

Financial Stability Review

OCTOBER 2017



RESERVE BANK
OF AUSTRALIA

Financial Stability Review

OCTOBER 2017

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The material in this *Financial Stability Review* was finalised on 12 October 2017.

The *Review* is published semiannually and is available on the Reserve Bank's website (www.rba.gov.au). The next *Review* is due for release on 13 April 2018. For copyright and disclaimer notices relating to data in the *Review*, see page 61 and the Bank's website.

The graphs in this publication were generated using Mathematica.

Financial Stability Review enquiries:

Secretary's Department

Tel: +61 29551 8111

Fax: +61 2 9551 8033

Email: rbainfo@rba.gov.au

ISSN 1449-3896 (Print)

ISSN 1449-5260 (Online)

Overview

Global economic conditions strengthened further over the past six months, reducing some near-term risks to financial stability and improving the outlook for bank profitability. Despite the gradual withdrawal of monetary stimulus in the United States, financial conditions remain accommodative. There are concerns that the combination of low interest rates and low volatility in financial markets is promoting excessive risk-taking via a search for yield. Indebtedness and asset prices have also risen further in some countries, from already high levels, increasing the risk of a disruptive correction. A number of policy uncertainties and geopolitical risks persist, which, if they were to escalate, could trigger a reappraisal of asset valuations and a spike in volatility while also weighing on the economic outlook.

Risks remain elevated in China given high corporate debt levels and the prevalence of borrowing through opaque, less regulated channels. This has led to considerable credit, liquidity and contagion risks in the Chinese financial system. Recent regulatory measures have the potential to curb these risks over the longer term, but the authorities face a challenging transition away from growth strategies associated with rising debt. In Europe, stronger growth, regulatory developments and initiatives by banks have generally improved the resilience of the financial system, although vulnerabilities remain in some countries given still weak banking systems and high sovereign debt.

Turning to Australia, household balance sheets and the housing market remain a core area of

interest. Household indebtedness is high and, against a backdrop of low interest rates and weak income growth, debt levels relative to income have continued to edge higher. Steps taken by regulators in the past few years to strengthen the resilience of balance sheets, including limiting the pace of growth of investor lending, discouraging loans with high loan-to-valuation ratios (LVRs) and strengthening serviceability metrics, have seen the growth in riskier types of lending moderate. The most recent focus has been on limiting interest-only lending, and banks have responded by further reducing lending with high LVRs for interest-only loans, increasing interest rates for some types of mortgages and significantly reducing interest-only lending. The tightening of banks' lending standards for property loans is constraining some households and developers but, in doing so, making the balance sheets of both borrowers and lenders more resilient. Conditions are relatively weak in the Brisbane apartment market, with a large increase in supply reflected in declines in prices and rents. There are, however, few signs of significant settlement difficulties to date. More generally, while housing market conditions vary across the country, there are signs of easing of late, particularly in Sydney and Melbourne where conditions have been strongest.

Business conditions are generally favourable, although there are some concerns about non-residential commercial property markets. In Sydney, price increases continue to outpace the growth of rents for these properties. In contrast, activity is more subdued in some other cities

and vacancies are elevated, especially in Perth. Conditions are positive in most other parts of the business sector, including the resources sector, as corporate profitability remains at a relatively high level and leverage and debt-servicing are contained. Business failures remain low.

The financial system is in a strong position and its resilience to adverse shocks has increased over recent years. Non-performing loans remain low in aggregate, though they are rising in some cities and regions that have a greater exposure to mining activity. Bank profitability is high and banks are seeking to maintain this by reducing their lower-yielding assets, both domestically and abroad. The banks also have ample access to a range of funding sources at a lower cost than a year ago, despite many of them being downgraded by credit rating agencies of late (largely due to concerns about high and rising household debt). The Australian Prudential Regulation Authority (APRA) recently announced details of its requirements for banks to have ‘unquestionably strong’ capital ratios. This will see a further rise in minimum capital requirements, so that the major banks are comfortably within the top quartile of international peers when measured on a comparable basis. Following further examples of lapses in risk controls, the government, regulators and banks are taking steps to enhance accountability and to strengthen the risk culture in the financial sector.

With the tightening of lending standards, there is a potential that riskier lending migrates into the non-bank sector. To date, non-bank financial institutions’ residential mortgage lending has remained small though their lending for property development has picked up recently. While the banking system has minimal exposure to the

non-bank financial sector, growth in finance outside the regulated sector is an area to watch.

The insurance sector has remained generally profitable, though returns on equity remain lower than historically and the sector continues to face a range of challenges over the medium to longer term. Risks to the superannuation sector are low in part due to its modest use of leverage. Financial market infrastructures have continued to function effectively.

Efforts to strengthen the resilience of the global financial sector are continuing, though the finalisation of the Basel III capital reforms has been delayed. International bodies have also been considering new potential sources of financial stability risk, including the growth of financial technology (‘fintech’) and cyber threats. They are also assessing the broad effectiveness of the post-crisis G20 financial reforms that have been implemented and whether there have been any material adverse developments that require adjustments to policies. Domestically, the Council of Financial Regulators has continued its work on enhancing the crisis management framework and on a range of other issues. ✖

1. The Global Financial Environment

Global economic conditions have strengthened further since the previous *Financial Stability Review*. However, historically low interest rates are contributing to financial risk-taking, and a range of asset prices appear increasingly elevated. High asset values and low financial market volatility suggest that some investors may be underestimating the downside risks they face, which may increase the likelihood of a disruptive correction. Favourable borrowing conditions have encouraged corporates and households in some jurisdictions to extend already historically high levels of debt. This has raised concerns about borrowers' resilience to negative shocks – such as a sudden rise in interest rates or fall in earnings – and the potential flow-on effects to banks and financial systems more broadly.

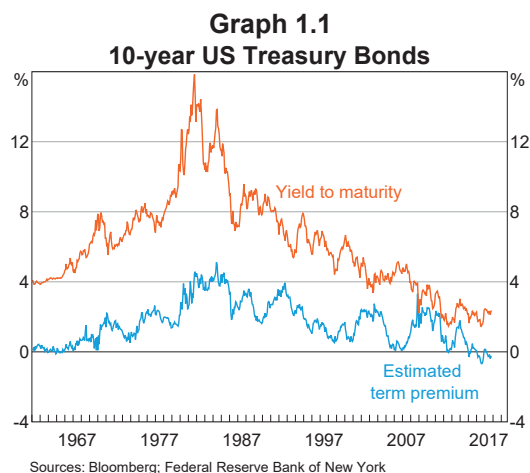
While risks have been building in asset markets, to which banks are somewhat exposed, the resilience of banking systems has otherwise been improving. Profit expectations are being buoyed by strengthening economic conditions, and banks' regulatory capital ratios have generally increased further. In Europe, some uncertainty has been removed by regulatory actions to deal with several weaker banks in Italy and Spain, although banks' profits in these jurisdictions are still low and overall the European financial system remains vulnerable to negative shocks.

Risks remain elevated in China. Debt levels are high, largely driven by corporate borrowing, with a significant share of debt funded through less regulated 'shadow banking' channels. This has led to considerable credit, liquidity and contagion risks in the Chinese financial system. However,

recent regulatory measures have the potential to lower financial stability risks over the longer term. Risks in other emerging markets have receded somewhat. Nevertheless, some emerging economies remain vulnerable to a shift in sentiment and capital flight, which could expose underlying weaknesses, such as high corporate debt levels.

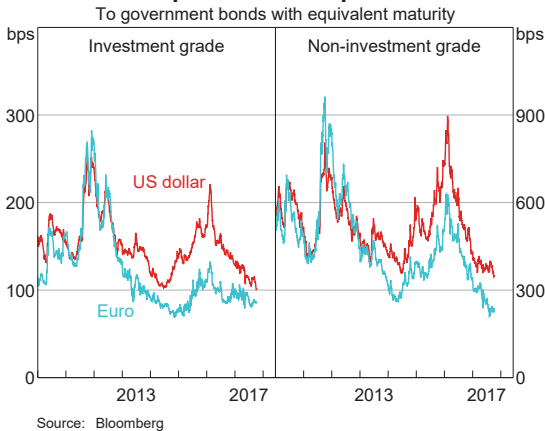
Major Advanced Economies

A range of asset prices in advanced economies have risen further from already high levels over the past six months. Long-term sovereign bond yields generally remain at very low levels and hence bond prices are very high (Graph 1.1). This has contributed to high prices for riskier assets, because risk-free rates are central to their valuation. The return for bearing risk is also low. Spreads on investment and non-investment grade corporate debt securities, for example, have fallen further over the past six months



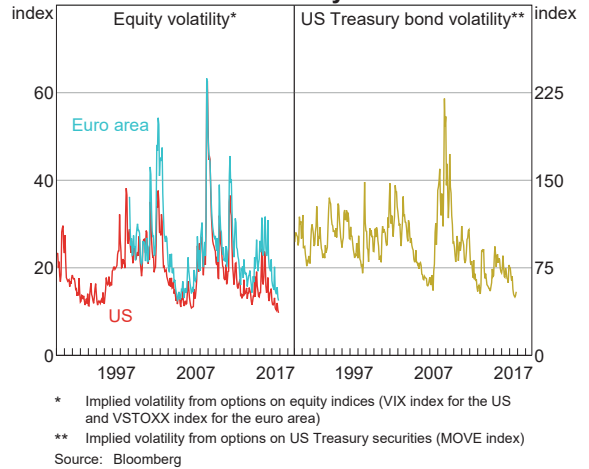
to around their lowest levels since before the financial crisis (Graph 1.2). Non-price lending standards for wholesale corporate debt have also eased in recent years. Favourable funding conditions have allowed corporates in some jurisdictions to maintain historically high debt levels and in some cases increase them further. In the United States, the increase in corporate debt has included a notable pick-up in issuance of riskier 'leveraged loans' (typically loans to non-investment grade companies). The combination of low compensation for risk and low expected volatility – in addition to low risk-free rates – suggests that some investors may be underestimating the downside risks they face (Graph 1.2; Graph 1.3). This could lead to a further build-up of risks and could also increase the likelihood that an adverse shock would lead to a sharp and disruptive correction in asset prices.

**Graph 1.2
Corporate Bond Spreads**



Adverse shocks are, by their nature, uncertain and mostly unexpected. A range of developments could trigger a sharp repricing of many assets. For example, long-term risk-free interest rates could rise faster than expected, without being accompanied by stronger growth, if markets were to reappraise the record low levels of term premia or the likely persistence of low inflation. Indeed,

**Graph 1.3
Volatility**



bond prices have become more sensitive to interest rates as yields have fallen and new bonds have been issued at longer tenors. Alternatively, a significant geopolitical event, such as an escalation of tensions on the Korean Peninsula, could see a sudden increase in risk premia.

Regulatory reforms and changes in market structure have altered how bond markets are likely to respond to shocks. These regulatory reforms have been designed to transfer some liquidity risk away from financial intermediaries to end investors. This has contributed to a decline in bond market liquidity in the post-crisis period. While the reforms are likely to better allocate liquidity risk, the lower liquidity could exacerbate the price response to a sell-off in bond markets.¹

Forced selling by bond investment funds could also aggravate a sell-off if investors in these funds redeem their holdings in response to price falls. Bond funds have become increasingly important holders of corporate bonds and often have a mismatch between the relatively low liquidity

¹ For more information on developments in market liquidity in the post-crisis period, see CGFS (Committee on the Global Financial System) (2016), 'Fixed income market liquidity', CGFS Papers No 55, and CGFS (2014), 'Market-making and proprietary trading: industry trends, drivers and policy implications', CGFS Papers No 52.

of these bonds and the easy redemption terms offered to investors. Bond funds often have tools to limit fire-sale risks, including options to suspend redemptions, although they are not available in all jurisdictions. International standard-setting bodies have also taken steps to better understand and address these risks, though reform efforts are still ongoing.

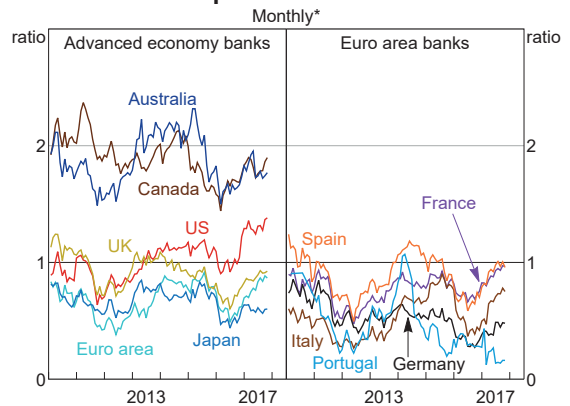
Moderate falls in asset prices or upticks in volatility are unlikely to threaten the solvency of systemic financial institutions, especially given regulatory and risk management measures taken since the crisis. However, with imperfect visibility of exposures, leverage and interconnection across the financial system, there is always the risk that some large concentrated losses could adversely affect other financial institutions. The cost and availability of funding for corporates might also be adversely affected by an increase in risk premia or disruption in credit supply, particularly for those that borrow through bond markets. This could lead to financial stress given the trends in corporate leverage noted earlier. A rapid and significant repricing of risk that coincided with other negative shocks could lead to a large increase in corporate defaults and significant losses for systemic financial institutions. Losses would be magnified if defaults fed back into a larger and more sustained rise in risk premia and greater redemptions and asset sales by bond funds.

Very low interest rates have also contributed to strong growth in property prices internationally as investors search for yield. To the extent that prices have moved beyond what their underlying determinants suggest, this increases the risk of sharp price falls if interest rates were to rise suddenly or if risk sentiment were to deteriorate. Commercial property prices have risen rapidly in recent years in parts of the United States, Canada, New Zealand and Europe. Housing credit and

price growth have also been strong in many parts of the world, especially in a number of English-speaking and Nordic countries (see 'Box A: Risks in International Housing Markets'). Prudential policies have generally led to some improvement in banking and household sector resilience, but, to the extent that authorities were also hoping to dampen growth in credit and housing prices, the effects have often been more limited or temporary.

The resilience of banking systems across most advanced economies has been improving, leading to large rises in bank equity prices over the past year (Graph 1.4). Most banks' regulatory capital ratios have increased further and are well above regulatory minimums. Profit expectations are being buoyed by improved economic conditions, with stronger loan demand and falls in bad loans. Fines resulting from legal actions and restructuring costs are also expected to be less of a drag on profits going forward. In the United States, proposals to roll back some financial regulations have become somewhat clearer and appear to focus on easing the regulatory burden for smaller banks and reducing areas where US regulations exceed international standards.

Graph 1.4
Banks' Share-price-to-book-value Ratios



* End of month; October 2017 observation uses latest available data
Sources: Bloomberg; RBA

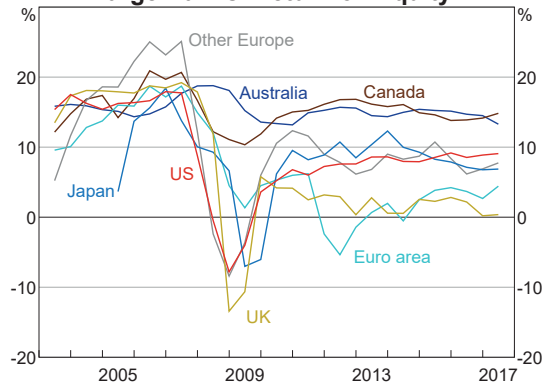
Important steps have been taken to bolster the resilience of the European banking sector, building on the effects of the ongoing economic recovery. Regulatory capital ratios and asset quality have improved following successful capital raisings and sales of non-performing loans (NPLs). Recent regulatory actions to deal with problem banks have also partly addressed long-standing sources of uncertainty in the Italian and Spanish banking systems. In Spain, the European Commission (EC) approved the resolution of Banco Popular Español, which had a large stock of non-performing real estate loans. The bank's equity and subordinated debt were written down and the bank was sold to Banco Santander for the notional sum of €1. The EC authorised a 'precautionary recapitalisation' of Italy's fourth largest bank, Monte dei Paschi di Siena, including the provision of €5.4 billion in state aid. The EC also approved plans to transfer the non-performing assets of two small Italian banks to the Italian Government, with the banks' other assets transferred to Intesa Sanpaolo along with a €5.2 billion capital injection from the government (plus substantial guarantees). These resolutions were a test of the new European resolution framework, which, among other things, is intended to minimise the need for governments to inject funds into weak banks. In the event, there was some flexibility in the approach, with varying degrees of public support and creditor 'bail-in'. While this led to pragmatic solutions, it has raised some uncertainties around the circumstances in which certain types of bank debt would incur losses.

While recent developments have been positive, European banking systems nevertheless remain vulnerable to negative shocks. Bank profitability remains low in several European countries, reflecting both prolonged economic weakness and structural factors (Graph 1.5). In particular, high cost bases, legacy loss-making exposures

and excess capacity are constraining profits. Low profitability makes it harder for banks to build capital buffers to absorb unexpected shocks. Stocks of NPLs have been falling but remain high (Graph 1.6). Uncertainty about the value of these loans means that banks' capital buffers could be much smaller than reported capital ratios suggest.

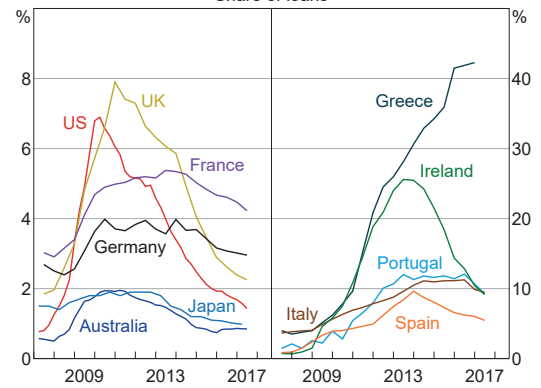
Sovereign debt levels remain high in some European countries, although associated near-term risks have receded somewhat

Graph 1.5
Large Banks' Return on Equity*



* Ratio of profits after tax and minority interests to shareholders' equity; the number of banks varies by jurisdiction: Australia (4), Canada (6), euro area (38), Japan (4), other Europe (10), United Kingdom (4) and United States (18); adjusted for significant mergers and acquisitions; reporting periods vary across jurisdictions
Sources: Bloomberg; RBA; S&P Global Market Intelligence

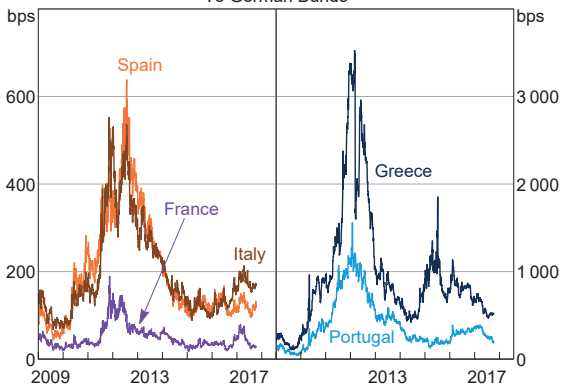
Graph 1.6
Large Banks' NPLs
Share of loans



Sources: APRA; Banks' annual and interim reports; Bloomberg; FSA; RBA; S&P Global Market Intelligence

over the past six months given stronger economic conditions, improved fiscal positions and pro-European Union election results. Government bond spreads to German Bunds have generally narrowed as a result (Graph 1.7). Sovereign credit ratings for Ireland and Portugal were also upgraded in September. However, negative shocks – including a reversal in global risk sentiment – could still precipitate higher government bond yields and increase concerns about debt sustainability in several European countries. The Greek Government reached an agreement with its creditors to access another tranche of bailout funding in June, and subsequently returned to the bond market for the first time in three years. However, ongoing disagreement between Greece’s European creditors and the International Monetary Fund remains a barrier to more comprehensive debt restructuring.

Graph 1.7
Euro Area 10-year Government Bond Spreads
 To German Bunds



Sources: Bloomberg; RBA

In Japan, very low interest rates continue to challenge banks’ profitability, with larger banks responding by lending in offshore markets. This has exposed some banks to additional liquidity risk, due to the use of short-term foreign currency funding, and to additional credit risk. Nevertheless, large Japanese banks continue

to comfortably exceed minimum capital requirements, and ongoing efforts to reduce liquidity mismatches and cross-ownership should further improve their resilience to system-wide shocks.

