

Financial Stability Review

APRIL 2016

Contents

Overview	1
1. The Global Financial Environment	3
Box A: Asset Performance in the Chinese Banking Sector	17
2. Household and Business Finances	21
Box B: Chinese Demand for Australian Property	30
3. The Australian Financial System	33
Box C: The Countercyclical Capital Buffer	46
Box D: Trade Compression	49
4. Developments in the Financial System Architecture	51
Copyright and Disclaimer Notices	61

Reserve Bank

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Financial Stability Review enquiries

Information Department
Telephone: +61 2 9551 9830
Facsimile: +61 2 9551 8033
Email: rbainfo@rba.gov.au

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Overview

Developments since the previous *Financial Stability Review* have increased attention on global risks, with much of the focus on the outlook for emerging market economies. In China, the slowing pace of economic growth, the large run-up in debt financed from both the bank and non-bank sectors, and deteriorating loan quality have prompted concerns over downside risks to its financial system. While the authorities still have significant scope to address the various challenges – including a high level of foreign reserves – there are tensions in balancing short-term stability with longer-term policy objectives. To varying degrees, other emerging economies also face financial challenges in the lower-growth environment, especially those most exposed to the large declines in global commodity prices over recent years and where corporate sector leverage has increased more quickly.

Risks remain elevated in the financial systems of some advanced economies. The prospects for banking systems have been marked down in Japan and Europe, reflecting various combinations of a slow pace of economic growth, weak bank profitability and a high level of non-performing loans. The Federal Reserve began raising the federal funds rate in December, but the pace of normalisation remains uncertain. In the context of the global ‘search for yield’ activity seen in recent years, these uncertainties in advanced and emerging markets create a risk of a disruptive fall in asset prices. Financial markets have seen further bouts of volatility.

Nonetheless, to date, none of these external developments has significantly affected Australia’s financial system. While spreads on external

wholesale funding have increased a little, overall yields remain low relative to their history and banks have retained access to global funding markets. Australian banks’ exposures to China are small and mainly trade related, and the major banks are in the process of pulling back on some of their foreign exposures in Asia and Europe as they move to reduce lower-return lending. However, risks remain more prominent in their exposures to the housing and dairy sectors in New Zealand. More broadly, the ongoing low-growth environment, despite near and sub-zero policy interest rates in much of the world, suggests that a large global shock could be difficult for overseas policymakers to address, which could have spillover effects on the Australian economy.

Over the past six months, domestic financial risks have shifted from housing lending towards lending for residential development and some other commercial property markets, and there are ongoing concerns associated with the challenges in the resource-related sector. The actions of the regulators since late 2014 have helped induce a tightening of authorised deposit-taking institutions’ (ADIs) housing lending standards, and housing market conditions have moderated since the previous *Review*. In particular, the share of high loan-to-valuation lending has taken a noticeable step down and tighter serviceability metrics have reduced maximum loan sizes. ADIs have also increased advertised interest rates for investor loans relative to owner-occupier loans, while providing larger discounts for some owner-occupier lending. These developments have contributed

to a moderation in the pace of investor credit growth, though the effect on growth of overall housing credit has been largely offset by a pick-up in owner-occupier lending. While the household debt-to-income ratio has increased a little further, mortgage buffers in offset and redraw facilities are rising strongly, which helps to mitigate any associated risks.

While these developments have generally enhanced resilience in the household sector, the tighter access to credit for households could pose near-term challenges in some medium- and high-density construction markets given the large volume of building activity that was started several years ago. These apartments are popular with investors and foreign buyers and any concerns over settlement risk and/or a slowdown in demand for Australian-located property by Chinese and other Asian residents could lead to difficulties for particular projects, though there is little evidence of either occurring so far. Risks seem greatest in the inner-city areas of Melbourne and Brisbane, where new supply is most geographically concentrated, and increasingly in Perth.

Some other commercial property markets are also adjusting with a lag to a slowing in demand. This is most noticeable for office buildings in the resource-intensive states, where vacancy rates remain very high as further supply continues to come on line. More broadly, commercial property yields have compressed across a range of market segments and there are some questions over their sustainability at these levels once global interest rates normalise. In the rest of the business sector, the balance sheets of resource-related companies have come under strain following the large falls in global commodity prices over recent years and interest payments are taking an increasing share of earnings for the smaller producers and mining-related services firms. In contrast, the non-resources business sector shows little sign of financial difficulties.

None of these domestic risks appears to be enough on their own to seriously degrade the near-term

functioning of the domestic financial system, though they could exacerbate a major shock from elsewhere, such as a global economic downturn. In any case, Australian-based banks have taken further steps to increase their resilience to potential risks. As noted, ADIs have tightened their housing lending standards to align them with the prudential regulator's expectations. While lending to the commercial property sector by the Australian major and Asian banks has continued to rise, many ADIs have tightened lending standards in this area and have reportedly become quite cautious in lending to certain parts of the sector. Banks' non-performing loans remain low overall: while they have picked up for resource-related lending, banks' exposures to this sector and to mining services firms are small. That said, some foreign banks operating in Australia have much higher shares of their total lending to this sector. Bank profitability has also remained high and capital levels have increased substantially in the past year. Nonetheless, with banks now competing intensely for lending in a narrower range of markets, it will be important that their serviceability and other lending standards remain appropriate.

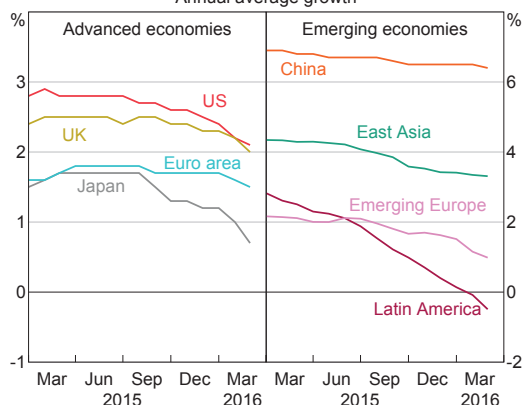
Domestic regulators continue to advance a number of policies, partly in response to the parts of the Basel III global capital framework that are expected to be finalised later this year. In recent months, the Australian Prudential Regulation Authority (APRA) announced the specifics of its countercyclical capital buffer policy (set initially at 0 per cent) and released its policy for banks' medium-term liquidity management for consultation. APRA will announce around the end of the year how an 'unquestionably strong' capital framework will be achieved. A range of policies are also being finalised in Australia and abroad that will affect major players within the financial system architecture. While these measures are expected to enhance financial stability over the medium term, it will be important to continue to monitor how they are affecting bank incentives and behaviour, as well as the interaction between banks and the broader financial system, in the period ahead. ✦

1. The Global Financial Environment

China and other emerging market economies remain an important locus of global financial stability risks, given the run-up in debt in the post-crisis period. In China, slowing economic growth has raised the possibility of a sharp increase in defaults, particularly in industries characterised by over-investment. Policy challenges facing the Chinese authorities have also become more evident, although the authorities have a range of tools available to maintain financial stability. In other emerging markets, the rise in corporate debt over recent years has added to financial risk, as slower growth, generally tighter financial conditions and, for some, lower commodity prices weigh on profits. Spillovers of weakness between emerging markets are an additional concern, given past examples where investor skittishness has quickly spread to other parts of the asset class. The main financial risks to the rest of the world from potential adverse developments in emerging markets are likely to be indirect, through channels such as trade volumes, commodity prices and sentiment in financial markets.

Financial markets have been volatile at times, driven by weaker growth outlooks, particularly among emerging economies (Graph 1.1), the commencement of 'lift-off' in the US federal funds rate while other major central banks have eased monetary policy further, and falls in oil prices. Around the beginning of 2016 equity prices fell and spreads on corporate bonds rose while sovereign bond yields declined (Graph 1.2). The currencies of a range of commodity exporters also depreciated further. However, these moves have been retraced somewhat over the past two months. Bank share

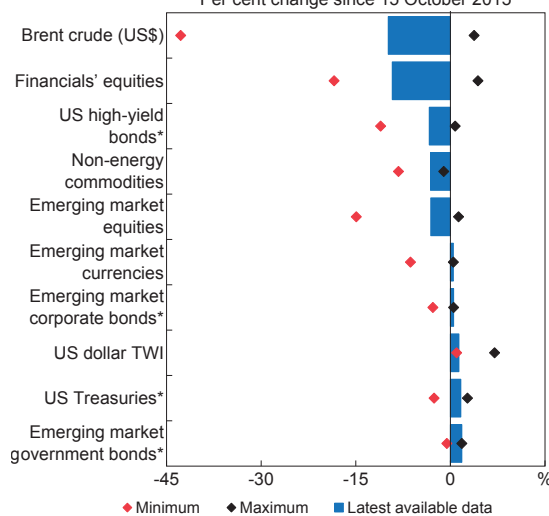
Graph 1.1
2016 GDP Forecasts
Annual average growth



Sources: Consensus Economics; RBA

Graph 1.2
Asset Prices

Per cent change since 15 October 2015



* Increase denotes lower yield

Sources: Bank of America Merrill Lynch; Bloomberg; RBA

prices in advanced economies have fallen sharply, particularly early in 2016. This has reflected concerns about the profitability outlook in a low-growth environment, including headwinds to earnings from flatter yield curves and negative interest rates in some markets, and deteriorating emerging market and energy sector credit exposures. In Europe, profitability concerns have been compounded by a persistent large stock of non-performing loans. Nonetheless, despite subdued profit growth, advanced economy banking systems have continued to increase capital ratios. In emerging markets, key banking indicators have generally remained sound, although there are pockets of weakness, and some banking systems will continue to face challenging operating environments in the period ahead.

Emerging Market Financial Systems¹

China

As noted in previous *Reviews*, risks in China have been building for some time. The large run-up in debt since the global financial crisis, accompanied by apparent over-investment in the real estate and industrial sectors, has raised the vulnerability of borrowers and lenders to the slower economic growth that is now occurring (Graph 1.3). While policymakers still have many levers to support growth and financial stability, investor perceptions of their effectiveness have been reassessed. This follows some policy actions since mid 2015 that were poorly received by markets, related to share market dynamics and renminbi (RMB) exchange rate flexibility, as well as a pick-up in capital outflows.

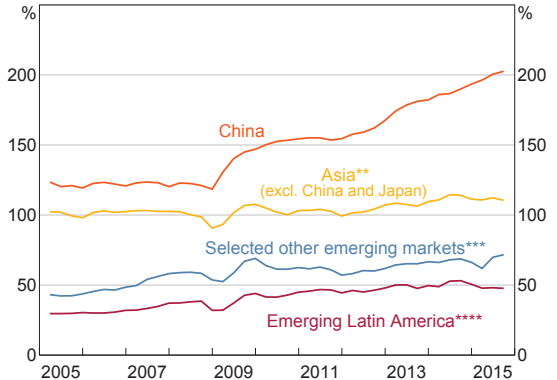
The high and rising level of debt in China has been concentrated among non-financial corporate borrowers, some of which are publicly owned (Graph 1.4). As overall growth has slowed, profits

¹ There are various definitions of emerging markets. The definition used in this section is based on the economies in the MSCI Emerging Markets Index. This includes countries such as South 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.

Graph 1.3

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; includes public-owned non-financial firms

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

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

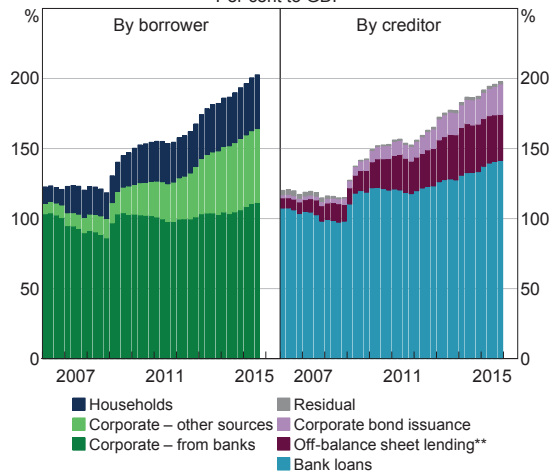
**** Argentina, Brazil and Mexico

Sources: BIS; CEIC Data; RBA; Thomson Reuters

Graph 1.4

China's Private Non-financial Debt*

Per cent to GDP



* Data in the left and right panels are sourced from various publications and so can sometimes diverge

** Entrusted loans, trust loans and bank-accepted bills

Sources: BIS; CEIC Data; PBC; RBA

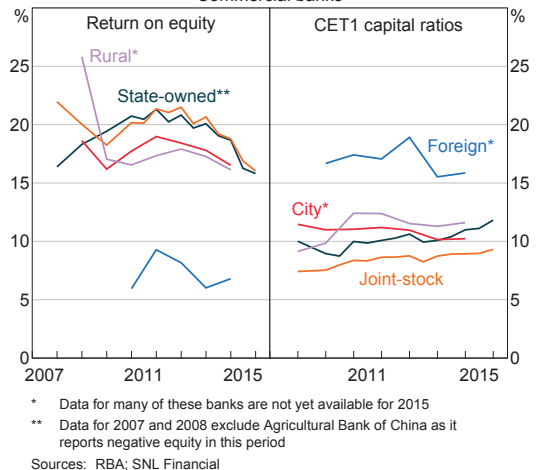
available to service and repay this debt have fallen in a number of sectors, particularly for firms exposed to the mining and real estate industries, which face additional headwinds from low commodity prices and the large stock of unsold homes. Sectoral data suggest that leverage in the construction industry

rose markedly post-crisis, while ongoing deflation in parts of the industrial sector could add to repayment challenges for these borrowers.

While much of the recent rise in corporate debt in China has been provided by the bond market and the shadow banking sector, the bulk of debt is financed by banks. The Chinese banking system continues to report solid profitability, although the recent slowing in economic growth has dampened profit growth as banks have increased loan-loss provisions and write-offs. While reported non-performing loans (NPLs) in aggregate remain low, they have risen over recent years and forward-looking indicators suggest that they are likely to increase further (see 'Box A: Asset Performance in the Chinese Banking Sector'). Looking ahead, the more challenging economic environment, particularly for the corporate sector, is expected to continue weighing on bank profitability, as reflected in some credit rating agencies' overall negative outlook for China's banking system. Some small- and medium-sized Chinese banks appear more vulnerable to adverse shocks than the larger state-owned banks, given their higher NPL ratios, weaker profitability, lower capital ratios, more concentrated regional exposures and greater use of short-term interbank funding (Graph 1.5).

The Chinese banking system as a whole reports adequate levels of capital, with the aggregate Common Equity Tier 1 (CET1) capital ratio stable at around 10 per cent over the first half of 2015. More recently, large Chinese banks' capital ratios were little changed in the six months to December 2015 at between 10 per cent and 13 per cent of risk-weighted assets, compared with the CET1 regulatory minima of 7.3 per cent and the global systemically important bank (G-SIB) surcharge of 1 per cent (where applicable). On the other hand, some smaller banks, most notably joint-stock banks, have CET1 capital ratios that exceed the regulatory minima by only a small margin. As of mid 2015, each of the five largest Chinese banks was reported to be compliant with the Liquidity Coverage Ratio (LCR) on a fully phased-in basis.

Graph 1.5
Chinese Banks' Capital and Profitability
Commercial banks



The less regulated shadow banking sector remains an important area where risks could emerge and potentially spread to the formal banking system. Growth in the measured shadow banking sector has slowed in recent years in response to government policy, but shadow banking still accounts for at least one-fifth, and possibly substantially more, of the stock of debt in China. These activities are considered to be a source of riskier loans for several reasons. As the lending is less regulated, it is not subject to a range of capital and provisioning requirements, and also attracts riskier borrowers that cannot access credit through the formal banking system. Many of the investment vehicles in this sector have maturity mismatches without formal access to liquidity support for the lender. Further, in some cases sponsoring banks have taken on the liabilities of distressed investment vehicles, reducing incentives for such vehicles to lend prudently.² The banking system as a whole appears equipped to absorb the initial effects of shocks arising from shadow banking activity, though some small- and medium-sized banks with large exposures to this sector may be less resilient, and

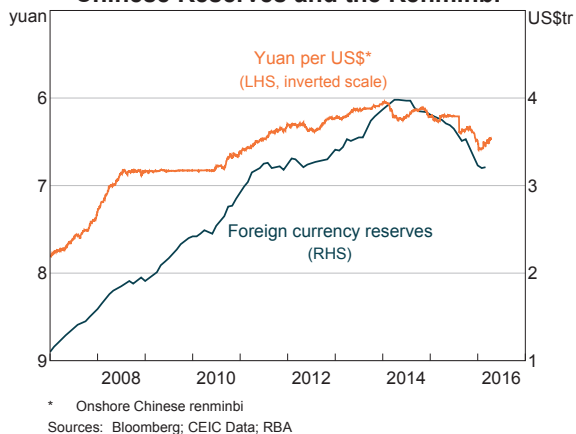
² For more information about investment vehicles in China, see Perry E and F Weltewitz (2015), 'Wealth Management Products in China', RBA Bulletin, June, pp 59–67.

stress in this sector could potentially give rise to unpredictable indirect or second-round effects.

Policy actions to address any building or manifested strains will be key. The authorities have taken steps towards financial liberalisation, which, in principle, suggests increased tolerance of financial institutions and investors bearing losses for poor investments. In the long term, this should promote more efficient allocation and pricing of funds through the financial system. But in the short term, it could give rise to added volatility and uncertainty that could amplify any macroeconomic slowdown. Accordingly, authorities may choose to prioritise near-term goals by promoting more debt-financed economic growth and bank forbearance of suspect exposures, though this path comes with longer-term risks to financial stability and growth.

Policy actions around the RMB and capital account are another important financial stability consideration. Market participants appear to have become less certain about the authorities' intentions for the RMB exchange rate, following the authorities' decision to allow it to be more market-determined. Accordingly, net capital outflow from China picked up in the second half of 2015, reflecting concerns about a possible depreciation of the RMB, with the authorities selling foreign exchange reserves to stabilise the currency (Graph 1.6). While reserve levels are still substantial, and recent statements suggest that the Chinese authorities do not consider the RMB to be overvalued, some market participants have focused on the risk that net capital outflow increases to the point where the Chinese authorities are pressured to allow the RMB to depreciate more quickly. If this occurred it could prompt a loss of public confidence in the authorities. While the stock of foreign currency corporate debt in China is relatively small at less than 10 per cent of annual GDP, and is often naturally hedged, there are likely to be some pockets of vulnerability; in particular, the real estate sector has sizeable foreign currency borrowings yet has limited foreign currency revenues.

Graph 1.6
Chinese Reserves and the Renminbi



Although net capital outflows have historically been strongly associated with financial crises in emerging markets, there are several factors that make this less of an issue in China. China's debt is largely domestic, and the vast bulk of foreign capital in China is direct investment, rather than more mobile forms of capital, which lowers the probability of foreign capital flight. Indeed, net capital outflows to date have been mainly driven by Chinese residents paying down their foreign currency debt, as well as a fall in offshore renminbi deposits. China's foreign currency reserves also far exceed its foreign currency debt exposure, and the authorities have extensive capital controls that can be, and reportedly have been in some instances, more rigorously enforced or tightened. Nonetheless, it is unclear how effective capital controls would be in the face of sustained pressure, and it is possible that capital outflows by Chinese firms and households could continue or even accelerate, particularly if expectations for further RMB depreciation emerge.

The Chinese authorities have used a range of tools to maintain economic and financial stability. They also have scope to provide further support, given the ongoing large role of the state in the economy, the heavily regulated financial system, and the central government's relatively strong fiscal position. Nonetheless, Chinese policymakers face challenges from the growing size and complexity of

China's financial system, and the tension between short-term stability and longer-term policy objectives.

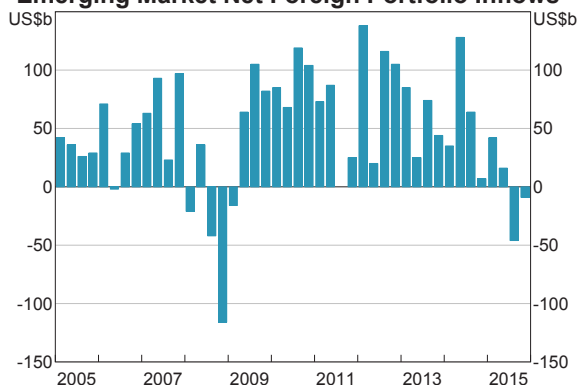
If financial strains that threaten growth in China emerge, they could spill over to other economies by affecting trade volumes and commodity prices, as well as sentiment in global financial markets. Direct financial linkages between China and other economies are small in aggregate because China's capital account is still relatively closed. But these linkages have grown – both in terms of foreign bank lending to China and Chinese bank lending abroad – and are sizeable for particular jurisdictions, so they could be an additional mechanism for transmitting financial difficulties.

Other emerging markets

For emerging markets more broadly, growth outlooks have been revised down further (especially for commodity exporters), financial conditions have generally tightened and the pace of net private capital inflows has continued to slow (Graph 1.7). The change in conditions has been associated with lower oil prices, ongoing uncertainty about the outlook for the Chinese economy and prospects for increases in the US federal funds rate. As a result, concerns persist about potential vulnerabilities related to the rise in corporate sector leverage when capital inflows were strong. Asset prices in emerging markets were volatile early in 2016 as some of these concerns intensified, with equity prices falling, bond spreads widening and currencies depreciating further, before recovering somewhat in recent months (Graph 1.8).

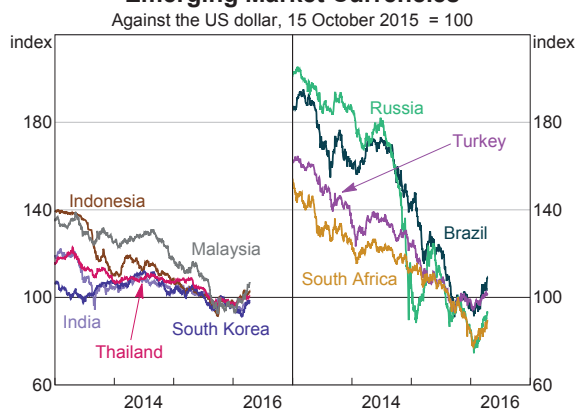
Corporate sector indebtedness has risen since the financial crisis in most emerging market economies, but has increased relatively quickly in Turkey and in commodity-exporting economies such as Brazil, Russia, Malaysia and Indonesia. In part this reflects financial deepening in these economies and a response to lower global long-term interest rates. The available evidence also suggests that currency risks for corporate borrowers in these economies

Graph 1.7
Emerging Market Net Foreign Portfolio Inflows*



* Argentina, Brazil, Chile, Colombia, Czech Republic, Hong Kong, Hungary, India, Indonesia, Malaysia, Mexico, Philippines, Poland, Russia, South Africa, South Korea, Taiwan, Thailand and Turkey
Sources: CEIC Data; IMF; National Sources; RBA; Thomson Reuters

Graph 1.8
Emerging Market Currencies

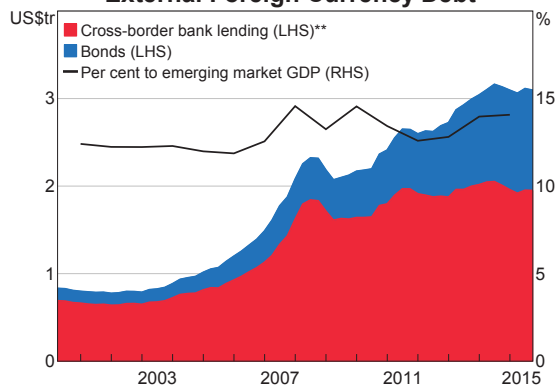


Source: Bloomberg

– which are pertinent given the sharp falls in exchange rates and shifts in capital flows over the past year or so – may be low in aggregate. External foreign currency borrowing by emerging market firms has increased only modestly relative to GDP in recent years, and many of the largest borrowers appear to be naturally hedged (Graph 1.9).³ Nonetheless, some firms in non-tradeable sectors (which typically do not earn significant foreign currency revenue) have increased foreign currency borrowings. Also, firms remain exposed to a rise in

³ See Kofanova S, A Walker and E Hatzvi (2015), 'US Dollar Debt of Emerging Market Firms', RBA Bulletin, December, pp 49–58.

