking activity for signs of risk. As part of these efforts, the Reserve Bank provides regular updates to the CFR and participates in the FSB’s annual global assessment of shadow banking activity.

Non-bank securitisation activity is an area of shadow banking that warrants particular attention given the heightened risk environment in the domestic mortgage market. Issuance of residential mortgage-backed securities (RMBS) has picked up since 2013, including for non-ADI mortgage originators that fall outside the prudential regulatory

6 Other non-prudentially regulated financial entities account for a further 10 per cent of financial system assets in Australia, but are either not involved in credit intermediation or their parent institution is subject to consolidated prudential regulation. For further discussion of Australia’s shadow banking sector, see Manalo J, K McLoughlin and C Schwartz (2015), ‘Shadow Banking – International and Domestic Developments’, *RBA Bulletin*, March, pp 75–83.

Graph 3.17
Shadow Banking



perimeter. Mortgage originators tend to have riskier loan pools than banks: they are the only suppliers of non-conforming residential mortgages (which are those that do not meet the standard underwriting criteria of banks), and their RMBS have a higher average LVR and a larger share of low documentation loans and interest-only loans (Table 3.4). Given the riskier nature of the underlying collateral, mortgage originators usually provide more credit enhancement to senior notes to achieve AAA-ratings, such as by allocating a larger share of the RMBS to junior sub-AAA tranches or through the use of lenders mortgage insurance (LMI).

Mortgage originators’ RMBS outstanding is equivalent to about 1 per cent of the total value of Australian mortgages. At this level, mortgage originators’ activity therefore has limited influence on competition in the mortgage market and the housing price cycle. Even so, Australian financial regulators remain alert to the possibility that activity by non-bank issuers might pick up in response to the recent tightening in banks’ housing lending standards and higher pricing for banks’ investor housing loans. The potential for this to occur will depend on market demand for additional mortgage

Table 3.4: Characteristics of RMBS Issuance
At date of issuance; 2012/13–2014/15^(a)

	Major banks	Other ADIs	Non-ADIs
Average LVR	58	59	69
Per cent of loans with full documentation	100	100	83
Per cent of interest-only loans	19	21	33
Per cent of loans covered by LMI	22	97	89
Per cent of sub-AAA tranches	7	3	13

(a) For all marketed RMBS issuances with available data; weighted by loan values except per cent of sub-AAA tranches, which is based on tranche face values
Source: RBA

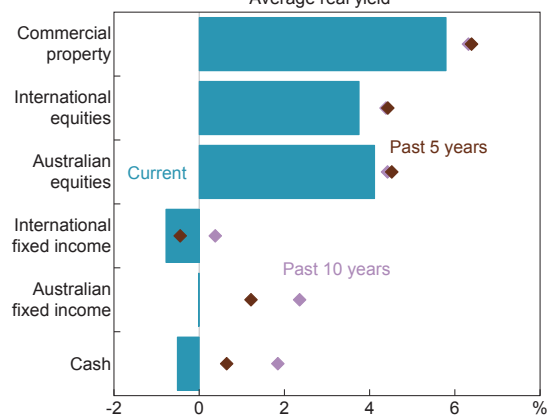
originators' RMBS, as well as mortgage originators' access to the necessary warehouse funding from banks (the provision of which regulators are monitoring) along with their operational capability to process greater lending volumes.

Superannuation

Superannuation funds are a large part of the financial sector, accounting for three-quarters of managed funds' total assets, and in total are over half the size of the banking sector in terms of assets. Superannuation funds' assets grew at an annualised rate of around 9 per cent over the six months to June 2015, to \$2.02 trillion. The recent pace of growth in total assets has been affected by the volatility in Australian equity markets; for example, APRA-regulated superannuation funds recorded a net investment loss of 1.7 per cent over the June quarter.

Superannuation funds are required to set an investment return objective for the assets invested on behalf of their members (by investment option). This is typically defined as a fixed percentage in excess of CPI inflation or relevant benchmark index. Over recent years, the prolonged period of low global interest rates and subdued economic growth has lowered the returns available across various investment classes, which has made it more difficult for some superannuation funds to achieve their return objectives (Graph 3.18). While superannuation fund trustees have a legal obligation to act in the best interests of their members, in this environment

Graph 3.18
Asset Class Annual Returns*
Average real yield**



* Does not account for investment fees or taxes; commercial property: IPD Australia All Property Index discount rate; international equities: MSCI World Index forward earnings yield; Australian equities: ASX 200 Index forward earnings yield; international fixed income: Barclays Global Aggregate Bond Index yield; Australian fixed income: Bloomberg AusBond Composite Index yield; cash: 1-year swap rate
** Assumes 2½ per cent inflation

Sources: Bloomberg; IPD; RBA; Thomson Reuters

there is a risk of superannuation funds choosing higher portfolio allocations to riskier assets than otherwise in order to try to boost returns. In addition to exposing fund members to greater risk, this behaviour could possibly contribute to financial instability by amplifying asset price cycles, though funds would typically aim to hold such assets for a long time. While there has been no significant shift in aggregate in superannuation funds' portfolio allocations in recent years, anecdotal evidence suggests that low returns have prompted some funds to switch into riskier assets such as commercial property that are expected to generate higher returns. However, it appears more common

for funds to have reduced their return targets or communicated to members that returns may be lower in coming years (or both).

Over the longer term, the ageing of the population means that an increasing proportion of superannuation funds' members are moving from the accumulation phase into the drawdown phase. This demographic change may result in an increase in allocation towards more conservative assets, such as cash and deposits, potentially increasing the interconnectedness between banks and the superannuation industry. Also, as benefit payments increase relative to contributions with the ageing of the population and maturing of the superannuation system, superannuation funds will need to carefully manage the associated liquidity implications.