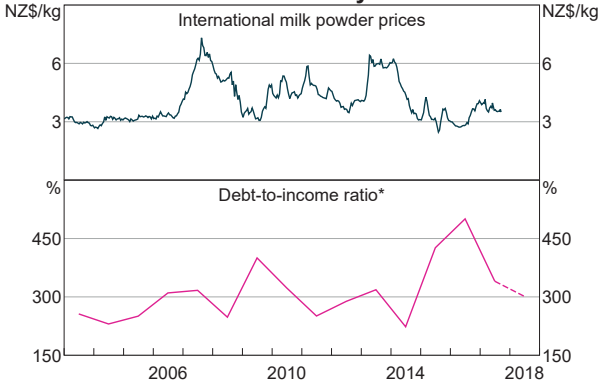
New Zealand

All four major Australian banks have large operations in New Zealand where, like Australia, housing-related risks have been a key focus given rapid growth in household debt and housing prices. Vulnerabilities in the New Zealand housing market appear to have lessened slightly since late 2016. Further tightening of loan-to-valuation (LVR) requirements in October 2016, a general tightening in credit standards and reduced affordability in some regions appear to have contributed to at least a temporary slowing in housing credit and price growth. These policies have also helped to limit the share of some riskier loans on banks’ balance sheets; the share of high-LVR loans has continued to decline and the share of new investor lending at high debt-to-income (DTI) ratios has fallen. Despite this, the overall share of new loans with high DTI ratios remains elevated by historical standards. The Reserve Bank of New Zealand has proposed adding DTI limits to its agreed set of macroprudential policy tools, and is currently considering feedback from stakeholders.

Conditions in the dairy sector in New Zealand have improved alongside higher global dairy prices over the past year (Graph 1.8). Most farms are expected to return to profitability this year and growth in dairy-related debt has slowed. However, the sector remains highly leveraged, leaving it vulnerable to any future dairy price weakness or an increase in interest rates, raising the risk of loan losses for banks.

Graph 1.8

New Zealand Dairy Sector

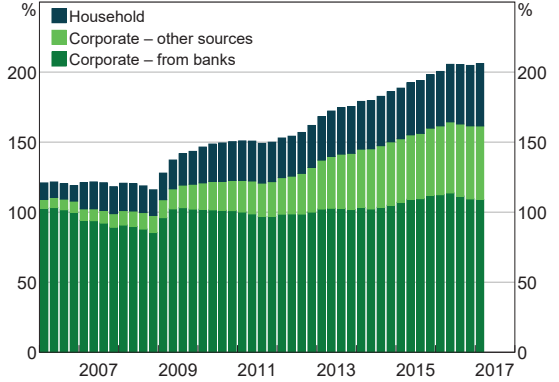


* 2018 estimate uses latest Fonterra and ABARES forecasts for farmgate milk prices and milk production respectively; debt held constant at 2017 levels

Sources: ABARES; Bloomberg; RBA; RBNZ; USDA

Graph 1.9

China's Non-financial Sector Debt
Per cent to GDP



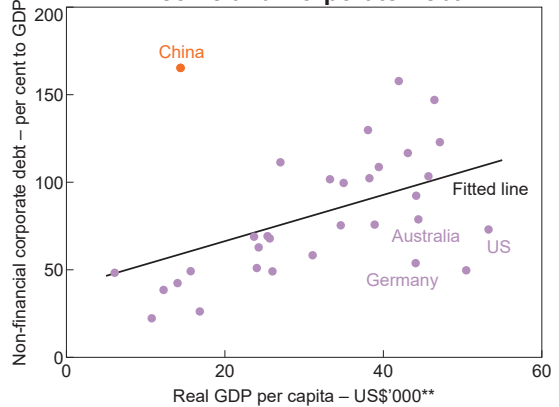
Sources: BIS; RBA

China

Chinese policymakers have recently strengthened efforts to address financial stability risks. If sustained and calibrated appropriately, these actions should help curb risks over the longer term. For now, however, financial stability risks in China remain high. Debt levels have increased significantly over the past decade, largely driven by corporate borrowing (Graph 1.9). Relative to GDP, China's corporate debt exceeds that of most advanced economies, and is more than three times higher than in economies with comparable per capita incomes (Graph 1.10). A significant part of the run-up in corporate debt has been funded through less regulated and less transparent 'shadow banking' channels. Lending standards in China are also likely to have been, at times, undermined by implicit government guarantees and other distorted incentives. Many financial institutions have funded the increase in lending with short-term borrowing and wholesale finance from other domestic financial institutions. Together, these developments make the system more vulnerable to adverse shocks, by raising considerable credit, liquidity and contagion risks.

Graph 1.10

Income and Corporate Debt*



* Sample of 32 countries; latest available data

** Converted into US dollars using purchasing power parity exchange rates; figures are in 2011 dollars

Sources: BIS; RBA; World Bank

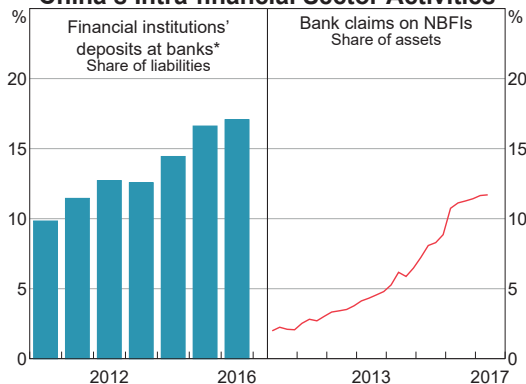
A large amount of corporate debt is owed by state-owned enterprises (SOEs) and firms in the industrial sector. Despite some recent improvement, many of these firms have low profitability, partly due to widespread excess capacity. Low profitability reduces corporates' ability to service their debts and increases their vulnerability to adverse shocks. While measured corporate distress has so far remained relatively low, supported by policy stimulus and loan forbearance, it has been rising. China's local governments have also borrowed heavily since

the global financial crisis, including in recent years to fund infrastructure projects. As with SOEs, local governments enjoy favourable access to finance, in part because of implicit central government support, despite limited net revenue streams. They also have an incentive to maintain strong short-term growth. This can lead to poor investment decisions and increase the risk of repayment problems.

Non-bank financial institutions (NBFIs), or so-called 'shadow banks', are less regulated than banks and have rapidly expanded both their lending to firms and purchases of financial assets in recent years. Their growth has been aided by that of small and medium-sized banks, which in many cases have borrowed funds in short-term wholesale markets to invest with NBFIs (Graph 1.11). Assets of small and medium-sized banks account for around one-half of banking system assets in China.²

Graph 1.11

China's Intra-financial Sector Activities



* Including from banks and non-bank financial institutions
Sources: CEIC Data; RBA; S&P Global Market Intelligence

Increased lending through less regulated channels raises several risks. Such lending often involves multiple layers of intermediaries, which can obscure the ultimate borrower. This allows banks to avoid restrictions on lending to some higher-risk sectors (such as property

development) thereby increasing their credit risks. At the same time, it allows banks to lower provisioning and capital requirements, which reduces financial buffers. The lack of transparency also increases contagion risk, as banks are more likely to withdraw from interbank markets when uncertainty about other banks' solvency is high. The expansion of NBFIs has raised liquidity risks, as these institutions rely mostly on short-term funding to make longer-term loans but they do not have formal access to central bank liquidity and are not backed by deposit insurance. As noted above, many smaller banks have also increased their use of short-term wholesale debt, including interbank loans. Overall, this suggests a heightened risk that loan losses and funding pressures in the shadow sector could quickly cascade through the financial system.

Risks persist in the Chinese property sector. Housing price growth has been relatively strong overall, despite slowing in many cities where measures have been introduced to cool the market. Household debt also continues to grow rapidly, although households are not highly leveraged by international standards. In contrast, property developers are typically highly leveraged, making them susceptible to large falls in the prices of properties they have financed. Developers also often obtain finance through shadow banking channels, which may be particularly unreliable during times of stress. A downturn in the property market could also transmit to local governments. Property is typically used as collateral for the debts of local governments' off-balance sheet financing vehicles, while property-related taxes and land sales are important sources of local government revenue.

Over the past year, the Chinese authorities have taken steps to address financial stability risks. Backed by strong political support, regulators have announced a range of measures to

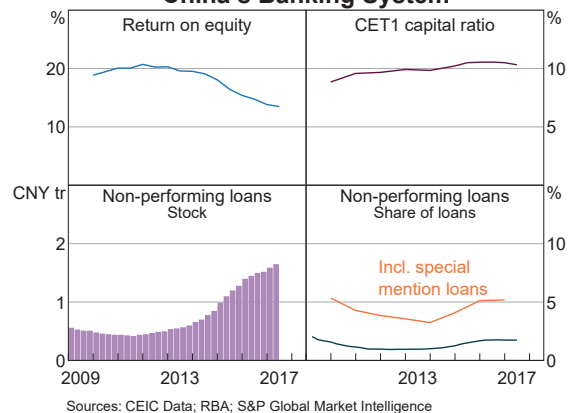
2 See RBA (2016), 'Box A: Recent Growth of Small and Medium-sized Chinese Banks', *Financial Stability Review*, October, pp 14–16.

reduce leverage, improve transparency and strengthen risk management in the financial system.³ Important measures have included restrictions on some forms of shadow lending and stricter enforcement of rules governing banks' capital, provisioning and interbank lending. The authorities have also established a Financial Stability and Development Committee to facilitate better coordination among regulators. The People's Bank of China has extended coverage of its macroprudential assessment framework to include banks' off-balance sheet activities and facilitated an increase in money market rates over the first half of the year. As a result of these measures, NBFIs' appetite for holding corporate bonds has declined and growth in some less visible forms of shadow credit has reportedly slowed. Consequently, NBFIs have reduced their holdings of financial assets, and financial conditions have tightened for corporations, although they generally remain favourable. Many smaller banks have also signalled intentions to raise equity to increase their capital buffers.

These latest regulatory measures should help to curb financial stability risks over the longer term. However, the authorities' commitment to moderate riskier financing could be tested if economic growth targets are threatened. Given the already high level of risk that has built up in the financial system, the authorities are likely to face a trade-off between strong regulatory action that could trigger financial and economic disruption and a more cautious approach that may allow a further build-up of risks. Further reform, such as facilitating the restructuring of SOEs and enhancing the fiscal discipline of local governments, will most likely be needed to address the poor governance and adverse lending incentives that have contributed to increased leverage.

China's banks remain profitable and well capitalised overall, but their profitability has been falling in recent years, in part due to higher loan losses (Graph 1.12). Despite increasing loan write-offs, reported NPL ratios have risen and would likely be much higher if measured on an equivalent basis to advanced economies. The stock of marginal performing loans (where loan repayment is at risk, but the loan is not yet classed as non-performing) has also risen strongly, possibly pointing to further increases in NPLs. Authorities in China have launched a number of programs to restructure corporate debts and help banks repair their balance sheets, such as a debt-to-equity swap program and the establishment of firm-level creditor committees comprising all relevant stakeholders to manage debt workouts. While these are having some effect on the resolution of distressed loans, NPLs will likely remain a headwind to bank profitability for some time.

Graph 1.12
China's Banking System



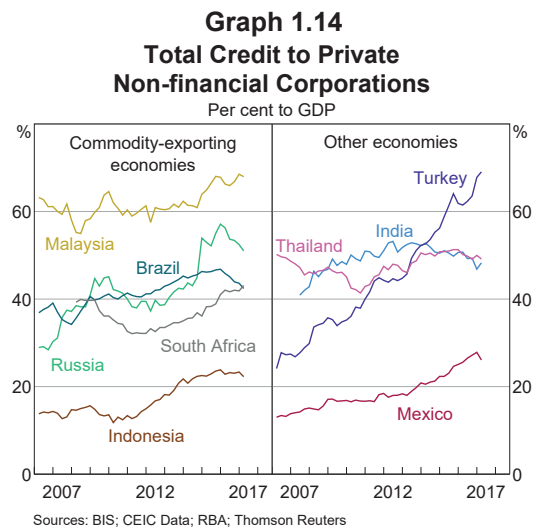
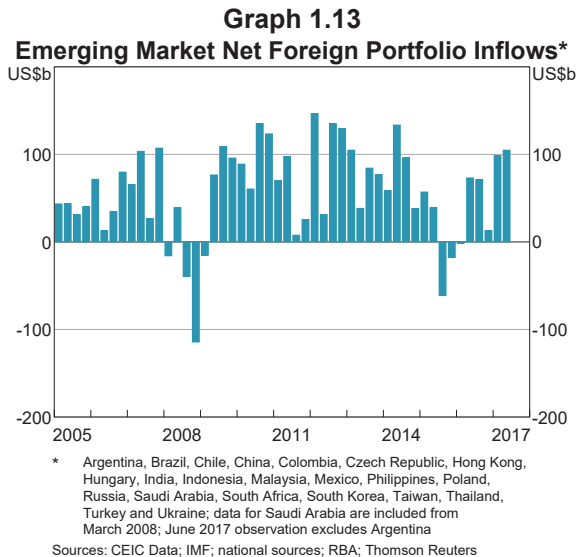
If financial risks were to materialise in China, the negative effect on China's economy could be substantial. Direct financial linkages between China and other economies are generally still small, limiting the spillovers through this channel. Rather, a disruption would most directly affect countries with strong trade links

³ See RBA (2017), 'Box B: Recent Developments in Chinese Financial Regulations', *Statement on Monetary Policy*, August, pp 27–29.

to China, including Australia, with second-round effects on a broad range of countries through weaker global growth. Weaker confidence and higher volatility in financial markets would also have global effects. As noted earlier, Chinese authorities have increased their focus on financial stability risks, and they retain a wide range of economic and financial policy tools to address them. But the more that leverage and risky lending grow, the more likely that China's economic transition will include a significant financial disruption of some form.

Other Emerging Markets

Risks in other emerging market economies have receded somewhat over the past year. Economic growth is expected to continue recovering on the back of accommodative policy settings and stronger global trade. Capital inflows have been relatively strong this year, following a temporary decline in the wake of the US presidential election (Graph 1.13). Most emerging market economies have also made progress in addressing financial vulnerabilities by increasing their banking systems' capital and liquidity ratios. Nonetheless, emerging markets remain exposed to a shift in sentiment and capital flight, which could reveal or exacerbate underlying weaknesses. One area of concern is the corporate sector, where low global interest rates have fuelled strong growth in debt in the post-crisis period, though debt has stabilised or fallen recently in many economies (Graph 1.14). Higher corporate debt levels are particularly evident in commodity-exporting economies, with the rapid pace of growth increasing the probability that some recent lending may be of low quality. A particular risk for emerging market economies is that currency depreciation would inflate unhedged foreign currency borrowing (and interest costs) at the same time that foreign lenders are less willing to roll over or extend new



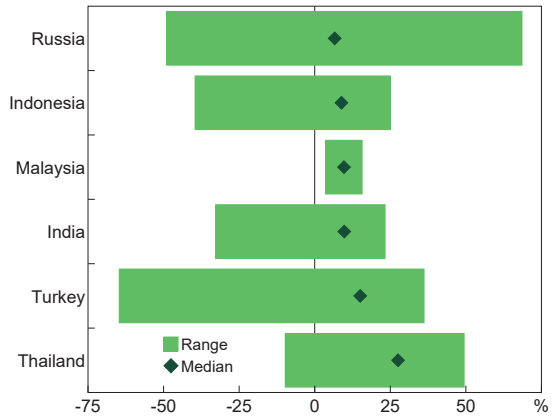
debt. This risk is somewhat mitigated by the large proportion of listed emerging market firms that have at least some foreign currency earnings. Rising US interest rates will also make it more difficult for emerging market firms to service their foreign currency debts.

Despite challenging economic conditions in recent years, banking systems in the larger emerging market economies are generally profitable and most appear to be well capitalised.

However, bank performance varies widely within and across jurisdictions, with some banks having weak profitability and thin provisioning and capital buffers (Graph 1.15). NPL ratios have increased over recent years in some commodity-exporting economies (Graph 1.16). NPL ratios are also high and rising in India, although this partly reflects regulators' efforts to improve NPL recognition. Efforts by Indian authorities to address the risks posed by high NPLs include clamping down on loan forbearance, reviewing the asset quality of banks, and strengthening insolvency and regulatory frameworks to facilitate the resolution of distressed assets. The Indian Government has also injected capital into some weaker public sector banks and is pursuing reforms to strengthen bank governance. In Russia, the central bank recently took control of two large private lenders, as it continues efforts to strengthen and consolidate the Russian banking sector. Bank equity valuations remain low in a number of emerging economies where corporate debt has risen fastest, suggesting that investors remain concerned about underlying asset quality.

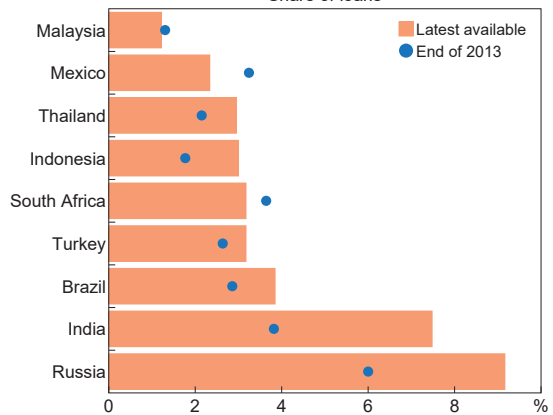
The potential for emerging market financial stress to spill over to advanced economies has risen over time due to their increased size and integration in the global economy. Advanced economies' direct financial linkages to emerging markets remain small despite some increased links, such as holdings of emerging market corporate bonds. Accordingly, any distress would be most likely transmitted through trade links and financial market sentiment. ❖

Graph 1.15
Banks' Return on Equity*
As of June 2017



* Number of banks in sample differs across jurisdictions
Sources: RBA; S&P Global Market Intelligence

Graph 1.16
Banking Sector NPLs*
Share of loans



* Definitions of NPLs can differ across jurisdictions
Sources: CEIC Data; RBA; World Bank

Box A

Risks in International Housing Markets

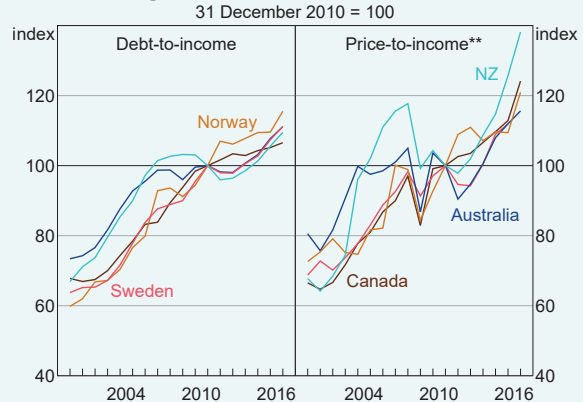
Housing debt in a number of countries has risen from already high levels in recent years and has coincided with some evidence of riskier lending and strong growth in housing prices. This has raised concerns about the resilience of households and banks to negative shocks, particularly as interest rates start to rise from very low levels. This box outlines: recent developments in the housing markets of Canada, New Zealand, Norway and Sweden; key risks associated with these developments; and recent policy actions to address these risks.

Recent Developments in International Housing Markets

Housing debt and prices in these four small open economies have been rising from already high levels, outpacing growth in incomes and rents (Graph A1). As in Australia, much of the recent housing price growth has been concentrated in major cities, while smaller cities and rural regions have generally experienced much slower price growth or in some cases price declines (Graph A2).