Graph 1.9
Emerging Market Corporations'
External Foreign Currency Debt*



* Excludes China; includes financials and government-owned corporations
 ** Excludes lending in non-major third-party currencies
 Sources: BIS; Dealogic; IMF

global interest rates and rollover risk, and thus to deteriorating sentiment in financial markets. While the maturity profile of corporate bond issuance by emerging market firms has lengthened slightly since the financial crisis, which somewhat alleviates rollover risk, the volume of bonds maturing over the coming years is substantially higher than in the past.

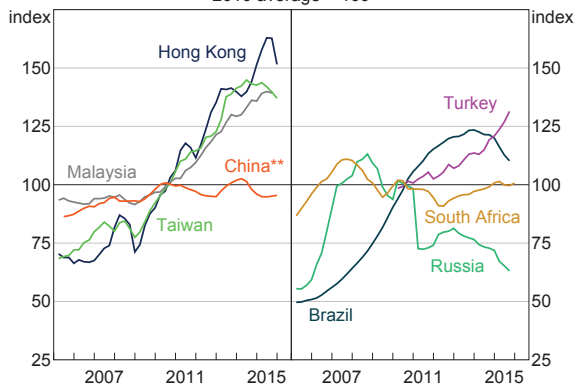
Taking all these factors together, a further increase in default rates of emerging market corporations now seems more likely, following a slight rise in 2015. This is especially the case for commodity-exporting countries, because their terms of trade have fallen significantly and the earlier rise in corporate debt was more concentrated among commodity-producing firms. Commodity firms have issued around one-fifth of the outstanding stock of corporate bonds across emerging markets, with this share even higher – at about 40 per cent – in emerging markets outside of Asia. The risk of financial distress is exacerbated by reduced policy flexibility in some emerging market economies. For example, central banks in Brazil, Russia and South Africa have increased or maintained high policy interest rates, despite slowing growth, to help contain inflationary pressures associated in part with lower exchange rates. Lower commodity-related revenue is also causing budget strains in numerous economies.

Banks in emerging markets bear most of the risk of any significant rise in defaults, as the bulk of emerging market corporate debt continues to be intermediated by domestic banking systems. However, advanced economies could also be affected because direct and indirect economic and financial linkages between the two groups of economies have increased in recent years.⁴ Spillovers between emerging market economies are also possible, given the history of concerns about some emerging markets affecting other parts of the same asset class. In aggregate, international bank exposures to emerging economies are relatively small and bond prices for more vulnerable firms have already fallen significantly without, to date, notable wider financial system stress. But to the extent that rising corporate defaults discourage capital inflows to emerging markets and thereby tighten financial conditions further, a feedback loop could emerge with potential for spillovers to both other emerging markets and advanced economies via trade links and higher risk premia.

Housing market risks are also present in some emerging market and Asian economies. This reflects large increases in residential property prices over recent years – including in Hong Kong, Brazil, Malaysia, Taiwan and Turkey – alongside increased household indebtedness (Graph 1.10). Price growth has moderated more recently and prices have fallen in some economies, including Brazil, Russia and Taiwan, which could add to the challenges already faced by these economies and their banks from weaker corporate sectors. Housing prices in Hong Kong rose especially quickly until late 2015, partly as a result of low interest rates associated with its fixed exchange rate system. But prices have fallen recently amid concerns about economic conditions in China and slower credit growth. Housing transaction volumes have also fallen, to be at their lowest level since at least the mid 1990s. Despite the slowdown in the housing market,

⁴ See IMF (2016) 'Chapter 2: The Growing Importance of Financial Spillovers from Emerging Market Economies', *Global Financial Stability Report*, April.

Graph 1.10
Real Housing Prices*
2010 average = 100



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

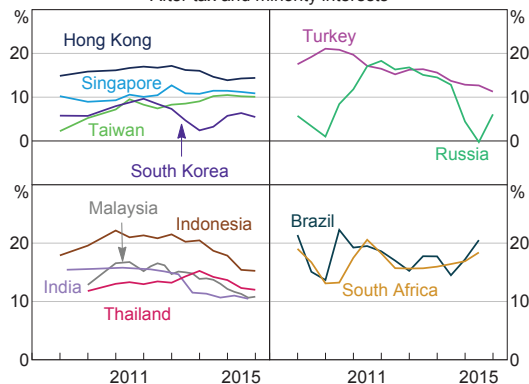
the Hong Kong Monetary Authority imposed a countercyclical capital buffer of 0.625 per cent in January 2016, with further increases scheduled, largely in response to elevated ratios of credit-to-GDP and housing prices-to-rents relative to their long-run trends.

Banking systems in other emerging markets

The combination of higher corporate leverage, tighter financial conditions and weaker economic growth mean that the banking systems of several key emerging markets face a challenging near-term operating environment, especially as the bulk of lending by emerging market banks goes to corporations rather than households. However, available indicators show that many banking systems continue to be profitable and well capitalised, and NPL ratios remain fairly low overall (Graph 1.11).

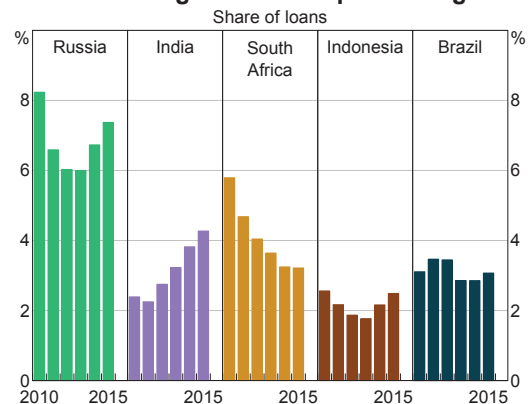
East Asian banking systems, which are of particular interest given Australia's trade and financial linkages, generally remain sound. In contrast, bank profitability has declined noticeably in Russia and NPLs remain high and rising, driven in particular by low oil prices and contracting economic activity (Graph 1.12). NPLs are also high and rising in India,

Graph 1.11
Selected Banks' Return on Equity*
After tax and minority interests



* Coverage differs across jurisdictions; data are adjusted for significant mergers and acquisitions
Sources: Bloomberg; RBA; SNL Financial

Graph 1.12
Selected Banking Sector Non-performing Loans*
Share of loans



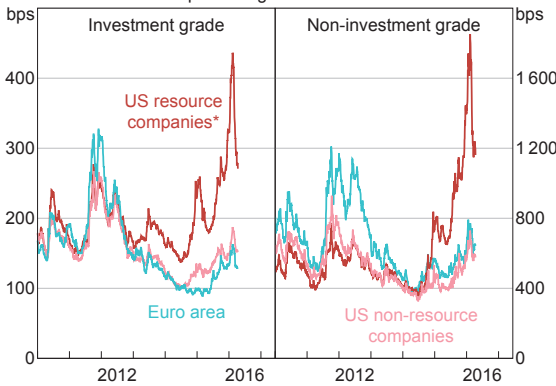
* Definitions of non-performing loans can differ across jurisdictions
Sources: CEIC Data; RBA; World Bank

mostly reflecting legacy issues at state-controlled banks, with the government planning to inject capital into these banks to shore up their balance sheets. Looking ahead, the more vulnerable systems appear to be those of energy-related commodity-exporting economies that tend to be less connected to Australia, including Russia, Brazil and other parts of South America, because economic conditions have deteriorated markedly and capital buffers are thin for some banks in these systems.

Advanced Economy Financial Systems

Since the previous *Review*, the outlook for growth in the advanced economies has moderated and there has been ongoing volatility and a further reassessment of risk in global financial markets. In particular, equity prices fell and yield spreads for corporate bonds widened in early 2016 after an extended period of low risk premia and investors ‘searching for yield’ (Graph 1.13). While a weaker outlook for growth in China and other emerging markets has been an important driver, some commentators have attributed these developments in part to concerns that monetary policymakers in advanced economies may be running out of options to stimulate growth.

Graph 1.13
Corporate Bond Spreads
To equivalent government bonds



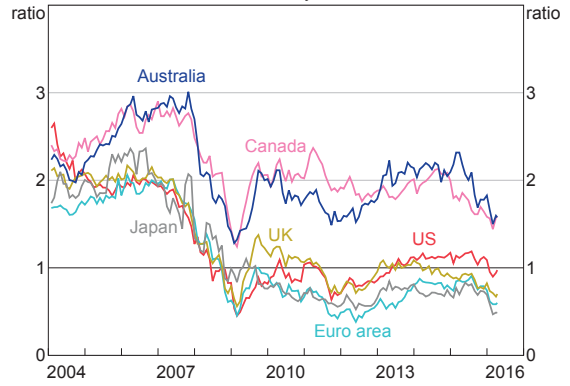
* Energy, metals, mining and steel sectors
Sources: Bank of America Merrill Lynch; RBA; Thomson Reuters

The prices of bank securities have fallen particularly sharply since the previous *Review*, especially in Europe and Japan where share price falls have taken price-to-book ratios to low levels (Graph 1.14). Heightened concerns about the bank profitability outlook reflect a range of factors.

- Lower, and increasingly negative, policy interest rates are shifting yield curves and pressuring net interest margins, particularly in Europe and Japan, in the wake of monetary policy responses to persistent low inflation.

- Resource company defaults are likely to rise given the large declines in oil and other commodity prices over recent years. While resource exposures generally account for only a small share of advanced economy banks' lending – often in the low single digits – significant losses on these exposures could be challenging for banks with already weak profitability or concentrated exposures and could accompany a broader weakening in corporate credit quality.
- The weaker outlook for growth in emerging markets is, to some extent, expected to weigh on advanced economies' growth prospects and, in turn, their banking systems. Some international banks also have significant exposures to emerging markets, where credit quality is deteriorating.

Graph 1.14
Banks' Share-price-to-book-value Ratios
Monthly*



* End of month; April 2016 observation is based on latest available data
Source: Bloomberg

In Europe, bank profitability concerns have been compounded by additional factors, including a general fall in profits in the second half of 2015 and, in several countries, a persistent large stock of NPLs. Government and corporate debt levels remain high in some European countries, which in a sustained low growth and inflation environment creates challenges for debt serviceability and repayment, and political developments remain a potential source of uncertainty. The continued weak health of banking systems in Europe was reflected

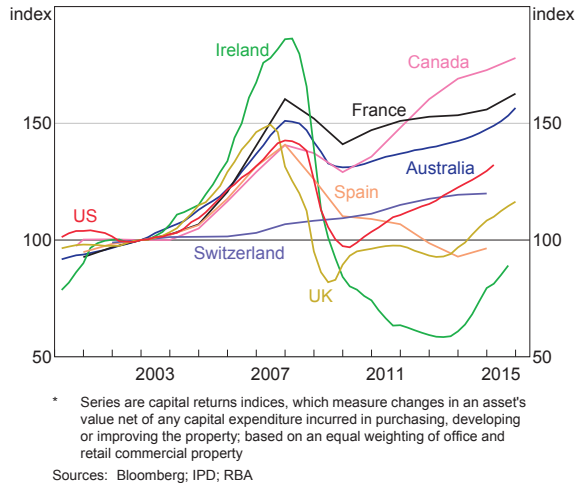
in some high-profile bank recapitalisations and resolutions completed in late 2015 in Greece, Italy and Portugal. These episodes focused attention on the legal powers to ‘bail-in’ creditors under the new euro area bank resolution framework, the Bank Recovery and Resolution Directive. Along with the weakening in European bank profitability, this may have contributed to a sharp fall in the prices of contingent capital instruments in early 2016 (discussed further below).

While the ‘search for yield’ behaviour that had been evident for many years has moderated, it remains apparent in some markets, raising the risk of disruptive falls in asset prices in the future. Commercial property markets in a range of countries have been experiencing strong investment alongside rising prices, including in the United States, United Kingdom, Canada and Ireland (Graph 1.15). While this in part reflects the strengthening of their economies, it has attracted regulatory attention, and commercial property lending standards have recently tightened in the United States.

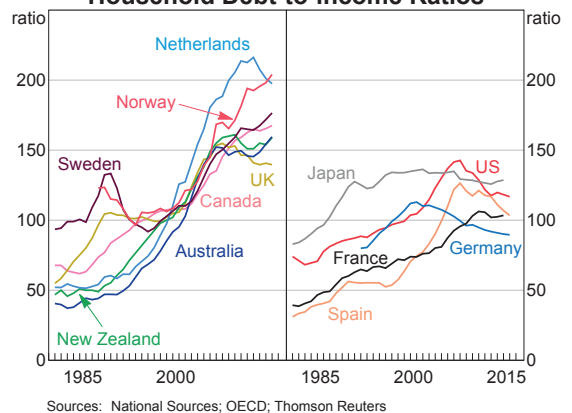
Housing prices have also continued to increase in many advanced economies, including Canada, Norway, Sweden and the United Kingdom; in many of these countries, household debt-to-income ratios have also risen (Graph 1.16). Authorities in some of these countries have imposed macroprudential regulations in an effort to limit the build-up of financial risks in the household sector; some, including in Sweden, Norway and the United Kingdom, have set countercyclical capital buffers above zero. Outside of property markets, the low interest rate environment also continues to pose longer-term challenges for insurance firms and defined benefit pension plans, which, to a large extent, rely on financial asset returns to meet their long-term liabilities.

As highlighted in previous *Reviews*, authorities have been focusing on the liquidity risks posed by asset managers because some of them offer daily or intraday withdrawals despite often investing in

Graph 1.15
Commercial Property Values*
December 2002 = 100



Graph 1.16
Household Debt-to-income Ratios



assets with low liquidity, such as corporate bonds. These liquidity risks mean that investor redemptions could exacerbate asset price falls and add to contagion, particularly as bond market liquidity is generally considered more fragile post-crisis as risk management actions by banks and regulators to boost financial system resilience have reduced market-making activity. However, asset management firms have a number of features that mitigate liquidity risks and operate with much lower leverage than banks; indeed, in late 2015 a few small high-yield bond funds in the United States

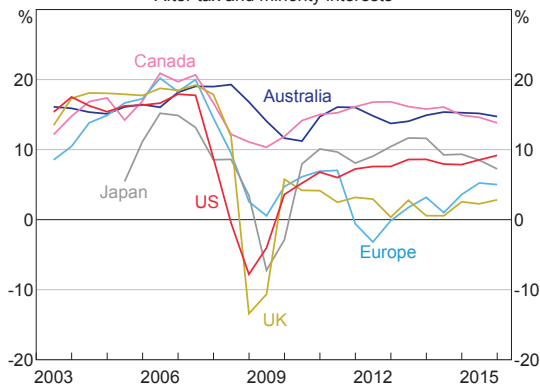
were able to close and begin liquidating their assets following large redemptions without significant contagion.

Related to these market liquidity concerns, a number of sovereign wealth funds (SWFs) of commodity-exporting nations have been selling assets and withdrawing funds from external asset managers to address government budget pressures stemming from falls in commodity prices. This marks a key turnaround from prior years when assets under management accumulated quickly amid high commodity prices. This shift has likely had an important, but difficult to quantify, tightening effect on global financial conditions and may have contributed to bouts of financial market volatility over the past year or so. There is usually limited transparency on SWFs' asset holdings and investment strategies, and some SWFs may have large and concentrated positions in less liquid markets (because of their typically long investment horizon and low withdrawal risk). These characteristics increase the risk that, in the event of a further fall in commodity prices, SWF asset sales could contribute to market volatility.

Banking systems in advanced economies

Profitability of the major banking systems generally declined or remained low in the second half of 2015 (Graph 1.17). Bank profitability has been soft in Europe in recent years, with a persistent large stock of NPLs – alongside higher capital requirements – weighing on profitability. Profits at the large European banks fell in the six months to December 2015, reflecting some high-profile asset write-downs, costs associated with litigation and business-model restructurings, and a decline in trading and fee revenue amid higher market volatility. Outside of Europe, bank profitability has continued to drift lower in Japan, while banks in the United States reported an increase in profitability in the second half of 2015, albeit mainly due to falling legal expenses. As noted above, expectations for bank profitability in the advanced economies

Graph 1.17
Large Banks' Return on Equity*
After tax and minority interests

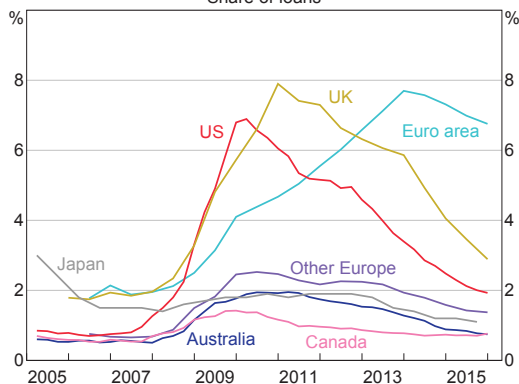


* Number of banks: Australia (4), Canada (6), Europe (52), Japan (4), United Kingdom (4) and United States (18); adjusted for significant mergers and acquisitions; reporting periods vary across jurisdictions
Sources: Bloomberg; RBA; SNL Financial

have been scaled back due to a weaker outlook for economic growth, persistently low interest rates and an expected deterioration in credit quality among resource sector and emerging market exposures.

Asset performance generally continued to improve in the second half of 2015, with NPL ratios declining in all major banking systems except Canada (Graph 1.18). In the United States, further declines in NPL ratios for residential real estate loans continued to drive asset quality improvements.

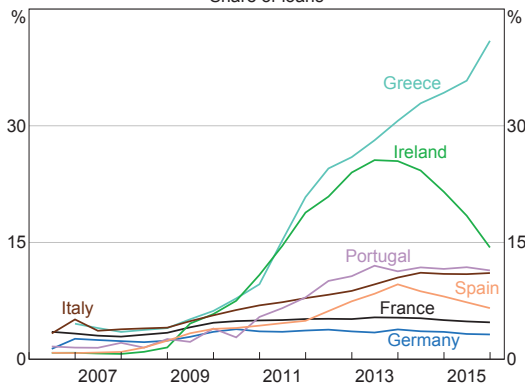
Graph 1.18
Large Banks' Non-performing Loans*
Share of loans



* Definitions of 'non-performing loans' differ across jurisdictions; number of banks: Australia (4), Canada (6), euro area (42), Japan (5), other Europe (10), United Kingdom (4) and United States (18)
Sources: APRA; Banks' Annual and Interim Reports; Bloomberg; FSA; RBA; SNL Financial

While NPL ratios continued to fall in the euro area – especially in Ireland and Spain – they remain high in most euro area countries relative to both pre-crisis levels and other banking systems (Graph 1.19).

Graph 1.19
Euro Area – Large Banks’ Non-performing Loans*
Share of loans



* Definitions of ‘non-performing loans’ differ across jurisdictions; number of banks: France (6), Germany (9), Greece (4), Ireland (2), Italy (5), Portugal (3) and Spain (6)

Sources: Banks’ Annual and Interim Reports; RBA; SNL Financial

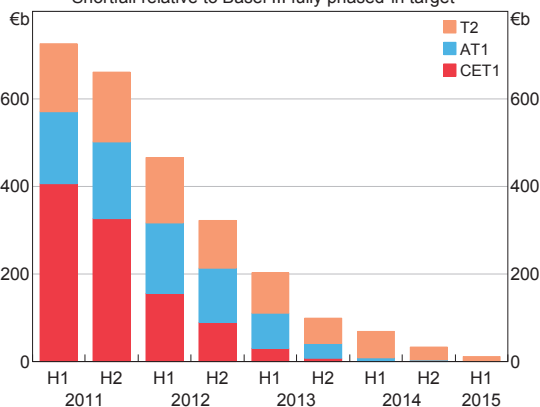
Lower commodity prices, particularly for oil, are expected to lead to higher delinquencies in banks’ commodity and energy portfolios. These expectations have already led some large banks in Europe and North America to increase energy-related loan-loss provisions, albeit from a low level. But banks in advanced economies do not appear to have large direct exposures to these industries, so the direct effect on profitability is likely to be small. Nonetheless, lower commodity prices could indirectly reduce bank profitability in commodity-exporting economies by weighing on economic growth.

Some international banks also have significant exposures to emerging markets, where the outlooks for growth and loan performance have weakened, particularly for those economies exposed to lower commodity prices. As a proportion of their total global exposures, banks headquartered in the United Kingdom have the largest exposures to commodity-exporting emerging economies, most notably to Brazil, South Africa and the United Arab Emirates (Table 1.1). UK banks also have the most

significant exposures to other emerging economies, including China, and Asian financial centres, particularly Hong Kong. Japanese banks have been actively expanding their overseas activities recently, notably to emerging Asian economies, although the Bank of Japan (BoJ) has assessed that the risks to Japan’s financial stability from a slowdown in Asian economies are ‘limited’. Nonetheless, the BoJ has continued to highlight the foreign currency and liquidity risks associated with these activities, as a significant proportion of foreign currency lending is funded via short-term money markets.

The majority of large banks in the advanced economies increased their CET1 capital ratios over the second half of 2015. This was mainly achieved through lower risk-weighted assets as well as higher retained earnings for banks that recorded profits. All the G-SIBs continued to exceed the minimum Basel III CET1 capital requirements, including the capital conservation buffer and the G-SIB surcharge, even though full phase-in does not occur until 2019. More generally, the aggregate capital shortfall for G-SIBs has fallen significantly in recent years, with only a small capital shortfall remaining as of mid 2015 (Graph 1.20). Looking ahead, there has been some concern about the ability of some advanced

Graph 1.20
G-SIBs’ Aggregate Capital Shortfall*
Shortfall relative to Basel III fully phased-in target**



* Includes banks classified by the Financial Stability Board as G-SIBs as of November 2015

** CET1 capital targets include the Basel III capital conservation buffer and G-SIB surcharges

Source: BIS

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

	Share of total global exposures (per cent)			
	Euro area	Japan	United Kingdom	United States
Commodity-exporting Emerging Economies^(b)	2.3	0.9	5.5	1.7
Brazil	0.7	0.2	0.9	0.6
Indonesia	0.0	0.1	0.3	0.1
Malaysia	0.0	0.1	0.7	0.1
Russia	0.3	0.1	0.1	0.1
South Africa	0.0	0.0	1.2	0.1
United Arab Emirates	0.1	0.1	1.0	0.1
Other Emerging Economies	5.7	2.0	8.4	3.6
China	0.4	0.4	2.9	0.7
India	0.2	0.2	1.2	0.6
Mexico	0.7	0.1	0.6	0.7
Turkey	0.8	0.1	0.4	0.2
Asian Offshore Financial Centres	0.5	0.8	8.0	1.0
Hong Kong	0.2	0.5	6.2	0.5
Singapore	0.3	0.3	1.8	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 group totals

(b) Based on the IMF classification of commodity-exporting emerging markets in the October 2015 *Global Financial Stability Report*
 Sources: BIS; RBA

economy banks to generate sufficient retained earnings to meet future regulatory capital requirements and their own capital targets, which contributed to the recent fall in bank share prices. Banks are likely to continue to adjust their balance sheets ahead of additional changes to regulations, including the finalisation of the leverage ratio and the proposed total loss-absorbing capacity (TLAC) requirement for G-SIBs.