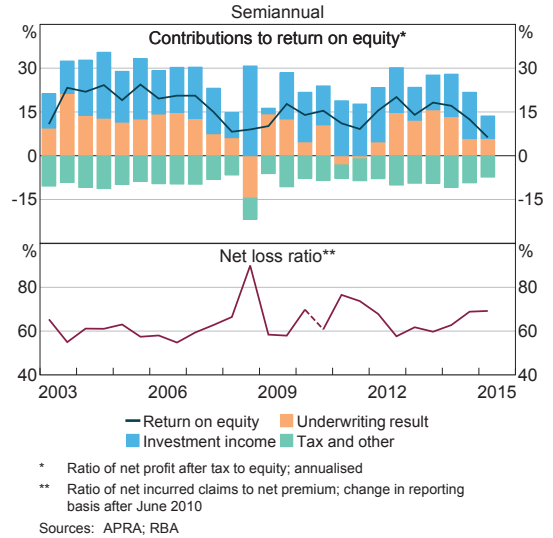
Insurance

General insurance

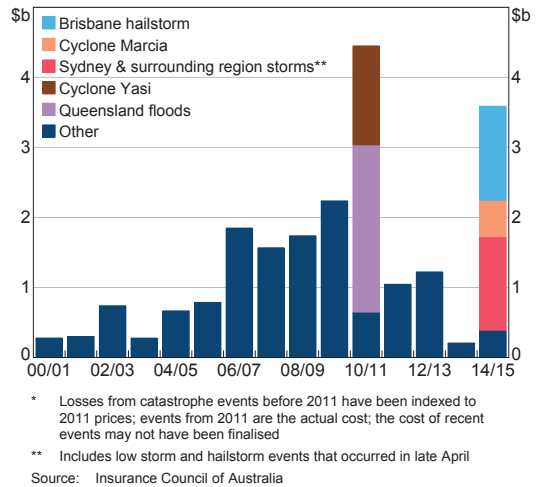
The general insurance industry remains well capitalised, with capital equivalent to 1.7 times APRA's prescribed amount. Following several years of strong outcomes, general insurers' underwriting result has declined sharply in recent periods (Graph 3.19). Net claims expenses have risen substantially, to be equivalent to around 70 per cent of premium revenue, compared with lows of 60 per cent recorded during 2012–13. Natural catastrophe claims were historically high in the 2014/15 financial year at around \$3½ billion, with these mainly arising from events in Queensland and New South Wales (Graph 3.20). Insurers' profit in the six months to June 2015 was also weighed down by lower investment income.

Insurers report that strong competition has weighed on premium rates, particularly in commercial lines of insurance, where average premiums have fallen more sharply than those for personal lines of insurance over the past year (Graph 3.21). Soft pricing conditions in commercial lines have been present in the market for several years and pose a concern that inadequate pricing may negatively

Graph 3.19
General Insurers' Financial Ratios



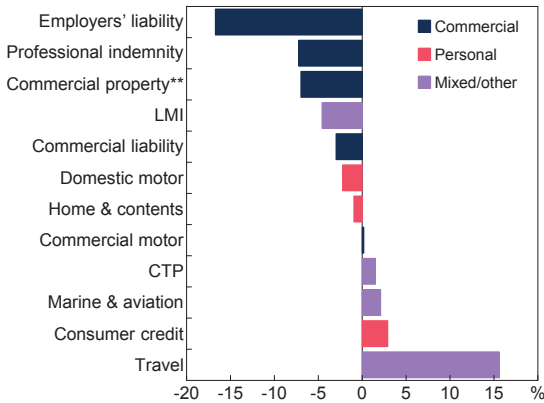
Graph 3.20
Claims from Natural Catastrophes in Australia*



affect insurers' future financial performance. This risk is exacerbated by the prolonged period of muted investment returns on low-risk debt securities, which increases the amount of premium revenue an insurer needs to cover future claims payments.

LMI are specialist general insurers that offer protection to banks and other lenders against losses on defaulted mortgages. Australian LMIs have benefited from a below-average level of

Graph 3.21
Change in
Average Insurance Premium*
 Year to June half 2015



* Gross written premium divided by number of policies written

** Fire and industrial special risks insurance

Sources: APRA; RBA

claims over recent years in a climate of rising housing prices. However, the industry's premium revenue declined in the first half of 2015, with LMIs reporting a reduction in new high-LVR policies as banks tightened their mortgage lending practices. In addition, claims from the mining-exposed states of Queensland and Western Australia have increased recently.

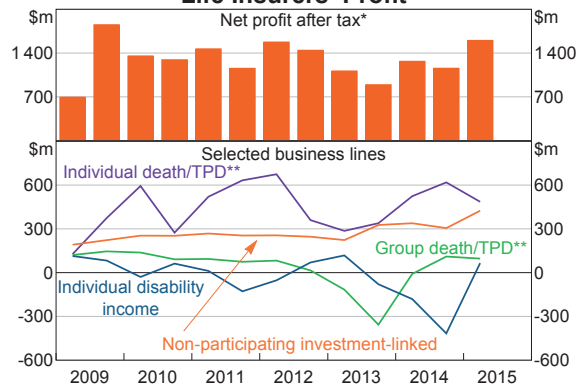
The concentration of Australian LMIs' customer base in the four major banks means that they are vulnerable to a significant decline in demand. In the first half of 2015, Westpac stopped using Genworth and QBE (the two major Australian LMIs) as its external LMI providers and shifted its risk to an offshore reinsurer. While NAB renewed its contract with Genworth in June, it is possible that banks might actively reduce their business with Australian LMIs in the future, either by switching to offshore providers or by 'self-insuring' mortgages (that is, charging the borrower a low-equity fee and retaining the risk themselves).

Life insurance

Life insurers' profits increased noticeably in the six months to June 2015, driven by an improvement in individual disability income insurance (commonly

known as 'income protection insurance'), a line of insurance business that had been generating losses since mid 2013 (Graph 3.22). As discussed in previous *Reviews*, the life insurance industry is addressing a number of structural weaknesses that have contributed to low profitability over recent years. These include poor definitions of product benefits, pricing not being adjusted for enhanced benefits, a lack of data on insurance risk and a shortage of skills for claims management. APRA has recently observed a number of improvements in these areas, particularly in pricing and data analysis on 'group' policies (that is, policies sold through superannuation funds).⁷ Despite the recent challenges, the life insurance industry is well capitalised, at 1.8 times APRA's prescribed capital amount.

Graph 3.22
Life Insurers' Profit



* Includes profit from other non-risk business

** TPD = total and permanent disability

Source: APRA

The Australian Government recently endorsed a package of reforms that were proposed by industry participants in response to ASIC's concerns about the quality of retail life insurance advice.⁸ Key components of the reforms, which could become fully effective in 2018, include a reduction of up-front commissions paid to advisers and a lengthened period during which commissions may be clawed

⁷ See Khoo B (2015), 'Letter to LI Entities on Group Insurance', 18 May.