Housing prices have been boosted by an increase in demand and constrained supply. On the demand side, low interest rates have enabled households to borrow more to purchase housing. In some major cities, strong population growth and heightened investor activity have also increased demand for housing. Housing supply generally has not risen to the same extent as demand due to the usual constraints of lags in planning, approval and construction. Building new housing in major cities can face more

Graph A1
Housing Ratios in Selected Economies*

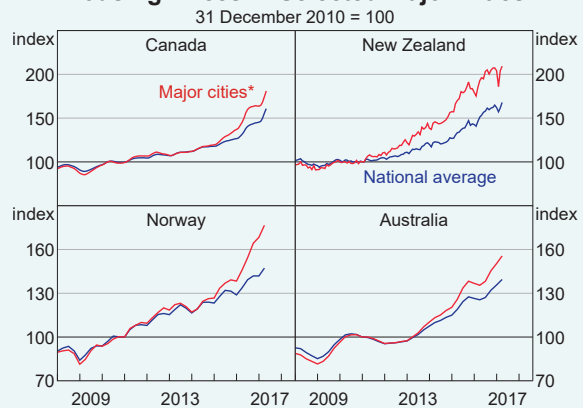


* Includes income and debt of unincorporated enterprises, and debt owed to the non-financial sector (including education-related debt, and overseas debt held by migrants); some countries compile these measures on a 'best endeavours' basis only

** Average dwelling prices to average household disposable income

Sources: Canadian Real Estate Association; CoreLogic; national sources; OECD; RBA; REINZ; Thomson Reuters

Graph A2
Housing Prices in Selected Major Cities



* Simple average; major cities include Greater Toronto and Greater Vancouver (Canada); Auckland (New Zealand); Greater Oslo (Norway); Sydney and Melbourne (Australia)

Sources: CoreLogic; RBA; Statistics Canada; Statistics New Zealand; Statistics Norway

serious constraints because of restrictions on the availability of land, including natural barriers and zoning requirements. Rent controls and the scaling back of some social home-building programs have also played a role in constraining supply in some cities.

Key Vulnerabilities

Authorities in the affected countries have expressed concern that high, and rising, household debt relative to income, together with riskier lending, has likely made households less resilient to negative shocks. At the same time, there is concern that the rapid increase in housing prices has increased the risk of a subsequent sharp price fall, particularly if it has been partly driven by speculation. Taken together, these developments have increased the risk of financial and macroeconomic instability.

While household debt levels are high, and rising, to date the impact on households' ability to service their debt has been muted by falls in interest rates to historically low levels. Nonetheless, highly indebted households are more likely to struggle to repay their debts, or substantially reduce their consumption, in response to a negative shock, such as a rise in unemployment, an unexpectedly large increase in interest rates or a sharp fall in housing prices.¹ This could lead to bank losses and slower economic growth. Banks in turn might be less able or willing to provide credit to the economy, amplifying any downturn.

The distribution of debt is also important in identifying where risks lie as typically it is not the 'average' household that gets into financial

difficulties. In Canada and Sweden, for example, the risks from high household debt may be heightened since the debt is concentrated among younger and low-to-middle-income households, who are likely to be more vulnerable to negative shocks.²

As in Australia, national authorities have also been concerned about riskier lending, which can further increase vulnerabilities.³ For instance, lending at high loan-to-valuation ratios (LVRs) has worried regulators in many countries, in part because households that borrow at high LVRs are more likely to fall into negative equity if housing prices decline. In this scenario, such households would be unable to repay their debts by selling their homes or to cushion income falls by drawing down on equity. Increasingly, regulators are turning their attention to loans that are large relative to borrowers' income. Such loans could stretch the ability of households to repay their debts and make them more sensitive to falls in income or unexpected rises in interest rates. Further, interest-only (IO) lending has been identified as increasing risks in some jurisdictions.⁴ Households with IO loans remain more indebted throughout the life of the loan than if they had been paying down the loan principal, making them more vulnerable to higher interest rates, reduced income, or lower housing prices. Such households are also more vulnerable to 'payment shock' due to the increase in repayments following the end of the interest-only period of the loan.

1 Academic studies find non-linearities in the consumption patterns of highly indebted households. See, for example, Mian A, K Rao and A Sufi (2013), 'Household Balance Sheets, Consumption, and the Economic Slump', *The Quarterly Journal of Economics*, 128(4), pp 1687–1726 and Bunn P and M Rostom (2014), 'Household Debt and Spending', *Bank of England Quarterly Bulletin*, Q3, pp 304–315.

2 See Bank of Canada (2015), 'Report on Indebted Households and Potential Vulnerabilities for the Canadian Financial System: A Microdata Analysis', *Financial Stability Review*, December, pp 49–58 and Ölcer D and P van Santen (2016), 'The Indebtedness of Swedish Households: Update for 2016', *Sveriges Riksbank Economic Commentaries*, November.

3 See the 'Household and Business Finances' chapter for an assessment of housing-related vulnerabilities in Australia.

4 For recent developments in IO lending in Australia, see the 'Household and Business Finances' chapter and APRA (2017), 'Further Measures To Reinforce Sound Residential Mortgage Lending Practices', Letter to Authorised Deposit-Taking Institutions, 31 March.

Much like in Australia's largest cities, investor demand has been strong in several fast-growing markets, including Auckland, Toronto and Vancouver. Rapidly rising prices and low rental yields suggest that this demand is at least partly based on expectations of capital gains. If speculation has played a role, this can raise the risk of housing price falls in the future. Past episodes in several countries also suggest that investors may be more likely than owner-occupiers to sell their properties in a downturn or default on their loans in times of stress, posing risks to the broader market and the banking system.⁵ In some markets, such as Toronto and Vancouver, foreign investor activity has boosted demand for housing, contributing to the upswing in some segments of the market. It is uncertain how foreign investors will behave in a downturn.

Macroprudential Policy Responses

Low interest rates, which central banks view as appropriate given their inflation and output or employment objectives, have contributed to the run-up in housing debt and prices in many economies. National authorities have, therefore, been increasingly using macroprudential policies to address the associated risks.

Foreign authorities' macroprudential policies have focused on three key areas:

- Households' equity buffers have been strengthened by the use of tighter LVR restrictions – often specifically targeting investors – to lower the proportionate amount households can borrow (such as in Canada and New Zealand). IO lending has also been restrained by the implementation

of minimum amortisation requirements for loans at high LVRs (in Norway and Sweden), which ensure faster repayment of mortgage debts and an associated build-up in equity.⁶

- Loan serviceability has been strengthened by imposing maximum loan-to-income ratios (in Norway) and debt-service ratios, which cap the proportion of income that households can allocate to repaying their mortgage in determining maximum loan size (in Canada).⁷ Banks in Canada and Norway are also required to check that households are able to service their debts if faced with significantly higher interest rates.
- Some regulators have increased the regulatory capital requirements by raising mortgage risk weights or increasing countercyclical capital buffers (as in Sweden). Regulators have also raised the minimum loss rate that banks can assume when setting aside capital against potential mortgage losses. These policies aim to boost bank resilience by raising capital reserves to cover potential losses in downturns.

It is difficult to assess the effectiveness of these measures and macroprudential policies more generally. These policies do not have a long track record; they often have differing objectives; and their effects are hard to isolate and measure, especially because they are often implemented in combination with other policies. National authorities have indicated that so far macroprudential policies have generally led to some improvement in household and banking sector resilience. For example, the share of high-LVR loans on banks' balance sheets has been falling in New Zealand. Macroprudential

5 See, for example, McCann F (2014), 'Modelling Default Transitions in the UK Mortgage Market', Central Bank of Ireland Research Technical Paper 18/RT/14 and Haughwout A *et al* (2011), 'Real Estate Investors, the Leverage Cycle, and the Housing Market Crisis', Federal Reserve Bank of New York Staff Reports No 514.

6 Other countries, such as China and Singapore, have banned IO lending.

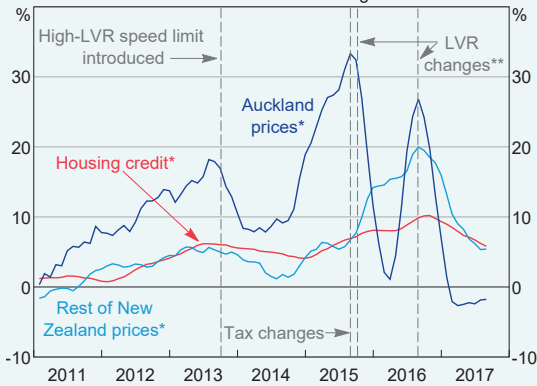
7 A range of other jurisdictions have also introduced limits on loan-to-income ratios, such as the United Kingdom and Ireland, or caps on debt-service ratios, such as Hong Kong and the Netherlands.

policies also appear to have contributed to slower growth in credit and housing prices, although experiences in countries such as New Zealand suggest that these effects tend to diminish over time (Graph A3). Some policies appear to have led to leakages and spillovers, such as avoidance behaviour, increased lending by less regulated institutions and a shift in price growth to smaller cities. However, these effects have been fairly limited so far.

Graph A3

New Zealand Housing Credit and Prices

Six-month-ended annualised growth



* To latest three months
 ** Refers to tighter restrictions introduced in November 2015, mainly targeting Auckland investors, which were subsequently tightened further and extended to investors in the rest of New Zealand in October 2016

Sources: RBNZ; REINZ

increased taxes on investor properties held for less than two years.⁸

Overall, available evidence suggests that a range of policies (including both macroprudential and other tools) have led to some improvement in household and banking sector resilience in several markets. However, household debt levels and housing prices remain high and continue to grow rapidly in many regions, so risks persist. Macroprudential policies can at best moderate the growth of credit and prices for a while, but they cannot address the high levels of debt and prices. Further, there continues to be much uncertainty around the calibration and effectiveness of these tools. Ongoing analysis and experience will be important for understanding the impact that such policies can have on housing market risks. ↗

Other Policy Responses

A number of authorities have also used other policy tools to mitigate housing market risks. Some governments have implemented tax policies to limit speculative activity. Provincial governments in Canada introduced higher taxes on investor purchases (particularly by foreign investors), and the New Zealand Government

8 Similarly, both the New South Wales and Victorian governments have increased stamp duty for foreign housing purchasers and removed the deferral of stamp duty payments for some off-the-plan purchases. The New South Wales Government has also implemented an additional land tax for foreigner property owners, while the Victorian Government has imposed a tax on vacant residential land and an absentee owner surcharge. Governments in several other jurisdictions, such as Hong Kong and Singapore, have also introduced tax policies targeting speculative purchases.

2. Household and Business Finances

The key domestic risks in the Australian financial system continue to stem from household borrowing. Household indebtedness, most of which is mortgage borrowing, is high and gradually rising against a backdrop of low interest rates and weak income growth. While some households have taken advantage of low interest rates to make excess mortgage payments, others have increased their borrowing. Higher interest rates, or falls in income, could see some highly indebted households struggle to service their debt and so curtail their spending. Recent regulatory actions have been taken to build the resilience of authorised deposit-taking institutions (ADIs) and borrowers to ensure that borrowers could service their mortgage with higher mortgage rates. These actions include limiting the growth of interest-only lending and emphasising that banks should also limit other forms of higher-risk lending. These measures have already seen significant declines in the share of interest-only lending. Since their introduction, there has been some moderation in housing market conditions.

Strong demand for housing over recent years has contributed to a large increase in apartment construction. Substantial additions to the stock of apartments in particular locations raise the possibility of price falls as the new stock is absorbed. To date the adjustment has been orderly with the rate of price decline slowing in Brisbane and prices falling a little in inner-city Melbourne. While there have been some reports of settlement delays, there is little evidence of settlements actually failing. In Brisbane, however,

apartment market conditions are relatively weak, with declining prices and no growth in rents.

The Bank is continuing to closely monitor conditions in non-residential commercial property markets. Growth in commercial property prices in Sydney and Melbourne continues to exceed that in rents, and office vacancies are elevated in the cities with greater exposure to the mining sector, especially in Perth. In other parts of the business sector, conditions remain generally favourable, with corporate profitability relatively high and gearing at relatively low levels. However, the economic slowdown in mining-exposed areas has seen business failure rates in Western Australia and Queensland rise to above those of the other Australian states, although they are still at a generally low level.

Household Sector

Mortgage and housing markets

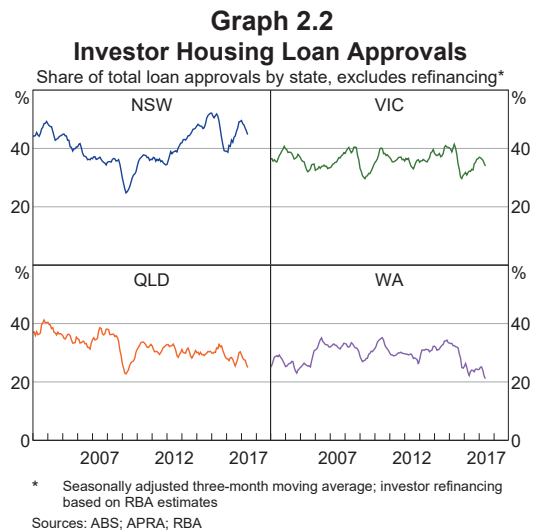
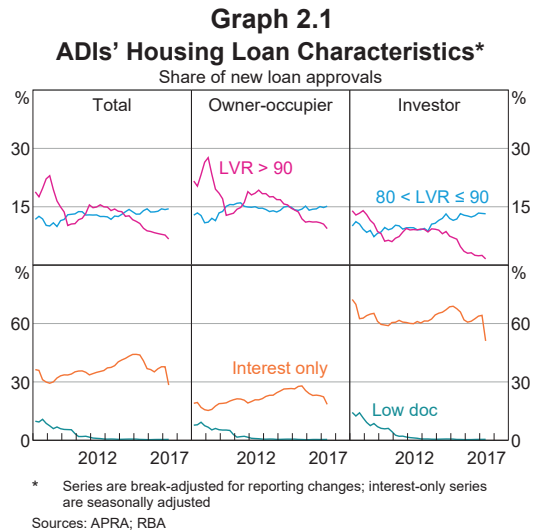
A core area of focus has been trends in household borrowing, with most of that borrowing for the purpose of housing. Regulators have responded to the build-up of risk associated with household mortgage lending with a sequence of measures. These have aimed to increase household and banking sector resilience by improving the quality, and balancing the composition, of housing sector lending. In particular, there has been greater regulatory focus on ADIs' lending standards, prompting lenders to strengthen a range of serviceability standards, such as interest-rate buffers to assess serviceability, the assessment of minimum living

expenses and discounting less stable income sources. The Australian Prudential Regulation Authority (APRA) is continuing its focus on serviceability standards, resulting in many new borrowers now having greater buffers against income losses or higher interest rates.

APRA announced further regulatory actions on 31 March, after discussions by the Council of Financial Regulators. For all ADIs, a 30 per cent cap on interest-only loans as a share of loan originations was imposed, and the 10 per cent benchmark on investor credit growth, imposed in December 2014, was reaffirmed. Deposit requirements were raised by strengthening prudential expectations regarding banks' limits on high-LVR interest-only loans and increasing scrutiny of serviceability assessments.

ADIs have changed their lending conditions in response to the latest APRA measures. ADIs have increased interest rates on investor and interest-only loans, and allowed existing interest-only borrowers to switch to principal-and-interest (P&I) loans at no cost. Lenders have also lowered maximum LVRs on interest-only loans, both for owner-occupiers and investors. Interest-only loans as a share of new approvals fell sharply in the June quarter, and the outstanding stock of these loans has declined (Graph 2.1). The combination of a renewed focus on the 10 per cent benchmark on investor lending and the cap on interest-only loans (which are more commonly used by investors) has contributed to the recent significant moderation in investor credit growth across all states (Graph 2.2).

While these regulatory measures should help make household and bank balance sheets more resilient, they will constrain some types of (potential) borrowers. In particular, some households will not be able to borrow as much as previously, though their smaller loan



will be more manageable.¹ In addition, some households may find it more difficult to obtain finance for apartments purchased off the plan some time earlier, which could, in particular, affect some apartment markets such as Brisbane that are adjusting to large increases in supply. Some borrowers, including investors, could experience increased financial stress as a result

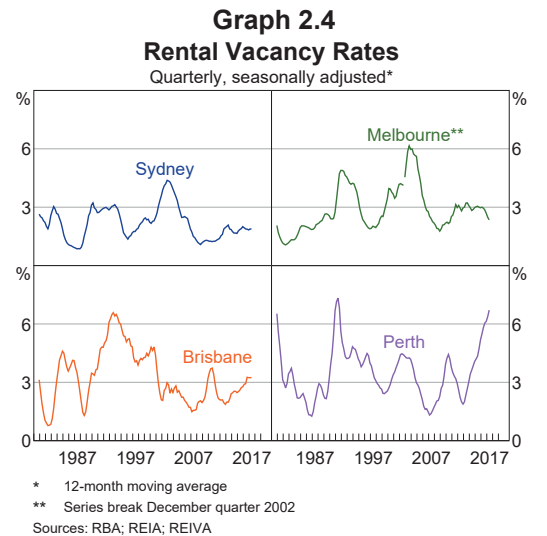
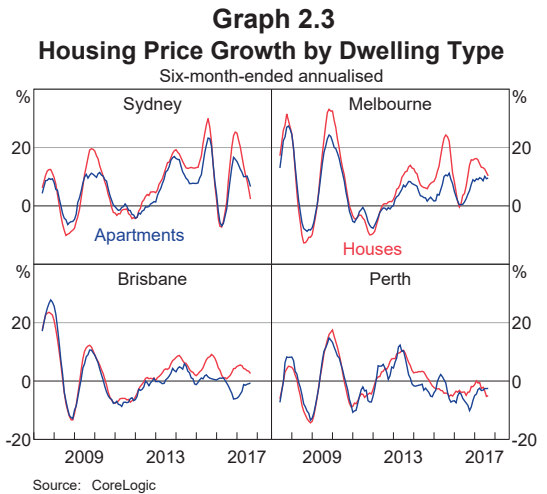
¹ See also Simon J and Stone T (2017), 'The Property Ladder after the Financial Crisis: The First Step Is a Stretch but Those Who Make It Are Doing OK', RBA Research Discussion Paper No 2017-05.

of higher repayments from either switching to a P&I loan, or higher interest rates if they retain an interest-only loan (for a discussion of the characteristics of investors and their borrowing, see 'Box B: Households' Investment Property Exposures: Insights from Tax Data'). However, most borrowers should be able to absorb these changes given progressive improvements in lending standards since the financial crisis. For loans taken out over more recent years, the initial serviceability assessment would have been rigorously based on the higher repayments required after the interest-only period and also include a larger buffer against interest rate rises. Further, given the decline in interest rates over recent years, most households with older loans would have initially borrowed at rates that were higher than current interest rates.

Housing market conditions appear to have eased in recent months. In Sydney and Melbourne, housing price growth has slowed and auction clearance rates have fallen (Graph 2.3). A range of factors have contributed to the slowing, including increased housing supply, higher interest rates for some borrowers, and an apparent reduction in demand from foreign buyers. In Melbourne, these factors appear to have offset the impact of strong migration flows into Victoria, both from overseas and interstate.

Nationally, apartment prices have continued to record weaker price growth than detached housing, consistent with the increased relative supply of apartments. Some concerns remain about the process of absorbing the substantial increase in new apartments in Brisbane. Brisbane apartment prices continue to fall, although the rate of decline has slowed, and apartment prices in inner-city Melbourne have been falling. Weak conditions in Western Australia and a significant increase in new apartment building in Brisbane have increased the potential for further localised housing price corrections. In Perth, the

vacancy rate is the highest in 25 years and more than double the average of other capital cities (Graph 2.4). The constraints on mortgage finance could compound the weakness in some localised property markets.