Increases in bank capital in recent years have included issuance of contingent convertible capital instruments – included in Additional Tier 1 (AT1) and Tier 2 (T2) capital – which has been supported by strong investor demand for high-yielding assets.⁵

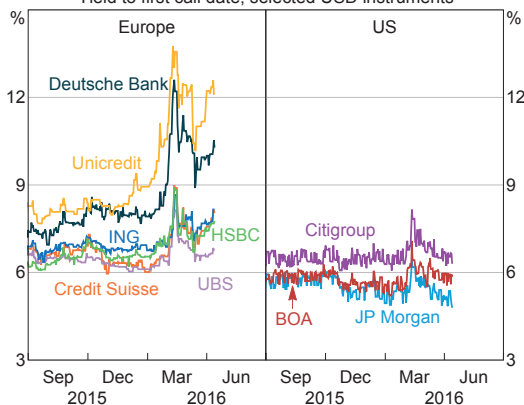
⁵ AT1 capital must be able to absorb losses on a going-concern basis, while the objective of T2 capital is to provide loss absorption on a gone-concern basis. For financial instruments to count as AT1 and T2 capital, they must meet a range of criteria laid out in the Basel III capital rules. For example, AT1 capital instruments must have no maturity date, must be the most subordinated claim after CET1 capital and, for instruments considered liabilities for accounting purposes, contain a numeric loss-absorption trigger. AT1 capital instruments typically include preference shares and convertible securities. T2 capital instruments typically consist of subordinated bonds.

Along with the broader repricing of risk, yields on these instruments rose sharply (and prices fell) in early 2016, as investors priced higher coupon-payment and conversion risks into these relatively new and untested financial securities, although part of the increase has since been unwound (Graph 1.21). The increase was particularly marked for some euro area banks; in addition to broader concerns about the outlook for profitability, market uncertainty arose around regulatory treatment of these securities, including whether some large banks would be permitted to make coupon payments on their contingent capital instruments given their profitability and capital positions. As noted above, some unexpected creditor loss allocations from a spate of bank recapitalisations and resolutions in the euro area in late 2015 may have also contributed to the increase in yields in some jurisdictions. The sharp price response of these contingent capital instruments highlights their potential to contribute to volatility, particularly as it was accompanied by

Graph 1.21

Banks' Additional Tier 1 Capital Yields

Yield to first call date, selected USD instruments



Source: Bloomberg

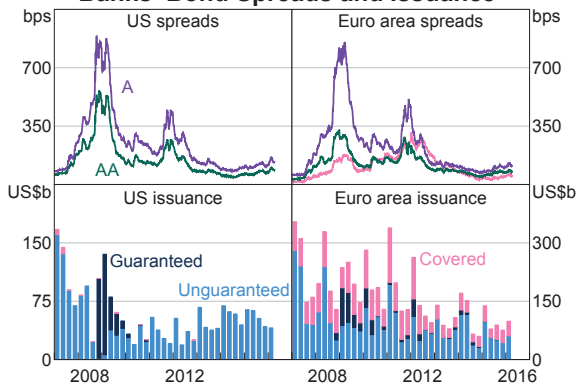
sharp falls in share prices and a widening in banks' credit default swap premia; this may have partly reflected spillover effects from hedging activity by contingent capital investors seeking to minimise their mark-to-market losses. To the extent that contingent capital yields remain permanently higher, this could add to the cost of funding for banks seeking to meet loss-absorbing capital requirements through issuance of these instruments.

Other bank funding conditions have remained broadly favourable since the previous *Review*. Bond spreads widened moderately alongside the more general repricing of risk assets, before narrowing to be little changed on net over the past six months, while the volume of issuance has remained around the level of recent years (Graph 1.22). Nevertheless, banks in both Europe and the United States have continued to reduce their use of wholesale debt funding. The share of deposit funding has increased in Europe and has been broadly stable in the United States since the previous *Review*. Most advanced economy G-SIBs continue to report LCRs that either are close to meeting or exceed their fully phased-in Basel III requirements.

Consistent with the recovery in economic conditions and banks' balance sheets, credit growth in advanced economies picked up over the second half of 2015, including in the euro area where it has

Graph 1.22

Banks' Bond Spreads and Issuance*

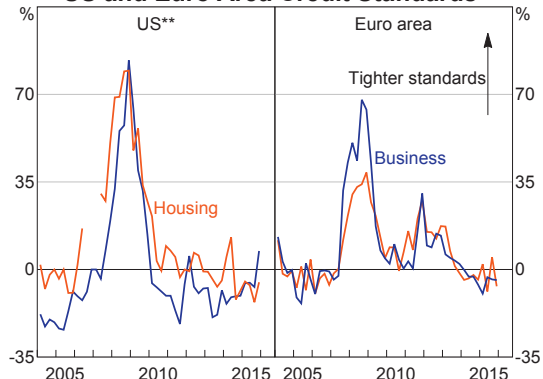


* Spread to equivalent government bonds
Sources: Bank of America Merrill Lynch; Bloomberg; Dealogic; RBA

been low since the financial crisis. Credit growth has been supported by an ongoing easing of lending standards across most major markets and borrower types (Graph 1.23). The main exception is the United States where lending standards to businesses have tightened recently, due to concerns about the economic outlook, particularly for energy-related industries. Changes in credit demand have been more mixed across the major markets. Recent surveys, while not capturing developments in the past few months, indicate that demand for credit increased in the euro area, Japan and the United Kingdom in late 2015, but decreased in the United States.

Graph 1.23

US and Euro Area Credit Standards*



* Net percentage of respondents reporting tighter standards
** US housing from June 2007 onwards is a simple average of housing loan sub-categories

Sources: ECB; RBA; Thomson Reuters

New Zealand

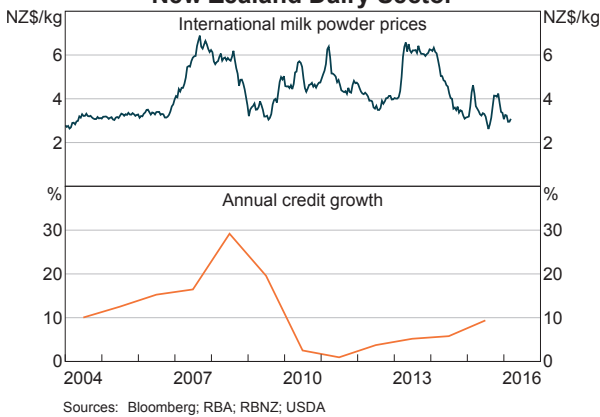
Financial stability risks in New Zealand are of key interest given that Australia's major banks have significant operations in that country. The dairy and housing sectors continue to be the main sources of risk to New Zealand's financial stability.

The Reserve Bank of New Zealand (RBNZ) is concerned about the prospect of rising loan defaults by dairy farmers as low dairy prices persist. International milk prices have fallen by around 55 per cent in New Zealand dollar terms since their 2013 peak and are currently below the estimated industry average break-even point (Graph 1.24). Lending to the sector accounts for about 10 per cent of bank lending in New Zealand. Within the total, risk could be quite skewed because higher-cost producers tend to be the most leveraged. The RBNZ estimates that around

80 per cent of dairy farmers will have negative cash flow in the current financial year, compounding cash flow pressures experienced in 2014/15. Dairy land prices have also fallen over the past year, which increases the likelihood of farmers falling into negative equity, and so raises the probability of defaults and bank losses in the event of foreclosure. While defaults have been limited to date, many farmers have increased their borrowing to service existing debts. Recent stress testing conducted by the RBNZ found that severe stress scenarios would be manageable for the largest dairy lenders and the banking system as a whole.

The RBNZ also continues to warn that the interaction of low mortgage rates, high household debt and increasing housing prices – particularly in Auckland – poses a 'significant risk' to financial stability. In response to this risk, the RBNZ has introduced tougher restrictions on investor lending. The measures restrict the flow of investor lending for properties in Auckland with a loan-to-valuation ratio above 70 per cent to 5 per cent of new investor loans in that city. Capital requirements for such loans have also been raised. These macroprudential measures have been supported by an increase in taxes on investment properties sold within two years of their purchase and the introduction of a requirement for buyers to disclose additional information (including foreign buyers). While housing price growth in Auckland has since slowed, price growth outside of Auckland has recently been quite strong. ❖

Graph 1.24
New Zealand Dairy Sector

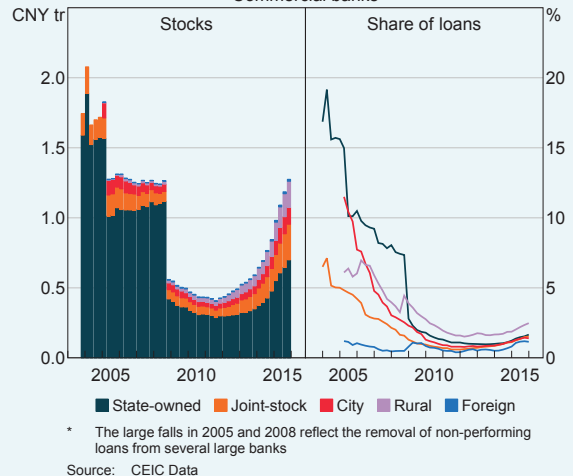


Box A

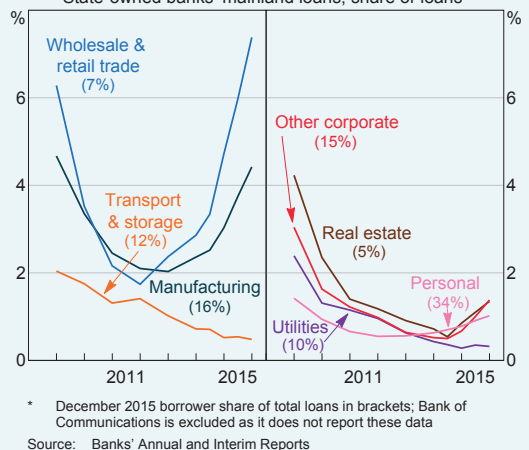
Asset Performance in the Chinese Banking Sector

Chinese commercial banks' reported non-performing loans (NPLs) have risen in recent years, though as a share of bank lending they remain low relative to their history (Graph A1).¹ Recent increases in reported NPLs have been driven largely by the wholesale & retail trade and manufacturing sectors (Graph A2), and have been concentrated in the geographic areas where some of these industries (particularly heavy manufacturing) are prevalent. NPLs as a share of loans (NPL ratios) are fairly similar across the bulk of the commercial banking system – the large state-owned banks, joint-stock banks and city banks – but in recent years they have been consistently higher at the smaller rural banks. This box reviews a range of asset performance indicators and considerations that collectively suggest that NPLs in China are likely to increase further in the period ahead.² That said, as noted in Chapter 1, 'The Global Financial Environment', the Chinese banking system reports adequate levels of capital, and is currently quite profitable.

Graph A1
Chinese Banks' Non-performing Loans*
Commercial banks



Graph A2
Chinese Banks' NPLs by Sector
State-owned banks' mainland loans, share of loans*



1 The large falls in NPLs in 2005 and 2008 reflect policy actions. In the past, where it has been required, large build-ups of NPLs at Chinese banks have been addressed by sales of NPLs to asset management corporations (AMCs; essentially 'bad banks') and public injections of capital.

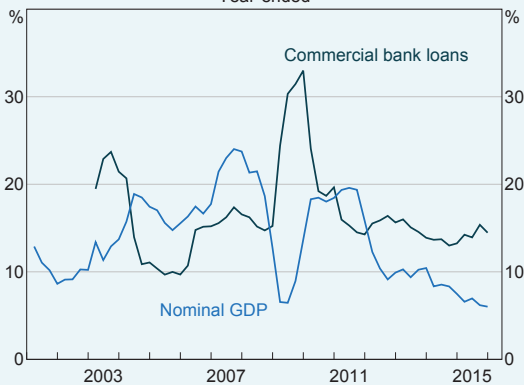
2 This box focuses on the commercial banking system, which accounts for 80 per cent of financial system assets. Asset quality and performance in the shadow banking sector is generally thought to be worse in the formal banking sector. Borrowers in the shadow banking sector are more likely to be small and medium size enterprises, which are more concentrated in the poor-performing wholesale & retail trade and manufacturing sectors, or from a sector where access to the formal banking sector is restricted due to regulation. This includes sectors where there is overcapacity such as steel and cement production and real estate development.

Reasons to Expect Further Increases in NPLs

Bank credit, GDP and profit growth are slowing

NPL ratios are inherently backward looking, because new loans generally take some time to become impaired. Periods of fast credit growth, such as that between 2009 and 2012, therefore tend to hold measured NPL ratios down mechanically, because both the denominator of the ratio is boosted and the share of relatively new loans, which have not had time to become impaired, is higher. As credit growth has slowed – albeit to levels still well above nominal GDP growth – this effect has waned, placing upward pressure on NPL ratios (Graph A3).

Graph A3
China – Credit and GDP Growth
Year-ended



Sources: CEIC Data; RBA

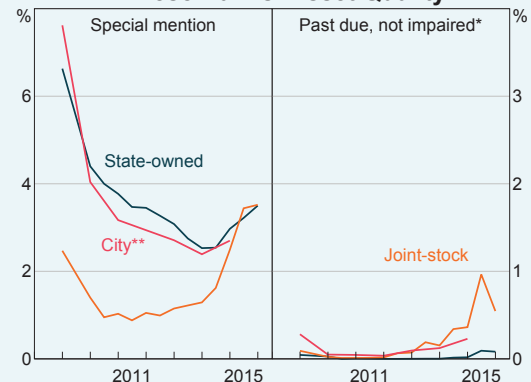
In addition, some information suggests that the flow of new impairments has been rising in recent years, as financial pressures on borrowers have been increasing. Economic growth has slowed from the very fast post-crisis pace and signs of overcapacity and deflation have emerged in some industries, leaving the corporate sector with lower profits to service its higher level of debt. This increased flow of newly impaired loans has added to the stock of NPLs and is likely to continue to do so. Another

indication that asset performance is declining is that some banks are reported to have been selling loans to asset management corporations before the point at which the loans must be classified as non-performing. Although such transfers can strengthen banks' balance sheets and allow banks to concentrate on new and performing assets, they might still involve losses if the loans are sold below book value.

Marginal performing loans are rising quickly

The stock of loans in the 'special mention' and 'past due but not impaired' categories has risen noticeably over 2014 and 2015, particularly for the joint-stock banks (Graph A4). While these loans are considered to be performing loans in China, they are likely to be of poorer credit quality than other performing loans. Loans are classed as special mention if there are some factors that may have an adverse effect on loan repayment, but they are not yet classed as non-performing. Past due but not impaired loans are those that are in arrears by more than 90 days (and in some cases more than 360 days), but their repayment is not considered to be in doubt. To the extent that these categories provide an indication of the pipeline of loans that may become impaired in the future, this points to further increases in NPLs.

Graph A4
Chinese Banks' Asset Quality



* 90 or more days past due

** Data for many of these banks are not yet available for 2015

Source: SNL Financial

Some of the loans included in these categories would be classified as non-performing in other jurisdictions, implying that the aggregate NPL ratio in China would likely be higher if it were reported on an internationally comparable basis. While there is variation in national accounting and regulatory standards on the classification of problem loans, the IMF (2006) *Financial Soundness Indicators (FSI)* guidelines recommend that loans be classified as non-performing if the interest and/or principal are more than 90 days past due, or if there are other good reasons to doubt that payments will be made in full.³ Accordingly, loans past due but not impaired are classified as non-performing in many other jurisdictions (including Australia). In addition, the FSI guidelines suggest that loans should be classified as non-performing when interest payments 90 days or more past due have been capitalised (added to the principal amount), refinanced or rolled over. In China, restructured loans must be classified at least as special mention, but do not need to be classed as non-performing. Restructuring loans in this way does give the borrower time to repair their finances and in some cases can minimise realised losses, but this kind of forbearance becomes increasingly tenuous if done repeatedly for the same borrower. ❖

3 See IMF (2006) *Financial Soundness Indicators Compilation Guide*. Available at <<http://www.imf.org/external/pubs/ft/fsi/guide/2006/index.htm>>.

2. Household and Business Finances

In the household sector, risks have ameliorated somewhat since the previous *Review* as housing price growth has eased and – more importantly – banks have further tightened lending standards on mortgages. Attitudes toward investing in housing appear to have adjusted to the softer housing market conditions, with investors less active in the housing market compared with a few months ago. The tightening in lending standards has put recent borrowers on a sounder footing to cope with any deterioration in economic conditions, fall in housing prices or individual adverse events. Overall indicators of household resilience remain sound, supported by solid employment growth and low interest rates.

An ongoing risk comes from the significant and geographically concentrated growth in supply of new apartments in Sydney, Melbourne and Brisbane due for completion over the next few years. This new supply may weigh on prices and rents in these areas. If that occurs, investors will need to service their mortgages while earning lower rental income and any households facing difficulties making repayments may not be able to resolve their situation easily by selling the property. This is one reason why it remains important to have prudent lending standards ahead of such a possibility.

For the developers of these apartments, risks appear to have increased since the previous *Review*. With demand for apartments softening in some areas, particularly in Brisbane and Perth, and households facing tighter access to credit, settlement failures might increase. A downturn in apartment markets could weaken the financial health of these developers.

For other types of commercial property, the compression in yields has continued. Price growth remains rapid, supported by strong investor demand, particularly from foreign investors. However, there is some uncertainty as to how these foreign buyers would react to a downturn in their home countries or in the Australian property market. While yield compression is fairly common across the capital cities, there is a divergence in market conditions. In Sydney and Melbourne investment demand is strongest and leasing conditions are generally firm, while in Brisbane and Perth conditions are challenging, resulting from the fairly large amount of supply still coming on line and the downturn in the resource-related sector. Despite these challenges, banks' lending for commercial property has picked up over recent years across a range of categories, including residential development, though as a share of their total lending it remains below the levels reached during the financial crisis.

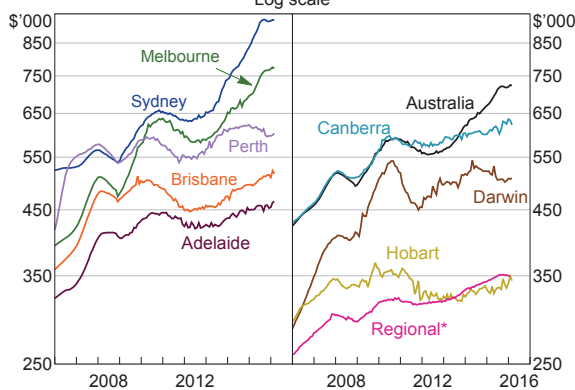
Outside the property sector, businesses' finances generally remain in good shape and broad indicators of financial stress are low. An exception is the resource-related sector where there are several signs of stress. Falls in global commodity prices have weighed on the earnings of resource-related companies and the ability of these companies to service their debts. Banks are reporting higher rates of non-performance among their resource-related exposures, but their lending to the sector is only a small share of their total lending. In liaison, the major banks also note signs of broader stress emerging in mining-exposed geographic regions, where the performance of other business and household loans has deteriorated.

Household Sector

Housing and mortgage markets

The pace of housing price growth has eased somewhat since the previous *Review* largely because of slowing growth in Sydney and Melbourne where prices had previously risen most rapidly (Graph 2.1). Auction clearance rates and other high-frequency indicators also point to moderately softer housing market conditions. Consistent with this slowing, attitudes towards investing in housing have become less optimistic; survey data suggest that households' expectations of future housing price growth have eased and the share of households that view real estate as the wisest place for their savings has declined. An ongoing risk is that the significant construction of apartments that is already underway, particularly in inner-city Melbourne and Brisbane, may lead to price falls in these areas if demand fails to keep pace.

Graph 2.1
Housing Prices
Log scale



* Excludes apartments; measured as areas outside of capital cities in mainland states

Sources: CoreLogic RP Data; RBA

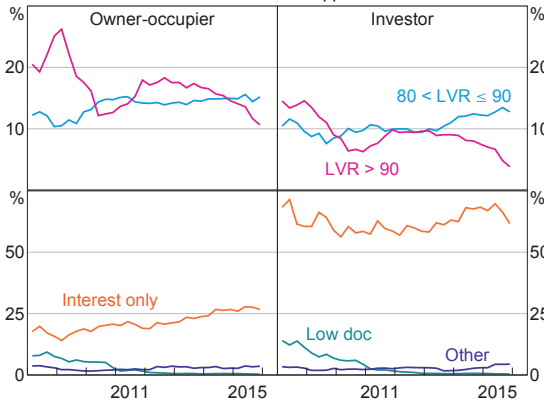
A contributing factor for the softening in housing market conditions was the actions of regulators starting from late 2014 to address the increasing risks stemming from the housing sector. These included measures to rein in growth in lending to investors and to reinforce sound and responsible lending practices. These measures were introduced at a

time of heightened investor activity and borrowing. Had that continued, it could have amplified the upswing in housing prices and increased the risk of subsequent significant price falls. In response, authorised deposit-taking institutions (ADIs) have increased interest rates on investor loans, so that advertised pricing is about 25 basis points higher than for owner-occupier loans. Lenders also reduced the size of discretionary discounts available to investors. More recently, however, competition for investor loans has strengthened with many ADIs increasing discounting and lowering advertised rates for investors. ADIs also now apply stricter loan serviceability assessment criteria across all types of housing lending.

The effects of this tightening are now apparent in data on the characteristics of housing loan approvals (Graph 2.2). Over the second half of 2015, the shares of owner-occupier and investment lending at high loan-to-valuation ratios (LVRs; greater than 90 per cent) declined markedly and the share of interest-only lending also fell, particularly for investors. The average size of loan approvals is now lower than a few months ago, consistent with the reduced availability of high-LVR loans and the tighter serviceability standards. The Australian Prudential Regulation Authority's (APRA) second hypothetical borrower exercise in September 2015 found that the maximum loan size that could have been extended to the four hypothetical borrowers in the scenario fell by around 12 per cent for investors, and by around 6 per cent for owner-occupiers. Given that some ADIs have continued to phase in the tightening required by the regulators, some further falls in the share of high-LVR lending and interest-only lending in the period ahead could be expected.