⁸ For further details, see Frydenberg J (2015), 'Industry Reform Proposal on Retail Life Insurance Welcomed', media release, 25 June.

back if a policyholder chooses to withdraw from a policy. These initiatives, if implemented, should more closely align the incentives of advisers, insurers and customers.

Financial Market Infrastructure

Financial market infrastructures (FMIs) – such as payment systems, central counterparties (CCPs) and securities settlement systems – support most financial transactions in the economy. Because FMIs concentrate both services and risk, they need strong regulation and supervision of their financial position, governance and risk management practices. The cyber resilience of FMIs is one area that has attracted greater attention from regulators in recent years. Default management and stress testing are also important elements of risk management, and were therefore key themes in the Reserve Bank's most recent assessment of ASX.⁹

Cyber resilience

Since participants in the financial system rely on FMIs to support most financial transactions, a significant operational disruption at an FMI could, in turn, disrupt the financial system. For this reason, it is essential that FMIs maintain a high level of operational resilience, and this is reflected in the international standards for FMIs (the *Principles for Financial Market Infrastructures*, PFMI). In recent years, the growing threat of cyber attacks poses an increasing risk to FMIs' operational resilience. Recognising this, FMIs and their regulators, both in Australia and internationally, are making the resilience of FMIs to cyber threats a strategic priority.

While domestic FMIs have robust frameworks in place to protect against cyber threats, they have been taking a number of actions to enhance their resilience to the growing threat. The Reserve Bank has initiated two projects to increase the resilience

of the Reserve Bank Information and Transfer System (RITS) – Australia's wholesale payment system – to cyber threats:

- a comprehensive assessment of measures in place to prevent a cyber-related incident
- a review of RITS' ability to detect, investigate and recover from a wide range of potential operational disruptions, including a cyber attack; this review will include the identification of additional measures that could improve RITS' resilience in this area and an examination of the benefits, challenges and costs of implementing them.

Separately, ASX has carried out a high-level self-assessment against a widely used cyber resilience standard, the US National Institute of Standards and Technology *Framework for Improving Critical Infrastructure Cybersecurity*. This self-assessment concluded that ASX's cyber security practices generally aligned with the upper two tiers of 'maturity' levels under this framework.

Globally, FMI regulators are also working together through international standard-setting bodies to develop guidance in the area of cyber resilience to support relevant requirements in the PFMI. Once published, the guidance is intended to help FMIs enhance their cyber resilience and to provide a framework for supervisory dialogue.

Default of BBY

A CCP stands between the counterparties to a financial market trade and performs the obligations that each has to the other under the terms of that trade. Accordingly, in the event of the default of a participant in a market that is centrally cleared, the CCP takes on the defaulting participant's obligations to the remaining participants. This was the case for ASX Clear, when a broker participant, BBY Limited (BBY), entered into voluntary administration on 17 May 2015. To neutralise its exposure to market risk, ASX Clear had to 'close out' the financial risk associated with BBY's obligations by entering into offsetting trades or transferring client positions to another clearing participant (the latter process is

⁹ The Bank's most recent assessment of ASX against the Financial Stability Standards was published in September and is available at <www.rba.gov.au/payments-system/clearing-settlement/assessments/2014-2015/index.html>. It covers the default of BBY and enhancements to stress testing.

known as 'porting'). In the event, ASX Clear was able to manage the default without any evident market impact and held sufficient collateral from BBY to absorb all losses arising in the close-out process.

The first early warning of potential governance, control and financial issues at BBY occurred in June 2014. At that time, BBY submitted an unusually large concentrated cash market transaction for clearing, but was unable to fully meet the collateral call triggered by this transaction. ASX permitted a delayed payment, but imposed restrictions on BBY's ongoing clearing activity and required BBY to improve its governance framework and risk control systems.

On 6 May 2015, BBY was again unable to meet a collateral call. At that time BBY had more than 1 000 derivatives clients, which together accounted for around 10 per cent of ASX Clear's derivatives exposures (as measured by total margin requirements). By the time BBY entered voluntary administration it had closed out or transferred open client positions representing around one-third of its derivatives exposures. Where arrangements to transfer client positions to another clearing participant were sufficiently well advanced at the time of default, ASX proceeded with these transfers. Ultimately, over half of the outstanding derivatives exposures at 6 May were able to be ported. The remaining exposures were closed out by ASX.

ASX Clear was able to port derivatives client positions because it uses individually segregated accounts, which ensures that each client's exposure is collateralised to a high degree of confidence. The BBY incident nevertheless highlighted a number of specific impediments to the porting process. In particular, portability relies on the willingness and capacity of another participant to take on the affected clients within a short period of time. The BBY default demonstrated that porting may not be possible if transfer arrangements have not already been pre-positioned prior to a clearing participant's default, because it takes time for receiving participants to complete due diligence and 'know-your-customer' processes. ASX has

begun to consider how account structures, transfer arrangements and operational processes could be enhanced to assist the efficient porting of clients when a broker defaults.

ASX, in consultation with the Reserve Bank, has begun to assess some of the experiences gained. In addition to the impediments to porting, the BBY default has highlighted that the diversity of ASX Clear participants may justify a more risk-sensitive approach to determining minimum capital and other financial requirements. The Reserve Bank, in its recent assessment of ASX, has also encouraged ASX Clear to consider the experience gained from BBY's default as part of its broader review of the calibration of its margin model parameters.

Enhancements to ASX stress testing

Beyond defaulter pays resources, CCPs maintain additional pre-funded pooled financial resources to ensure their resilience to a participant default. Under the *Financial Stability Standards* determined by the Reserve Bank, which are based on the PFMI, a CCP's pre-funded pooled resources must be able to withstand the default of the participant and its affiliates to which it has the largest exposure under stressed market conditions. Where a CCP clears complex products or is systemically important in multiple jurisdictions, as is the case for the ASX CCPs, the test is more stringent, requiring coverage for the simultaneous default of the largest two participants and their affiliates.