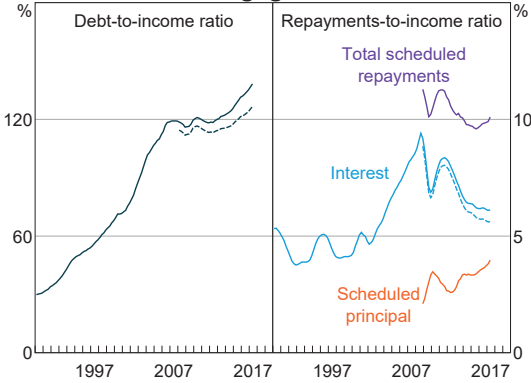


Households' financial position

While most indicators of household financial stress remain fairly benign, there are some concerns. The aggregate debt-to-income ratio is high (Graph 2.5). Households with high debt burdens could be vulnerable to financial stress

Graph 2.5

Household Mortgage Debt Indicators*



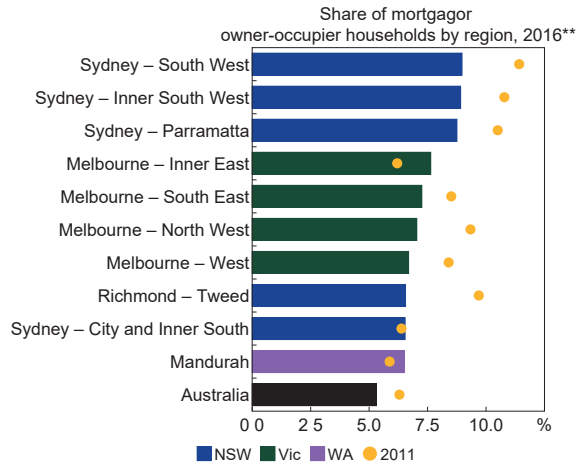
* Excludes non-housing debt; dashed lines are calculations based on debt balances net of offset accounts; income is household disposable income before housing interest costs
Sources: ABS; APRA; RBA

if they experience large declines in income (see 'Box C: Large Falls in Household Income'). At the same time household net wealth has been rising, and has been growing of late at an above-average pace, driven primarily by housing and superannuation assets.

Improvements in lending standards over recent years should have increased household resilience and low mortgage rates have contained debt-serviceability metrics. In line with these developments, Census data suggest that the share of indebted owner-occupier households making mortgage payments at or above 30 per cent of gross income declined from 28 per cent in 2011 to around 20 per cent in 2016 (around ½ million households). However, the Census data overstate debt-serviceing requirements as they include households' voluntary prepayments. Other indicators of repayment stress such as the '50/40' measure of the share of households in the lowest 40 per cent of income earners making total mortgage payments – required and prepayments – above 50 per cent of their income, show a similar trend (Graph 2.6). The overall share of non-performing housing loans has also declined between 2011 and 2016 and remains low at around 0.8 per cent,

although it is rising somewhat of late primarily due to trends in the more mining-exposed areas (Graph 2.7; see also 'The Australian Financial System' chapter). The recently released 2015/16 Household Expenditure Survey shows that the number of households experiencing financial stress has steadily fallen since 2003/04.

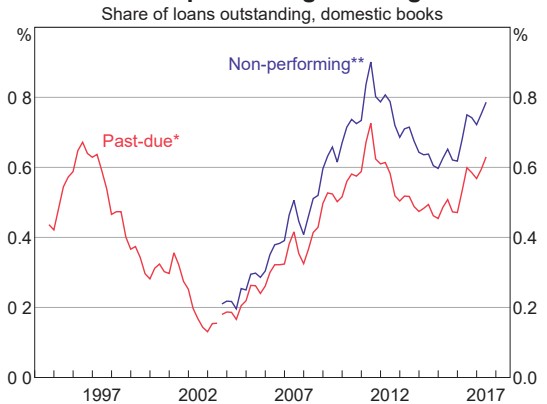
Graph 2.6
Lower-income Households with High Mortgage Repayments*



* Includes households in the lowest two income quintiles with debt-serviceing ratios above 50 per cent, estimated using actual mortgage repayments reported in the Census
** Classified by SA4 regions
Sources: ABS; RBA

Graph 2.7

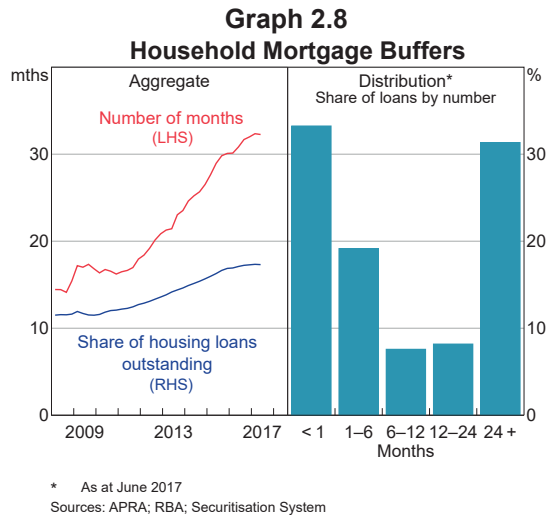
Banks' Non-performing Housing Loans



* Loans that are 90+ days in arrears and well secured; prior to 2003, data includes resident and non-resident loans and numerator is on a consolidated basis
** Includes impaired loans and loans that are 90+ days past-due
Sources: APRA; RBA

Further, although aggregate measures of household financial stress are little changed over the past year, conditions vary across states and regions. Recent ABS estimates suggest that the share of households making high mortgage repayments (both required and excess payments into offset and redraw accounts), while lower than in 2011, remains relatively high in some parts of Sydney and Melbourne. And weak economic conditions, underemployment and falling housing prices present ongoing challenges to households in some regions with greater exposure to mining activity. The rate of personal administrations in Western Australia rose further over the first half of 2017 and remains elevated in Queensland, and applications for property possessions have increased over recent years in Western Australia.

Prepayments are an important dynamic in the Australian mortgage market as they allow households to build a financial buffer to cushion mortgage rate rises or income falls. Aggregate mortgage buffers – balances in offset accounts and redraw facilities – remain around 17 per cent of outstanding loan balances, or over 2½ years of scheduled repayments at current interest rates (Graph 2.8; left-hand side). These aggregates, however, mask substantial variation; about one-third of mortgages have less than one months’ buffer (Graph 2.8; right-hand side). Not all of these are vulnerable given some borrowers have fixed rate mortgages that restrict prepayments, and some are investor mortgages where there are incentives to not pay down tax deductible debt. This leaves a smaller share of potentially vulnerable borrowers with new mortgages who have yet to accumulate prepayments, and borrowers who may not be able to afford prepayments. Partial data suggest that the share of households with only small buffers has declined in recent years, in part due to declines in mortgage rates. Households with



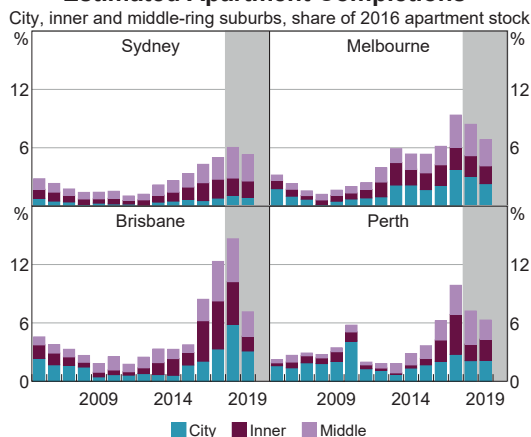
small buffers also tend to be lower-income or lower-wealth households, which could make them more vulnerable to financial stress.

Commercial Property

Residential development

Recent *Reviews* have highlighted the potential risks posed by the large pipeline of apartment construction in some areas. So far, the areas where new apartments have represented a larger proportionate addition to supply, particularly in pockets of inner-city Melbourne and in Brisbane, have not experienced significant disruption (Graph 2.9). In inner-city Melbourne, strong population growth has helped to absorb the new supply, with vacancy rates declining and apartment prices only falling a little (Graph 2.10). In Brisbane, for some lower-quality apartments, valuations at settlement have declined relative to the purchase price. In contrast, valuations for high-quality apartments, or those mostly marketed to owner-occupiers, continue to be realised at or above the purchase price. In Sydney there are reports of small declines in prices in a few apartment development projects.

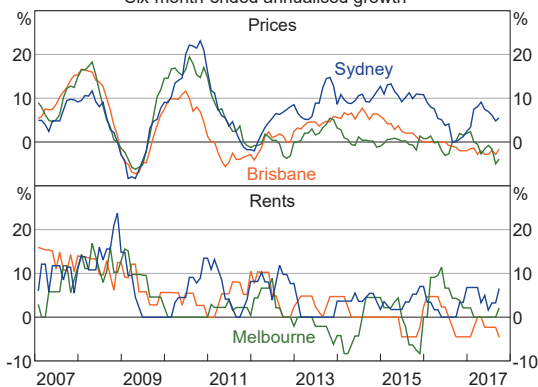
Graph 2.9
Estimated Apartment Completions*



* Financial years
Sources: ABS; RBA

Graph 2.10
Inner-city Apartments*

Six-month-ended annualised growth**



* Inner-city areas of Brisbane (SA4), Melbourne (SA3) and Sydney (SA3)
** Underlying series are 12-month median values
Sources: CoreLogic; RBA

To date, the adjustment in the Brisbane apartment market has not resulted in significant stress. Settlement failures appear to have remained in line with historical norms, although the peak of new supply is yet to come. Some developers, however, report that tighter financing conditions are contributing to delays in the settlement of off-the-plan purchases, as valuations below the purchase price reduce the amount banks will lend. In liaison, industry participants and banks express confidence that the Brisbane market

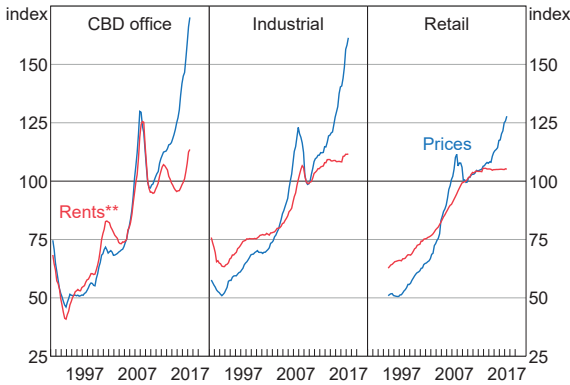
will continue to absorb the new supply despite tighter financing conditions for buyers. Continued weakness in rents, and so rental income, remains a debt-servicing risk for investors.

Developers' access to bank finance for new projects has tightened over the past year, particularly in areas where a large volume of new supply has yet to come on line. As a result, some developers have turned to non-bank lenders for finance, which liaison indicates is generally more expensive than bank financing. Building approvals for new projects in Brisbane and Melbourne have fallen from their recent highs. In Perth, builders and developers face weak demand for new dwellings. Several small to medium builders – including those involved in commercial or multi-unit developments – have filed for bankruptcy in Perth and Brisbane, and market analysts anticipate more failures in coming months.

Other commercial property

As in many other countries, strong demand for commercial property has seen prices rise and yields fall (Graph 2.11). Despite this, yields on commercial property in Australia remain high internationally, attracting foreign and domestic investors. But if these higher commercial valuations are not sustained, say because of a marked increase in global long-term interest rates, highly leveraged investors close to the maximum LVR covenants on bank debt could become vulnerable to breaching loan covenants. Typically, they could then be required to provide additional equity to reduce the LVR below the maximum, potentially triggering sales and further price falls. Conditions in commercial property markets vary significantly by state and property type. Investor demand remains strongest in Sydney and Melbourne where the prices of office and industrial properties have risen substantially. In contrast, Brisbane office prices have remained

Graph 2.11
Commercial Property*
2009 = 100

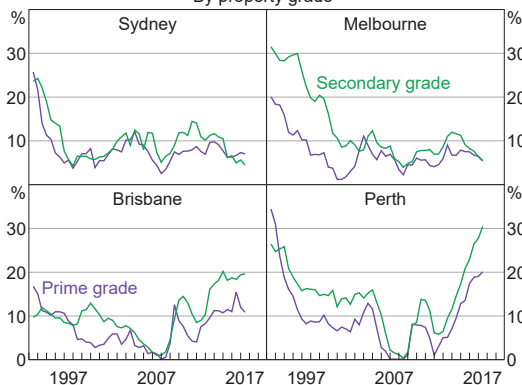


* CBD office and industrial are prime property, retail is regional (non-CBD) centres
 ** CBD office is effective rents, industrial and retail are face rents
 Sources: ABS; JLL Research; RBA

flat, while prices in Perth have edged lower and conditions remain difficult. In Brisbane, Perth and Adelaide, elevated office vacancy rates and falling rents have seen tenants relocate into better quality office space. This continues to place pressure on secondary-grade markets where the outlook remains weak (Graph 2.12).

Conditions in retail property markets across Australia have been relatively subdued. Rents have been flat and price growth has lagged that

Graph 2.12
CBD Office Vacancy Rates
By property grade*

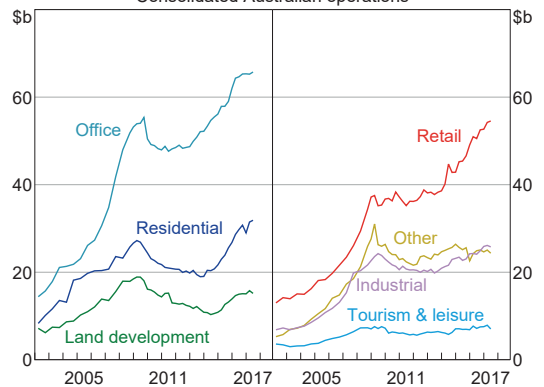


* Prime grade includes premium and A grade stock weighted by floor space; secondary grade includes B grade, C grade and D grade stock weighted by floor space
 Sources: Property Council of Australia; RBA

of other commercial property segments. Liaison with industry suggests that strong competition in the retail sector, particularly from online and new entrants, is compressing retailers' margins, constraining their ability to accommodate rent increases. In liaison, banks have also expressed concern over the outlook for the retail sector due to this increased competition, as well as changing consumer preferences and the failures of some well-known retailers. Banks are closely monitoring segments such as clothing and footwear but to date have seen failures around the long-run average, with low loan losses in their retail portfolios. Despite the concerns expressed, both foreign and major banks have continued to grow their exposures to new retail properties by providing funding to new developments (Graph 2.13). New developments and refurbishments have an increased emphasis on entertainment, hospitality and services. This has cushioned the impact on retail property from online retailers, but the expanded available floor space has still put downward pressure on rents.

Following APRA's 2016 review of commercial property lending, banks have continued to tighten their commercial property lending standards and assess their portfolio allocations. Australian banks have slowed the growth of their

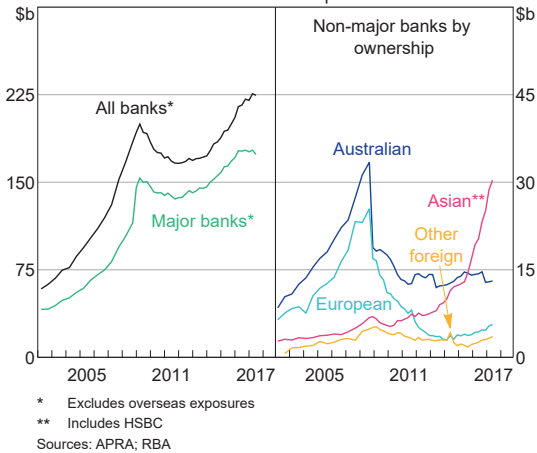
Graph 2.13
Commercial Property Exposures by Segment
Consolidated Australian operations



Sources: APRA; RBA

overall commercial property exposures, pulling back on lending to all asset types except for retail and residential development. In contrast, Asian banks' exposures to commercial property have continued to grow strongly (Graph 2.14).

Graph 2.14
Commercial Property Exposures
Banks' consolidated operations

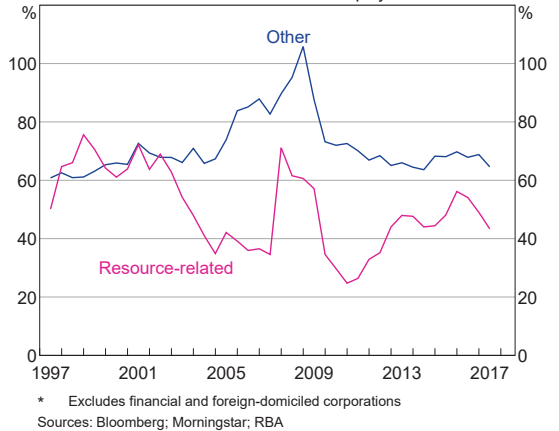


Business Sector

Outside of the mining-exposed states, businesses' finances generally remain in good shape. Survey measures of business conditions are above their long-run averages and business loan performance continues to improve. Non-resource-related listed companies appear well placed to meet their financial obligations, supported by a rise in profits in the June 2017 half (compared with the previous June half). The gearing ratio of these listed corporations was broadly unchanged compared with the previous period; debt-servicing ratios continued to decline, reflecting higher profits and a decline in interest expenses; and market measures of default risk declined over the period (Graph 2.15; Graph 2.16). Smaller businesses have also seen profits rise and their aggregate debt-servicing ratio has remained at a low level.

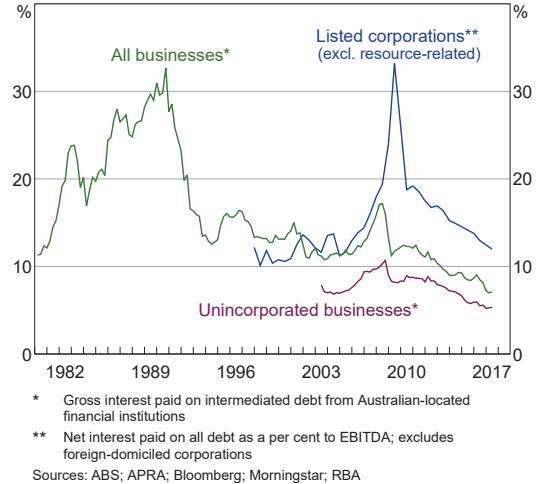
Graph 2.15

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



Graph 2.16
Debt-servicing Ratios

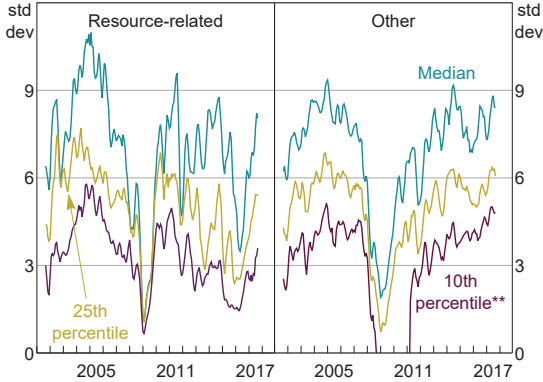
Non-financial businesses' interest payments as a per cent of profits



For the resources sector, higher commodity prices have also underpinned improved conditions. Listed resource companies appear in sound financial health and market-based default risk measures declined further over the past six months (Graph 2.17). Higher commodity prices supported by ongoing cost reductions drove a rise in profits over the June half compared with the same period last year (Graph 2.18). Many listed resource-related companies have used this to further reduce their debt. For listed mining

Graph 2.17

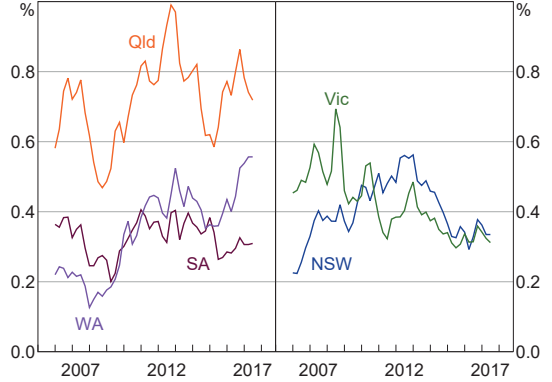
Listed Corporations' Distance-to-default*
Debt-weighted, three-month moving average



* Calculated up to 31 August 2017 using a sample of the largest 300 corporations listed on the ASX by debt; excludes financial and foreign-domiciled corporations
 ** Between 2008 and 2011, distance-to-default measures turned negative for around 100 non-resource-related companies, implying a high probability of default; of these, around one-third went on to default
 Sources: Bloomberg; Morningstar; RBA

Graph 2.19

Unincorporated Business Failures by State
Share of unincorporated business owners, six-month annualised*

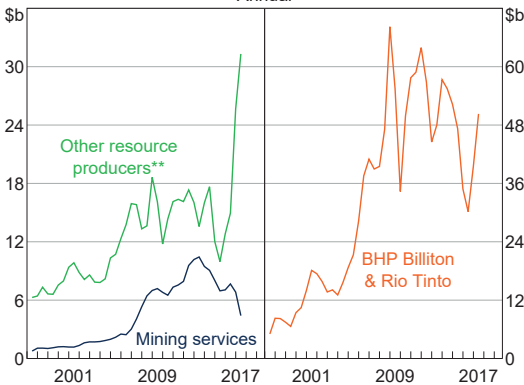


* Number of unincorporated business owners by state estimated from September quarter 2015
 Sources: ABS; AFSA; RBA

Recent liaison with industry suggests overall conditions are improving in Western Australia despite stress in some industries, namely residential construction and retail, amid tighter lending conditions and weak consumer confidence. ↕

Graph 2.18

Listed Resource-related Corporations' Earnings*
Annual



* Listed corporations' EBITDA; excludes foreign-domiciled corporations
 ** Includes listed junior explorers
 Sources: Bloomberg; Morningstar; RBA

services corporations, however, earnings remain under pressure given the focus on cost reduction by resource producers.