The share of investors in housing finance has also declined as a result of these changes in loan pricing and terms. Investor loan approvals have fallen and owner-occupier approvals have increased sharply, particularly in New South Wales and Victoria (Graph 2.3). As a consequence, the composition

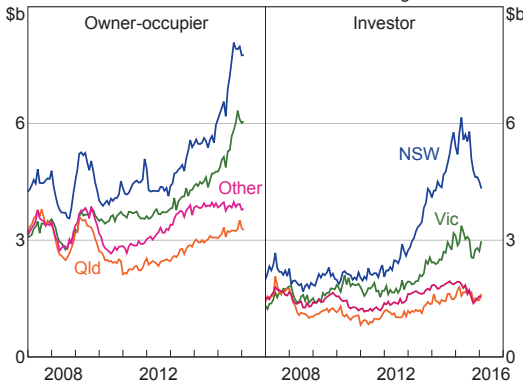
Graph 2.2
ADIs' Housing Loan Characteristics*
 Share of new loan approvals



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

Sources: APRA; RBA

Graph 2.3
Housing Loan Approvals by State
 Includes construction and refinancing



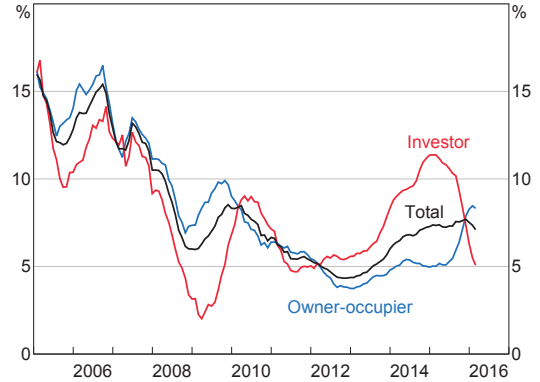
Sources: ABS; RBA

of housing credit growth has shifted away from investors towards owner-occupiers, though this may, in part, reflect investors switching their loan purpose to owner-occupiers.¹ In particular, investor

¹ The pricing differential has created an incentive for borrowers with investment loans to switch to owner-occupier loans in circumstances where the purpose of their original loan has changed, which has resulted in a substantial amount of loan switching. Banks are checking to ensure loans are recorded accurately, such as comparing the address of the borrowers' residence and the property securing the loan, and requesting account information or tax returns for evidence of rental income. The credit data cited here look through these loan reclassifications but can only account for cases where the borrower does not change lender at the same time.

credit expanded at an annual rate of 5 per cent over the six months to February 2016, down from its recent peak of 11 per cent in early 2015 and well below APRA's benchmark of 10 per cent (Graph 2.4). Overall housing credit growth has, however, declined only modestly.

Graph 2.4
Housing Credit Growth
 Six-month-ended, annualised

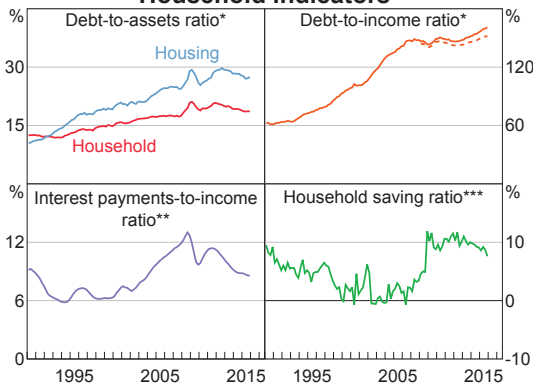


Sources: APRA; RBA

Financial position and indicators of stress

The tightening in lending standards has left recent purchasers better placed to withstand weaker economic conditions, an easing in housing prices or other adverse events. While, in principle, borrowers who accessed credit under looser lending conditions in the past couple of years may be more vulnerable than recent borrowers, indicators of household financial stress remain fairly benign, aided by low interest rates and ongoing employment growth. In particular, the current low interest rate environment continues to support households' debt-servicing ability and households continue to save a greater share of their income than in the decade or so prior to the financial crisis (despite recent declines in this share; Graph 2.5). Around half of total household debt is owed by households in the top income quintile, a pattern that is broadly consistent across the states, suggesting that debt is owed by those households most able to service it. Finally, aggregate

Graph 2.5
Household Indicators

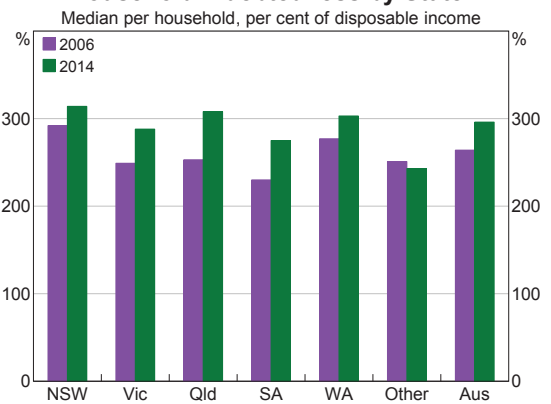


* Debt to the financial sector; dashed line is net of offset account balances
 ** Excludes unincorporated enterprises
 *** Net of depreciation
 Sources: ABS; APRA; RBA

mortgage buffers – balances in offset accounts and redraw facilities – have increased further since the previous *Review*, to now be around 17 per cent of outstanding loan balances, which is equivalent to more than 2½ years of scheduled repayments at current interest rates. However, survey evidence indicates that households considered more likely to experience financial stress, such as those with lower net wealth and income or higher leverage, are less likely to have mortgage buffers and that these buffers tend to be smaller than for other households.

Nonetheless, the gross debt-to-income ratio continues to rise from already high levels as households take on more housing debt and income growth has slowed. Net of balances in offset accounts, the increase has been less pronounced, though it has still reached new highs of late. Although housing price growth has varied substantially across the states, recent evidence on households with mortgages indicates that the household debt-to-income ratio is higher than a decade ago and fairly uniform across the country (Graph 2.6). The increase in indebtedness has tended to be larger in those states that previously had lower debt-to-income ratios. With incomes

Graph 2.6
Household Indebtedness by State*

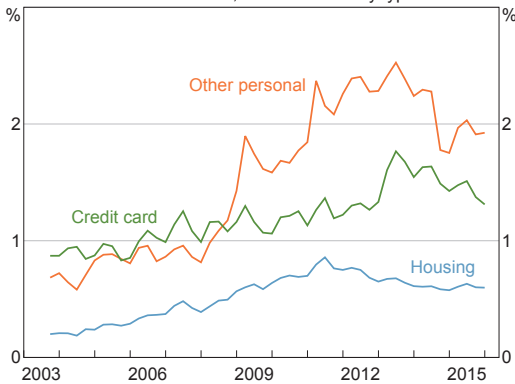


* Indebted households with any form of housing debt
 Sources: HILDA Release 14.0; RBA

growing more slowly in the past few years compared with the previous decade, households may not be able to rely as much on future income growth to reduce debt-servicing burdens.

Indicators of overall stress in banks' household loan portfolios remain low. The share of banks' housing loans that are non-performing ticked down over the second half of 2015, to 0.6 per cent (Graph 2.7). Non-performing rates for credit card and other personal loans have also declined over recent quarters. An exception to this general theme is that regions heavily reliant on the mining sector have experienced large falls in housing prices and deteriorations in credit performance. Public disclosures by the major banks indicate that arrears on housing loans are higher in Queensland and Western Australia than in the rest of the country. Applications for property possessions in Western Australia have edged higher recently, although nationally they continue to decline as a share of the dwelling stock. Personal administrations as a share of the labour force are higher in mining regions compared with non-mining regions. These developments will need to be monitored in the period ahead.

Graph 2.7
Banks' Non-performing Household Loans
 Domestic books, share of loans by type



Source: APRA

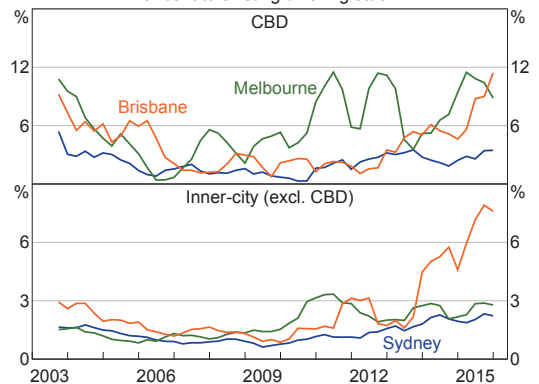
Commercial Property

Residential development

The near-term risks for residential property developers have increased, with a mismatch between a growing supply of geographically concentrated apartments on the east coast and concerns about softening demand for these apartments in some areas (given the rebalancing of housing demand and strengthened lending standards). As the supply of new apartments has continued to come on line, price growth has slowed over the past six months and rental growth has been modest (Graph 2.8 and Graph 2.9). Industry liaison suggests that developers in Brisbane are having increasing difficulty securing pre-sales, leading to wider use of rental guarantees and other buyer incentives, project delays and, in some cases, sales of development sites. Conditions in Perth have also deteriorated, as the new supply of apartments is being sold into a weaker local economy.

Industry contacts report that the large volume of new apartments still planned and under construction in the major capital cities has also put pressure on developers' finances by driving up developer site and construction costs. And while the prices of off-the-plan apartments have been supported by ongoing strong interest from foreign buyers, particularly in Sydney and Melbourne, it

Graph 2.8
Residential Building Approvals*
 Per cent to existing dwelling stock**

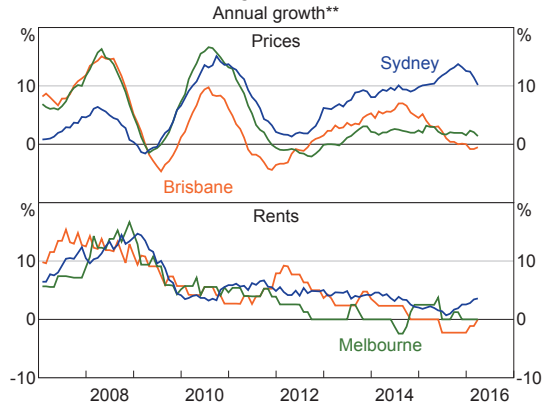


* Four-quarter rolling sum

** Dwelling stocks estimated by RBA

Sources: ABS; CoreLogic RP Data; RBA

Graph 2.9
Inner-city Apartments*
 Annual growth**



* SA4 regions: Melbourne – Inner and Brisbane – Inner City; Sydney is an average of SA4 regions: Sydney – City and Inner South, Sydney – Inner West, Sydney – Inner South West and Sydney – Eastern Suburbs

** Rolling 12-month average growth rate

Sources: CoreLogic RP Data; RBA

is unclear how these buyers would respond to a downturn in their own economy or the Australian property market (see 'Box B: Chinese Demand for Australian Property').

Whatever the cause, a downturn in apartment markets could weigh on developers' financial health through a number of channels. Values of sites and incomplete developments would be likely to fall the most, and the value of apartments held on developers' books would also decline.

Falling apartment prices also increase the risk that off-the-plan purchases fail to settle, although liaison suggests that settlement failures have, to date, remained uncommon and are generally expected to increase significantly only if housing prices fall substantially. At present, listed developers' balance sheets generally appear healthy; many of these companies deleveraged significantly following the financial crisis. However, liquidity ratios have declined in some cases and the limited available data on unlisted developers suggest that near-term risks may be higher for them, because they tend to rely more on (bank) debt financing.

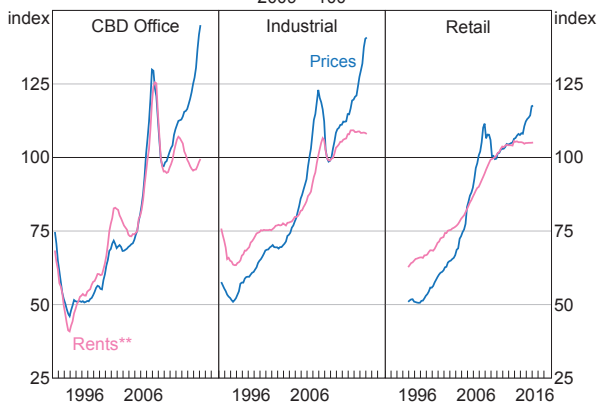
Non-residential property

Conditions and risks in the non-residential property market vary across the major cities although a broad-based phenomenon has been declining yields as prices and rents diverge. Prices for office, industrial and retail property continue to rise sharply on the back of strong investor demand (Graph 2.10). Foreign investors, especially from China and elsewhere in Asia, have been an important factor behind the marked compression in Australian commercial property yields by contributing to this rapid price growth (see 'Box B: Chinese Demand for Australian Property').

Conditions are particularly weak in the Perth and Brisbane office markets (Graph 2.11). Resource-related tenants and, in Brisbane, the public sector, have scaled back office space requirements at a time when significant new supply continues to come on line. The vacancy rate is climbing sharply in Perth, reaching almost one-quarter of properties, and remains high in Brisbane, and rents are falling (Graph 2.12). Vacancies are particularly high for lower-grade properties as tenants are moving into newly constructed offices. In Brisbane, some of these lower-grade properties are being withdrawn for refurbishment or conversion into residential property, student accommodation or hotels.

In contrast, conditions in the Sydney and Melbourne office markets are much firmer and have improved over the past year, reflecting the stronger economic conditions in these cities. Vacancy rates have declined and rents have risen as tenant demand for space has increased strongly, both within and outside the CBD areas. The office markets in Sydney and, to a lesser extent, Melbourne have also been supported by the high level of activity in apartment markets; strong competition for the limited available development sites has prompted some developers, particularly from China, to purchase lower-grade office buildings for redevelopment or conversion into apartments.

Graph 2.10
Commercial Property*
2009 = 100



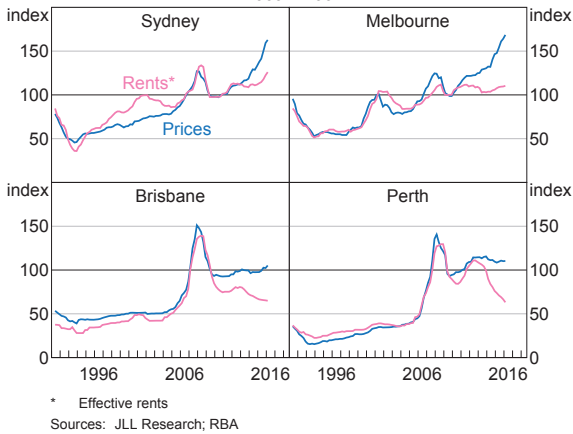
* CBD office and industrial are prime property, retail is regional (non-CBD) centres

** CBD office is effective rents, industrial and retail are face rents

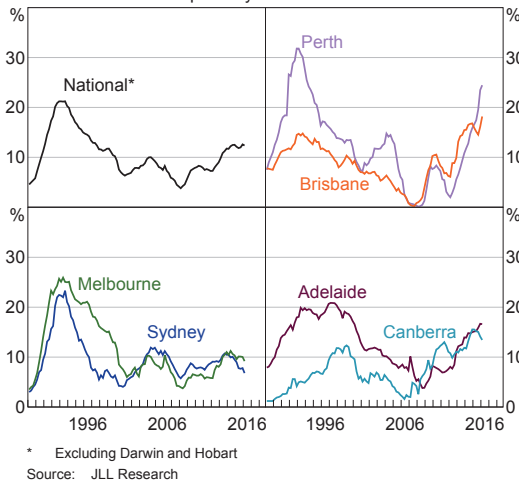
Sources: ABS; JLL Research; RBA

For industrial and retail property, yields have also fallen as continued strength in investor demand, including from foreign investors, has driven solid price growth in these sectors, while at the national level rents have been flat. Again, conditions vary somewhat across the cities. For industrial property, price growth has been most rapid in Sydney, in part reflecting the purchase of sites by residential developers and the government for infrastructure projects. This withdrawal of industrial space has also supported rental growth in Sydney. Consistent with economic conditions, investor and tenant demand have been solid in Melbourne and much weaker in

Graph 2.11
Prime CBD Office Property
2009 = 100



Graph 2.12
Office Vacancy Rates
Capital city CBD markets



Brisbane and Perth. In the retail sector, conditions have also been noticeably firmer in Sydney and Melbourne than in Brisbane and Perth.

Other Business Sectors

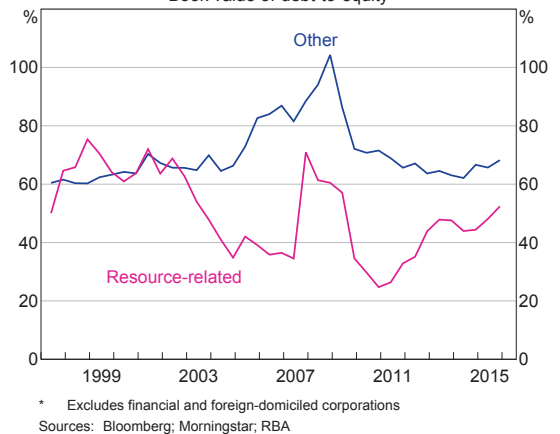
Business conditions and finances

Outside the property sector, businesses' finances generally remain in good shape and broad indicators of financial stress are low. Setting

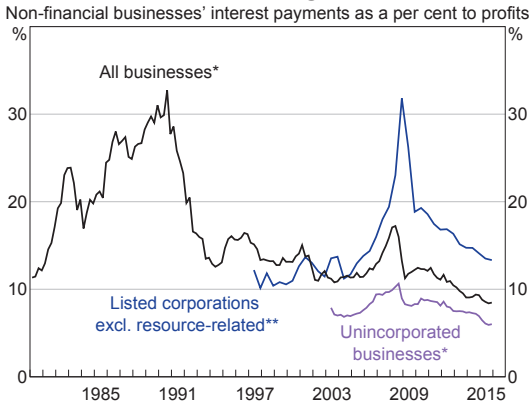
aside the resource-related sector – where there are several signs of stress – survey measures of business conditions are above their long-run average levels, business loan performance has continued to improve and business failure rates are fairly low. The low level of interest rates and the sizeable deleveraging of the business sector following the financial crisis have contributed to this positive environment. The large depreciation of the Australian dollar since mid 2014 has also supported businesses in a number of industries and the decline in oil and other commodity prices has generally benefited companies outside the resources sector.

Businesses outside the resource-related sector appear well placed to meet their financial obligations. The gearing ratio of listed corporations outside the resource-related sector has remained fairly steady over the past few years, though it has drifted up a little of late (Graph 2.13). Aided by lower interest rates, the aggregate debt-servicing ratio of these listed corporations declined over recent years (Graph 2.14). The aggregate debt-servicing ratios for both unlisted corporations and unincorporated businesses have also trended lower over the period, to be around historic lows.

Graph 2.13
Listed Corporations' Gearing Ratios*
Book value of debt-to-equity



Graph 2.14
Debt-servicing Ratio

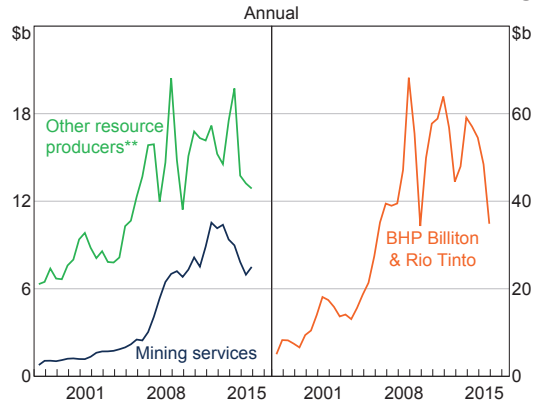


* Gross interest paid on intermediated debt from Australian-located financial institutions

** Net interest paid on all debt as a per cent to EBITDA; excludes foreign-domiciled corporations

Sources: ABS; APRA; Bloomberg; Morningstar; RBA

Graph 2.15
Listed Resource-related Corporations' Earnings*



* Listed corporations' EBITDA; excludes foreign-domiciled corporations

** Includes listed junior explorers

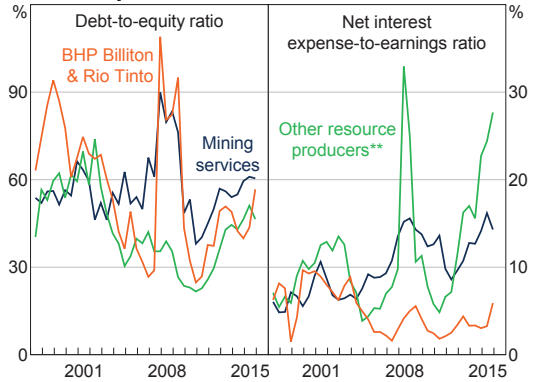
Sources: Bloomberg; Morningstar; RBA

Resource-related sector

For the resource-related sector, conditions are challenging as commodity prices remain well below their levels of recent years. This has led to a further significant decline in the earnings of resource-related companies, including the large, low-cost producers (Graph 2.15). The oil and gas sector has been particularly affected; in 2015, the earnings of listed oil and gas companies fell by more than 40 per cent. Most smaller resource producers are struggling to cover costs at current prices, leading some to suspend operations at higher-cost mines. While producers have further reduced costs, industry liaison suggests that additional cost cutting is proving progressively more difficult.

The steep fall in earnings has weighed on resource-related companies' capacity to meet their debt-servicing obligations; excluding BHP Billiton and Rio Tinto, net interest expenses absorbed more than one-quarter of resource producers' earnings in 2015 (Graph 2.16). Book value measures of gearing ratios have also increased over recent years, indicating a decline in the ability to repay debt through asset sales should this be required. When measured using the market value of equity – which may better reflect the realisable value of assets – gearing has increased even more sharply.

Graph 2.16
Listed Resource-related Corporations' Financial Position*



* Excludes foreign-domiciled corporations; book value

** Includes listed junior explorers

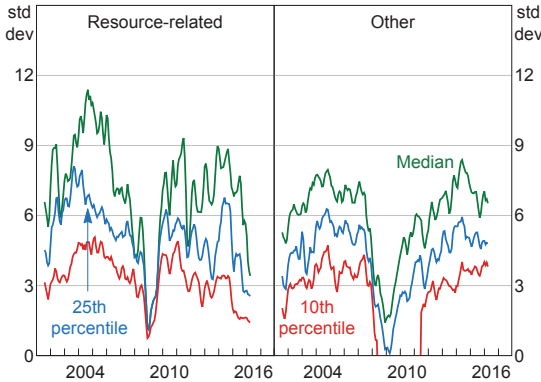
Sources: Bloomberg; Morningstar; RBA

Consistent with these developments, listed resource-related companies' distances-to-default – market-based measures of default risk using equity prices and reported liabilities – suggest that the financial health of the sector has deteriorated significantly over the past six months (Graph 2.17). The measures are generally at their weakest levels since the financial crisis, unlike the corresponding measures for firms outside this sector. During that period, these forward-looking measures fell below zero (theoretically suggesting an imminent default) for a number of non-resource-related companies and, of these, around one-third went on to fail.

Graph 2.17

Listed Corporations' Distance-to-Default*

Debt-weighted, three-month moving average

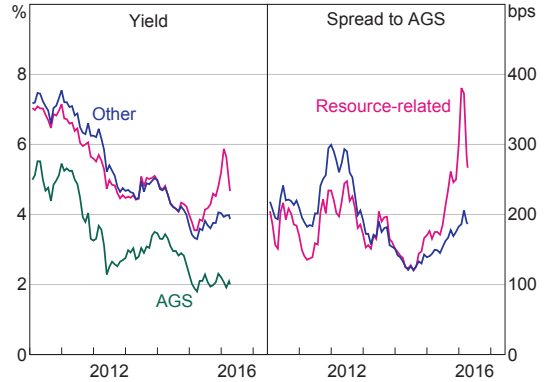


* Excludes financial and foreign-domiciled corporations
Sources: Bloomberg; Morningstar; RBA

Graph 2.18

Australian Corporate Bond Pricing*

Investment grade bonds, 5-year target tenor



* Excludes financial and foreign-domiciled corporations
Sources: Bloomberg; RBA; S&P Capital IQ

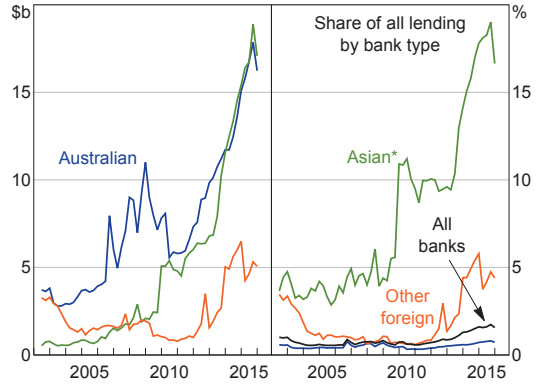
Following widespread downgrades to credit ratings and outlooks across the sector, the bonds of many resource-related companies are currently trading at high yields (Graph 2.18). In particular, yields for lower-rated companies have risen sharply over the past year. This increases the risk that resource-related companies will have difficulty rolling over their debt, putting further pressure on their debt-servicing ability. Generally though, those companies with especially high yields have little market-sourced debt maturing in the next two years, and resource-related companies more broadly will likely have lower funding requirements in the near term given they have cut back on capital expenditure.