A CCP is required to conduct regular stress tests to verify the adequacy of its pre-funded financial resources; this includes testing the adequacy of its liquidity arrangements. ASX Clear and ASX Clear (Futures) also use daily stress testing to calculate requirements for additional initial margin, which they collect to cover large and concentrated exposures. In order to ensure that stress tests remain appropriate, ASX reviews its set of stress scenarios on a monthly basis by using forward-looking and current market indicators. In addition, ASX performs monthly 'reverse stress tests' to identify scenarios in

which its financial resources would be exhausted. This involves varying the assumed magnitude and direction of both shocks and participant positions, as well as the number of participant defaults assumed.

In line with a Reserve Bank recommendation, in 2014/15 ASX's capital and liquidity stress test models were subject to a full evaluation by an external expert. ASX's approach was found to be broadly comparable to that of its peers, but ASX has implemented a number of changes to bring it closer into line with international best practice as identified by the benchmarking study. In particular, ASX has extended its holding period for exchange-traded products from one day to a minimum of three days and introduced a series of forward-looking hypothetical scenarios motivated by external 'macro' events, such as shocks stemming from natural disasters, collapses in commodity prices or offshore sovereign defaults. These changes are part of a first phase of enhancements to ASX's stress testing. A second phase will be partly dependent on any additional guidance coming out of the international stocktake of existing measures for CCP resilience, including stress testing (see 'Developments in the Financial System Architecture' chapter). ❖

Box C

The Regulatory Capital Framework for Residential Mortgages

Simply put, a bank's capital represents its ability to absorb losses. To promote banking system resilience, regulators specify the minimum amount of capital that banks should allocate against various risks. Of particular importance is the amount of capital allocated against credit risk – the risk that borrowers will not repay their debt obligations – as this is typically the main risk that commercial banks assume. From mid 2016, the Australian Prudential Regulation Authority (APRA) will require some banks to increase the capital that they allocate against credit risk in their residential mortgage exposures. This box outlines the regulatory capital framework in Australia in order to provide some context for this recent decision.

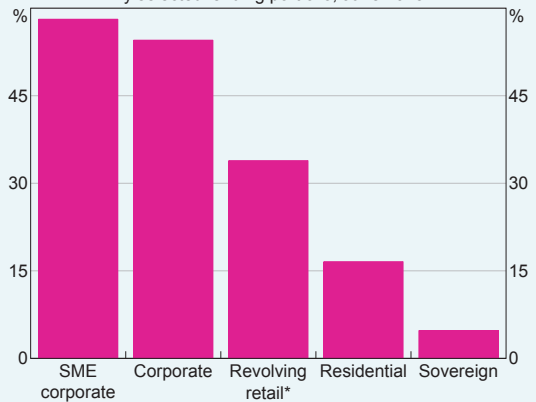
The framework for credit risk requires banks to determine the capital that they need to allocate against their credit exposures by assigning each exposure a 'risk weight' that reflects the potential for unexpected losses.¹ For instance, a risk weight of 25 per cent on a \$100 loan equates to a risk-adjusted exposure of \$25, so a bank would need to allocate \$2.50 in capital to achieve a capital ratio of 10 per cent of risk-weighted assets.² Average risk weights can differ significantly across classes of credit exposures: for example, most corporate lending exposures attract risk weights that are well above those on most residential mortgages (Graph C1).

In Australia, the four major banks and Macquarie Bank are approved to use the internal ratings-based (IRB) approach to credit risk, whereby they

1 Technically speaking, capital is required to cover unexpected losses up to a 99.9 per cent level of confidence. A bank's expected losses should be covered by its credit provisions.

2 A capital ratio of 10 per cent is used here for illustration. Required regulatory capital ratios are somewhat higher than this, although they may be lowered by supervisors in stressed conditions.

Graph C1
Major Banks' Average IRB Risk Weights
By selected lending portfolio, June 2015



* Excludes retail SME
Sources: APRA; RBA

use internal models accredited by APRA to derive the risk weights on their credit exposures. All other authorised deposit-taking institutions (ADIs) currently use the standardised approach, where the risk weights are prescribed by APRA. The set of prudential standards for both of these approaches in Australia are consistent with the international capital standards issued by the Basel Committee on Banking Supervision (BCBS).

Internal Ratings-based Approach

The IRB approach to measuring credit risk was a centrepiece of the international Basel II capital framework that was implemented in Australia in 2008. Its aim was to enable banks to more accurately estimate the risk of their credit exposures using their own data and experience, and to ensure that

capital varies according to changes in measured risk over time.³

Under the IRB approach, the risk weight for each type of credit exposure is based on an estimated probability distribution of credit losses. The shape of this distribution is affected by the following key inputs:

- the effective maturity (M)
- the probability of default (PD) – the risk of borrower default in the course of a year
- the exposure at default (EAD) – the amount outstanding if the borrower defaults
- the loss given default (LGD) – the percentage of the exposure that the bank would lose if the borrower defaults.

Banks typically estimate these inputs internally after rating their exposures according to a number of risk characteristics – hence the term ‘internal ratings-based’ approach.⁴ For instance, a mortgage for a borrower that has a poor repayment history and a high loan-to-valuation ratio (LVR) may be assigned a relatively weak rating and a higher estimated PD and LGD; differences in the composition of mortgage types is one reason why risk weights vary between IRB banks.

An additional input, a ‘correlation factor’, is specified by APRA for each broad type of credit portfolio. The correlation factor can be thought of as the dependence of exposures within a portfolio on the general state of the economy.

Although IRB banks largely determine the risk weights on their credit exposures using their

internal models, supervisors play an important role in reviewing and approving the modelling approach. Indeed, APRA grants approval to use the IRB approach only after a bank has met strict governance and risk modelling criteria. Purely statistical models or other mechanical methods are not acceptable, and banks must have policies detailing how judgement and model results should be combined. Model outputs also need to be supplemented with insights from stress tests.