In Queensland and Western Australia, the challenging conditions faced by non-resource-related businesses are reflected in indicators of financial distress. Business failures rose to record highs in Western Australia over the June quarter and remain elevated in Queensland (Graph 2.19).

Box B

Households' Investment Property Exposures: Insights from Tax Data

The strong growth of investor borrowing for property in recent years has potential implications for financial and macroeconomic stability. The characteristics and risk profile of households' investment property exposures differ in important ways from those of owner-occupiers. This box uses the most recent data from the Australian Taxation Office (ATO) that cover 13 million individual tax returns to provide insights into households' property investments.¹

Several features of households' property investment point to areas of potential risk. Many investors are lower-to-middle-income earners with a substantial share of households in lower-income occupations experiencing losses on their rental properties. There is also some evidence that changes over time may be increasing risks, namely the rise in the share of households with multiple investment properties and in the share of investors over the age of 60 with mortgage debt, as well as investment across state borders where the investors' knowledge of the property market can be lower.

Investor Lending Risks

There are reasons to expect that the risk attributes of investor housing lending differ from those of owner-occupier lending. Some characteristics suggest that investor loans might have lower risk for the lender. Investor loans

tend to have lower loan-to-valuation ratios (LVRs) at origination than owner-occupier loans. Some institutions require lower LVRs for investor loans and investors may choose an investment property such that their equity exceeds 20 per cent of the price in order to avoid the cost of lenders' mortgage insurance. In addition, the most indebted investors tend to have higher income and/or wealth and so may be more able to absorb income falls or interest rate rises, and the lender is less likely to suffer a loss given the investor's greater net wealth.² There are, however, other features of investor lending that suggest that the risks of investor lending may exceed those of owner-occupier lending, at least for the economy if not also for the lender.

- **Credit risk to lenders.** Because interest expenses on investment properties are tax deductible, investors have less incentive than owner-occupiers to pay down their debt. Many take out interest-only loans so that their debt does not decline over time.³ With many investor loan balances not declining as rapidly as those of owner-occupiers, it is more likely that an investor's loan will exceed the property value should housing prices fall, increasing the risk to the lender.
- **Macrofinancial risks.** Investors could amplify cycles in borrowing and housing prices contributing to economic risks. Investors might be more likely to sell their property if they expect prices to fall because it is

1 Two caveats of these data are that they are only available with a lag (currently covering up to the 2014/15 tax year) and they cannot separate commercial from residential property, although most property investments are residential.

2 For further details, see RBA (2017) 'Box C: Characteristics of Highly Indebted Households', *Financial Stability Review*, April, pp 29–32.

3 For further details, see RBA (2017) 'Box B: Interest-only Mortgage Lending', *Financial Stability Review*, April, pp 26–28.

an investment rather than their home. Conversely, periods of rapidly rising prices might create the expectation of further price rises, drawing more investors into the market as capital gains can be a larger part of their decision to purchase.

- Housing supply imbalances.** Investors purchase more off-the-plan dwellings than owner-occupiers, so they might contribute to larger upswings in construction with the risk of future oversupply for some types of properties or in some locations. Conversely, they could amplify any subsequent downswing, increasing risks to the broader housing market and household sector.

Investor Characteristics

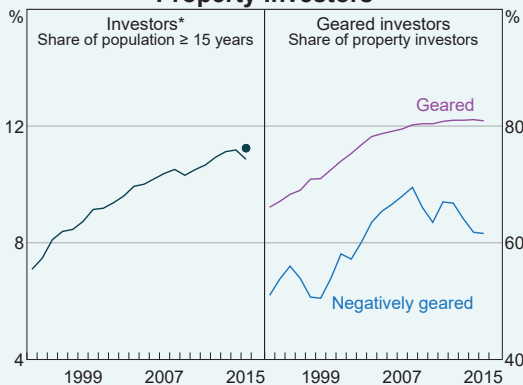
The share of taxpayers who are property investors has increased steadily over the past few decades (Graph B1).⁴ In 2014/15, 11 per cent of the adult population, or just over 2 million people, had one or more investment properties. The share of these with mortgage debt has remained around 80 per cent since 2008. In recent years

the share of negatively geared investors has declined in line with interest rates, but remains over 60 per cent of total investors. With many not earning positive income from their property, prospective capital gains are more likely the primary rationale for investing.

Number of properties

Around 70 per cent of investors own just one property. However, around half of investment properties are owned by investors with multiple properties; 20 per cent of investors own two properties and 10 per cent own three or more. The number of investors with multiple properties has grown relative to those with a single property, particularly between 2013/14 and 2014/15 (Graph B2). Indeed, the number of investors with five properties grew by 7½ per cent in that one year, compared with average growth of 4½ per cent over the previous nine years. The data do not provide information on the characteristics of investors with multiple properties and so they cannot shed light on the risks associated with these holders of multiple properties. However, given the strong growth in investor housing credit and riskier types of borrowing over this period, investors with multiple properties have likely contributed to higher risk.

Graph B1
Property Investors

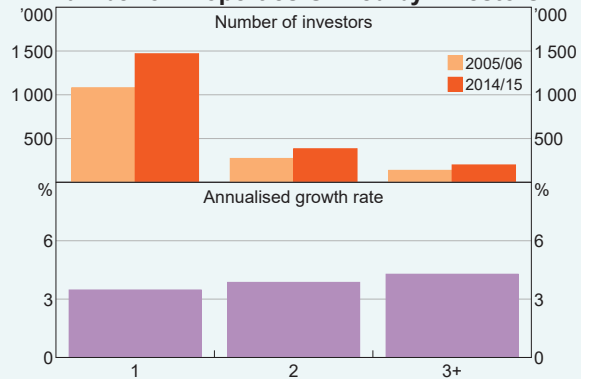


* Dot indicates estimate from the 2013/14 data accounting for likely revisions

Source: ATO

4 The number of property investors is the number of tax return lodgers reporting net rental profit or loss. Geared investors are the number of investors making interest deductions and negatively geared investors are those reporting net rental losses.

Graph B2
Number of Properties Owned by Investors



Source: ATO

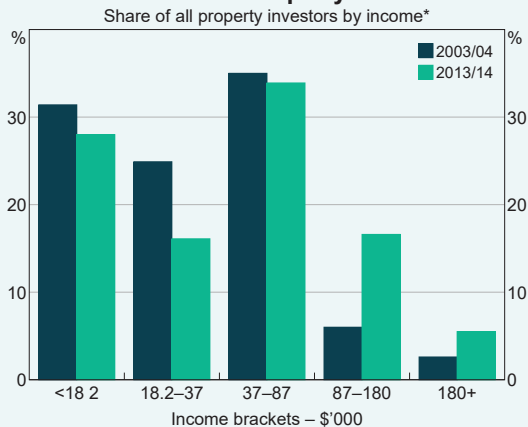
Income

Higher-income taxpayers are more likely to own investment properties than those on lower incomes. About 11 per cent of taxpayers earning under \$50 000 have investment properties compared with around 30 per cent of taxpayers earning between \$100 000 and \$500 000. (The definition of income used here includes gross rent before deductions but excludes non-taxable sources of income such as drawdowns from superannuation.) However, while lower and middle-income households are less likely to own investment properties, they make up a larger share of property investors because there are more of these types of households (Graph B3). Lower-income households are just as likely as higher-income households to be negatively geared, with interest payments and other property expenses exceeding rental receipts. Indeed, the majority of investors with a mortgage are negatively geared.

The absolute size of rental loss is largest for higher-income taxpayers (Graph B4).⁵ Relative to total income, however, the rental loss is largest for the lowest income bracket and gets progressively smaller for higher income brackets. This suggests that lower-income taxpayers may be more vulnerable to increases in debt repayment obligations or reductions in income. They might also be more reliant on rental income to meet their repayments. About 35 per cent of individuals in the lowest income bracket are over the age of 60 and the majority of this income group did not have any salary income (though they may have superannuation or other non-taxable income not included in this classification). This suggests that this group could include people who are retired or temporarily out of the workforce. About 70 per cent of

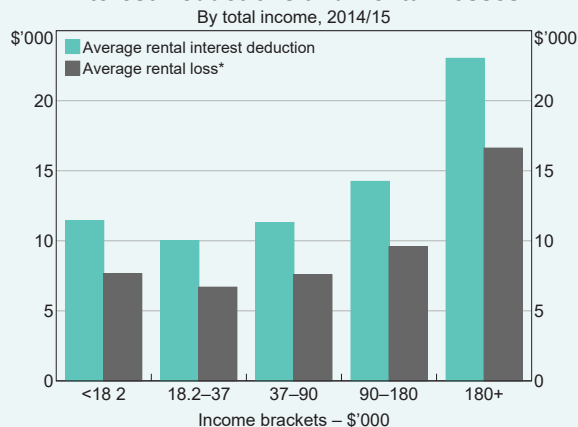
⁵ Interest payments make up around half of rental property expenses. There are many other smaller expenses that contribute to investors making a net loss such as council rates and capital works deductions.

Graph B3
Distribution of Property Investors



* Income is total income minus gross rent
Source: ATO

Graph B4
Interest Deductions and Rental Losses



* Rental loss is the average value reported by taxpayers where rental expenses exceed rental income
Source: ATO

investors in this group also indicated that they have a partner; for these households, partner income might provide another source to service investor loans.

Profession

Professionals, for example teachers, lawyers and doctors, account for the largest share of property investors, reflecting their large share as taxpayers and their greater propensity to be investors;

they account for 17 per cent of taxpayers and 22 per cent of investors (Table B1). Managers and professionals together account for over one-third of property investors, likely due to their relatively high median income. In contrast, lower-income occupations exhibit a lower propensity to invest in property; in general, they account for a smaller share of property investors than of their share as taxpayers. Even among some lower-income occupations, however, large proportions of investors are negatively geared. For example, 72 per cent of community and personal service worker investors and 67 per cent of sales worker investors are negatively geared compared with an average of 62 per cent across all occupations. These investors could be particularly vulnerable to an income shock affecting their ability to meet mortgage repayments.

Age

There has been a marked increase in the age of property investors since the mid 2000s. Over the decade to 2014/15, the share of property investors who were aged 60 years and over almost doubled (Graph B5). This shift reflected both the increase in the share of the population aged over 60 and an increase in the extent of investment property ownership within this age group. Overall, around 20 per cent of taxpayers aged over 40 are property investors compared with less than 10 per cent of those under 40.

There has also been a significant increase in the share of geared investors aged over 60. While this seemingly could increase risks, there are some mitigating factors. Although this age group is more indebted, the average retirement age has increased over time, so older investors are more

Table B1: Property Investor Characteristics by Occupation
2014/15

Occupation	Median salary income (\$)	Share of all taxpayers (%)	Share of all investors (%)	Share of investors in occupation (%)	Share of occupation's investors that are negatively geared (%)
Managers	65 784	10	15	23	71
Professionals	65 755	17	22	21	70
Machinery operators & drivers	55 542	5	3	11	74
Technicians & trade workers	54 256	9	8	14	73
Clerical & administrative workers	42 926	12	12	16	68
Labourers	32 396	8	3	7	66
Community & personal service workers	31 790	8	5	10	72
Sales workers	27 788	7	4	8	67
Other ^(a)	32 594	25	28	18	39
Total^(b)	46 428	100	100	16	62

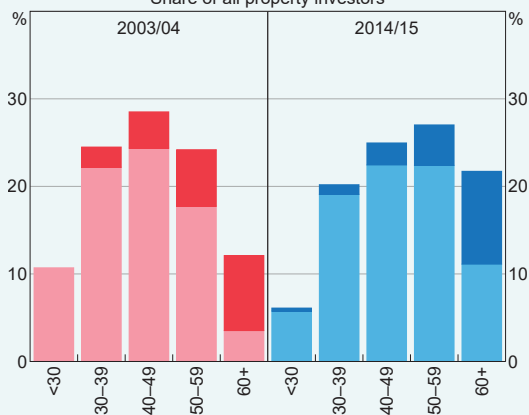
(a) About 80 per cent of the 'other' category is individuals who did not report an occupation

(b) Totals do not equal the sum of components due to rounding and measures to ensure the data meet privacy regulations

Source: ATO

Graph B5
Age Distribution of Property Investors*

Share of all property investors



* Light shading indicates geared investors
 Source: ATO

likely to be working, increasing their capacity to withstand shortfalls in rental income or higher interest rates. In 2004, just under 50 per cent of indebted investors over the age of 60 received salary income, but this had increased to 60 per cent in 2015. Older investors may also have greater accumulated wealth that could enable them to withstand lower rental income or higher mortgage interest. They might also have lower personal expenses.

Overall, however, borrowing has remained far more prevalent among younger investors, with almost all investors below the age of 40 years being indebted. While these investors generally have stable wage and salary income, they also have relatively high personal expenses that can reduce their ability to cushion changes in rental income and interest rates.

State

In most states, the share of the Australian population who own an investment property is similar to the overall share of investment properties located in that state. Queensland is a notable exception – around 25 per cent of all rental properties are in Queensland but less than 20 per cent of investors are from Queensland. This suggests a sizeable share of investment properties in Queensland are owned by investors with multiple properties or people not residing in the state, who are possibly less informed about the local property and rental market. This could increase the likelihood of many investors selling in a sharp downturn. Information from liaison suggests there was strong investor demand due to dwelling price and yield differentials with other states and the active role of property marketers, particularly in areas of Queensland exposed to the resources boom. ↗

Box C

Large Falls in Household Income

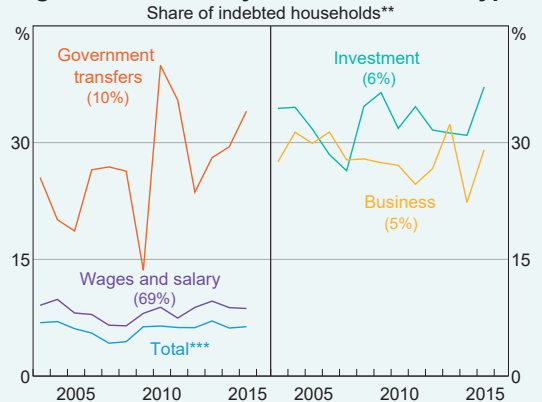
Households that experience large income falls can struggle to meet mortgage repayments. This box uses annual data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey to look at the typical characteristics of households that experience large declines in income. It focuses mainly on households with owner-occupier housing debt as HILDA data on investor housing debt are only available every four years. Overall, on average the households that are more likely to experience large falls in income tend to be those with lower debt-servicing burdens or higher incomes and so are best able to continue servicing their financial debts, though there is clearly a range of experiences.

Households with Large Income Falls

In this box, households are classified as having a 'large' income fall if their annual disposable income declines by more than 20 per cent relative to their minimum income level over the previous two years. This definition abstracts from large income falls that reflect the unwinding of temporary income gains such as redundancy payments. Based on this measure, HILDA data indicate that, on average, around 6 per cent of indebted households experience large declines in their total disposable income in any given year (Graph C1).

Households receive income from a range of sources, some of which are more volatile and hence more likely to experience large declines (and large rises). For example, around 30 per cent of households earning business or investment

Graph C1
Large Income Falls by Selected Income Types*



* Households reporting a decline in each income type of greater than 20 per cent relative to the lowest value reported for that income type in the previous two years

** Numbers in parentheses represent the average share of each income type in total household income in 2015

*** Total household disposable income

Sources: HILDA Release 15.0; RBA

income (which includes rent from investment properties) reported large declines in these income types in a given year, even though these types of income are only a relatively small share of total household income.¹ For this reason, APRA expects lenders to apply a discount (or 'haircut') to volatile income sources when assessing a borrower's income.² Further, while a substantial share of households experience annual declines in transfer income (especially government assistance payments), these declines are often accompanied by increases in wage and salary income.

1 The large spike for transfer income during the financial crisis period was likely due to the unwinding of the various temporary bonus payments made by the federal government.

2 APRA notes that it is prudent practice for lenders to apply a discount of at least 20 per cent on most types of non-salary income such as bonuses, overtime, rental income and other investment income. See APRA (2017), 'APG 223 Residential Mortgage Lending'; Prudential Practice Guide, February.

While wage and salary income comprises around 70 per cent of total household income on average, less than 10 per cent of households reported large annual declines in this type of income. However, given that wage and salary income makes up a sizeable proportion of total income, large declines in households' total disposable income are in practice most commonly driven by falls in wage and salary income. HILDA data suggest that two drivers of large declines in wage and salary income are household members becoming unemployed or dropping out of the labour force, for instance due to child care and/or retirement, and relationship breakups, such as divorce, which change household composition or reduce a household's overall income.³

Experiencing a sizeable decline in household income does not necessarily imply that a household will struggle to repay its debts. Some households plan for income falls, such as choosing to leave the workforce to study, have a child or retire. Households with low debt relative to income – for example those who initially borrowed small amounts or whose income has grown since they took out the debt – may have sufficient disposable income to still make their debt repayments. Other households may have accumulated funds through pre-payments that can be drawn on to smooth through temporary falls in income. Nonetheless, households experiencing large income declines are more likely to experience mortgage stress; the characteristics of these households are outlined below.

3 Over the sample period, roughly 15–20 per cent of households experiencing large declines had a household member who reported a transition from being employed to being unemployed or not in the labour force from one year to the next. This does not include shorter-term episodes of labour market transition that are reversed within one year, which can also negatively impact household income.

Household Characteristics

Two characteristics associated with households experiencing large income declines are the income quintile of the household and the employment type of the household head. More households in the top income quintile report large declines in income than other households (Graph C2; left panel). This appears to partly reflect that high-income households typically earn a greater share of their income from investment and business income, both of which tend to be more volatile than other sources of income. Nonetheless, higher-income households are still likely to be better placed to service their debts than low-income households even after experiencing a large income fall. In contrast, fewer households in the bottom income quintile experience large income declines, partly because more of their income tends to come from relatively stable sources.

Households with self-employed heads are also more likely to experience large income falls (Graph C2; right panel). These households, on average, earn a much higher share of their total income from volatile business income (20–25 per cent) compared with other households (1–2 per cent). Similarly, households in which the head works part time are more likely to experience large income declines compared with households where the head works full time.

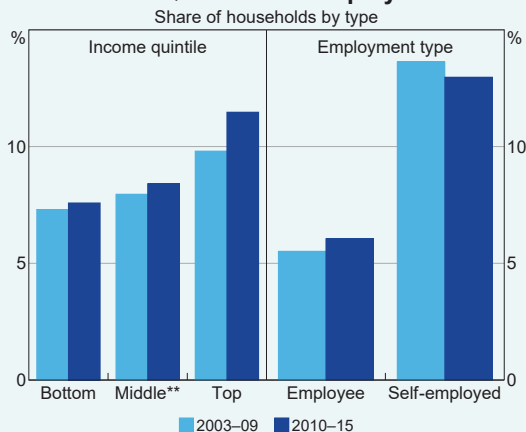
Households with owner-occupier mortgage debt are less likely to experience large income falls than those without mortgage debt (Graph C3). Further, the HILDA data suggest that of households with owner-occupier debt, the more indebted households are less likely to experience large income falls. Specifically, the share of households with debt-servicing ratios (DSRs) above 30 per cent that report large declines in income is lower than for households

with lower DSRs.⁴ It is not clear to what extent this reflects that households with volatile income borrow less (either by choice or because of the lending policies of financial institutions, such as

applying a haircut to volatile income sources) or whether households seek out more stable forms of income before or soon after borrowing. In addition, households with higher DSRs are less likely to choose to cut down their working hours or to exit the labour force.