Nonetheless, as discussed in previous *Reviews*, direct risks to the domestic financial system arising from these stresses in the resource-related sector are limited. Banks' exposure to the sector remains fairly low at around 2 per cent of consolidated group exposures. However, some banks, particularly Asian banks, do have significant and concentrated resource-related exposures and hence are vulnerable to the deteriorating conditions facing the sector (Graph 2.19). For the major banks, the share of these loans that are non-performing has roughly doubled over the past six months and, in recent public announcements, some of these

Graph 2.19

Banks' Lending to the Mining Sector

Domestic banks



* Includes HSBC
Sources: APRA; RBA

banks indicated that their provisioning for such lending has increased. Although resource-related non-performing assets remain a small part of total non-performing assets, they are likely to rise further in the period ahead, especially if commodity prices do not recover further. In recent liaison, the major banks also noted signs of broader stress emerging in mining-exposed geographic regions, where the performance of other business and property loans has deteriorated. In this environment, it is particularly important that banks accurately value the collateral underlying their resource-related loans and adequately provision for future losses. ❖

Box B

Chinese Demand for Australian Property

Chinese investment in Australian residential and commercial property has increased significantly in recent years. This interest in property from Chinese households, institutional investors and developers is not unique to Australia; they are also active in the property markets of other countries, such as the United States, the United Kingdom, Canada and New Zealand.

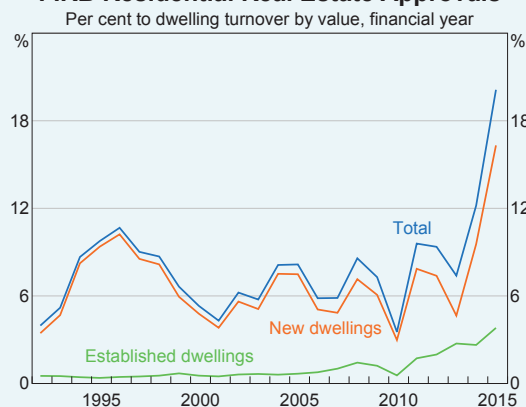
The Australian banking system's direct exposure to Chinese property investors and developers appears to be small. However, if Chinese demand were to decline significantly, that could weigh on domestic property prices and so lead to losses on the banks' broader property-related exposures. This box explores these issues further.

Housing

Non-resident Chinese buyers own only a small portion of the Australian housing stock, but industry contacts suggest that they account for a significant and increasing share of purchases. These purchases are largely concentrated in off-the-plan apartments (especially in Sydney and Melbourne), in part because all foreign buyers, other than temporary residents, are generally restricted to purchasing newly constructed dwellings. Consistent with observations by industry contacts, the limited and partial data available from the Foreign Investment Review Board (FIRB) suggest that approvals for all non-residents applying to purchase residential property have increased substantially of late

(Graph B1).¹ The majority of these approvals are for new dwellings in New South Wales and Victoria. China is the largest source of approved investment in (residential and commercial) real estate and its share of total approvals is growing, but it still only accounts for a small fraction of overall market activity.

Graph B1
FIRB Residential Real Estate Approvals



Sources: CoreLogic RP Data; FIRB; RBA

Nonetheless, if a significant subset of buyers reduce their demand sharply, this can weigh on housing prices, and Chinese buyers are no exception to this given their growing importance in segments of the Australian market. Such a reduction in housing

¹ Setting aside any misreporting to FIRB, these data overstate the share of foreign purchases of Australian residential property for several reasons: not all of the FIRB approvals translate into actual purchases; for some proposed developments, developers can receive pre-approval from FIRB to sell up to 100 per cent of the dwellings to foreign buyers, but the data are not subsequently updated to reflect the actual share of these dwellings sold to foreign buyers; the data are gross approvals to foreign buyers and do not subtract any subsequent sales of these properties; and given that foreign purchases are skewed towards more expensive housing, the importance of these purchases in overall dwelling turnover will be overstated in value terms. For a detailed discussion of these data limitations, see Gauder M, C Houssard and D Orsmond (2014), 'Foreign Investment in Residential Real Estate', RBA *Bulletin*, June, pp 11–18.

demand could result from a number of sources, including:

- A sharp economic slowdown in China that lowers Chinese households' income and wealth. Any accompanying depreciation of the renminbi against the Australian dollar could further reduce their capacity to invest in Australian housing. In the extreme, Chinese investors may need to sell some of their existing holdings of Australian property to cover a deteriorating financial position at home. A macroeconomic downturn in China could also be expected to have knock-on effects on other countries in the region, which could also affect those countries' residents' capacity and appetite to invest in Australian property. On the other hand, if economic prospects in China deteriorate this could make investment abroad, including in Australia, more attractive and result in an increase in demand for Australian property.
- A further tightening of capital controls by the Chinese authorities that restricts the ability of Chinese households to invest abroad.
- A domestic policy action or other event that lessens Australia's appeal or accessibility as a migration destination, including for study purposes. Industry contacts suggest that in addition to wealth diversification, many Chinese purchases are dwellings for possible future migration, housing for children studying in Australia or rental accommodation targeted at foreign students. If so, this demand could be expected to be fairly resilient to shorter-term fluctuations in conditions in China or developments in the domestic property market, but more sensitive to changes in migration or education policy.

A substantial reduction in Chinese demand would likely weigh most heavily on the apartment markets of inner-city Melbourne and parts of Sydney, not only because Chinese buyers are particularly

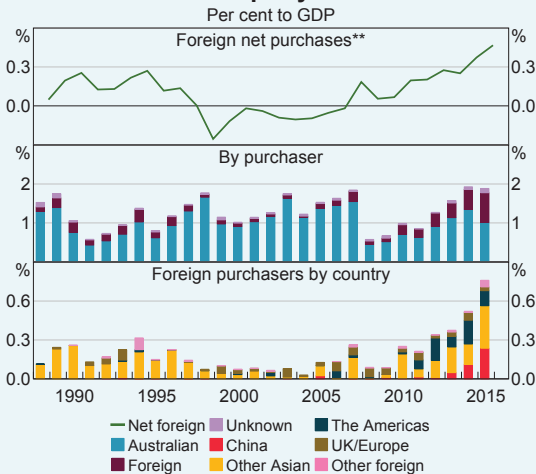
prevalent in these segments but also because other factors would reinforce any initial fall in prices. These include the large recent expansion in supply in these areas as well as the practice of buying off-the-plan, which increases the risk of price declines should a large volume of apartments return to the market if the original purchases fail to settle.

The Australian banking system has little direct exposure to Chinese investors. Australian-owned banks engage in some lending to foreign households to purchase Australian property, but the amounts are small relative to their mortgage books. Australian-owned banks also have tighter lending standards for non-residents than domestic borrowers, such as lower maximum loan-to-valuation ratios, because it is harder to verify these borrowers' income and other details, and because the banks have less recourse to these borrowers' other assets should they default on the mortgage. Australian branches of Chinese-owned banks appear to be more willing to lend to Chinese investors because they are often in a better position to assess these borrowers' creditworthiness, particularly where they have an existing relationship. Nonetheless, although the direct exposures are small, if a reduction in Chinese demand did weigh on housing prices this could affect banks' broader mortgage books to some extent.

Commercial Property

Chinese institutional investors and residential property developers have also become increasingly active in Australian commercial property markets. In the past two years, they accounted for 9 per cent of purchases (greater than \$5 million) compared with 1 per cent on average during the prior decade (Graph B2). These figures may understate the involvement of Chinese investors to the extent that they invest through trusts or managed funds domiciled in other Asian countries, which, in turn, invest in Australian commercial property. Another

Graph B2
Commercial Property Transactions*



* Only includes transactions greater than \$5 million

** Foreign purchases minus foreign sales

Sources: ABS; JLL Research; RBA; Savills

avenue for foreign investment is indirectly through portfolio inflows into domestically listed investors and developers.

The growing involvement by Chinese buyers is occurring in a broader context of increasing foreign investment in Australian commercial property. In 2015, foreign investment accounted for around 40 per cent of purchases, the highest proportion since such data were first collected in the late 1980s. This compares with earlier increases in foreign investment in commercial property, such as the early 1990s, when such investment reached around one quarter of all purchases for a number of years, mainly driven by Japanese investors. Unlike in that episode, though, most recent Chinese investment is thought to be equity funded rather than debt funded.

Over recent years, around half of Chinese purchases have been high-grade office property, largely in Sydney and Melbourne, and almost half have been lower-grade office or industrial buildings in Sydney, primarily for conversion or development into apartments. This reflects Chinese developers' intentions to develop several high-rise apartment

projects in Sydney and, to a lesser extent, Melbourne and Brisbane. Chinese developers have also become increasingly active in greenfield land markets, particularly in Melbourne.

Along with demand from elsewhere in Asia, Chinese demand has been an important factor behind the marked compression in Australian commercial property yields, by contributing to the rapid price growth in Sydney and Melbourne and supporting prices in other cities. However, it is unclear whether demand will be sustained at these lower yields, particularly if yields elsewhere and on other assets increase over time.

Liaison with banks suggests that Chinese institutional investors and developers fund much of their activity with equity from their own balance sheets and loans from Chinese banks, including their Australian branches. While Australian-owned banks do lend to foreign developers, this is generally to long-standing customers or, occasionally, by taking the lead on syndicated deals in which foreign banks provide a large portion of the funding or take the first exposure to credit losses. As with housing lending, the main risk to the Australian banking system is therefore indirect; were Chinese or other investors and developers to sell down their portfolios or were inflows of investment to fall, prices of commercial property and development sites could decline, weighing on the banking system's broader commercial property exposures. ❖

3. The Australian Financial System

The Australian financial system remains in good condition overall. Banks' profitability is at a high level and the performance of banks' assets has continued to steadily improve, driven by their business loan portfolio. The performance of housing lending remains strong and some of the concerns associated with banks' mortgage portfolios have lessened since the previous *Review* (as discussed in the previous chapter). Nonetheless, risks have become more pronounced, though still manageable, in a number of other areas.

One of these risks is the possibility of large losses on lending to residential property developers and on banks' commercial property portfolios, given the concerns about oversupply that were outlined in the previous chapter. In addition, banks' resource-related exposures have shown further signs of stress, but, as noted, these represent only a small share of their total exposures. Vulnerabilities in the global economy also pose a risk to banks generally, including Australian banks with international exposures. Australian banks' largest international exposures are to New Zealand, where high levels of mortgage debt and rapidly rising housing prices have raised the risk that a price correction could adversely affect banks' asset quality, while persistently low milk prices and declining land values have increased the probability of defaults and likely losses on loans to the dairy industry. A further deterioration in global risk sentiment could raise the cost of wholesale funding, though, to date, the increase in spreads has been modest and yields remain low.

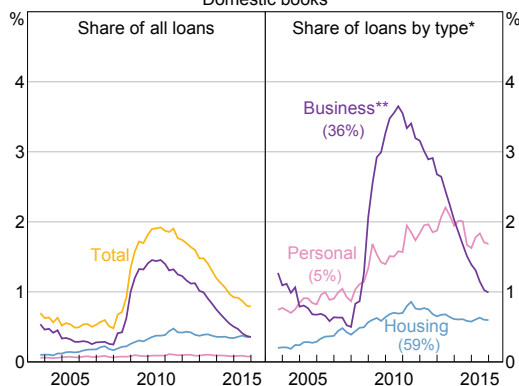
While banks face heightened risks in some areas, their resilience to adverse shocks has increased significantly via a strengthening of their capital and liquidity positions since the previous *Review*. In particular, the major banks' capital positions have moved further above their minimum regulatory requirements. This has largely been in anticipation of higher future capital requirements as the Australian Prudential Regulation Authority (APRA) finalises the level required to ensure that the capital positions of authorised deposit-taking institutions (ADIs) are 'unquestionably strong' by international standards. As a result, banks' return on equity (ROE) has declined a little, despite strong profitability, as more capital has been raised. It is important that banks and investors recognise that this decline has been associated with an increase in resilience and do not seek to offset it by increasing the overall level of risk-taking or by weakening risk controls and culture; the latter, in particular, can have both financial and reputational ramifications.

Profitability of the general insurance industry declined in 2015, reflecting lower investment income and a deterioration in underwriting results as insurers faced strong competition for commercial lines of business. While these pressures appear to have subsided somewhat through the year, there is little sign of an imminent rebound in profits. Lenders mortgage insurers' (LMIs) profitability has also been reduced as some banks switched to offshore insurers and the volume of high loan-to-valuation (LVR) loans declined in response to tighter lending standards. Given these developments, insurers' pricing policies and the adequacy of their claims reserves warrant ongoing attention.

Bank Asset Performance and Lending Conditions

The asset performance of Australian banks has improved steadily over the past five years and this trend continued over the second half of 2015. In the banks' domestic loan portfolios, the ratio of non-performing assets to total loans was 0.8 per cent at December 2015, down from a peak of 1.9 per cent in mid 2010 (Graph 3.1). This improvement has been driven by business loans, though the non-performing ratios for housing and personal loans have also declined a little over recent years. Future asset performance, in particular, will depend on lending standards and the evolution of macroeconomic conditions as well as conditions in the mining and property sectors.

Graph 3.1
Banks' Non-performing Assets
Domestic books



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

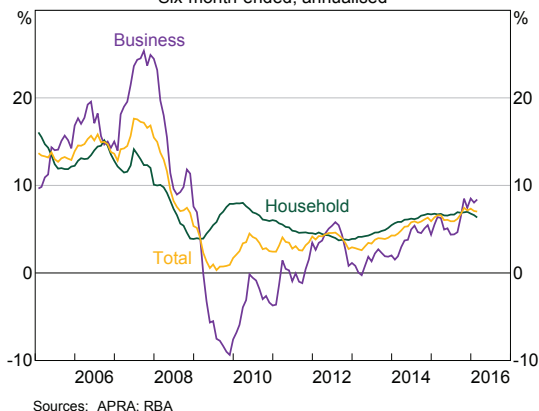
** Includes lending to financial businesses, bills, debt securities and other non-household loans

Source: APRA

Total credit growth picked up over the past six months, led by growth in business lending (Graph 3.2). Household credit growth has declined modestly over recent months, and the composition of housing credit growth has shifted away from investor lending and towards owner-occupier lending. As discussed in the previous *Review*, lenders tightened lending standards in the housing market over 2015 in response to regulatory actions, with some further tightening occurring over recent

Graph 3.2
Credit Growth

Six-month-ended, annualised



months. Lenders have implemented tighter housing loan serviceability criteria such as:

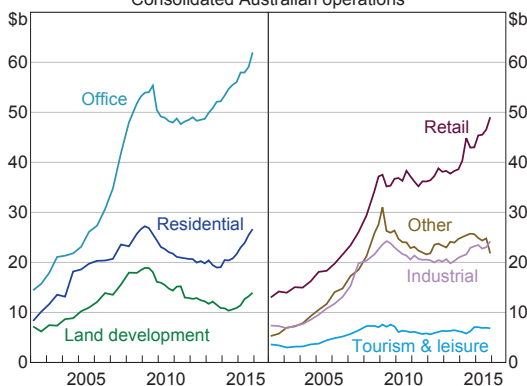
- applying higher interest rate buffers and floors, including to existing debt
- applying haircuts to uncertain income sources such as bonuses and overtime
- more accurately assessing borrowers' actual living expenses and scaling minimum living expense estimates by income.¹

Some lenders have also lowered the maximum allowable LVR for new investor lending to between 80 and 90 per cent and reduced the maximum interest-only period for owner-occupiers. In addition to the changes in non-price conditions, lenders increased pricing for investor loans in mid 2015 and on all variable-rate mortgages later in the year. These various measures have contributed to the fall in investor housing loan approvals. In contrast, pricing competition for owner-occupier loans has reportedly intensified, particularly for lower-risk borrowers given the tightening in general lending standards, with discounting for some borrowers increasing significantly across the industry over the past six months.

1 APRA conducted a hypothetical borrower exercise in early 2015 and in late 2015. These exercises were used to examine the effect of changes to banks' residential mortgage lending standards in response to policies introduced during 2015. For further information, see Richards H (2016), 'A Prudential Approach to Mortgage Lending', Speech at the Macquarie University conference, 'Financial Risk Day', Sydney, 18 March and APRA (2016), 'APRA *Insight*', Issue One.

Business credit growth has picked up since the previous *Review*, especially large business loans. By industry, growth has been driven by lending to the property & business services and finance & insurance industries, which together account for more than half of total business lending. Within property & business services, commercial property exposures have continued to grow strongly, outpacing growth in other business credit, though, as a share of total lending, they remain below the levels reached around the financial crisis. The pick-up in commercial property lending has been broad based across office, retail, residential and land development (Graph 3.3). The major banks and Asian banks have driven much of this growth, with the Asian banks growing their business rapidly from a low base.

Graph 3.3
Commercial Property Exposures by Segment
Consolidated Australian operations



Sources: APRA; RBA

In liaison, Australian-owned banks have expressed caution about the outlook for residential property developers as well as concerns over the growth in these exposures as a share of banks' total lending. In response, they have tightened lending criteria over the past six months, with widened margins, increased pre-sales requirements, lowered maximum loan-to-development cost ratios, and reduced appetite to lend for new developments in areas considered most at risk of oversupply. Competition among lenders for non-residential property investment loans, however, appears to have intensified; banks report that margins narrowed

further over the second half of 2015. Given the increase in risk, commercial property lending, including for residential development, will require continued close monitoring for some time yet.

Competition between lenders in business lending areas outside commercial property has stabilised after intensifying over a number of years, although it remains strong. Margins on large business loans remain around historic lows.

International Exposures

Australian-owned banks are exposed to risks arising from international developments because of their international exposures, which account for one-quarter of their consolidated assets (Table 3.1). As discussed in 'The Global Financial Environment' chapter, recent global concerns have largely reflected risks associated with the outlook for China and other emerging economies. Australian-owned banks' direct exposures to China account for only around 1 per cent of consolidated assets and declined marginally over 2015 after a number of years of rapid expansion (Graph 3.4). In addition, many of these exposures are short-term, trade-related claims, which should limit credit and funding risks. As a result, events in China do not present a significant direct risk to the stability of Australian banks. However, a significant weakening in economic conditions in China could contribute to a sustained period of volatility in global funding markets that would raise costs for the Australian banking system. To the extent that weaker economic conditions spill over to economies where Australian banks have a greater presence, including Australia, asset performance might also be expected to be adversely affected.

More broadly, Australian-owned banks' exposures to Asia have begun to grow more slowly. Over 2015, exposures to Asia declined as a share of assets for the first time since the financial crisis, and this trend is likely to continue following ANZ's announcement that it will narrow its focus in Asia. Exposures to the United Kingdom are also expected to almost

Table 3.1: Australian-owned Banks' International Exposures

Ultimate risk basis, December 2015

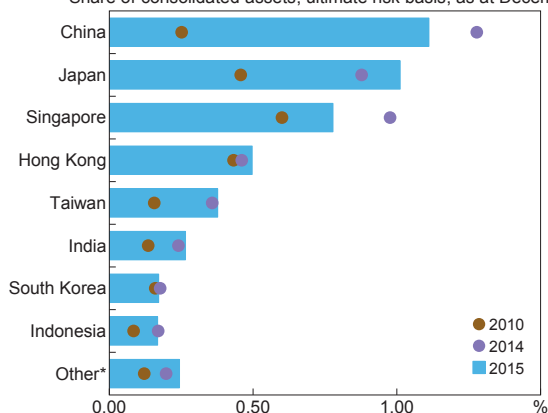
	Value	Share of international exposures	Share of global consolidated assets
	\$ billion	Per cent	Per cent
New Zealand	361	36	9
Asia	186	18	5
– China	45	4	1
United Kingdom	183	18	5
United States	147	15	4
Europe	66	7	2
Other	71	7	2
Total	1 014	100	25

Sources: APRA; RBA

Graph 3.4

Australian-owned Banks' Exposures to Asia

Share of consolidated assets, ultimate risk basis, as at December



* Cambodia, Laos, Malaysia, Philippines, Thailand and Vietnam

Sources: APRA; RBA

halve following the demerger of NAB's Clydesdale subsidiary in February.

Australian-owned banks' largest international exposure is to New Zealand, largely via the major banks' New Zealand subsidiaries, which comprise around one-tenth of Australian-owned banks' total consolidated assets. Housing lending in New Zealand represents a little under half of these exposures. The recent performance of the major banks' New Zealand housing lending has been strong – the NPL ratio was 0.2 per cent at end 2015, down from a peak of 1.3 per cent in mid 2010.

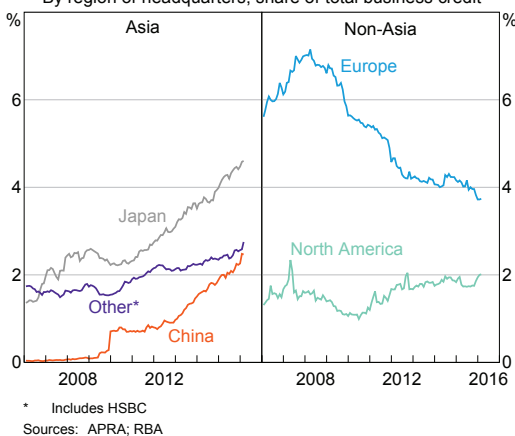
However, as noted earlier, high levels of household debt and the rapid rise in housing prices in recent years raises the risk of a price correction that could result in a deterioration in banks' loan performance; that said, the loss rates on this portfolio would generally be limited by the housing collateral backing such loans.

The major banks also have substantial exposures to the dairy industry in New Zealand, amounting to about 1 per cent of their consolidated assets. Exposures to this industry increased by around 10 per cent over the year to June 2015 and appear to have continued to grow subsequently, as demand for working capital has increased in a loss-making environment and banks have supported borrowers they consider viable in the medium term. Persistently low milk prices as well as a decline in dairy land values over the past year have increased the probability of defaults and likely losses on lending to the sector, especially if the banks' assessments of borrower viability prove too optimistic.

Foreign banks operating in Australia have a different risk profile than their locally owned counterparts. Asian banks, particularly the branches of Chinese and Japanese banks, have significantly increased their activities in Australia since the financial crisis (Graph 3.5). This expansion has been concentrated in specialised lending activities, such as commercial property and syndicated lending to the mining

sector, and relies heavily on intragroup funding. A key risk associated with the expansion of lending by foreign banks is that they can make lending more procyclical by expanding rapidly when conditions are favourable and reducing lending substantially or even exiting the Australian market during a downturn.² This was the case with some European bank branches in the lead-up to, and in the aftermath of, the financial crisis.