In addition to overseeing banks’ internal modelling processes, national supervisors may use discretion under the Basel II framework to require banks to maintain capital above the international minimum for a particular exposure class, as circumstances can differ materially between jurisdictions. The residential mortgage asset class is one area where APRA has adopted a more conservative local stance than the minimum requirements set out in the Basel II framework. Specifically, in 2008 APRA set a ‘floor’ of 20 per cent on the LGD for residential mortgage exposures, rather than the 10 per cent floor prescribed by the BCBS. The higher floor was judged necessary in the Australian context to guard against banks underestimating the losses on their mortgage portfolio in a downturn. There are no historical data that cover a severe loss episode, because there has not been a major housing downturn in Australia since the 1890s.⁵

In recent years, some national regulators have made adjustments to the IRB approach for residential mortgages in response to concerns that modelling practices were not adequately capturing the full range of risks. In particular:

- Hong Kong introduced a 15 per cent risk weight floor
- Sweden introduced a 25 per cent risk weight floor
- Norway introduced a 20 per cent LGD floor

3 The IRB Basel II framework was also a way of addressing incentives for capital arbitrage that had become apparent under the simple Basel I framework – that is, the incentive to accumulate assets in areas where risks were under-recognised in the previous capital framework. See Ingves S (2013), ‘Strengthening Bank Capital – Basel III and Beyond’, address to the Ninth High Level Meeting for the Middle East & North Africa Region, Abu Dhabi, 18 November.

4 For non-retail exposures, such as corporate lending, there are two tiers within the IRB framework: ‘advanced’ IRB banks have supervisory approval to model the PD, EAD, LGD and M parameters, whereas ‘foundation’ IRB banks must use supervisor-specified estimates for LGD and EAD. Currently Macquarie Bank is a foundation bank whereas the four major banks are all advanced banks.

5 See Stapledon N (2012), ‘Trends and Cycles in Sydney and Melbourne House Prices from 1880 to 2011’, *Australian Economic History Review*, 52(3), pp 293–317.

- New Zealand increased the correlation factor for loans with high LVRs.

Standardised Approach

Relative to the IRB approach, the standardised approach is a simpler way of measuring credit risk and determining minimum capital requirements. Risk weights are prescribed by supervisors based on some observable risk characteristics. For residential mortgage exposures, risk weights in Australia are based on:

- the loan-to-valuation ratio
- whether the loan is standard or non-standard (e.g. loans with low documentation)
- whether the loan is covered by lenders mortgage insurance (LMI).

Depending on the mix of characteristics, residential mortgage exposures can attract a risk weight of 35, 50, 75 or 100 per cent (Table C1). APRA's prudential standard applies more risk-sensitive prudential criteria than in some jurisdictions, which typically impose risk weights of 35 per cent for loans with an LVR of less than 80 per cent.

The standardised approach is not as risk-sensitive as the IRB approach for residential mortgages in Australia. One consequence is that certain mortgage exposures with the same risk profile can attract a different risk weight (and hence capital requirement) under the IRB approach than the standardised approach. In practice, risk weights tend to be lower under the IRB approach, although APRA's adjustments to the Basel II framework have reduced the difference somewhat. The difference in average risk weights between the two approaches provides an incentive for banks to invest in developing and maintaining the models and risk management processes required to achieve IRB accreditation;⁶ a number of smaller banks are currently progressing towards meeting the necessary criteria.

Recent Developments

In July APRA announced an increase in capital requirements for Australian residential mortgage exposures under the IRB approach. The increase will be implemented via an adjustment to the correlation factor prescribed by APRA. The average risk weight of residential mortgage exposures using

Table C1: Mortgage Risk-weights Under the Standardised Approach to Credit Risk
Per cent

LVR	Standard loans		Non-standard loans	
	With LMI ^(a)	Without LMI	With LMI ^(a)	Without LMI
0–60	35	35	35	50
60.01–80	35	35	50	75
80.01–90	35	50	75	100
90.01–100	50	75	75	100
> 100.01	75	100	100	100

(a) A minimum of 40 per cent of the original loan amount must be insured
Source: APRA

⁶ The standardised and IRB credit risk-weights are not directly comparable for a given product. First, ADIs that use the standardised approach tend to be relatively undiversified across geographies and products, as well as have greater business/strategic and credit concentration risks than the larger, more diversified banks using the IRB approach. Second, IRB banks are subject to other capital requirements that are not applied to standardised banks, including for interest rate risk in the banking book. See APRA (2014), *Submission to the Financial System Inquiry*, p 75.

the IRB approach will increase to at least 25 per cent by mid 2016, from an average of around 17 per cent at the end of June 2015. By comparison, the average risk weight for residential mortgage exposures under the standardised approach was around 40 per cent.

The increase in IRB mortgage risk weights addresses a recommendation of the 2014 Financial System Inquiry that APRA raise the average IRB mortgage risk weight to narrow the difference between average mortgage risk weights for banks using the IRB approach and those using the standardised approach. The increase is also consistent with the direction of work being undertaken by the BCBS on changes to the global capital adequacy framework for credit risk.

The increase in IRB mortgage risk weights in Australia is an interim measure. The final calibration between the IRB and standardised mortgage risk weights will not be finalised until the BCBS' broader reviews of these frameworks are completed. ❖

4. Developments in the Financial System Architecture

International regulatory reform efforts continue to focus on finalising and implementing post-crisis reforms, while remaining attentive to potential new and evolving risks. Work is ongoing across the four core reform areas identified following the financial crisis: addressing ‘too big to fail’; responding to shadow banking risks; making derivatives markets safer; and building resilient financial institutions. Attention has increased more recently on areas such as potential risks stemming from asset management activities and reduced market liquidity, as well as market misconduct and the increasing importance of central counterparties (CCPs) to the financial system.

Domestically, in line with recommendations by the Financial System Inquiry (FSI) for the banking sector, the Australian Prudential Regulation Authority (APRA) has taken steps to narrow the competitiveness gap between banks vis-à-vis their capital requirements for mortgages and, more generally, to increase their resilience. Separately, authorities continued to work on implementing internationally agreed reforms, particularly in the area of over-the-counter (OTC) derivatives markets.

International Regulatory Developments and Australia

Addressing ‘too big to fail’

One major element of the G20’s post-crisis financial reform agenda has been to address the moral hazard and financial stability risks posed by ‘too big to fail’ or systemically important financial institutions (SIFIs).

Policy development in this area has focused on strengthening resolution frameworks for SIFIs as well as enhancing their supervision and resilience.