These observations, however, do not necessarily imply that households with greater debt-servicing burdens are less likely to suffer mortgage distress. Previous research has found that households with high DSRs are more likely to miss mortgage repayments.⁵ One way to reconcile these results is that, while households with high DSRs are less likely to suffer large income declines than households with low DSRs, if they do experience a sharp fall in income, they are much more likely to experience financial stress. ❖

Graph C2
Large Income Falls by
Income Quintile and Employment*

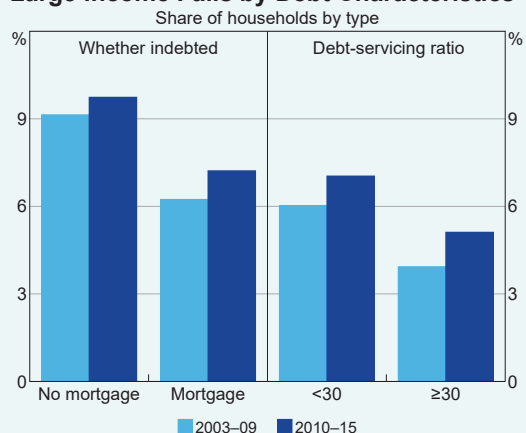


* Large income fall defined as a decline in household disposable income of more than 20 per cent relative to the lowest income value reported in the previous two years; households are classified by their characteristics in the previous year

** Includes households in the second, third and fourth income quintiles

Sources: HILDA Release 15.0; RBA

Graph C3
Large Income Falls by Debt Characteristics*



* Large income fall defined as a decline in household disposable income of more than 20 per cent relative to the lowest income value reported in the previous two years; households are classified by their characteristics in the previous year; includes owner-occupier housing debt only

Sources: HILDA Release 15.0; RBA

4 The DSR is the share of disposable income devoted to meeting repayments. Over the sample period, a DSR above 30 per cent corresponds to around the 75th percentile of the DSR distribution.

5 See Read M, C Stewart and G La Cava (2014), 'Mortgage-related Financial Difficulties: Evidence from Australian Micro-level Data', RBA Research Discussion Paper No 2014-13.

3. The Australian Financial System

The Australian financial system remains resilient and its ability to withstand adverse shocks continues to be strengthened. Banks' capital levels are well above current regulatory minimums and, for the major banks, are around the top quartile of international peers on a comparable basis. Banks' capital has been boosted by high profit levels over recent years. While net interest margins have trended lower they are now widening as funding conditions improve and the effects of recent loan repricing are realised. Bad and doubtful debts remain around historical lows, despite rising mortgage loan arrears in mining-related regions.

In July, the Australian Prudential Regulation Authority (APRA) announced the additional capital required for Australian authorised deposit-taking institutions (ADIs) to be considered 'unquestionably strong'. The major banks will need to target a Common Equity Tier 1 (CET1) capital ratio of around 10.5 per cent by January 2020 (based on the current capital framework), while the effective increase in capital requirements for smaller ADIs will be around 50 basis points. APRA also announced that it intends to set new capital standards, expected to become effective from 2021, that will include minimum requirements consistent with these benchmarks. Banks are well placed to meet these higher requirements through retained earnings and dividend reinvestment plans, having already increased their capital in anticipation of these changes. After reaching these new benchmarks, banks will have completed a substantial increase in their capital ratios since the onset of the financial crisis. APRA plans to release a discussion

paper later this year setting out modifications to the underlying capital framework, including changes to address banks' high concentration of residential mortgages. APRA's intention is that any changes to this framework will not result in further increases to aggregate capital requirements.

The increase in banks' capital over recent years has made them more resilient and lowered their return on equity (ROE). Despite this, investors appear to still be expecting similar returns to those sought a decade ago. This tension could motivate banks to seek higher returns by taking on additional risks. Regulators have increased their focus on the risk culture of banks and the industry is taking steps to strengthen their approach to certain risks.

Tighter standards for banks' lending to the property market over recent years have created an opportunity for shadow banks to expand. Yet available evidence indicates that shadow banks' share of residential mortgage lending has increased only slightly, and from a low level. There are several constraints to such lending growing rapidly. Shadow banks' lending for property development has increased more strongly, but it has not been enough to fully replace the pullback by banks.

Non-bank financial institutions are also in good condition, though they face some challenges. General insurers are addressing historically low profitability by reversing earlier declines in some commercial premiums. Life insurers are responding to ongoing structural issues by reducing risk through greater use of reinsurance and raising capital ratios. Risks from the superannuation sector remain limited

due to its modest use of leverage, even in self-managed superannuation funds. Financial market infrastructures have also continued to function effectively and are working to reduce possible vulnerabilities.

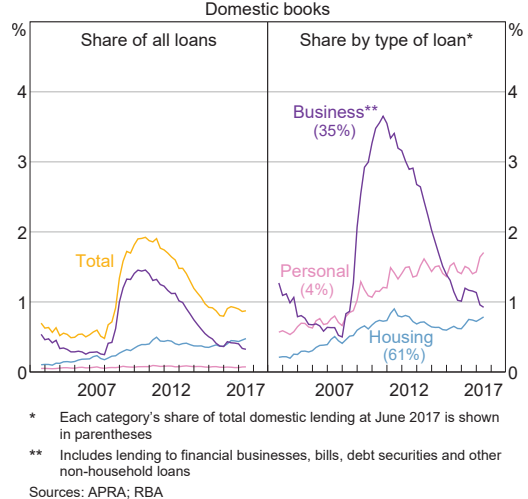
Banks' Domestic Asset Performance

The performance of Australian banks' domestic assets was little changed overall in the first half of 2017, although this masks some variation by asset type (Graph 3.1). The share of non-performing housing loans increased a little. However, banks' non-performing housing loans are mostly well secured, with the impaired share very low (Graph 3.2).¹ By state, delinquencies are highest in Western Australia, Queensland and South Australia. In liaison with the Reserve Bank, some banks continued to report that they do not expect loan performance to deteriorate much further in Western Australia. Banks also reported some worsening in the performance of personal loans. Weaker economic conditions in Western Australia and Queensland have contributed to higher arrears on personal loans. Changes in banks' reporting of loans granted hardship concessions also pushed up the share of non-performing personal loans. This has little impact on banks' overall loan performance as personal lending remains a very small share of banks' total lending. In contrast to household loans, aggregate business loan performance has improved further, supported by low interest rates. Impairments on commercial property exposures remain low.

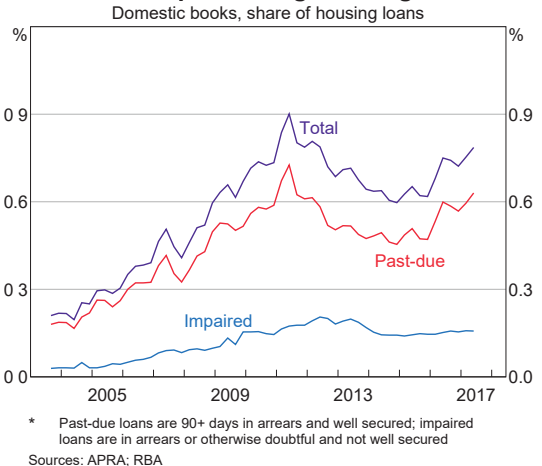
Future asset performance will continue to be influenced by developments in property markets and the resources sector, as well as macroeconomic conditions more generally.

¹ Impaired loans are those that are not well secured and where there are doubts as to whether the full amounts due will be obtained in a timely manner. Past-due loans are at least 90 days in arrears, but well secured.

Graph 3.1
Banks' Non-performing Assets



Graph 3.2
Banks' Non-performing Housing Loans*

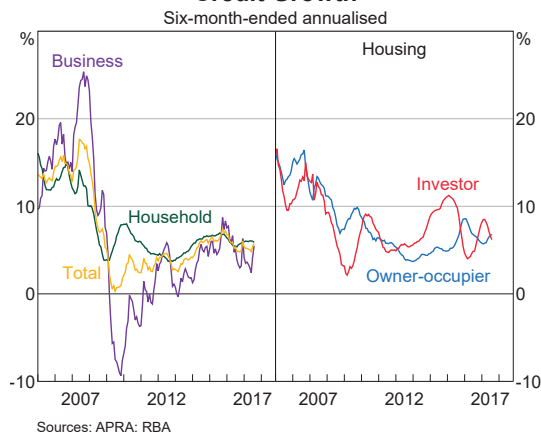


The strengthening in housing lending standards over recent years should support future loan performance.

Credit Conditions

Total credit growth was little changed over the past six months and is still slightly faster than nominal income growth (Graph 3.3). Housing credit growth was stable in aggregate, with some slowing in the growth of investor credit being

Graph 3.3
Credit Growth

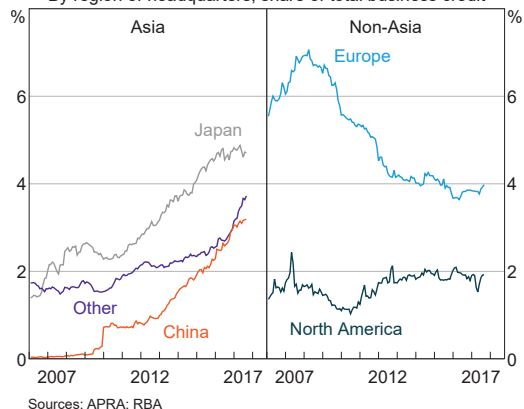


offset by faster growth in owner-occupier credit. The moderation in investor credit follows the increases in investor and interest-only interest rates and is broadly akin to the slowing observed after APRA announced limits on investor housing credit growth in late 2014.

Business credit growth has picked up in recent months following a slowing earlier in the year, although it remains modest relative to history. The major banks have reduced their commercial property exposures and reported a further tightening in standards for residential development lending. However, lending by foreign-owned banks operating in Australia has continued to increase, driven primarily by banks headquartered in Asia (Graph 3.4). Asian banks now supply 12 per cent of total business credit in Australia, compared with 6 per cent in 2012, with this growth driven particularly by infrastructure and commercial property lending. Some Asian banks have concentrated exposures to particular companies or sectors. Rapid expansion by foreign banks has in the past exacerbated asset price and economic cycles by amplifying the credit supply cycle and could lead domestic banks to loosen lending criteria to remain competitive. To date, these risks to lending standards appear to have been contained, and indeed standards have

Graph 3.4

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



been tightened in response to APRA's onsite reviews of commercial property lending. It will be important to remain vigilant about risks that can be precipitated by foreign bank lending.

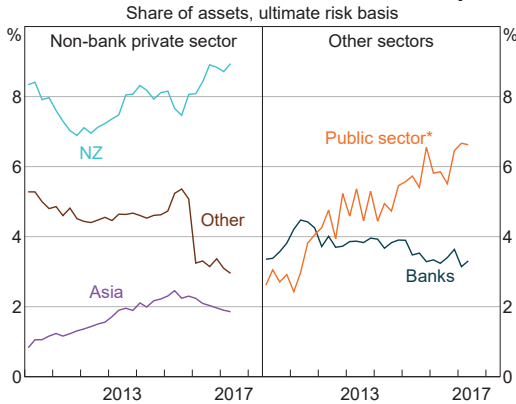
International Exposures

Australian-owned banks have continued to reduce their international lending exposures over the past year, other than in New Zealand (Graph 3.5). The decline has been spread across a range of countries and is consistent with the desire of several banks to scale back from lower return businesses, particularly lending to institutional customers. Exposures to Asia are expected to fall further as ANZ completes the sale of some retail banking and wealth management businesses over coming months.

In contrast, Australian-owned banks' lending exposures in New Zealand and their international sovereign exposures (which mainly comprise government bonds and central bank deposits) have grown a little faster. The increase in lending to New Zealand has been mainly for housing, where risks are elevated, as discussed in 'The Global Financial Environment' chapter. While arrears for New Zealand housing are currently at their lowest level in at least a

Graph 3.5

Australian-owned Banks' International Exposures



* Predominantly sovereign bonds held outright or on repo and central bank deposits
Sources: APRA; RBA

decade, the rising share of banks' exposures to New Zealand and Australian housing markets has reduced their diversification given the correlation of these housing markets over an extended period. However, this shift towards housing lending, which historically generates higher return on equity, has also supported their profits.

Liquidity and Funding

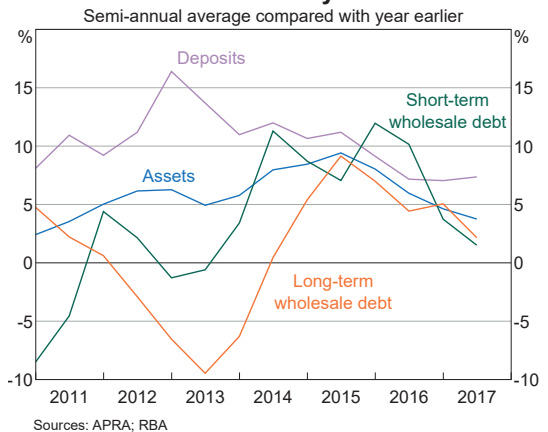
Australian banks have maintained resilience to potential liquidity and funding shocks. Banks' Liquidity Coverage Ratios, which measure their buffers of liquid assets against short periods of liquidity stress, are reasonably above the 100 per cent minimum requirement. Banks' Net Stable Funding Ratios, which measure the extent more stable liabilities are used to fund less liquid assets and which will become binding from next year, have mostly risen close to banks' target levels.

Australian banks have ample access to a range of funding sources at a lower cost than one year ago. Deposits inflow has been strong, such that despite reducing the interest rates paid on deposits, they have grown more quickly than assets over the past year (Graph 3.6). Spreads on banks' short-term and long-term wholesale

funding have also narrowed considerably, with long-term spreads around their lowest level since the financial crisis (Graph 3.7). The strong growth in deposit funding has meant banks have only slightly increased their funding from wholesale markets in absolute terms, and reduced it as a share of total liabilities. Conditions in residential mortgage-backed securities (RMBS) markets have also improved: spreads have declined a little but remain well above pre-crisis levels. RMBS issuance by smaller Australian banks has picked up, but is also well below pre-crisis levels.

Graph 3.6

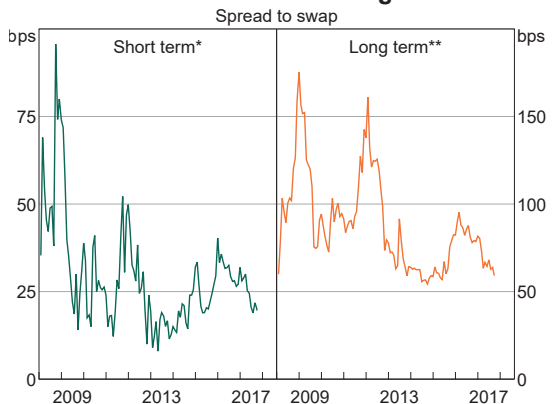
Asset and Liability Growth



Sources: APRA; RBA

Graph 3.7

Banks' Debt Pricing



* Three-month bank bill swap to three-month overnight indexed swap
** Major banks' three-to-five-year AS\$ bonds on a residual maturity basis to four-year interest rate swap

Sources: AFMA; Bloomberg; Tullett Prebon (Australia); UBS AG, Australia Branch

The ratings of many Australian financial institutions were downgraded by credit rating agencies in recent months, largely due to concerns about high and rising household debt. Standard & Poor's downgraded 23 institutions, but affirmed the ratings of the major banks (because of an unchanged assumption of sovereign support) and Macquarie Bank. Moody's downgraded 12 institutions, bringing its ratings for the major banks into line with other major ratings agencies at AA-. These ratings actions led to some deposit outflows for some non-major banks, but the impact was small and temporary because of the strong growth in deposit markets.

Capital and Profits

Australian banks' resilience to adverse shocks is underpinned by their capital positions, which are above current minimum requirements. Each of the major banks' CET1 capital ratios are well above the current 8 per cent threshold, and around the top quartile of large international banks when measured on a comparable basis (Graph 3.8). Capital ratios at most other ADIs are higher still. The leverage ratios of the major banks – the ratio of Tier 1 capital relative to total non-risk-adjusted exposures – are also around the top end of the 3–5 per cent range that was expressed as 'appropriate' for a minimum requirement in the 2014 Financial System Inquiry (FSI). However, the major banks' leverage ratios have typically been around or a bit below the median of international banks because of Australian banks' greater exposure to residential mortgages, which have historically experienced fewer losses and so have lower risk weights.

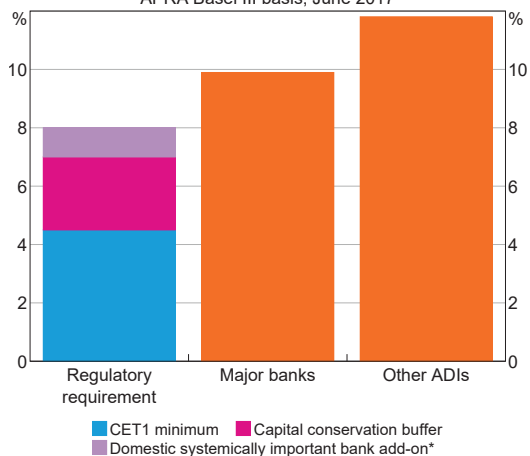
APRA released an information paper in July that set out the additional capital required for Australian ADIs to be considered 'unquestionably strong'.² This fulfilled one of the

² APRA (2017), 'Strengthening Banking System Resilience – Establishing Unquestionably Strong Capital Ratios', Information Paper, 19 July.

Graph 3.8

CET1 Capital Ratios

APRA Basel III basis, June 2017



* Only applicable to the major banks

Sources: APRA; RBA

main recommendations from the FSI. APRA's expectation is that all ADIs meet the new capital benchmarks by 2020.

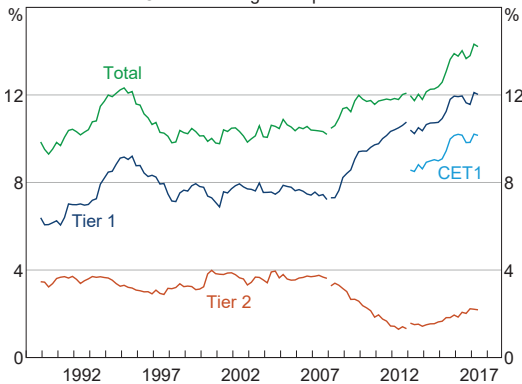
- The major banks will need to target a CET1 capital ratio of around 10.5 per cent (based on the current capital framework). This corresponds to a CET1 capital ratio of more than 15 per cent on an internationally comparable basis, and should put the major banks' CET1 ratios comfortably within the top quartile of large international banks.
- For smaller ADIs using the standardised approach to credit risk, the effective increase in CET1 capital requirements will be around 0.5 percentage points.

APRA plans to release a discussion paper later this year with proposed revisions to the capital framework that are expected to be implemented from 2021. In this, APRA intends to outline how it will implement changes to the international Basel III capital framework if it is finalised by then. It intends to also address the Australian banking system's high concentration of residential mortgages. In particular, APRA has indicated that

it will seek to target higher-risk lending, building on the revised Basel III framework that will likely modify risk weights for higher loan-to-valuation (LVR) loans and identify separate risk weights for investor lending. APRA expects that any changes to the capital framework will not necessitate further increases to banks' aggregate capital.³

Banks are well positioned to meet the 'unquestionably strong' capital targets, having increased capital markedly over recent years in anticipation of higher regulatory requirements (Graph 3.9). APRA estimates that the major banks should be able to generate the additional required capital from retained earnings, without significant changes to asset growth or dividend policies, or the need for equity raisings. Many smaller ADIs already hold enough capital to meet the effective increase in requirements.

Graph 3.9
Banks' Capital Ratios*
Consolidated global operations



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

Source: APRA

Reaching a CET1 capital ratio of 10.5 per cent will complete a substantial strengthening of the major banks' capital position over recent years. Their CET1 capital ratio will be around

2½ percentage points higher than when the FSI's proposal was released in late 2014 (including the effect of higher residential mortgage risk weights applied from mid 2016) and their Tier 1 capital ratio will be around 6 percentage points higher than before the financial crisis. APRA has also estimated that the major banks' leverage ratio could increase to around 6 per cent following the substantial strengthening in capital, somewhat higher than the current international median.