Graph 3.5
Foreign Bank Business Credit in Australia
By region of headquarters, share of total business credit

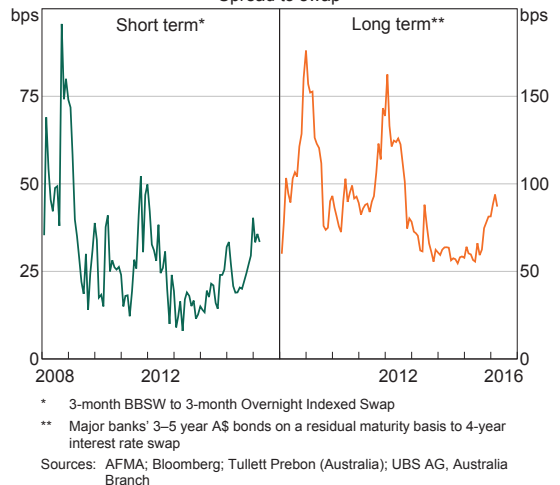


Funding and Liquidity

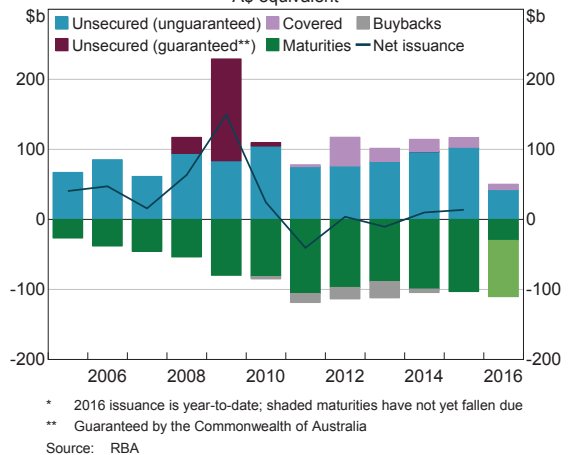
Spreads on Australian banks' wholesale funding increased over the past six months (Graph 3.6). Several one-off changes have contributed to this, including changes to various domestic and international regulations that reduced demand for bank paper. In addition, the deterioration in global risk sentiment has raised spreads. However, wholesale funding spreads remain well below those seen during 2008 and 2012. Moreover, banks have retained good access to a range of wholesale credit markets, issuing around \$50 billion of bonds since the start of the year (Graph 3.7). Liaison suggests that banks expect to retain this good access and comfortably meet their funding requirements for 2016. In any case, Australian banks are less

2. For a broader discussion of the financial stability risk arising from foreign-owned banks' operations in Australia, see Turner G and J Nugent (2015), 'International Linkages of the Australian Banking System', *FINSIA Journal of Applied Finance*, Issue 3, pp 34-43.

Graph 3.6
Banks' Debt Pricing
Spread to swap



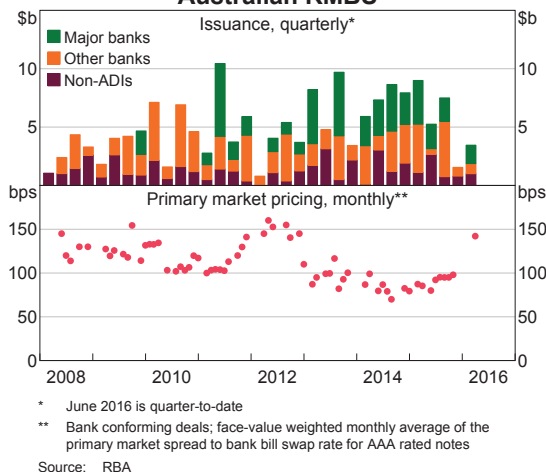
Graph 3.7
Banks' Bond Issuance and Maturities*
A\$ equivalent



exposed to wholesale funding markets than they were during the financial crisis because the shares of deposit and, more recently, equity funding have increased. However, offshore wholesale funding still accounts for around one-fifth of banks' total funding.

There has been only modest issuance of residential mortgage-backed securities (RMBS) since November, and the cost of such funding has been higher than it was mid last year (Graph 3.8). One reason for this has been the global rise in spreads on fixed income securities.

Graph 3.8
Australian RMBS



Higher spreads on wholesale funding have not affected average deposit rates to date, despite some impact on wholesale term deposit costs. Banks report that competition for most deposits eased over the past year. The major banks' average outstanding deposit rate has fallen by almost 60 basis points since the start of last year, compared with a 50 basis point decline in the cash rate over the same period. However, competition for deposits may increase if conditions in wholesale funding markets become less accommodative in the period ahead.

Banks have continued to increase their resilience to liquidity shocks over the past six months. The aggregate Liquidity Coverage Ratio (LCR) increased by 5 percentage points to 123 per cent at end December 2015, as banks' holdings of high-quality liquid assets (HQLA) increased by more than their

projected net cash outflows (Table 3.2). Banks' holdings of HQLA have increased substantially since mid 2015, with the bulk of their holdings being state government securities ('semis') or deposits with central banks.

The Net Stable Funding Ratio (NSFR) is part of the Basel III liquidity framework and is intended to complement the LCR by requiring banks to maintain a stable funding profile over the medium term, thus lessening the impact of any deterioration in wholesale funding conditions. While the NSFR is not due to be implemented until 2018, banks are already lengthening their funding maturity profiles to meet the requirement and will likely continue to do so. APRA recently released a consultation paper on the NSFR that set out details of proposed requirements for stable funding and the ability of different kinds of liabilities to provide it in the Australian context.

Profitability

Banks have recorded strong profit growth in recent years as revenues have increased and loan performance has improved. While headline profit in the latest half was 7 per cent lower than a year earlier, at \$16 billion, the decline largely reflected the effect of extraordinary items (including writedowns of capitalised software). Net interest income increased over the period due to moderate asset growth, but net interest margins narrowed slightly as the boost to margins from mortgage repricing was offset by strong competition in

Table 3.2: Components of the Liquidity Coverage Ratio
All currencies, December 2015

	Value	Change since June 2015	Share of consolidated assets
	\$ billion	\$ billion	Per cent
Net cash outflows	558	27	14
High-quality liquid assets	436	61	11
Committed liquidity facility ^(a)	250	-1	6

(a) Eligible collateral, excluding that which is encumbered.

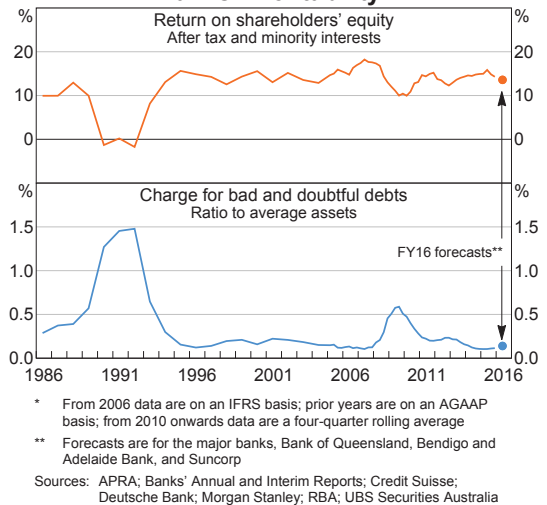
Sources: APRA; RBA

business lending markets. Charges for bad and doubtful debts were steady as a share of total assets and remained at a low level relative to their history (Graph 3.9). Some major banks indicated that credit quality had deteriorated in their resource-related portfolios, but highlighted that these exposures represent only a small proportion of total credit exposures (for further discussion of these trends, see the 'Household and Business Finances' chapter).

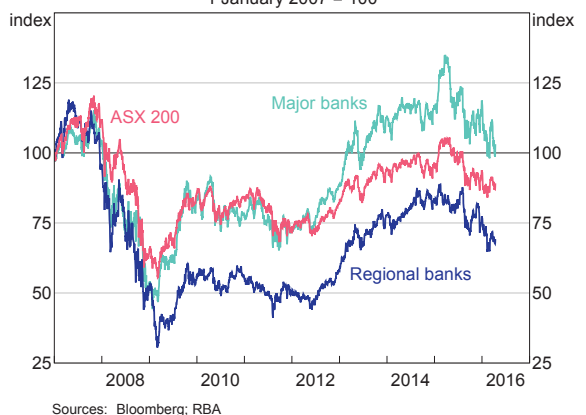
The banking sector's aggregate ROE declined in the most recent half because of lower headline profits and large increases in the capital positions of major banks, but it remains within the range seen in recent years and high by international standards. The increase in capital is expected to have a persistent effect on ROE; equity market analysts expect the major banks' ROE to decline by around 1 percentage point in the current financial year. Investors may accept that a lower ROE is offset to some extent by a reduction in risk associated with stronger capital positions, but if investors' expectations are not adjusted it could push banks to take more risk to maintain returns. Indeed, banks that publish explicit ROE targets have set these at levels that exceed both current returns and analysts' expectations and are at least as high as those achieved over recent years. If these targets are maintained, it will be important that banks also maintain appropriate risk management practices and operational capabilities. So far the major banks appear to be focusing on divesting low-return and capital-intensive businesses, both internationally and domestically, as well as repricing their loan books to support profitability. For example, NAB announced the sale of 80 per cent of its life insurance business to Nippon Life in 2015 and finalised the demerger of its UK Clydesdale subsidiary in February this year.

Banks' share prices are more than 15 per cent lower than mid last year, and have been volatile over recent months (Graph 3.10). These developments largely reflected the deterioration in sentiment towards banks globally. Recent announcements of

Graph 3.9
Banks' Profitability*



Graph 3.10
Banks' Share Prices
1 January 2007 = 100



increased charges for bad and doubtful debts have also contributed, as have analysts' expectations that the major banks may need to lower their dividend payout ratios to meet anticipated higher capital requirements if profit growth slows. These expectations for lower profit growth reflect a variety of factors, including an anticipated end to declining charges for bad and doubtful debts, possibly lower net interest margins, and the potential for growth in mortgage lending to slow as the housing market cools and lending standards tighten.

Capital

Australian banks have increased their resilience to adverse shocks over recent years. Most recently, this has occurred by a strengthening of their capital positions in anticipation of APRA's measures to address the Financial System Inquiry's recommendation for Australian ADIs' capital ratios to be 'unquestionably strong' by international standards. The focus on strengthening capital positions builds on previous changes to banks' liquidity positions that make them more resilient to adverse funding shocks. Together, these measures aim to ensure the banking system is able to maintain core economic functions even under stress.

The standards required to achieve an 'unquestionably strong' capital position are yet to be determined, with APRA expected to provide further detail around the end of 2016 on a framework for achieving this.³ The international capital framework is also due to be finalised over the year ahead and will inform changes to these standards. APRA has indicated that the Australian banking system is likely to face higher capital requirements as a result of these initiatives, in addition to those arising from higher mortgage risk weights for banks using the internal ratings-based (IRB) approach to credit risk (the four major banks plus Macquarie), discussed in more detail in the previous *Review*. However, APRA considers that any resulting increases in capital requirements should be well within the capacity of the banking system to absorb over the next few years. APRA's countercyclical capital buffer policy also took effect from January 2016. While this was set at 0 per cent, any adjustment to this in the future would also result in higher capital requirements (see 'Box C: The Countercyclical Capital Buffer').

The need for unquestionable strength in capital levels is particularly relevant for the major banks

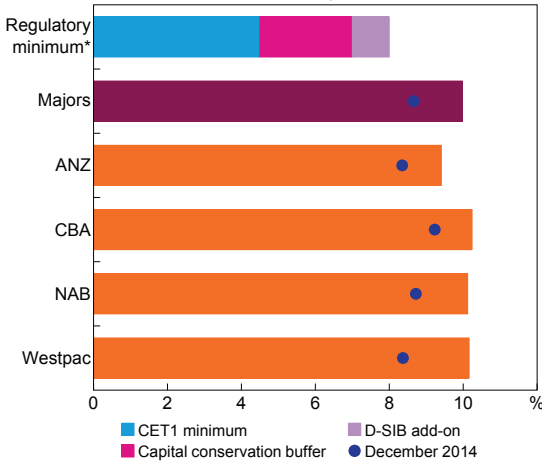
given their dominant share of banking activities in Australia, which creates a concentration risk in the system, and their greater exposure to global market conditions. This makes it important that the major banks are not only able to withstand severe external shocks, but can also support the economy during such episodes by maintaining their ability to fund themselves and extend new lending. As a result, each of the four major banks has been designated as a domestic systemically important bank (D-SIB) by APRA, requiring them to hold an additional capital buffer of 1 per cent of risk-weighted assets from January 2016.

In response to these developments, banks have continued to increase their capital positions. The major banks have raised around \$5 billion of common equity since the previous *Review*, including Westpac's \$3½ billion rights issue and an additional \$1½ billion from the major banks' dividend reinvestment plans. This increased the major banks' CET1 capital ratio to around 10 per cent of risk-weighted assets at December 2015, 1¼ percentage points higher than a year ago and well above the current standard minimum regulatory CET1 ratio of 8 per cent for Australian D-SIBs (Graph 3.11). The capital positions of some major banks are also being supported by the completion of asset sales. However, higher capital requirements for their residential mortgages, discussed above, could absorb around 0.8 percentage points of their CET1 capital ratios when the changes come into effect from July this year.

The total capital ratio of the banking system increased by 0.8 percentage points over the second half of 2015, to be around 14 per cent of risk-weighted assets (Graph 3.12). While this largely reflected the increase in major banks' CET1 capital, issuance of non-common equity capital (Additional Tier 1 and Tier 2 instruments, sometimes called 'hybrids') also contributed to the higher capital position. Net issuance of non-common equity capital was around \$4½ billion in the second

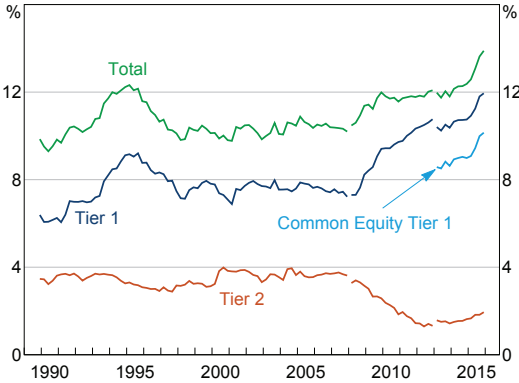
³ The government also outlined a timeline for other specific measures to strengthen the Australian financial system. For further information, see Australian Government (2015), *Government Response to the Financial System Inquiry*, October.

Graph 3.11
Major Banks' CET1 Capital Ratios
APRA Basel III basis, December 2015



* The capital conservation buffer and D-SIB add-on took effect on 1 January 2016
Sources: APRA; Banks' Financial Disclosures; RBA

Graph 3.12
Banks' Capital Ratios*
Consolidated global operations

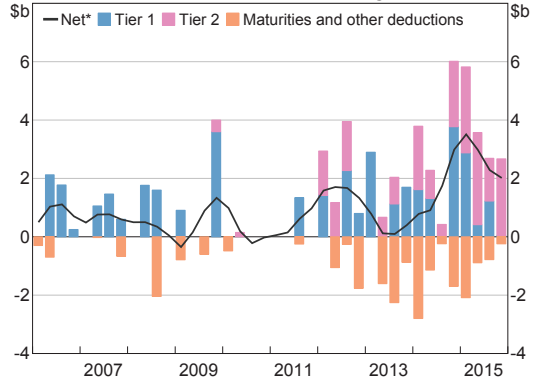


* Per cent of risk-weighted assets; break in March 2008 due to the introduction of Basel II for most ADIs; break in March 2013 due to introduction of Basel III for all ADIs

Source: APRA

half of 2015, largely driven by Tier 2 instruments (Graph 3.13). More recently, CBA issued \$1½ billion of Additional Tier 1 capital, although this largely replaced capital from previously issued instruments. Spreads on banks' new Additional Tier 1 issuance continued to increase over the past six months, and prices of most of the major banks' instruments in the secondary market traded at a substantial discount to their listing prices, consistent with global developments.

Graph 3.13
Banks' Non-common Equity Capital



* 7-period Henderson trend; prior to 2013 maturing instruments are estimated and net change in capital may exceed net issuance if maturing instruments are not fully Basel III compliant

Sources: APRA; RBA

Australian banks using the IRB approach to credit risk have been required to disclose their leverage ratio from mid 2015. The leverage ratio is a non-risk-based measure of a bank's Tier 1 capital relative to its total exposures, and is intended to be a backstop to the risk-based capital requirements. The leverage ratio framework is yet to be finalised internationally, although the Basel Committee's governing body agreed the minimum requirement should be 3 per cent. The Basel Committee is expected to make final adjustments to the measure by the end of 2016, with a view to establishing the requirement from January 2018. Each of the Australian banks required to disclose the measure reported a leverage ratio close to 5 per cent at December 2015, well above the minimum.

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 7 per cent of financial system assets in Australia, based on a new, broader definition implemented by the Financial Stability Board (FSB) in November 2015 (Graph 3.14).⁴ This share has declined from over 10 per cent in 2007 and is well below that for a number of large economies. 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, even though a few entities within the sector are highly leveraged. Nonetheless, the Reserve Bank and other Australian financial regulators continue to monitor shadow banking activity for signs of risk.

Mortgage lending by the shadow banking sector appears to have been fairly stable of late, despite the tightening of mortgage lending standards at prudentially regulated entities. Issuance of RMBS by entities other than ADIs in 2015 was lower than in 2014 and there has been modest non-ADI

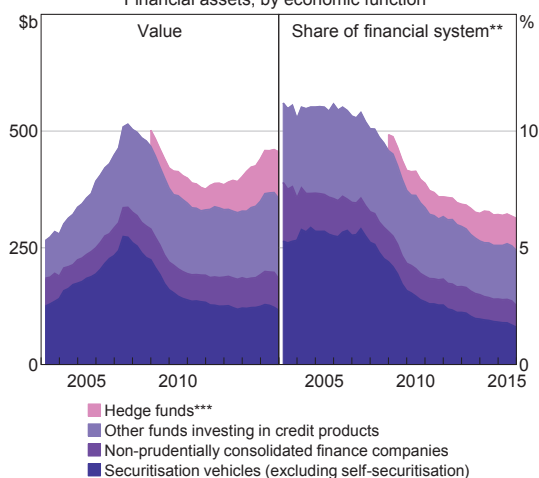
RMBS issuance since November 2015 (as discussed above). The higher cost of funding via RMBS is likely to curtail the capacity of the non-bank sector to expand. Limits to mortgage originators' access to warehouse funding from banks and to their capacity to process sufficient lending volumes to make a material difference to overall credit growth are also constraints. Nonetheless, it is important to continue to monitor whether there is any significant switch of lending to non-ADIs in response to tighter housing lending practices at ADIs, given that non-ADI mortgage originators fall outside the prudential regulatory perimeter and tend to have riskier loan pools than banks.

Superannuation

The superannuation sector is a large part of Australia's financial system. Total assets in the sector amount to over \$2 trillion, equivalent to around half the size of the Australian banking system and accounting for around three-quarters of assets in the managed fund sector (a higher share than in other advanced economies).

Total superannuation assets grew at an annualised rate of 2¼ per cent over the second half of 2015, well below the average pace of recent years. Growth was weighed down by a fall in investment income, and it is likely that declines in equity prices since the start of the year have continued to weigh on asset growth in 2016. As the Australian population ages and more members enter the drawdown phase, it is likely that outflows will trend higher relative to contributions, creating a need to consider the associated liquidity implications. Self-managed super funds' (SMSFs) assets have increased more rapidly than those of other super funds over the past decade and represented almost one-third of total superannuation assets at the end of 2015. The asset allocation of SMSFs is different to APRA-regulated funds, including a higher share of assets in (mainly commercial) property, which exposes investors to a different set of risks (Graph 3.15).

Graph 3.14
Shadow Banking in Australia
Financial assets, by economic function*



* Total assets for some entity types where financial assets data are unavailable

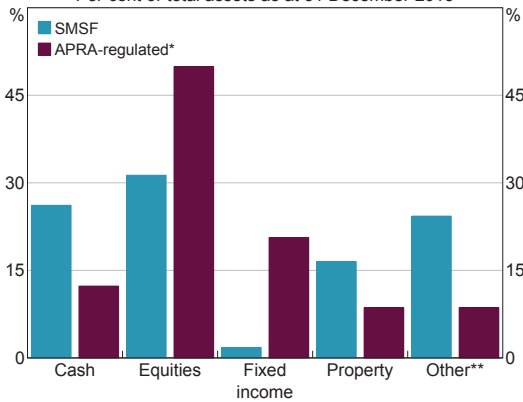
** Financial system excludes the RBA

*** Hedge fund data are only available from December 2008

Sources: ABS; APRA; ASIC; RBA

⁴ The new definition is based on the economic function of financial entities' activities, rather than the legal form of 'Other Financial Institutions' (OFIs). For further details, see FSB (2015), 'Global Shadow Banking Monitoring Report 2015'.

Graph 3.15
Superannuation Funds' Asset Allocation
 Per cent of total assets as at 31 December 2015



* Includes exempt public sector superannuation schemes
 ** Includes investments in managed funds, listed trusts and unlisted trusts which invest in a variety of asset classes
 Sources: APRA; ATO

An extended period of low returns could pose challenges for superannuation funds because they typically set long-term target returns for investments based on a spread above CPI inflation. To date it appears that most funds have responded to lower returns by decreasing their targets or communicating to members that returns may be below target for the foreseeable future, but there is a risk that some funds could increase their exposure to more risky asset classes (such as commercial property) in an attempt to boost returns.

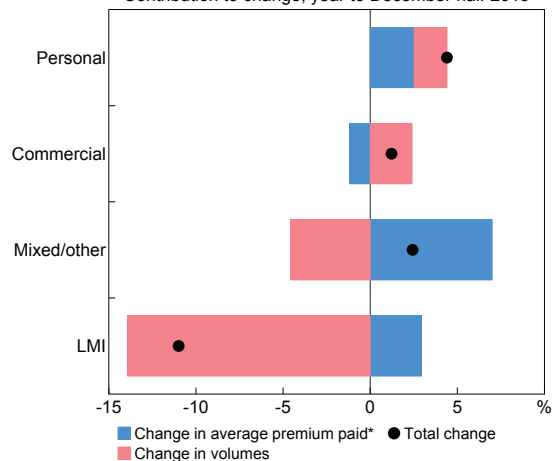
Australian superannuation funds rely substantially on outsourced service providers to act as administrators, custodians and asset managers. In recent years, these providers have become more concentrated and most of them fall outside of APRA's regulatory mandate. Operational or financial failures at any of the large service providers could cause a material disruption to the superannuation system. Superannuation funds are legally responsible for managing their service provision and for developing contingency plans in the event of disruptions to outsourced services. Hence, it continues to be important that superannuation funds allocate adequate resources and focus to managing these risks.

Insurance

The general insurance industry remains well capitalised with a capital position equivalent to 1.7 times APRA's prescribed amount. However, general insurers' profitability declined over 2015 after strong outcomes in previous years. The decline in profitability reflected reduced investment income because of lower bond yields and deteriorating underwriting results. Insurers' underwriting results were affected by both a spike in natural catastrophe claims in the 2014/15 financial year and strong competitive pressures on premium rates (particularly for commercial lines of business). These pressures abated somewhat in the second half of 2015 as premiums on some commercial lines of business stabilised, those on personal lines of business increased and natural catastrophe claims were lower as severe weather events were not repeated (Graph 3.16).

LMI are specialist general insurers that offer protection to banks and other lenders against losses on defaulted mortgages. LMIs experienced a large fall in premium volumes in 2015, largely because of Westpac's decision to switch its business

Graph 3.16
General Insurance Premium Growth
 Contribution to change, year to December half 2015



* Gross written premium divided by number of policies written; includes a small cross-product term
 Sources: APRA; RBA

from Genworth and QBE (two major Australian LMI) to an offshore reinsurer. While other banks have maintained their relationships with LMIs, these insurers remain vulnerable to such decisions given that their customer base is concentrated on the major banks. More generally, LMIs have benefited from a below-average level of claims over recent years in a climate of rising housing prices and relatively stable unemployment. However, a decline in high-LVR loans as banks tightened their mortgage lending practices has reduced their revenue, while higher claims from the mining-exposed states of Western Australia and Queensland have increased costs.