As discussed in the previous *Review*, a particular focus recently has been to develop a proposal for total loss-absorption capacity (TLAC) requirements for global systemically important banks (G-SIBs). This additional loss absorbency is intended to ensure that G-SIBs can be resolved in an orderly way that avoids using taxpayer funds for recapitalisation and limits the effect of failure on financial stability. The TLAC proposal aims to achieve these goals, in part, by allowing eligible debt instruments that can be ‘bailed-in’ (i.e. written down or converted into equity) to count towards the requirement, in addition to regulatory capital instruments. The Financial Stability Board (FSB) will present a final TLAC proposal to the G20 Leaders’ Summit in November, taking into account feedback on a consultative proposal released in late 2014, as well as the results of a recent quantitative impact study.

While no Australian banks are directly captured by this proposal (as they are not G-SIBs), it is relevant for Australia because the final requirements will shape bank resolution frameworks, capital structures and funding markets internationally. Moreover, the FSI recommended that APRA should develop a framework for minimum loss-absorbing and recapitalisation capacity for Australian banks in line with emerging international practice. The Bank and other Council of Financial Regulators (CFR) agencies have maintained a close interest in the development of this international standard through

their membership of the bodies, such as the FSB and the Basel Committee on Banking Supervision (BCBS), where these discussions are taking place.

The orderly resolution of large, complex banks with cross-border operations is another ongoing issue being considered by the G20 and the FSB. Following an earlier consultation process, the FSB will publish guidance later this year on the effectiveness of cross-border recognition of resolution actions, including bail-in and temporary stays on financial contracts. The motivation of this work is that, unless resolution measures taken by one jurisdiction are recognised promptly by other jurisdictions, authorities are likely to face obstacles in implementing effective group-wide resolution plans. In 2014, the International Swaps and Derivatives Association (ISDA), in coordination with the FSB, developed a contractual solution (known as the 'ISDA 2014 Resolution Stay Protocol') to help prevent cross-border OTC derivatives contracts from being terminated disruptively in the event of a foreign counterparty entering resolution. Parties that adhere to the protocol agree to 'opt in' to laws that govern temporary stays in jurisdictions that are identified under the protocol. Legislative proposals are currently being developed in Australia to provide for a temporary stay regime that would be eligible to be identified under the protocol.

Work also continues on the implementation of previously agreed reforms to improve resolution frameworks. In April, the FSB launched the second peer review of implementation of its *Key Attributes of Effective Resolution Regimes for Financial Institutions (Key Attributes)*. This review is focusing on the banking sector resolution powers available to authorities, and countries' progress in implementing recovery and resolution plans for domestic banks that could be systemic if they failed. Australia is participating in the review and the findings will be published in early 2016.

In May, the FSB published the findings of a thematic peer review on supervisory frameworks and approaches for systemically important banks,

which highlighted the role that effective supervision plays in reducing moral hazard. The review found that national authorities had significantly enhanced their supervisory frameworks since the financial crisis, and recommended that supervisors strengthen cross-border cooperation, develop clear and transparent supervisory priorities and increase engagement with banks, particularly at the board level.

While much of the post-crisis regulatory focus on SIFIs has been on bank resilience and resolution, work also continues on addressing risks posed by systemically important non-bank entities. In particular:

- Following a consultation earlier in the year, in October, the International Association of Insurance Supervisors (IAIS) released the first version of the higher loss absorption (HLA) requirement for global systemically important insurers (G-SIIs). Under the HLA requirement G-SIIs will need to hold additional capital on top of a 'basic capital requirement'. The HLA requirement, expected to be endorsed by G20 Leaders in November, will be further reviewed by the IAIS, and refined where necessary, before it comes into effect for G-SIIs from 2019.
- Earlier this year, the FSB and International Organization of Securities Commissions (IOSCO) received responses to their second consultation paper on methodologies for identifying non-bank non-insurer global SIFIs such as broker-dealers, investment funds and asset managers. The FSB announced in July that it has decided to delay finalisation of these methodologies until its current work on potential risks from asset management activities is completed, which is likely to be in the first half of 2016 (discussed further below).
- Several international bodies have developed a workplan to promote CCP resilience, recovery planning and resolvability (see below).

Domestically, CFR agencies continued to collaborate on strengthening Australia's resolution and crisis management arrangements.

- Work is underway to prepare legislative reforms that will include updated proposals to strengthen APRA's crisis management powers and introduce a resolution regime for financial market infrastructures (FMIs), broadly in line with the *Key Attributes*. The latter follows a government consultation on FMI resolution regimes earlier in the year.
- In June, CFR agencies participated in a targeted crisis simulation exercise to test aspects of the crisis management framework, particularly those relating to inter-agency and external communication, and determine the scope for further refinements.

In a related development, the government announced in September that, consistent with an FSI recommendation, the existing post-funding basis of the Financial Claims Scheme will be maintained. As such, the proposals of the previous government for an ex-ante levy on authorised deposit-taking institutions (ADIs) and a Financial Stability Fund will now not proceed.

Shadow banking

International bodies and national regulators continue to address the risks posed by shadow banking entities and activities that are more lightly regulated than the banking sector. With many of the post-crisis shadow banking reforms finalised, focus has shifted to implementation monitoring. In September, IOSCO published the results of peer reviews on money market funds (MMFs) and securitisation.

- The peer review on MMFs assessed the implementation of IOSCO's 2012 recommendations, which sought to introduce common standards for the regulation of MMFs, including for these funds' valuation methods, liquidity management and disclosures. In doing so, the reforms aimed to address the investor run risk faced by some MMFs. The peer review

found that jurisdictions had made progress in adopting the reforms, particularly countries with large MMF sectors, such as the United States. However, liquidity management and fund valuation policies were highlighted as areas where further work was needed in a number of jurisdictions. The Australian Securities and Investments Commission (ASIC) is currently working with the Financial Services Council to develop a set of industry standards addressing several IOSCO recommendations relevant to the Australian market.

- The securitisation peer review assessed the adoption of IOSCO's recommendations, also released in 2012, relating to aligning the incentives of investors and securitisers in the securitisation process, including, where appropriate, through mandating retention of risk in securitisation products. The peer review noted that several countries had fully implemented the reforms, but a number of others, including the United States and some European countries, were yet to complete them. The report suggested that potential issues arising from cross-border differences in incentive regimes were yet to be addressed and that jurisdictions had a wide variety of exemptions that may need to be assessed in future reviews.
- In a related development, in July, the BCBS and IOSCO finalised criteria for identifying 'simple, transparent and comparable' securitisations. These criteria are intended to help investors and other transaction parties evaluate the relative risks of similar securitisation products. Currently, they only serve as a guide and have no regulatory implications; however, the BCBS is considering options for incorporating the criteria into its capital framework for securitisation.
- In Australia, APRA is expected to release in coming months its revised ADI prudential standard for securitisation, taking into account submissions on its 2014 proposals to simplify the regulatory framework for securitisation.