A sizeable portion of banks' capital accumulation in recent years has come from retained profits or reinvested dividends flowing from their high profits. Profits remained high in the latest period, but there has been very little growth since 2014, both in headline and underlying terms (Graph 3.10). One reason for the lack of profit growth is that banks have divested wealth management and life insurance operations; another is that their net interest margins have compressed, partly reflecting increased holdings of low-yielding, high-quality liquid assets. In addition, while charges for bad and doubtful debts remain around historically low levels, they are no longer falling and so are not adding to profits as they did prior to 2014. (Profits are an important contributor to banks' resilience during stress, as highlighted in 'Box D: Stress Testing at the Reserve Bank'.)

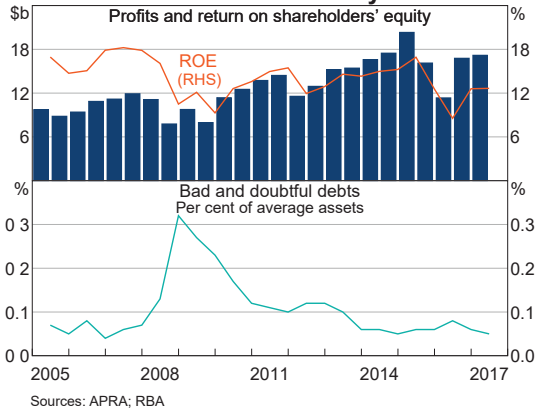
Analysts expect profits to increase over the coming year. Recent loan repricing and reduced funding costs are expected to drive some increase in the net interest margin, leading to higher income growth and profits.

The increase in capital over recent years, despite flat profits, has reduced banks' ROE below its historical average. Banks have partly offset this by making some adjustments to their lending activities.⁴ This has included a continued shift

3 The level of required capital under the new capital standards need not increase if risk weights are increased for a particular type of lending because this could be offset by other changes to the capital framework.

4 For more information, see Atkin T and B Cheung (2017), 'How Have Australian Banks Responded to Tighter Capital and Liquidity Requirements?' *RBA Bulletin*, June, pp 41–50.

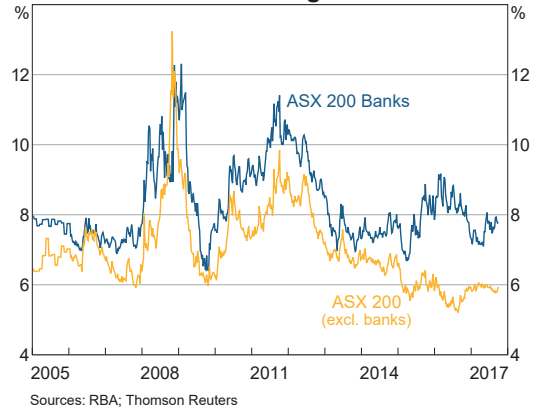
Graph 3.10
Banks' Profitability



towards housing lending, which requires less capital, and has generated higher ROE than other activities. Banks have also scaled back activities that are more capital intensive and do not generate sufficient returns to offset the capital required. As noted earlier, this has included some international activities and institutional lending. Most of the major banks have also sold (or are in the process of selling) parts of their wealth management and life insurance operations.

The share prices of Australian banks have declined over the past six months, underperforming global peers. The price fall has seen banks' forward earnings yields – a proxy for investors' expected rate of return – rise both in absolute terms and relative to the broader market (Graph 3.11). Banks' current forward earnings yields are around their pre-crisis average, despite a large decline in risk-free rates since then.

Graph 3.11
Forward Earnings Yields



Bank Culture

Global experience is that the culture within banks can have a major bearing on how a wide range of risks are identified and managed. There have been a number of examples where the absence of strong positive culture has given rise to a deterioration in asset performance, misconduct and loss of public trust. In Australia, there have also been examples of weak internal controls causing difficulties for some banks. These include in the areas of life insurance, wealth management and, more recently, retail banking. In August, AUSTRAC (the Australian Transaction Reports and Analysis Centre) initiated civil proceedings against the Commonwealth Bank of Australia for breaches of the *Anti-Money Laundering and Counter-Terrorism Financing Act 2006*. In the current environment where investors still expect high rates of return, despite regulatory and other changes that have reduced bank ROE, banks need to be careful of taking on more risk to boost returns.

A central element to address this issue is to ensure that banks build strong risk cultures and governance frameworks. Regulators have therefore heightened their focus on culture and the industry is taking steps to improve in this area. APRA's powers will be strengthened once

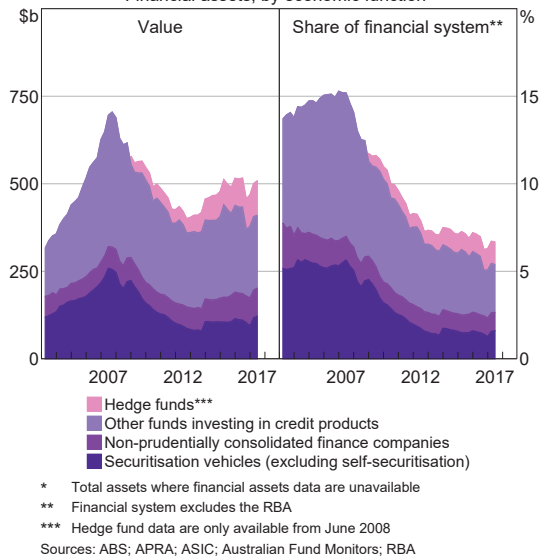
the Banking Executive Accountability Regime (BEAR) announced in this year's Federal Budget is legislated. The BEAR strengthens APRA's abilities to impose civil penalties and dismiss bank executives for poor conduct, and requires a significant share of executives' incentive remuneration to not vest for at least four years (although banks already largely adhere to this). APRA has also established an independent inquiry to identify whether there are deficiencies in governance, culture and accountability frameworks and practices at the Commonwealth Bank of Australia and, if so, how these can be addressed. The banking industry's own initiatives to improve culture include background checks aimed at preventing individuals with a history of misconduct moving within the industry, and rewriting the Code of Banking Practice to strengthen its commitment to customers.

Shadow Banking

Shadow bank lending can support economic growth by providing credit to borrowers that don't easily meet bank standards but, because it is less regulated, on a large enough scale it could damage financial system resilience. While tighter post-crisis prudential regulation for banks increases the chance that credit activities migrate to the less regulated shadow banking sector, there is little evidence of this so far in Australia. The shadow banking sector remains small – only 7 per cent of the financial system – and about half the size it was in 2007 (Graph 3.12). The fall in the shadow bank market share occurred as the crisis intensified and sourcing funding became more difficult, and the sector has not regained market share as funding markets have normalised. Systemic risks to the financial system are limited by banks' exposures to the sector, which are only a few per cent of their assets.

Property lending by shadow banks warrants attention given the tightening of lending

Graph 3.12
Shadow Banking in Australia
Financial assets, by economic function*



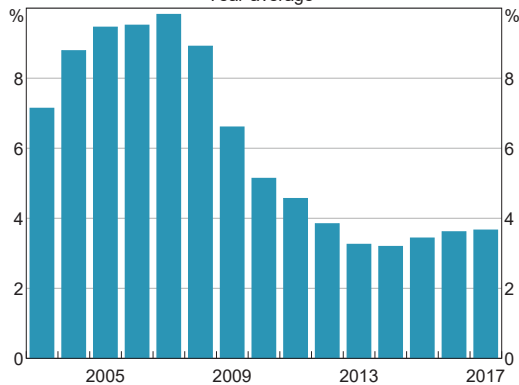
standards at prudentially regulated entities.

In line with the trends noted above, the available evidence suggests that shadow banks' share of residential mortgage lending has increased only slightly over the past few years and remains well below pre-crisis levels (Graph 3.13).⁵ For property development, there are limited data on the extent of shadow banks' lending. However, liaison suggests that this type of lending has increased relatively strongly over the past year or so, but has not fully offset the pullback by large banks. Much of this shadow bank finance is expensive mezzanine debt that poses less risk to financial stability, in part because it occurs with some regulatory oversight if a bank provides the senior debt. However, there has also been some growth in shadow banks' provision of senior debt.

A key constraint to a rapid expansion of shadow bank property lending is the cost and availability of funding. Non-bank mortgage originators require warehouse funding (revolving finance until mortgages are securitised), which banks

⁵ See Gishkariany M, D Norman and T Rosewall (2017), 'Shadow Bank Lending to the Residential Property Market', RBA *Bulletin*, September, pp 45–52 for more details.

Graph 3.13
Estimated Non-ADI Share of Housing Credit
 Year-average*



* 2017 is year-to-date average
 Sources: APRA; RBA

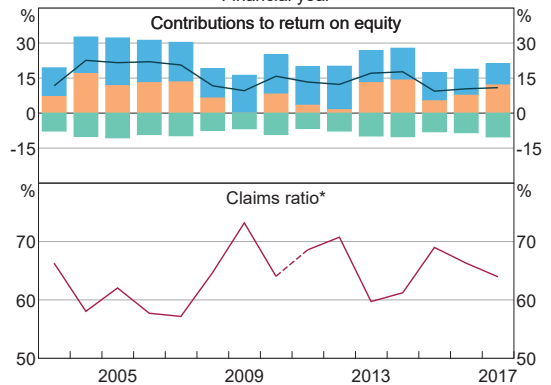
could be reluctant to provide due to regulatory issues. Longer-term funding is typically through RMBS and while this market is recovering, RMBS pricing is still well above the cost of bank funding (deposits or senior unsecured bank debt). This tends to push shadow banks using this business model to lend to borrowers with lower credit quality that pay higher interest rates.

Proposed legislation will improve the quality of data supplied to regulators by some shadow banks, making it easier to monitor these activities and assess their impact on financial stability. Related legislation will also grant APRA powers to impose rules on non-ADIs if their activities pose a threat to financial stability.

Insurance

General insurers' profits have been broadly steady over the past year, but ROE for the sector remains around the bottom of the range observed over the past decade (Graph 3.14). The decline in ROE compared with its historical average has mainly resulted from a material fall in investment income as interest rates declined. Underwriting performance has also been weaker than historically, but has recovered a little over the past year as insurers managed

Graph 3.14
General Insurers' Financial Ratios
 Financial year



* Ratio of net incurred claims to net premium; change in reporting basis after June 2010
 Sources: APRA; RBA

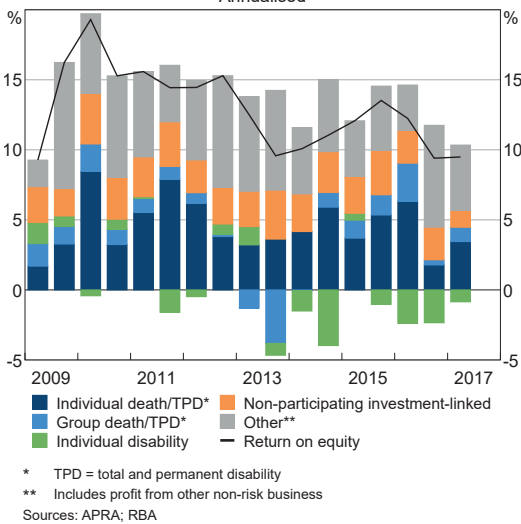
to reverse earlier downward pressure on some commercial premiums. Despite higher natural disaster claims due to cyclones, earthquakes and hailstorms, the claims ratio (net incurred claims relative to net premium) also fell as lower-than-expected inflation allowed insurers to release more reserves. The general insurance industry remains well capitalised, with capital equivalent to 1.8 times APRA's prescribed amount.

Lenders mortgage insurers' profits remain under pressure, but the sector remains well capitalised at 1.6 times APRA's prescribed amount. Profits continue to decline due to a decrease in revenue, as banks reduce high-LVR mortgage lending, and claims increase in Western Australia and Queensland. These headwinds seem likely to persist, given APRA's efforts to limit the flow of new high-LVR interest-only loans.

Life insurance profitability has stabilised due to an improvement in the individual death and total and permanent disability parts of the industry, and because large write-downs in prior periods have not been repeated. However, ROE remains low and the industry is still reporting considerable losses on individual

disability income insurance (commonly known as ‘income protection insurance’) due to structural issues (Graph 3.15). These include longstanding deficiencies in pricing, loose product definitions and rising claims, especially for mental health. Problems in the life insurance industry will take some time to resolve given the long-term nature of life insurance contracts. Given that, the industry has responded by reducing risk through additional reinsurance and by increasing its capital to 1.9 times APRA’s prescribed amount.

Graph 3.15
Contributions to Life Insurers’ Profitability
Annualised



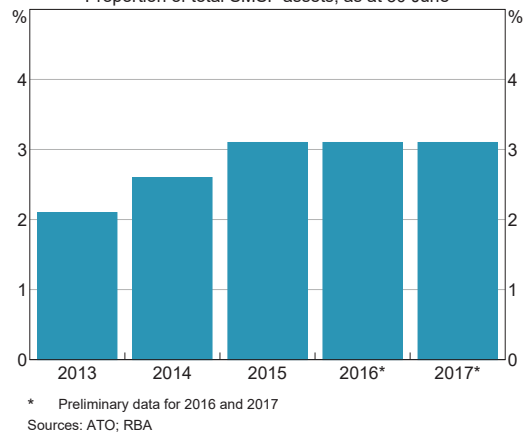
Superannuation

The superannuation sector remains a large and growing part of Australia’s financial system. Total assets amount to \$2.3 trillion, accounting for three-quarters of the assets in the managed fund sector (a higher share than in other advanced economies) and equivalent to around half the size of the Australian banking system. Total superannuation assets grew by 10 per cent in the year to June 2017, slightly higher than the post-crisis average. Growth was supported by stronger investment returns as global share markets rallied and higher member contributions

in advance of changes to the concessional contributions cap that took effect on 1 July.

The financial stability risks inherent in the superannuation industry are lower than for other parts of the financial system because debt funding accounts for a very small share of its total liabilities. This is particularly true for APRA-regulated funds, which are not generally permitted to borrow. Self-managed superannuation funds (SMFS) are permitted to use debt with limited recourse and the use of such debt has increased in recent years, mainly to fund the purchase of property (Graph 3.16). Despite this, leverage in SMSF as a whole remains very small (only a few per cent of total assets) and at this stage poses little risk to financial stability.

Graph 3.16
SMSF Limited Recourse Borrowings
Proportion of total SMSF assets, as at 30 June



Financial Market Infrastructures

Financial market infrastructures (FMIs) are institutions that facilitate the clearing, settlement or recording of payments, securities, derivatives or other financial transactions. Over recent years there has been considerable effort to strengthen the regulation and supervision of FMIs because of their central role in the financial system. The Reserve Bank has oversight responsibilities for the stability of FMIs operating in Australia.

The key FMIs located in Australia are the Reserve Bank Information and Transfer System (RITS) – which banks and other approved institutions use to settle payment obligations on a real-time basis – and the ASX clearing and settlement facilities – which facilitate the clearing and settlement of trades in securities and derivatives. RITS processed around 6 million transactions in the six months to September, with an aggregate value of \$22 trillion. There have been no major incidents impacting RITS during this time and the number and frequency of incidents remained at historical lows. All of the key ASX facilities also met their operational availability target of 99.9 per cent during this period. However, in light of a number of operational incidents, ASX has commissioned an external assessment of its operational risk management arrangements.

One recent focus of the Reserve Bank's oversight of ASX has been the margining arrangements of its two central counterparties (CCPs). Margin posted to the CCP by each participant is the first layer of financial protection against potential losses in the event of that participant's default. Overall, the Reserve Bank concluded that these CCPs had well-established margining arrangements that have been enhanced over recent years. However, the Reserve Bank noted that ASX Clear (Futures) does not currently have the operational capacity to collect margin during the night session, when almost 40 per cent of trading in its futures contracts occurs. This exposes the CCP to the risk of holding inadequate collateral against default if market prices move sharply during this time. In response to the Reserve Bank's concerns, ASX Clear (Futures) has started to require certain participants to lodge a 'buffer' of additional margin during the night session. In the longer term, ASX plans to manage its overnight risk by implementing real-time margining capabilities on a 24/6 basis, including scheduled overnight margin runs.

A second focus of the Reserve Bank's oversight of ASX CCPs has been their management of investment risk. This has seen ASX recently implement changes to its treasury investment policy that limits its unsecured exposure to individual non-government-related issuers or counterparties; each exposure can be no larger than the level of business risk capital held across the two CCPs (currently \$75 million).

In line with other areas of the financial system, management of cyber risk is a significant and growing focus for FMIs. The Reserve Bank has conducted a detailed assessment of the main domestic FMIs against the governance chapter of the international guidance on cyber resilience.⁶ To complement this assessment, the Reserve Bank has required these FMIs to conduct a self-assessment against the remaining chapters of the guidance and have their arrangements externally reviewed against industry standards on cyber resilience. These assessments have been completed for RITS and work is underway for the ASX clearing and settlement facilities. To date, these assessments have not identified any significant issues. Consistent with the international guidance, these FMIs have also developed concrete plans to improve their capabilities to recover from a cyber attack. Work is also progressing to enhance the cyber resilience of FMI members. RITS recently updated its Business Continuity Standards for RITS members to specifically address cyber security. SWIFT, a key provider of payments messaging infrastructure to the financial industry, has also announced a new policy framework for ensuring users of its infrastructure apply appropriate security controls. ✎

⁶ CPMI-IOSCO (2016), *Guidance on Cyber Resilience for Financial Market Infrastructures*, June. Available at <<http://www.bis.org/cpmi/pub/d146.htm>>.

Box D

Stress Testing at the Reserve Bank

Stress testing is a tool used to assess the health and resilience of the banking sector. It typically involves modelling the impact of an adverse macroeconomic scenario on credit losses and bank profitability in order to assess the potential effect on capital. Stress tests have become an increasingly important part of the bank regulation toolkit since the financial crisis and in some countries they are now used as an input to set macroprudential policy and capital standards.

There are two types of stress-testing frameworks, 'bottom up' and 'top down'. In the bottom-up framework individual banks are required to determine the impact of a common scenario using detailed data on their assets and liabilities, internal risk models and recovery plans, in a process overseen by the regulator. These stress tests usually focus on the impact on individual institutions rather than risks to the system as a whole. In contrast, a top-down framework typically involves central banks and other public authorities using their own models to estimate the impact of a scenario on the banking system without any involvement from individual banks. Each bank is assumed to respond to a scenario in uniform, pre-defined ways, so that variation in results across banks only reflects differences in their balance sheet structure, capital and profitability. The relative simplicity of top-down models makes them less resource intensive and more flexible, allowing authorities to run any number of scenarios. However, this simplicity comes at the cost of detail. They abstract from differences in banks' risk appetite, business models and behaviour. They also produce less

granular results because they do not use the detailed data about banks' balance sheet and profitability available in bottom-up modelling.

Stress Testing in Australia

In Australia, bottom-up stress testing is undertaken periodically by the Australian Prudential Regulation Authority (APRA). APRA's stress test program aims to assess the adequacy of banks' capital and assist Australian banks in improving their risk management and capital planning. Indeed, banks now regularly conduct internal stress tests as part of their risk management processes. More recently, stress-testing results were used as input in formulating APRA's benchmarks for unquestionably strong capital ratios for authorised deposit-taking institutions.

To supplement this work, the Reserve Bank is developing a top-down stress-testing framework. The top-down approach can help explain the differences in results across banks in bottom-up tests by applying the same parameters and assumptions to all banks. The model can also highlight the sensitivity of the overall system to a change in parameters. In addition, the top-down framework is more transparent to the public authorities as it can clearly identify how shocks propagate through a bank's balance sheet. This framework can be extended to capture systemic aspects of bank stress, such as flow-on effects to the financial system as a whole and amplification of economic downturns. This is consistent with the Reserve Bank's focus on risks affecting the whole banking sector, rather than bank-specific risks that are the focus of prudential regulators.