The life insurance industry remains well capitalised, with their capital position equivalent to 1.9 times APRA's prescribed amount. Profits increased in 2015, driven by a smaller loss on individual disability income insurance (commonly known as 'income protection insurance'), a business line that has been unprofitable since mid 2013 (Graph 3.17). As discussed in previous *Reviews*, life insurers are 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. Nonetheless, the effect of previously weak underwriting practices is likely to weigh on insurers' profitability for a while yet.

Financial Market Infrastructures

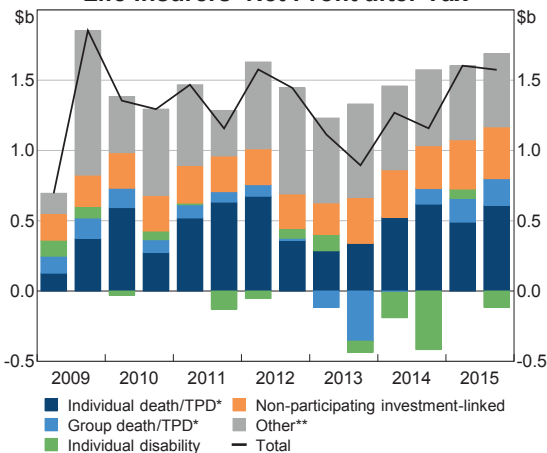
Financial market infrastructures (FMIs) – including payment systems, central counterparties (CCPs) and securities settlement systems – facilitate important post-trade activities underlying most financial transactions in the economy. Because FMIs concentrate both services and risks, they need strong regulation and supervision of their financial position, governance and risk management practices.⁵ In the case of CCPs, work is continuing globally to assess their level of resilience and to consider the need for additional regulatory guidance. This is particularly important given the G20's commitment that all standardised over-the-counter (OTC) derivatives should be centrally cleared.

Reserve Bank Information and Transfer System

The Reserve Bank Information and Transfer System (RITS) is used by banks and other approved institutions to settle Australian dollar payment obligations on a real-time gross settlement (RTGS) basis. Around 6 million payments worth \$21 trillion were settled over the past six months. RITS is a systemically important payment system, and the Bank assesses RITS annually against the internationally agreed *Principles for Financial Market Infrastructures* (PFMI). The 2015 assessment concluded that RITS observed all the relevant principles.

In addition to the regular assessment of RITS against the PFMI, projects are underway to review the system's resilience. The ongoing work in this area is considering the Bank's capabilities

Graph 3.17
Life Insurers' Net Profit after Tax



* TPD = total and permanent disability
 ** Includes profit from other non-risk business
 Source: APRA

⁵ For more information on the regulation of CCPs, see Hughes D and M Manning (2015), 'CCPs and Banks: Different Risks, Different Regulations', *RBA Bulletin*, December, pp 67–79.

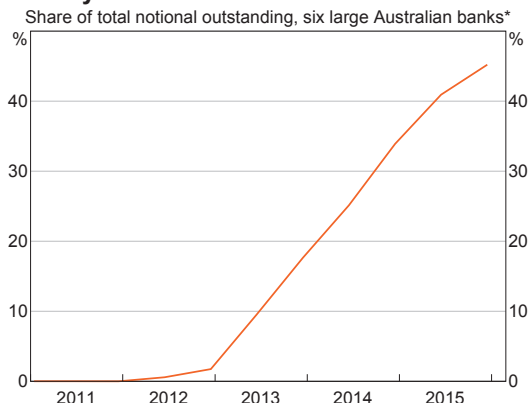
in the areas of cyber security and recovery from operational incidents. While RITS is designed to be a highly resilient system, with critical infrastructure duplicated in two geographically separate sites, this work is part of the Bank's efforts to ensure that RITS continues to be a secure system that meets international best practice and the needs of its participants. The work includes reviews of existing security controls, recovery options and the payments contingency arrangements that could be used if RITS was unavailable for an extended period.

Use of CCPs for clearing OTC derivatives

The proportion of Australian banks' OTC interest rate derivatives (IRD) exposures that are centrally cleared continued to increase, ahead of central clearing becoming mandatory in early April (see 'Developments in the Financial System Architecture' chapter). More than 45 per cent of Australian banks' outstanding OTC IRD (across all currencies) were centrally cleared via LCH.Clearnet Ltd (LCH.C Ltd) as at December 2015, up from 34 per cent in December 2014 (Graph 3.18). Liaison conducted by the RBA, ASIC and APRA in 2015 to inform the 'Report on the Australian OTC Derivatives Market' revealed that Australian banks are now centrally clearing all – or almost all – new trades that are eligible for clearing, and have also made considerable progress in moving legacy bilateral trades to CCPs. Since the mandatory clearing requirements will apply only to new trades, the transition of legacy bilateral trades to CCPs reflects banks' private commercial incentives. These include benefits arising from netting of exposures and lower capital requirements.

Around 90 per cent of Australian dollar-denominated OTC IRD that are centrally cleared by all participants globally are cleared through LCH.C Ltd. However, the shares cleared by ASX Clear (Futures) and CME Inc. increased over 2015,

Graph 3.18
Centrally Cleared OTC Interest Rate Derivatives

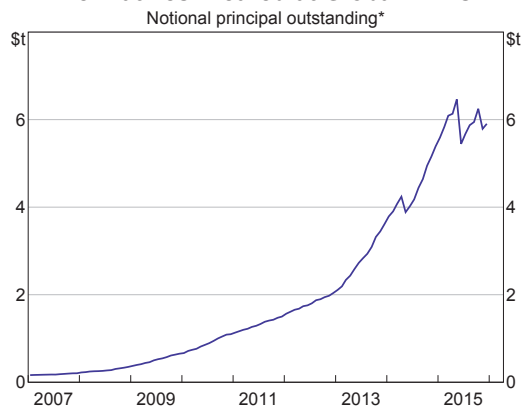


* Principal notional outstanding with LCH.C Ltd as a percentage of all AUD and non-AUD OTC IRD positions reported by Australian banks in the BIS semiannual derivatives survey

Sources: BIS; LCH.C Ltd; RBA

each to around 5 per cent by December 2015. The global total notional outstanding in Australian dollar-denominated OTC IRD that were centrally cleared across all CCPs was broadly steady over the year at around \$6 trillion, reflecting, in part, the compression of trades during the year (see 'Box D: Trade Compression'; Graph 3.19). ↘

Graph 3.19
A\$ OTC Interest Rate Derivatives Cleared at Global CCPs



* CCP figures adjusted for the double counting that occurs when a trade is novated; ASX Clear (Futures) data not available before December 2014

Sources: ASX Clear (Futures); CME Inc.; LCH.C Ltd

Box C

The Countercyclical Capital Buffer

One of the Basel III measures intended to improve the resilience of the global banking system is the countercyclical capital buffer (CCyB). The stated purpose of the CCyB is to protect the banking system against potential future losses caused by credit growth associated with an increase in system-wide risk.¹ The underlying rationale of the CCyB is that excessive credit growth is a key contributor to or cause of banking system distress. In Australia, the CCyB regime came into effect in January 2016.²

Capital Buffer Policy Framework

Under the Basel III capital framework, banking institutions must hold a buffer of Common Equity Tier 1 (CET1) capital over and above the minimum requirement. The buffer includes a capital conservation buffer equal to 2.5 per cent of risk-weighted assets (higher for systemically important banks), and the CCyB, which can typically range between 0 and 2.5 per cent of risk-weighted assets (and operates as an extension to the capital conservation buffer). The CCyB is set at a rate above zero by the local regulator during periods of credit growth that are judged to be associated with the build-up of system-wide risk and released when the credit cycle turns. When the CCyB is increased, regulators are to provide banks with advance notice of up to 12 months, while decisions to lower the buffer take effect immediately to reduce the risk of credit supply being constrained by regulatory capital requirements.

For all member jurisdictions of the Basel Committee on Banking Supervision (BCBS), international reciprocity arrangements are in place to ensure a level playing field between domestic and foreign banks and to account for different buffers across jurisdictions. Each bank's countercyclical capital requirement is calculated as the weighted average of the jurisdictional buffers in locations where the bank has private sector credit exposures.

The Credit-to-GDP Gap

The BCBS recommends that national authorities use the aggregate private sector credit-to-GDP gap to help guide decisions on setting the level of the CCyB. The credit-to-GDP gap is the difference between the current ratio of credit to GDP and its long-term trend; a positive gap may indicate excessive credit growth. The BCBS suggests that a credit-to-GDP gap between 2 and 10 percentage points should correspond to a buffer of between 0 and 2.5 per cent of risk-weighted assets.

The BCBS selected the credit-to-GDP gap because analysis by the Bank for International Settlements (BIS) suggested that it was the best-performing *single* early warning indicator of banking crises.³ This work assessed a broad range of indicators including aggregate macroeconomic, banking sector and cost of funding variables. It found that the credit-to-GDP gap performed better than any of the other indicators alone in anticipating financial crises often rising strongly before the emergence of financial stress.

1 See BCBS (2010), 'Guidance for National Authorities Operating the Countercyclical Capital Buffer', December.

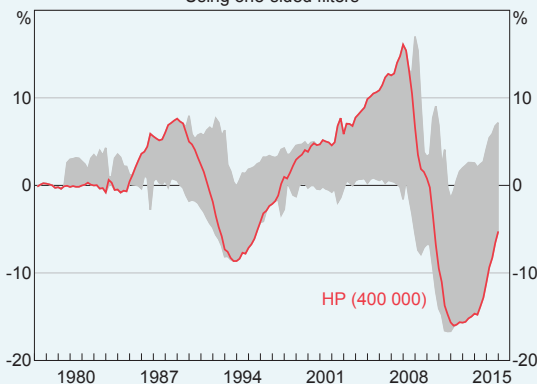
2 See APRA (2015), 'The Countercyclical Capital Buffer in Australia', *Information Paper*, December.

3 See Drehmann M, C Borio, L Gambacorta, G Jiménez and C Trucharte (2010), 'Countercyclical Capital Buffers: Exploring Options', *BIS Working Papers*, No 317, July.

Even so, limitations of the credit-to-GDP gap have been identified, including:

- The trend of the credit-to-GDP ratio needs to be established for the credit-to-GDP gap to be measured. Estimates of the trend are sensitive to the choice of filter, smoothing parameters and sample period. Although different statistical methods can be used to establish the credit-to-GDP trend, the BCBS specifically recommends a one-sided Hodrick Prescott (HP) filter with a smoothing parameter of 400 000.⁴ Estimating the credit-to-GDP gap with different detrending methods leads to a large variation in the range of gap measures obtained. For Australia, the various measures of the credit-to-GDP gap would have provided different signals of buffer magnitudes and the timing of activation (setting above zero) and release in the past (Graph C1).⁵

Graph C1
Credit-to-GDP Gap Measures*
Using one-sided filters



* Shaded area reflects the range of credit-to-GDP gaps measured using: HP filters with smoothing parameters set at 400, 4 000, 40 000 and 400 000; the Baxter-King filter; and the Christiano-Fitzgerald filter

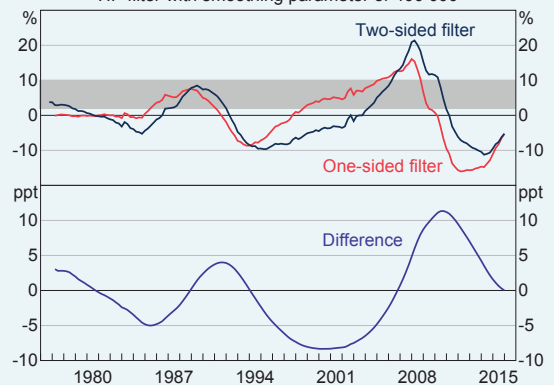
Sources: ABS; RBA

4 See the BCBS guidance paper for further details on the rationale for this method.

5 In addition, in assessing the level of the credit-to-GDP gap, the RBA and APRA use the measure of total credit published in the RBA Financial Aggregates statistical release. The BIS use total credit to the private non-financial sector for Australia, which is broader than the RBA measure and generates different credit-to-GDP gap estimates.

- As the gap must be measured in real time, only past information can be used (a one-sided filter). But some research has found that estimates of the trend in the credit-to-GDP ratio – and hence the gap – can be revised substantially as new information becomes available, due to the unreliability of trend estimates at the end of the sample period.⁶ For example, using the full sample of the data now available to measure the gap (a two-sided filter) suggests a later timing for the activation and release of the CCyB around the financial crisis relative to the gap measured using the one-sided filter (Graph C2).

Graph C2
Credit-to-GDP Gap Measures*
HP filter with smoothing parameter of 400 000



* Shaded area represents range of credit-to-GDP gap consistent with applying a countercyclical capital buffer

Sources: ABS; RBA

- As highlighted by APRA, the credit-to-GDP gap may understate the excessiveness of credit growth following lengthy periods of very strong credit growth and does not take into account whether the absolute level of credit and indebtedness is of concern. In addition, it may not differentiate between harmful credit growth episodes and more benign booms, for instance, due to financial deepening following periods

6 See Edge RM and RR Meisenzahl (2011), 'The Unreliability of Credit-to-GDP Ratio Gaps in Real Time: Implications for Countercyclical Capital Buffers', *International Journal of Central Banking*, 7(4), pp 261–298.

of disinflation or deregulation. Australian authorities, including APRA and the RBA, have expressed some reservations in the past about the specific credit-to-GDP gap measure recommended by the BCBS as a buffer guide.⁷ The BCBS has similarly noted that the gap does not work well at all times for all countries as an indicator of potential banking crises, and recommends that national authorities also examine other indicators and apply judgement in setting their buffers.

The Australian Policy Framework

APRA is responsible for setting the level of the CCyB that applies to Australian authorised deposit-taking institutions (ADIs) and the Australian exposures of foreign banks operating in Australia. In accordance with jurisdictional reciprocity arrangements, overseas banking institutions with private sector credit exposures to Australia would also apply the Australian CCyB, up to a ceiling of 2.5 per cent of these risk-weighted assets.

APRA's framework examines other indicators of systemic risk associated with financial activity, is forward-looking, and judgement-based. Henceforth, the framework will be informed by core indicators within four key areas of systemic risk: credit growth (including the credit-to-GDP gap), asset prices, lending indicators and financial stress. APRA will also monitor supplementary metrics and more granular information as necessary to guide decisions on the appropriate level of the CCyB.

APRA's approach differentiates between indicators that would support decisions to increase the buffer and indicators that would support decisions to release the buffer. During an upswing, APRA will focus on whether there is a build-up of unsustainable cyclical leverage, by assessing

whether there is excessive credit growth, inflated asset values and/or system-wide lowering of lending standards. During a downturn, APRA has indicated that indicators of financial stress, such as non-performing loans and loan-loss provisions, will be important in guiding decisions to release the capital buffer.

Importantly, the core indicators will not translate formulaically into decisions about setting the buffer, and these decisions will give due regard to dispersions and differences across markets, institutions, households and businesses. In addition, APRA will consider other factors such as bank capital positions, prudential concerns and the broader economic outlook.

APRA has set the CCyB applying to Australian private sector credit exposures at 0 per cent from 1 January 2016. The set of core indicators will be monitored by APRA on a quarterly basis and discussed regularly at the Council of Financial Regulators. ✎

⁷ See RBA and APRA (2012), 'Box C: Application of the Counter-Cyclical Capital Buffer', *Macprudential Analysis and Policy in the Australian Financial Stability Framework*, September, pp 19–20.

Box D

Trade Compression

Trade (or portfolio) compression is the practice of eliminating or reducing the size of over-the-counter (OTC) derivative positions by terminating offsetting trades or replacing them with a smaller set of netted trades. The process, which can be applied to both bilateral and centrally cleared trades, leaves each counterparty's market risk exposure unchanged (or within a pre-defined range). There are two broad types of trade compression:¹

- *Bilateral compression* involves only two counterparties that compare their portfolios to identify offsetting trades for termination or replacement.
- *Multilateral compression* usually involves more than two counterparties and is facilitated by a central counterparty (CCP) or a specialist service provider that compares relevant trades and, subject to the market risk tolerances of each participant, identifies a set of trades to be terminated or replaced. It typically provides more opportunities to terminate offsetting trades because it involves more counterparties. While initially limited to non-centrally cleared trades, this service is now also widely offered for centrally cleared OTC derivative trades.

Global use of trade compression has increased rapidly in recent years. The total notional value of interest rate derivatives (IRDs) that have been compressed is estimated to have more than tripled between late 2011 and June 2015 (the latest available date). A number of factors have contributed to this trend. Market participants have a direct incentive to engage in trade compression

because it reduces the number of individual trades to be managed; this in turn lowers both costs and operational risk. Recent technological developments and process changes such as the 'unlinking' of trades (that is, recording each side separately) have also enabled more compression.

Another significant driver of the recent increase in compression activity has been the anticipated introduction of the leverage ratio requirement from January 2018. Under current plans, OTC derivative exposures can be only partially netted, while eliminating such trades through compression can reduce a bank's calculated leverage without significantly affecting its net exposure. Reforms to counterparty credit risk capital requirements provide another incentive for banks to compress non-centrally cleared trades, by introducing higher capital requirements for such contracts.

To address some of the risks associated with non-standardised OTC derivatives, in early 2015 the International Organization of Securities Commissions (IOSCO) released risk mitigation standards for non-centrally cleared OTC derivatives that encouraged trade compression. Specifically, these standards require entities to implement policies and procedures to engage in portfolio compression when appropriate. The requirements are already in force in Europe and the United States, with some Australian entities affected through their dealings with international counterparties. Similar standards are currently being proposed for the Australian market.²

¹ For further information on the different types of trade compression see RBA (2015), 'Box A: Compression,' 2014/15 Assessment of LCH.Clearnet Limited's SwapClear Service, pp 11–12, December.

² See the Australian Prudential Regulation Authority's draft Prudential Standard CPS 226 for further information.

In contrast to the global trend, participation in Australian dollar-denominated compression, by both Australian and foreign banks, has to date remained relatively low. Survey data suggest that no more than 10 per cent of notional principal outstanding was terminated via compression in the year to May 2015. This was partly because, until recently, pricing conventions for swaps made it difficult to identify offsetting trades. In addition, Australian banks have not needed to use compression to meet anticipated requirements for the Basel III leverage ratio.

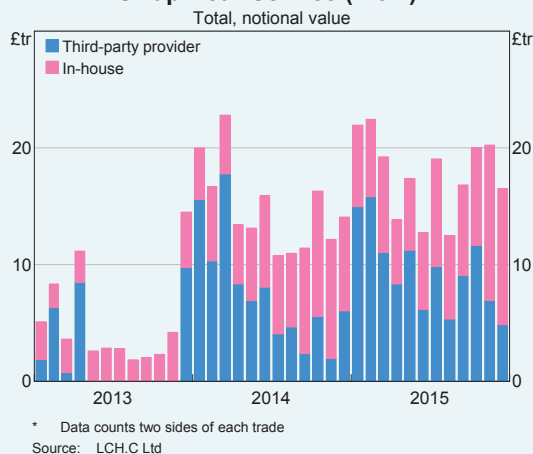
Nevertheless, the use of compression in Australia has increased in recent years. The latest survey data available, covering the year to May 2015, indicate that a number of large Australian and foreign banks had participated in a few multilateral portfolio compression cycles in Australian dollars and a higher number of bilateral compressions.³

Use of compression in the Australian market can be expected to increase further as a result of the greater use of CCPs. CCPs generally offer services to facilitate compression, as well as periodic access to third-party multilateral compression. In addition, the process of back-loading existing trades onto CCPs is likely to be encouraging bilateral compression, as the Australian ADIs seek to minimise the amount of trades to be back-loaded.

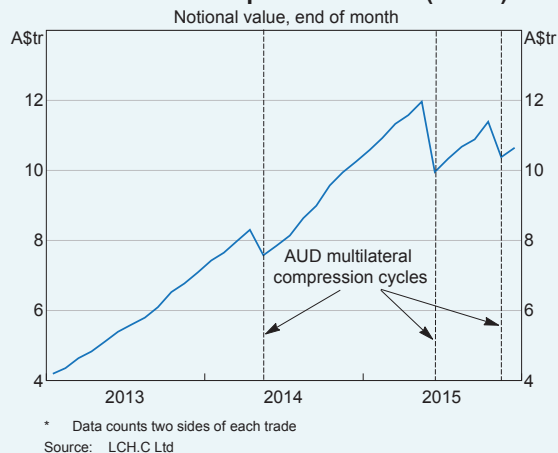
Compression in LCH.C Ltd's global SwapClear service has increased markedly since late 2013, including for Australian dollar-denominated trades (Graph D1). The June 2015 multilateral compression cycle run in LCH.C Ltd's SwapClear service was the largest to date for Australian dollar-denominated IRD trades, involving a notional value of \$2.2 trillion (Graph D2).⁴ This cycle was the first since resolution

of the pricing convention mentioned above, which, along with the unlinking of trades, contributed to the increased volume of trades that were compressed. ✎

Graph D1
Compression in LCH.C Ltd's SwapClear Service (Flow)*



Graph D2
AUD Value Outstanding in LCH.C Ltd's SwapClear Service (Stock)*



3 For further information, see Section 6.2.2 of APRA, ASIC and RBA (2015), Report on the Australian OTC Derivatives Market, November.

4 Third-party multilateral compression runs for the SwapClear service are facilitated by TriOptima, a privately held company that provides post-trade infrastructure and risk management services for the OTC derivatives market.

4. Developments in the Financial System Architecture

International regulatory efforts continue to focus mainly on implementing agreed post-crisis reforms, and increasingly on assessing their effects. Beyond these post-crisis reform efforts, more recent areas attracting international attention include the potential risks associated with the asset management industry and its influence on market liquidity, and the financial stability implications of innovations in financial technology.

Domestically, authorities progressed work on implementing internationally agreed reforms as well as the Financial System Inquiry (FSI) recommendations following the government's formal response to the FSI's final report.

International Regulatory Developments and Australian Response

Addressing 'too big to fail'

Since the financial crisis, ending 'too big to fail', or addressing the moral hazard and financial stability risks posed by systemically important financial institutions (SIFIs), has been an important element of the reform agenda. Reforms have focused on a number of issues, including improving the resilience of SIFIs, putting in place effective resolution frameworks and intensifying supervision.

As part of this work, in November 2015 the G20 Leaders endorsed the Financial Stability Board (FSB) standard on total loss-absorbing capacity (TLAC) for global systemically important banks (G-SIBs). The standard is intended to ensure that G-SIBs can be

resolved in an orderly way to minimise the impact on financial stability and avoid the use of public funds for recapitalisation. It does so by requiring G-SIBs to have a minimum amount of TLAC, with an expectation that at least one third of this is in the form of debt instruments that can be 'bailed-in' (i.e. written down or converted into equity). The minimum TLAC requirement, which is composed of both regulatory capital and other eligible debt, will be phased in for G-SIBs headquartered in advanced economies from 1 January 2019, starting at 16 per cent of risk-weighted assets (RWAs) and 6 per cent of the 'exposure' measure used in the Basel III leverage ratio denominator, and rising to 18 per cent and 6.75 per cent respectively by 2022. G-SIBs headquartered in emerging market economies (EMEs) have additional time to meet these requirements given the less developed capital markets in EMEs.