An FSB peer review is currently underway on countries' implementation of its policy framework for shadow banking entities (other than MMFs). The Bank coordinated with the other CFR agencies on preparing Australia's input for the review, and a senior officer from the Bank is on the peer review team. Preliminary findings of the peer review are to be presented to the G20 Summit, with the report to be released in early 2016.

In addition to this implementation monitoring, the FSB and BCBS are continuing to work on aspects of the regulation of securities financing transactions (SFTs), given the scope for procyclicality and leverage in SFT markets:

- The BCBS is currently working to incorporate the FSB's previously released haircut framework for bank-to-non-bank SFTs into the Basel capital framework.
- The FSB will soon publish the approach for applying its framework of numerical haircut floors for non-bank-to-non-bank SFTs, to address excessive leverage in these transactions.
- By the end of 2015, the FSB is expected to finalise a new data collection standard for SFTs, which jurisdictions will be expected to implement.

Meeting one of the FSB's SFT recommendations, the Bank recently consulted on the case for central clearing in the domestic repo market. The Bank is currently finalising a response paper, taking into consideration submissions received on the consultation paper.

OTC derivatives markets reform

In the most recent progress report on the G20 OTC derivatives market reforms, released in July, the FSB found that the implementation of central clearing of standardised OTC derivatives continues to be uneven across jurisdictions. In recent months, Australian authorities have made significant progress in implementing this aspect of the reforms. Following an earlier consultation, in September, the government issued a determination imposing mandatory central clearing obligations for internationally active dealers in Australian dollar-,

US dollar-, euro-, British pound- and Japanese yen-denominated interest rate derivatives. ASIC is expected to soon make Derivative Transaction Rules (Clearing), which will set out the details of the requirements and the effective date.

Australian regulators also continue to make progress in establishing cooperative arrangements with overseas authorities to support the rollout of regulatory reforms in OTC derivatives markets and the regulation of cross-border FMIs:

- A Memorandum of Understanding between the Bank and the Monetary Authority of Singapore was signed in April to gain access to the data of DTCC Data Repository (Singapore), the only trade repository licensed in Australia.
- The European Securities and Markets Authority announced in April that ASX Clear (Futures) and ASX Clear were in the first group of non-EU CCPs to be recognised under the European Markets Infrastructure Regulation.
- In August, ASX Clear (Futures) was granted a permanent exemption from registration as a Derivatives Clearing Organisation in the United States, the first CCP globally to be granted such an exemption.

As reported in the previous *Review*, the international regulatory community has been working to overcome legal and other barriers to the reporting, sharing and aggregation of key information from trade repositories. The FSB will soon publish a peer review report on these issues. In particular, the report will include an agreed timeline for addressing these challenges. Separately, the Committee on Payments and Market Infrastructures (CPMI) and IOSCO are in the process of developing detailed guidance on the form of key data elements, which will facilitate the aggregation of data across trade repositories.

FMI regulation

CPMI and IOSCO continue to monitor the implementation of the *Principles for Financial Market Infrastructures* (PFMI), the international standards for CCPs and other types of FMIs. As part

of this, a detailed assessment of the consistency of Australia's framework is currently in progress. Also, a peer review is assessing the extent to which authorities in member jurisdictions are observing the parts of the PFMI that relate to their roles as regulators and supervisors of FMIs. Both assessments are expected to be published by the end of 2015. In July, CPMI and IOSCO announced that they have also commenced assessing the consistency in outcomes achieved by FMIs' implementation of the PFMI, beginning with an assessment of derivatives CCPs' financial risk management. The scope of this review includes ASX Clear (Futures) and both the overseas CCPs licensed to clear OTC derivatives in Australia.

Given the growing use of CCPs, a workplan has been developed by the FSB, the BCBS, CPMI and IOSCO to promote CCP resilience, recovery planning and resolvability. The key elements of the workplan, which extends into 2016, include:

- conducting a stocktake of existing measures for CCP resilience and recovery planning to inform whether additional guidance to the international standards in these areas is needed;
- reviewing existing CCP resolution regimes and resolution-planning arrangements, and considering whether there is a need for more detailed standards or for additional pre-funded financial resources in resolution; and
- analysing the interconnections between CCPs and the banks that are their clearing members, and potential channels for transmission of risk.

In September, the four bodies noted above published a report outlining progress on the workplan. CPMI and IOSCO are in the process of analysing responses to a series of surveys conducted as part of the stocktake on CCP resilience and recovery planning. On the basis of a survey of authorities, the FSB concluded that CCP resolution planning regimes are currently not well developed. As a result, the FSB has established a cross-border crisis management group for FMIs. The group's initial focus will be on resolution planning for CCPs.

Building resilient financial institutions

With most of the post-crisis reforms aimed at building resilient financial institutions completed, work in this area continues to focus on implementation and on largely technical improvements to the Basel III capital framework. Work is progressing on the policy measures identified in the November 2014 report to the G20 addressing the excessive variability in banks' risk-weighted assets (RWAs); for example, in April, the BCBS published a list of national discretions it intends to remove from the capital framework to enhance comparability across jurisdictions and reduce variability in RWAs.

The BCBS has released consultation documents on two other areas of policy development:

- In June, the BCBS consulted on its review of the regulatory treatment of interest rate risk in the banking book, which is intended to replace the BCBS' 2004 *Principles for the Management and Supervision of Interest Rate Risk*. The consultation document proposed two approaches for the capital treatment: a minimum requirement and an approach based on supervisory review. The latter approach requires quantitative disclosure based on the proposed minimum requirement, but at the same time accommodates differing market conditions and risk management practices across jurisdictions. This consultation ended in September.
- In July, the BCBS issued its proposed Credit Valuation Adjustment (CVA) risk framework. Under the proposal, banks will be required to hold capital against potential future changes in the CVA, which is essentially an adjustment made to the price of derivative instruments to account for the credit risk of the counterparty. The consultation period ended in early October.