As no Australian banks are G-SIBs, they are not directly captured by the FSB's TLAC requirement. However, in line with a Government-endorsed FSI recommendation, the Australian Prudential Regulation Authority (APRA) is currently exploring options for a loss-absorbing and recapitalisation capacity framework in Australia, in consultation with the Bank and other Council of Financial Regulators (CFR) agencies. Given international developments are ongoing, APRA intends to address this issue over the medium term, consistent with the approach recommended by the FSI. It is therefore monitoring overseas initiatives being taken in this area, and has begun limited engagement with industry participants.

The FSB has continued to work on enhancing jurisdictions' resolution frameworks and monitoring implementation of reforms to resolution regimes:

- In November, the FSB released a consultation paper on principles to ensure that G-SIBs have access to sufficient liquidity in resolution to maintain critical functions. The principles seek to encourage reliance on private sources of funding in resolution, for instance through a pool of industry funds, and to minimise moral hazard risks if public sector funding is temporarily required.
- Also in November, the FSB initiated a consultation on guidance to help authorities assess whether financial institutions' resolution plans ensure the continuation of critical operations that are systemically important to broader financial markets. For example, the guidance highlights that contracts with critical service providers should not be disrupted by resolution and that adequate liquidity should be in place to support the services that enable critical operations to continue.
- In March 2016, the FSB released the results of a second peer review on the implementation of its *Key Attributes of Effective Resolution Regimes for Financial Institutions (Key Attributes)*. The review, which focused on bank resolution powers and recovery and resolution planning requirements, found that only a few jurisdictions (mainly in the European Union) have a full set of powers in line with the *Key Attributes*, and that progress implementing resolution planning and resolvability assessments has been limited. It recommended that jurisdictions: extend the scope of regimes to entities such as foreign bank branches and bank holding companies; introduce recovery and resolution planning for all systemic banks; and put in place key resolution measures such as powers to ensure continuity of services as well as to bail in liabilities in resolution. Though some room for improvement was identified,

Australia's resolution framework for authorised deposit-taking institutions (ADIs) is generally aligned with the *Key Attributes* as well as with international peer jurisdictions. Consistency with the *Key Attributes* will be further enhanced by planned legislative changes to strengthen APRA's crisis management powers (discussed below).

Seeking to ensure that large banks with cross-border operations can be resolved in an orderly manner has also been a focus of G20 and FSB efforts in recent years. In line with this goal, in November 2015, the FSB published a set of principles that jurisdictions should consider including in their legal frameworks to give cross-border effect to resolution actions. The aim of this work is to allow resolution measures taken by one jurisdiction to be promptly recognised by other jurisdictions, so that authorities do not face obstacles in implementing orderly group-wide resolution plans. While the framework encourages statutory measures (i.e. changes to legal frameworks) to ensure cross-border enforceability of resolution actions, it acknowledges that, until their adoption, contractual mechanisms can also play an important role.

A key recent example of such a contractual mechanism is the International Swaps and Derivatives Association Resolution Stay Protocol, which aims to prevent cross-border over-the-counter (OTC) derivative contracts from being terminated disruptively in the event of a foreign counterparty entering resolution. The Protocol was extended in November 2015 to cover securities financing transactions (SFTs). Parties adhering to the Protocol agree to 'opt in' to laws that govern temporary stays in jurisdictions that are identified under the Protocol. In Australia, a similar temporary stay power is included in legislation on OTC derivatives margining reforms (discussed below) which was introduced into Parliament in March. Once this is passed, it would be possible to seek to have Australia's regime recognised under the Protocol.

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

- In November 2015, the FSB released a consultation paper which provides guidance on how the *Key Attributes* should be applied to insurers. Relatedly, also in November, the International Association of Insurance Supervisors launched consultations on: (a) revisions to its assessment methodology for global systemically important insurers (G-SIIs); and (b) the concept of non-traditional non-insurance activities and products, which plays a role in the determination of the higher loss absorbency requirement for G-SIIs.
- As part of a broader international work plan to promote central counterparty (CCP) resilience, recovery and resolvability, the FSB is conducting further work on resolution issues specific to CCPs, to complement existing guidance. The FSB's Resolution Steering Group, of which the Bank is a member, recently established a cross-border crisis management group for financial market infrastructures (FMIs). This group will consider, among other issues, whether a resolution authority needs access to additional loss allocation tools beyond those included in the CCP's own recovery plan. Standards or guidance on CCP resolution issues are expected to be published for consultation by end 2016. In related work, the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) have completed a stocktake of CCPs' risk management practices and are currently developing additional guidance on the governance of risk management, stress testing and margin methodologies. Consultation on the additional guidance is expected to commence before the G20 Summit in September.

Domestically, CFR agencies continue to work 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, as well as introduce a resolution regime for FMIs that aligns with the *Key Attributes*.

- The update to APRA's crisis management powers builds on proposals consulted on in 2012 and covers all APRA-regulated entities. It will broaden APRA's powers to respond to the distress or failure of a financial group or foreign bank branch, give binding directions and appoint a statutory or judicial manager.
- The resolution regime for FMIs will reflect the CFR's November 2015 response to generally supportive feedback from a consultation last year. The planned regime would extend to all domestically incorporated and licensed clearing and settlement facilities, as well as trade repositories that are incorporated and licensed in Australia. It will also empower the Australian authorities to act to support overseas authorities resolving FMIs that are licensed to operate in Australia. In addition, the CFR sees a case for considering whether the scope of powers should be extended to address the situation in which offshore resolution authorities acted, or failed to act, in a way that adversely affected Australian interests. Under the planned regime the Bank would be the resolution authority for clearing and settlement facilities, with an overarching objective to maintain overall stability in the financial system and an additional key objective to maintain the continuity of critical FMI services. The Australian Securities and Investments Commission (ASIC) would be the resolution authority for trade repositories.

Shadow banking

As discussed in previous *Reviews*, the FSB and IOSCO have worked since the crisis to improve the oversight of shadow banking, meaning entities and activities involved in credit intermediation that are outside the regular banking system. In 2016, the focus is primarily on continued implementation of post-crisis reforms and implementation monitoring.

- The FSB is in the process of reviewing implementation of its 2013 framework for monitoring and assessing risks from shadow banks other than money market funds (MMFs). The framework calls for regulators to assess the risks stemming from their shadow banking sectors (such as those arising from maturity/liquidity transformation and leverage), adopt suggested policy tools where necessary, and share relevant information with other jurisdictions and the FSB. The Bank coordinated Australia's input to the review, which is expected to be released in May.
- IOSCO is to undertake second-round peer reviews on the implementation of its 2012 recommendations for MMFs and securitisation. Domestically, in November APRA released amendments to its proposed prudential standard for securitisation. The proposal, which will work to further align Australia's regulations with IOSCO's recommendations, simplifies the regulatory structure for securitisation and seeks to make it straightforward for ADIs to use securitisation in a low-risk manner as a funding tool and for capital relief. Subject to consultation, APRA intends to implement the revised framework from 2018.

In addition to implementation monitoring, international policy development work was ongoing in recent months, with the FSB finalising in November its framework for the application of haircut floors to non-bank-to-non-bank SFTs, such as repurchase agreements (or 'repos'). Relatedly, the Basel Committee on Banking Supervision (BCBS) issued in November a draft proposal for incorporating haircut floors on non-centrally cleared bank SFTs into the Basel III capital framework. These haircut floors for both bank and non-bank entities form part of a broader set of recommendations released by the FSB in 2013 that seeks to address risks, such as procyclicality, that can stem from SFTs. Improved data on SFTs is a central element of these recommendations and, in November, the FSB also finalised its data collection standard, which requires

jurisdictions to collect data from institutions covering items such as outstanding loan and collateral values by maturity, currency, counterparty type and jurisdiction, repo rate and haircut.

Domestically, a CFR working group has been assessing Australia's current regulation of SFTs against the FSB's recommendations. Meeting one of the FSB's SFT recommendations, in October the Bank published its evaluation of the costs and benefits of central clearing of repos in Australia. The Bank concluded that it does not believe there is a financial stability case to actively promote the introduction of a repo CCP in the Australian market. However, should the industry proceed with a proposal for introducing such a CCP, the Bank would stand ready to engage in the debate and be willing to consider participation, subject to certain preconditions on continuity, location, design and terms of access.

Building resilient financial institutions

The BCBS continues to focus on monitoring the implementation of agreed international reforms aimed at enhancing the resilience of banking institutions, namely Basel III. In its report to the G20 Leaders in November, the BCBS indicated that implementation of the Basel III risk-based capital and liquidity reforms has generally been timely and consistent, and progress continues to be made in implementing the leverage ratio, Net Stable Funding Ratio (NSFR) and systemically important bank frameworks. Domestically, APRA continues to implement Basel III reforms, releasing a consultation paper in March outlining its proposals for the NSFR, which would come into effect from 1 January 2018, in line with the internationally agreed timetable.

In its March semi-annual monitoring report, the BCBS found that all large internationally active banks met the fully phased in Basel III common equity requirements as at end June 2015. For the Basel III liquidity standards, the BCBS found that all banks covered by the monitoring report met the current minimum 60 per cent Liquidity Coverage

Ratio requirement and around 80 per cent of all banks met the 100 per cent NSFR requirement.

The BCBS also continues to work on finalising outstanding elements of the post-crisis policy development work, including capital floors, the revised standardised approaches, and a review of the role of internal models in the capital framework. The BCBS informed the G20 Leaders in November that it intends to finalise this work by end 2016. In recent months, the BCBS has published several documents that contribute to the completion of the post-crisis agenda:

- Consistent with the BCBS' review of the capital framework and its aim to reduce excessive variability in RWAs, the BCBS published consultation documents on the revised standardised approaches for credit risk in December 2015 and operational risk in March 2016, and changes to the internal ratings-based (IRB) approaches to measure credit risk in March 2016:
 - In response to an earlier consultation the BCBS has decided to reintroduce a role for external credit ratings for exposures to banks and corporates in the revised standardised approach for credit risk.
 - In addition to updating the proposed standardised approach for operational risk, which will replace the three existing standardised approaches, the BCBS has proposed removing internal modelling for operational risk from the framework, since it considers that the current internal model-based approach is unduly complex and has exacerbated variability in banks' RWAs.
 - The BCBS has proposed three main changes to the IRB approaches: removing the option to use the IRB approaches for some portfolios, such as banks and large corporates, where model parameters cannot be sufficiently reliably estimated;

adopting floors on model parameters; and limiting the range of parameter estimation practices. The consultation document states that the BCBS does not aim to significantly increase capital requirements and will consider the interactions between input floors, output floors and the leverage ratio when finalising the outstanding post-crisis reforms.

The BCBS' work on the variability in RWAs has been informed by quantitative assessments of the variation in banks' RWA calculations.

In its second report on this, released in April, the BCBS found that RWA variability in banks' retail and small business portfolios was partly driven by differences in the interpretation and application of the BCBS' standards. For example, the use of short time series coupled with limited guidance on the definition of a 'downturn' can lead banks to apply different definitions when estimating the likely loss on a portfolio in the event of default, which could result in varied RWAs. The report also suggests that the improvement and harmonisation of model validation could help to reduce variability in bank RWAs.

- In January, the BCBS finalised the revised market risk framework, which aims to address several structural flaws in the framework that were highlighted during the financial crisis. The revisions include updated standardised and internal modelling approaches, as well as a revised regulatory boundary between the banking book and the trading book to reduce the possibility of arbitrage across the two books.
- In March, the BCBS proposed revisions to the Pillar 3 framework, including the disclosure of a dashboard of key regulatory metrics and hypothetical RWAs calculated using the standardised approaches for credit risk, counterparty credit risk, market risk and the securitisation framework. These proposals form the second broad phase of the BCBS' review of the Pillar 3 framework, which aims to improve

the comparability and consistency of bank disclosure requirements, particularly those relating to RWAs.

- The BCBS issued in April proposed revisions to the Basel III leverage ratio framework, which includes amendments to ensure that differences in accounting frameworks do not affect the leverage ratio calculations, as well as proposing additional leverage ratio requirements for G-SIBs. The consultation document also notes that the Basel III leverage ratio is to be based on a Tier 1 definition of capital and should comprise a minimum level of 3 per cent when the leverage ratio is implemented in 2018.

Alongside the work to finalise outstanding reforms and monitor the implementation of reforms, as jurisdictions transition towards full implementation, there is increasing focus internationally on assessing the impact of reforms. In November, the FSB presented its first annual report on the implementation and impact of post-crisis reforms to the G20 Leaders' Summit. The report found that the main reforms implemented to date, which mostly comprise the Basel III reforms, have led to a more resilient banking sector and do not appear to have resulted in a sharp reduction in bank lending. While it is too early to assess the impact of many reforms, the report highlights areas that merit ongoing monitoring, including bond market liquidity. Liquidity has been affected by regulations designed to shift risks from banks to end investors as well as changes in financial institutions' own risk preferences, though both are expected to add to overall financial system resilience over the longer run. In its second annual report later this year, the FSB will include a review of any significant change in market liquidity and, if so, the causes and likely persistence of this.

FMI regulation

Internationally, CPMI and IOSCO continue to monitor the implementation of the *Principles for Financial Market Infrastructures* (PFMI), which are

the international standards for FMIs such as CCPs, securities settlement systems and systemically important payments systems. As part of this, a detailed assessment of the consistency of Australia's framework with the PFMI was published in December. The report confirmed that Australia's implementation was complete and consistent in most respects. Also, a peer review was published in November 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. This found that the Bank and ASIC observed all the responsibilities for authorities, as set out in the PFMI, in their regulation of all types of FMIs.

CPMI and IOSCO are also assessing whether FMIs are achieving consistent outcomes in their implementation of the PFMI, beginning with an assessment of derivatives CCPs' financial risk management. This is expected to be published mid year. The scope of this review includes ASX Clear (Futures) and both of the overseas CCPs licensed to clear OTC derivatives in Australia.

Risks and reforms beyond the post-crisis agenda

Work is continuing in two areas of potential risks discussed in the previous *Review*:

- The FSB has progressed work assessing the possible financial stability risks posed by asset management activities. Last year, the FSB highlighted the elevated near-term risks due in part to the unwinding of extraordinary policies and the potential reduction in market liquidity. As a result, the FSB encouraged asset managers to use stress testing to assess their ability individually and collectively to meet redemptions under difficult market liquidity conditions. In March, the FSB Plenary considered work assessing longer-term structural asset management vulnerabilities, including those associated with fund liquidity mismatch and leverage. The FSB expects to issue policy

recommendations for consultation mid year with the intention of finalising them by end 2016.

- In November, the FSB released progress reports on its efforts to address vulnerabilities from market misconduct and assess the decline in correspondent banking. Since the misconduct risk work plan was finalised in April 2015, several standard-setting bodies have advanced work across the four identified areas: the role of incentives, such as compensation and governance frameworks, in reducing misconduct; reforms to financial benchmarks and improving standards of conduct in fixed income, currency and commodities markets; coordination in the application of conduct regulations; and the potential withdrawal from correspondent banking. The bulk of work across these areas is expected to be completed by end 2016, although the full text of the global foreign exchange code of conduct is not scheduled to be released until May 2017.

The CFR has also been active in seeking to improve the integrity and reliability of financial benchmarks:

- Between October and February, the CFR conducted a consultation on the methodology underpinning the bank bill swap rate (BBSW) in response to concerns arising from the low trading activity during the BBSW rate set. Most of the submissions acknowledged that changes to the BBSW methodology were likely to be necessary. Following this feedback, in February the CFR released a discussion paper recommending that the definition of the market underlying the BBSW be broadened and that the benchmark be calculated directly from transactions. The CFR has asked the administrator of the BBSW, the Australian Financial Markets Association, to work on amendments to the BBSW methodology for implementation later in the year.

- In March, a consultation was initiated on regulatory reforms to significant financial benchmarks in Australia. The reform proposals relate to the administration of significant benchmarks, submission to significant benchmarks, and offences applying to benchmark misconduct. The proposals are guided by the IOSCO *Principles for Financial Benchmarks* and the recommendations of the FSB, as well as reforms in other jurisdictions.

More recently, standard-setting and other international bodies have begun work in several new areas:

- Reflecting a priority under China's G20 presidency, the International Monetary Fund, the FSB and the Bank for International Settlements will conduct a stocktake of international experiences and potential lessons with macroprudential policy frameworks and tools. This work aims to inform authorities of the key aspects of macroprudential policymaking, including processes to analyse systemic risks and the tools available to address vulnerabilities. Progress on this work will be discussed by G20 Ministers and Governors in July and a review of international experiences and lessons will be delivered to the G20 Summit. In contributing to this work, the Bank and other CFR agencies will be emphasising points they have made in recent years, including that macroprudential policy can be regarded as a subset of effective financial stability policy so that explicit separate governance arrangements for macroprudential policy may not be necessary.¹
- As part of its broader work on assessing vulnerabilities and sources of systemic risks,

¹ For further CFR agency perspectives on macroprudential policy, see RBA-APRA (2012), *Macroprudential Analysis and Policy in the Australian Financial Stability Framework*, September; Edey M (2012), 'Macroprudential Supervision and the Role of Central Banks', Remarks to the Regional Policy Forum on Financial Stability and Macroprudential Supervision, 28 September; Ellis L (2012), 'Macroprudential Policy: A Suite of Tools or a State of Mind?' Paul Woolley Centre for the Study of Capital Market Dysfunctionality Annual Conference, 11 October.

the FSB is exploring the potential financial stability risks from operational failures at financial institutions. CPMI-IOSCO have also continued work on operational risks, publishing in November draft guidance for consultation on cyber resilience for FMIs. Separately, IOSCO also published in April a review of different regulatory approaches and tools for dealing with cyber risk. Alongside international efforts, national regulators in a number of jurisdictions, including in Australia, have increased their focus on these issues in recent years. In March, ASIC released an assessment of the cyber resilience of Australia's major domestic FMIs (ASX Group and Chi-X Australia Pty Ltd), which found that to date the FMIs have managed cyber resilience in a manner consistent with their statutory obligations.

- The FSB is assessing the systemic implications of financial technology ('fintech') innovations such as blockchain and distributed ledger technology. The FSB is seeking to ensure that the regulatory framework is able to manage any systemic risks that arise from technological change without stifling innovation. In November, the CPMI published a report on digital currencies and distributed ledger technology, noting that the latter, in particular, might affect payment services and FMIs more broadly.

Domestically, the government released a statement in March on its 'fintech' policy, and a CFR working group, that also includes the Australian Transactions Reports and Analysis Centre (AUSTRAC) was recently established to coordinate research into blockchain innovations, including potential implications for the financial system. The private sector is also investigating this technology and its potential uses in Australia: for example, the ASX is exploring distributed ledger technology for a planned replacement of its equities clearing and settlement system.

- The FSB has been exploring possible risks to financial stability from climate change. This work has identified three risks to financial stability:

physical risk to property from increasingly severe weather events; liability risk to insurers if legal claims are made against carbon emitters; and transition risk if a policy change or climate event were to result in a sharp repricing of carbon-related assets. In response to these risks, the FSB has established an industry-led taskforce to consider how corporate disclosures could be improved to help regulators, investors and firms better take into account risks from climate change. The taskforce released a consultation paper on 1 April outlining its scope, objectives and work program for the period ahead. It intends to provide a final set of recommended principles for effective disclosures by end 2016.

Other Domestic Developments

Government response to the Financial System Inquiry

In October, the government released its response to the FSI's final report. Overall, the government expressed its support for almost all of the FSI's 44 recommendations and agreed with the FSI that Australia's regulatory architecture did not require major changes. Recommendations that the government supported pertaining to the Bank's financial stability and payments system responsibilities included the following:

- Increasing the resilience of the banking sector, including through APRA's recent actions to strengthen banks' capital positions, the crisis management reform package noted above, and the implementation of the Basel III leverage ratio.
- Maintaining the ex-post funding structure of the Financial Claims Scheme for ADIs.
- Strengthening regulator accountability by:
 - reconstituting the Financial Sector Advisory Council with revised terms of reference to include providing advice on the performance of the financial regulators (including the payments regulation function of the Bank); and

- updating regulators’ Statements of Expectations in the first half of 2016 and providing a Statement of Expectations to the Bank’s Payments System Board (PSB) for the first time.
- Enhancing payments system regulation by:
 - charging the Australian Competition and Consumer Commission (ACCC) with the enforcement of surcharge regulations determined by the PSB. In February, the Parliament passed legislation implementing this change; the legislation provides the ACCC with the power to take action against merchants surcharging in excess of permitted surcharge levels to be defined in standards determined by the Bank. The PSB expects to determine final standards at its May meeting.
 - clarifying ASIC’s and the Bank’s powers to regulate new payments systems, such as digital currencies; and
 - requesting APRA, ASIC and the Bank work to ensure that there is a graduated framework for payments regulation.

The Government also supported the PSB progressing its Review of Card Payments Regulation. As discussed in previous *Reviews*, the PSB has been undertaking a review of the framework for the regulation of card payments. In December, the Bank published a consultation paper setting out a range of options for possible reform, including draft standards on interchange and surcharging. The Bank received over 40 substantive responses to the consultation paper, and has been meeting with relevant stakeholders to discuss their submissions.

OTC derivatives markets reform

In recent months Australian authorities have continued to make progress in implementing internationally agreed OTC derivatives market reforms – in particular, those relating to mandatory

central clearing. Requiring that standardised OTC derivatives transactions be cleared through a CCP can simplify the network of interconnections between financial institutions, reduce total counterparty credit exposures, and standardise counterparty risk management. In Australia, ASIC recently finalised rules imposing mandatory clearing obligations for internationally active dealers in Australian dollar-, US dollar-, euro-, British pound- and Japanese yen-denominated interest rate derivatives. These rules came into effect from 4 April 2016. In their November *Report on the Australian OTC Derivatives Market*, APRA, ASIC and the Bank concluded that they did not see a case for extending the product scope of the Australian central clearing mandate at this time.

The main areas where domestic implementation of global OTC derivatives-related reforms is ongoing are margining and risk management requirements for non-centrally cleared derivatives. Margin is collateral designed to reduce the potential for contagion from the default of a market participant. APRA is currently consulting on draft Prudential Standards which would impose these requirements in Australia. Legislation was introduced to Parliament in March that would enable Australian entities to exchange margin in line with BCBS-IOSCO standards.

Clearing and settlement facilities

In recent months, regulatory bodies in Australia have clarified their views on two key elements of the framework for clearing and settlement facilities:

- *Operating in Australia.* In November, the CFR released its response to a consultation on a proposed new approach to assessing whether an ‘overseas’ clearing and settlement facility should be subject to regulation in Australia. Under the proposals, a two-stage test would be applied to make this determination. In the first stage it would be determined whether the facility had any connection at all to the Australian financial system. Where this condition was met, the second stage would assess the

materiality of that connection from a public policy perspective. ASIC, the Bank and the Treasury are currently developing formal proposals to implement the new approach.

- *Competition in cash equities.* In March, the government endorsed the CFR's recommendations from a review of competition in the clearing of Australian cash equities. This work was undertaken in collaboration with the ACCC. In its conclusions, the CFR recommended that the government make a number of legislative changes. The proposed changes would support competition in the clearing of cash equities, while also ensuring the safety of the market. They would also underpin a set of regulatory expectations for the ASX's conduct in operating its cash equity clearing and settlement facilities until such time as a competitor emerged.

Prudential regulation

In March, APRA released for consultation its updated framework for the supervision of conglomerate (Level 3) groups. Level 3 groups are made up of APRA-regulated institutions that have material operations across more than one APRA-regulated industry and/or in one or more non-APRA-regulated sector (such as a bank operating in insurance and/or funds management). The framework seeks to ensure that APRA can adequately supervise the risks to which APRA-regulated entities within Level 3 groups are exposed and covers four key areas: group governance, risk exposures, risk management and capital adequacy. ✎

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