As discussed in 'The Australian Financial System' chapter, APRA has recently taken steps that improve the resilience of Australian banks. In July, APRA responded to the FSI recommendation to ensure Australian banks' capital ratios are 'unquestionably strong' and published the results of an international

capital comparison study. Overall, the study found that the Australian major banks are well capitalised, though not in the top quartile of international peers. Soon after this, APRA also announced an increase in average residential mortgage risk weights for the currently five banks using the internal ratings-based (IRB) approach to credit risk. This announcement is consistent with the BCBS work aimed at reducing the excessive variability in banks' RWAs, and also addresses the FSI's recommendation to narrow the difference between the mortgage risk weights of IRB banks and banks using the standardised approach.

Identifying and monitoring new and evolving risks

Two areas identified as new and evolving financial stability risks have been a focus of G20/FSB efforts in recent months: asset management activities and market misconduct.

Consistent with the G20/FSB's interest in financial stability risks arising from shadow banking, international attention on the risks posed by asset managers has increased, given the growing size of the funds they manage and their potential to exacerbate movements in financial markets where underlying liquidity has reduced.¹ The work is evaluating the role that existing or additional activity-based policy measures could play in mitigating potential risks. This work is being undertaken by two FSB committees: the Standing Committee on Assessment of Vulnerabilities, of which the Reserve Bank Governor became chair in April; and the Standing Committee on Supervisory and Regulatory Cooperation. The FSB Plenary meeting in late September discussed the work on asset management activities, calling attention to elevated near-term risks, and encouraging appropriate use of stress testing by funds to assess their ability individually and collectively to meet redemptions under difficult market liquidity

conditions. Following a review of the initial work on the structural vulnerabilities in the asset management sector, areas for further analysis were identified, including: (i) mismatch between liquidity of fund investments and redemption terms and conditions for fund units; (ii) leverage within investment funds; (iii) operational risk and challenges in transferring investment mandates in a stressed environment; (iv) securities lending activities of asset managers and funds; and (v) potential vulnerabilities of pension funds and sovereign wealth funds. The FSB, jointly with IOSCO, will continue to conduct further analysis in these areas, and, as necessary, develop policy recommendations in the first half of 2016.

The G20 has increased its focus on misconduct risk given the potential for it to create systemic risks by undermining trust in financial institutions and markets. The FSB is currently following a workplan to address misconduct risks which focuses on corporate governance, financial benchmarks and enforcement of existing misconduct reforms. It also addresses the unintended consequences from prior reforms of the potential withdrawal from correspondent banking in response to rising compliance costs of anti-money laundering and other regulations and reputational risks. Several international bodies released reports in the market misconduct area in recent months.

- In June, IOSCO released a report identifying credible strategies for deterring market misconduct. The report identifies a number of factors as helpful in preventing misconduct, including swift investigation of offences, public communication, cross-country cooperation, proportionate sanctions, and enhancing the quality of legal and regulatory frameworks to provide legal certainty.
- In July, the BCBS issued revised corporate governance principles for banks. The revised principles place particular emphasis on risk governance in promoting the sound functioning of banks. They provide guidance to boards and others in risk management roles

¹ For more information about asset management, see Price F and C Schwartz (2015), 'Recent Developments in Asset Management', *RBA Bulletin*, June, pp 69–78.

on implementing effective risk management systems, and highlight the importance of compensation arrangements in communicating a bank's risk culture.

- In July, the FSB also published its interim report on the implementation of recommendations regarding major interest rate benchmarks. The report found that administrators of major benchmarks had made significant progress in reforming benchmarks, including by conducting reviews of methodologies and definitions, and increasing data collection. Market participants from countries without major benchmarks have also taken steps to reform rates in their own jurisdictions. And in early October, the FSB released a progress report on implementation of its 2014 recommendations for reforms to foreign exchange benchmarks. The report drew on assessments of market participants' progress, which were undertaken by the main foreign exchange committees as well as by central banks in other large foreign exchange centres. The report, the preparation of which was led by the Bank's Assistant Governor (Financial Markets), found that good progress had been made overall in implementing the recommendations. The Assistant Governor also chairs a working group set up by the Bank for International Settlements to establish a single global code of conduct for the foreign exchange market and to encourage greater adherence to the code.
- In Australia, ASIC released a report in July which outlined the importance of financial benchmarks and provided recommendations to help market participants avoid financial benchmark-related conduct issues. Key recommendations in the report were: dealers should review their past conduct, report misconduct and review internal oversight, culture and incentive arrangements to ensure they fully address conduct risk; benchmark administrators are encouraged to adopt IOSCO's *Principles for Financial Benchmarks* and publish self-assessments against those principles; and wealth managers and other clients should understand how dealers handle

their orders and information and how they have done so in the past. Relatedly, the Bank has been promoting industry discussions to improve the functioning of interest rate benchmarks in Australia.

In line with a request from the G20, the FSB is also conducting work on climate change and the financial sector. In September, the FSB hosted a meeting of public sector and private sector participants to consider the implications of climate-related issues for the financial sector, with a focus on any financial stability issues that might emerge. The meeting discussed possible financial stability risks and mitigants, such as encouraging disclosure and exploring stress testing. The FSB is to report to the G20 on potential follow-up work that would complement existing industry initiatives.

Other Domestic Developments

As discussed in the previous *Review*, following the Final Report of the FSI, the Bank's Payments System Board (PSB) commenced a review of the framework for the regulation of card payments with the publication of an Issues Paper in March 2015. This review was flagged in the Bank's March 2014 submission to the FSI, when the Bank noted that it would be reviewing aspects of the regulation of card payments, including interchange fee arrangements, the regulatory treatment of 'companion' card issuance and surcharging. The broad direction of the review received support from the FSI Final Report, which also recommended several areas for the PSB to consider further reform. In August, the PSB asked Bank staff to liaise with industry participants on the possible designation of certain card systems, including the bank-issued American Express companion card system, the Debit MasterCard system and the eftpos, MasterCard and Visa prepaid card systems. Following this liaison, the Bank designated these systems. Designation does not impose regulation; rather, it is the first of a number of steps the Bank must take to exercise any of its regulatory powers. ✎

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