The remainder of this box outlines the current state of the Reserve Bank’s model. As further development continues, the model will be used to explore the resilience of the Australian banking system with insights presented periodically in future *Reviews* and other Reserve Bank communications.

Features of the Reserve Bank’s Framework

The Reserve Bank’s top-down framework maps the impact of an adverse macroeconomic scenario through the major banks’ balance sheets. Using assumptions about their credit losses, funding costs and non-interest income in such a scenario, the stress test generates a projection of the banks’ profits, dividends, loan growth and capital positions. As is standard with top-down stress testing in other countries, many actions to mitigate the impact – such as capital raising and loan repricing – are typically not incorporated into the primary stress tests in order to isolate the impact from the potential response and also because the efficacy of these actions is uncertain in times of stress. However, the effect of mitigating actions can be explored in subsequent stress-test specifications.

The Reserve Bank model primarily relies on behavioural rules and accounting identities to generate projections of bank profitability and capital from a scenario (Table D1). In particular, behavioural rules are used to determine the pace of asset growth and dividend payments:

as capital ratios fall below normal levels, banks choose to reduce their dividend payout ratios and constrain lending growth, while investors demand higher returns when providing funding to banks. In addition, there are some variables that are pre-specified outside the model, notably credit losses, the evolution of risk weights and funding costs.

Credit losses are determined by benchmarking from historical episodes and past stress tests in Australia and abroad, and from Australian banks’ Pillar 3 disclosure requirements. Graph D1 and Graph D2 show relationships that could be used to estimate the loss rate on mortgages and commercial property lending. These illustrate the highly uncertain, and possibly non-linear, relationships between economic variables and loss rates that need to be incorporated in a scenario.

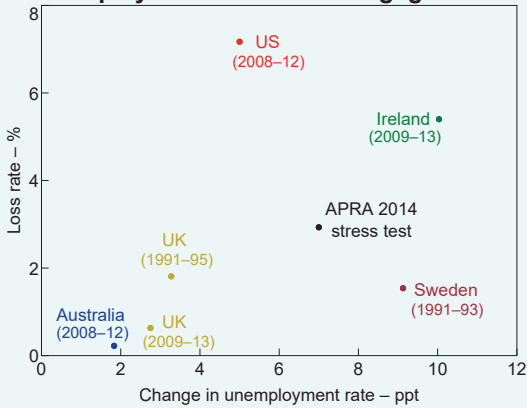
An alternative approach used by many central banks is to use statistical techniques to model credit losses based on historical relationships between observable default rates and economic variables (such as the unemployment rate and asset prices). This approach has not been used for Australia because large credit loss events have been rare and existing models have limited explanatory power. The only sizeable credit loss event in modern Australian history was during the 1990s recession and there are limited granular data from this period. In addition, structural changes to banks’ balance sheets and lending standards since that time make it hard to draw implications from that event for

Table D1: Variables in Stress-testing Framework

Pre-specified outside of the model	Accounting identity	Behavioural rule
Credit losses	Net interest income	Asset growth
Risk weights	Capital	Dividends
Funding costs	Profits	Additional funding costs
Lending rates		
Non-interest income		

Graph D1

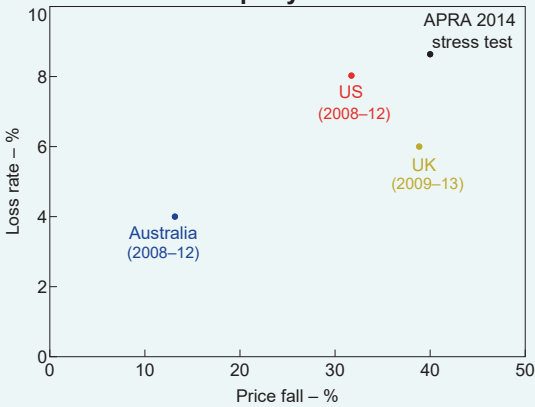
Unemployment Rate and Mortgage Losses



Sources: APRA; Bank of England; Federal Reserve; IMF; RBA

Graph D2

Commercial Property Prices and Losses



Sources: APRA; Bloomberg; ESRB; MSCI; RBA

current times. These challenges are illustrated by research models such as Rodgers (2015), Bilston, Johnson and Read (2015) and Kenny, La Cava and Rodgers (2016), which produce either very low credit losses when subject to quite severe stress scenarios or do not find a robust link between losses and the business cycle.¹

Risk weights are an important determinant of a bank’s capital ratio and tend to rise during stress as they take into account changes in economic conditions. The magnitude of changes is, however, difficult to predict and can vary substantially across banks. The Reserve Bank model therefore calibrates the evolution of risk weights using the results of previous bottom-up stress tests conducted by APRA.

Changes in banks’ funding costs are also pre-specified, given that shocks to markets are not easy to model. The interest rates at which banks can access deposit and wholesale funding are calibrated based on historical episodes. Banks are then assumed to experience additional increases in wholesale funding costs as capital ratios fall in the scenario. The model assumes banks absorb any increase in funding costs to abstract from the potential feedback effects of higher lending rates on household stress and hence loss rates, which cannot be determined without a credit loss model.

Sensitivity to Changes in Key Variables

The simplicity and flexibility of a top-down framework means a number of different scenarios can be considered quickly. For example, the framework can assess the sensitivity of the results and extent of non-linearities to adjustments to key variables or alternative assumptions.

This flexibility is demonstrated in this box by a simulation that shows the sensitivity of banks’ CET1 capital ratios to changes in the severity of the stress event. It takes a similar stress event to APRA’s 2014 bottom-up stress test, and then assumes

¹ See Rodgers D (2015), ‘Credit Losses at Australian Banks: 1980–2013’, RBA Research Discussion Paper No 2015-06; Bilston J, R Johnson and M Read (2015), ‘Stress Testing the Australian Household Sector Using the HILDA Survey’, RBA Research Discussion Paper No 2015-01; and Kenney R, G La Cava and D Rodgers (2016), ‘Why Do Companies Fail?’, RBA Research Discussion Paper No 2016-09.

credit losses, the fall in revenue or the rise in risk weights is either 50 per cent larger or smaller.²

This exercise generates a few key observations.

- First, credit losses and income shocks have non-linear effects on banks' capital ratios: the deviation in banks' capital ratios from the baseline is larger when the degree of stress is increased than when it is decreased (Table D2). This non-linearity is mostly attributable to the behavioural rule governing dividend payments. As profits decline in a stress scenario, lower dividend payouts help to cushion the impact on capital. But that ceases when profits fall to zero and losses directly reduce capital.
- Second, as the degree of economic stress evolves, the CET1 capital ratio is most sensitive to the consequent changes in risk weights. It is about twice that from changes in credit losses in the scenario (Table D2).
- Finally, credit losses have little impact on capital in these scenarios because the banks currently enter the stress period with very large pre-impairment profits. This enables them to continue generating capital through retained earnings in even quite severe

episodes. However, the impact of credit losses on CET1 capital becomes larger when accompanied by greater declines in revenue.

An alternative way to understand the sensitivity of capital ratios to various shocks is to run reverse stress tests. These tests estimate the magnitude and duration of stress that would result in banks breaching various thresholds. This can be used, for example, to assess how much more severe a past event or scenario would need to be in order to breach certain prudential capital requirements. ✎

Table D2: Sensitivity of CET1 Capital Ratios to Key Variables
Deviation in CET1 ratio from baseline scenario; in basis points

	Less severe ^(a)	More severe ^(a)
Credit losses	15	-30
Bank revenue	10	-15
Risk weights	60	-60

(a) The more (less) severe scenario assumes that either credit losses or the change in income or risk weights is 50 per cent larger (smaller) than in the baseline. Only one variable is changed at a time
Source: RBA

² In the 2014 scenario, real GDP falls by as much as 4 per cent per annum, the unemployment rate rises to 13 per cent and house prices fall by around 40 per cent. For more information, see Byres W (2014), 'Seeking Strength in Adversity: Lessons from APRA's 2014 Stress Test on Australia's Largest Banks', AB+F Randstad Leaders Lecture Series, 7 November.

4. Developments in the Financial System Architecture

The Financial Stability Board (FSB) and global standard-setting bodies have continued to progress work across a range of post-crisis reform areas. These include addressing ‘too big to fail’, as well as strengthening the regulatory framework for central counterparties (CCPs). These bodies have also been monitoring and, where necessary, responding to, potential new sources of risk to financial stability. This has included examining the implications of financial technology (‘fintech’) and the related issue of cyber security, and continuing work to reduce misconduct in the financial sector. Evaluating the effectiveness of post-crisis reforms also remains a key focus. The FSB recently released a new framework to guide such evaluations. Discussions continue at the Basel Committee on Banking Supervision (BCBS) to finalise remaining Basel III capital reforms, which are aimed at reducing the variability in banks’ risk-weighted assets (RWAs).

Domestically, the Council of Financial Regulators (CFR) agencies have focused on strengthening and testing crisis management frameworks, ongoing implementation of international reforms, and reducing misconduct and enhancing the culture within financial institutions. The Australian Prudential Regulation Authority (APRA) has published proposals on counterparty credit risk and a prudential standard on margining for non-centrally cleared derivatives. A number of measures have been announced, or are under consideration, for better facilitating innovation in the financial sector.

International Regulatory Developments

Addressing ‘too big to fail’

A key focus of the G20 post-crisis reforms has been to address the ‘too-big-to-fail’ problem – that is, mitigating the moral hazard and financial stability risks associated with institutions that are very large, perform critical functions or are highly interconnected with other parts of the financial system. One of the recent measures in this area is the FSB’s total loss-absorbing capacity (TLAC) standard for global systemically important banks (G-SIBs). To comply with this standard, G-SIBs must hold certain TLAC-eligible liabilities that can be ‘bailed in’ during resolution. Implementation of this standard has progressed further, with the FSB reporting to the G20 in July that TLAC issuance strategies are now in place for almost all of the 30 G-SIBs identified by the FSB.

A related issue is how to ensure that, where a G-SIB operates in another jurisdiction as a subsidiary, host authorities have the confidence that there is sufficient loss-absorbing capacity available to that subsidiary. This is being achieved through ‘internal TLAC’, which is a mechanism for a subsidiary’s losses to be absorbed by its parent G-SIB without the need for the subsidiary to enter into resolution. After consulting on internal TLAC earlier this year, the FSB issued final guiding principles in July. These provide guidance on the size and composition of the internal TLAC requirement, coordination between home and host authorities, and the trigger mechanism for internal TLAC.

More broadly, over recent years the FSB and standard-setting bodies have worked on improving resolution frameworks, in line with the FSB's *Key Attributes of Effective Resolution Regimes for Financial Institutions (Key Attributes)*. The FSB has regularly monitored global progress in implementing the *Key Attributes*, and in July the FSB published a stocktake of the resolvability of systemically important financial institutions (SIFIs). The stocktake found that the development of policies to help ensure that SIFIs can be resolved without wider disruption is largely complete. Despite this, the FSB reported that further work on implementation in some areas remains. In particular, implementing measures to address cross-border resolution issues will be a priority over the coming year. This includes the adoption of cross-border cooperation agreements between authorities, and 'resolution stay protocols' – which help prevent cross-border over-the-counter (OTC) derivatives contracts from being terminated disruptively in the event of a foreign counterparty entering resolution.

CCP recovery and resolution frameworks

Another major component of the post-crisis reforms was mandating the clearing of standardised OTC derivatives through CCPs, to reduce the scope for contagion in financial markets. As the use globally of central clearing has increased in derivatives markets, standard-setting bodies have pursued an international work plan to ensure that CCPs themselves do not become 'too big to fail', and that they are subject to strong regulatory requirements and supervisory oversight. Several key elements of the plan were finalised in July:

- The Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) published guidance to further strengthen CCP resilience in the area of

financial risk management. At the same time, these bodies issued revised guidance on recovery arrangements for financial market infrastructures (FMIs). The recovery guidance included a discussion of scenarios that may trigger the use of recovery tools and the characteristics of appropriate recovery tools in the context of such scenarios. The Bank will take both sets of guidance into account in its oversight of clearing and settlement facilities licensed to operate in Australia.

- The FSB published guidance on incorporating the *Key Attributes* in CCP resolution frameworks. The guidance sets out: the powers that resolution authorities should have to maintain the continuity of critical CCP functions; details on the use of loss allocation tools; and the steps authorities should take to establish crisis management groups for relevant CCPs and develop resolution plans. The Bank and other CFR agencies are working to develop an Australian resolution regime for CCPs and FMIs more generally.
- The BCBS, CPMI, FSB and IOSCO published an analysis of CCP interdependencies. The aim of this analysis was to develop an understanding of the connections between CCPs, clearing participants and other financial entities that provide critical financial services to CCPs. The report, based on data from 26 CCPs globally (including the two domestic CCPs operated by the Australian Securities Exchange (ASX)) found that some clearing participants are also important providers of critical services to CCPs, which could lead to operational difficulties at a CCP if one or more of these clearing participants defaulted. Further work will be conducted on this topic over the coming year.

In June, the FSB published a review of OTC derivatives market reforms. It found that

the implementation of most reforms is now well progressed. However, in some cases implementation has taken longer than originally intended due to the scale and complexity of the reforms and other challenges, such as the need to establish new FMI or upgrade existing FMI to meet new standards. As part of the increasing focus on evaluating the effectiveness of reforms, in July the FSB and relevant standard-setting bodies commenced a study of the effect of the reforms on incentives to centrally clear OTC derivatives. A final report is due in late 2018.

Shadow banking

In July, the FSB reported to the G20 that examples of shadow banking activity, which it previously labelled as ‘toxic’ (such as subprime residential mortgage-backed securities and collateralised debt obligations), had declined substantially since the crisis. Accordingly, the types of shadow banking that contributed to the financial crisis are no longer considered to be a key financial stability concern. Nonetheless, the asset management sector remains an area of focus. As detailed in the FSB’s 2016 *Global Shadow Banking Monitoring Report* published in May, investment funds are large in certain jurisdictions and many have inherent structural vulnerabilities, especially leverage and the risk of a redemption run.

IOSCO released a consultation paper in July that seeks to operationalise earlier FSB policy recommendations to address the mismatch between the relative illiquidity of certain fund investments and the ease of redemption in open-ended funds. Future IOSCO work will focus on developing consistent and risk-based measures of leverage in funds. This will facilitate more meaningful monitoring of leverage for financial stability purposes and better capture, for example, the use of ‘synthetic leverage’ and the effects of netting and hedging.

Building resilient financial institutions

Much of the work aimed at building resilient financial institutions, namely the Basel III capital and liquidity reforms, has been completed. However, as discussed in the previous *Review*, the BCBS is yet to finalise the remaining Basel III capital reforms. These are intended to reduce the variability in banks’ RWAs, and more generally to increase the simplicity, comparability and risk sensitivity of the Basel capital framework. The BCBS originally planned to finalise these reforms by the end of 2016, but discussions are still ongoing to reach an agreement. Areas yet to be finalised include:

- reforms to the ‘standardised’ and ‘internal ratings-based’ approaches to credit risk, which determine capital risk weights based on a fixed standard and banks’ own models, respectively
- the ‘output floor’, which places a limit on the benefit a bank derives from using its own models to estimate risk weights.

Separately, over the past six months, the BCBS has proposed revisions to other aspects of the Basel framework.

- In June, reforms to the standardised approach for market risk were announced. The changes will remove some of the more complex capital requirements as well as simplify calculations in other parts of the framework.
- In July, proposals were released setting out the criteria for identifying ‘simple, transparent and comparable’ (STC) short-term securitisations as well as additional guidance on their capital treatment. The criteria for identifying STC short-term securitisations build on earlier BCBS-IOSCO principles for STC securitisations. The new criteria are designed to help the parties to such transactions

conduct due diligence and evaluate the risks of a particular securitisation. According to the BCBS, STC short-term securitisations warrant reduced capital requirements due to increased confidence in their performance. Accordingly, the BCBS is proposing to apply preferential capital treatment for banks acting as investors in, or as sponsors of, STC short-term securitisations.

In July, the International Association of Insurance Supervisors (IAIS) released 'version 1.0' of the Insurance Capital Standard (ICS) for extended field testing. This is another key step by the IAIS in its development over recent years of a risk-based global capital standard for the insurance sector. All internationally active insurance groups will be included in the test and there will be supervisory consequences for groups that do not meet the ICS requirements. Implementation of the final version of the standard is expected to take place in 2019.

Risks and reforms beyond the post-crisis agenda

As the post-crisis reforms are implemented, increasing emphasis is being placed on evaluating whether they have met their intended objectives, and on identifying any material unintended consequences. In July, and following a consultation process, the FSB published a framework to guide such evaluations. The framework outlines the types of evaluation that could be undertaken, the techniques that could be employed, and the analytical issues that may be encountered. The FSB will be responsible for selecting and prioritising the policy evaluation proposals submitted by its members. In line with the FSB's prioritisation, the standard-setting body that issued the relevant standard will conduct the evaluation. Where possible, evaluations should build on existing implementation monitoring and assessment frameworks and be conducted with input from external stakeholders,

including academics and industry. At its October meeting, the FSB Plenary agreed that the FSB, in coordination with relevant standard-setting bodies, should undertake an evaluation of the effects of reforms on financial intermediation. This will be the second evaluation under the FSB's framework (the first being a review of the incentives for central clearing of OTC derivatives noted above).

These evaluation studies will complement the FSB's annual report to G20 Leaders on the implementation and effects of reforms. In July, the FSB's third such annual report suggested that the post-crisis reforms have increased resilience, consistent with the conclusions of previous annual reports. The latest report noted that reforms to OTC derivatives markets have had a meaningful impact on mitigating systemic risk. It also noted that the policies implemented to address shadow banking risks have been effective, with no new shadow banking risks that warrant additional regulatory action. The report pointed out some possible consequences of the reforms that merit ongoing attention. For instance, there is some evidence of reduced liquidity in certain markets, although the report largely attributed these changes to other factors, such as a decline in banks' risk appetite, historically low interest rates and unconventional monetary policy, as well as an increase in electronic trading. The report noted that these changes require ongoing analysis and may be assessed under the FSB's new evaluation framework.

In addition to the evaluation of existing reforms, international bodies continue to monitor emerging risks. In May, the FSB and the Committee on the Global Financial System (CGFS) of the Bank for International Settlements (BIS) published a report on fintech credit. The report noted that fintech lending activity may help diversify economies' credit channels and reduce the risk of a credit contraction if bank

lending is interrupted. However, regulators should remain mindful that competitive pressure from fintech firms may encourage greater risk-taking by banks and erode lending standards.

In June, the FSB published a report outlining the regulatory and supervisory issues raised by fintech. Echoing the FSB-CGFS report, the FSB study found that fintech can help diversify the sources of credit in an economy, as well as increase efficiency and competition. However, the FSB noted that it could introduce or increase procyclicality, cyber risk and operational risk from third-party service providers. While fintech activity is still very small in most countries, the report also noted that issues such as contagion (where distress in a fintech entity could be transmitted to other institutions or sectors, for example, through direct exposures) may emerge as fintech activities increase in size. Also, where fintech expands into critical areas, such as FMIs or core banking systems, it is important that risks are identified and managed effectively.

In August, the BCBS issued a consultation document on the sound practices banks and bank supervisors can adopt to respond to the new risks and opportunities presented by fintech. The BCBS made several recommendations, including that banks and bank supervisors should ensure the safety and stability of the banking system without inhibiting beneficial financial sector innovation. Other recommendations include that:

- banks, as well as new fintech entrants, should manage operational, cyber and compliance risks effectively
- bank regulators should enhance cooperation both domestically (with authorities responsible for fintech regulation) and with foreign authorities, given the potential global growth of fintech companies.

Cyber risk in the financial sector has been another area of international focus recently. The FSB has undertaken a stocktake of existing publicly available regulations, guidance and supervisory practices with the aim of identifying effective practices. In a progress report to the G20 in July, the FSB noted that all member jurisdictions have released regulations or guidance that address cybersecurity for at least part of the financial sector. The FSB will deliver the stocktake to the G20 in October.

Over recent years, the FSB together with relevant bodies, has been progressing a work plan to reduce the risk of misconduct in the financial sector. A key aspect of this work has been the development of the Global Code of Conduct for wholesale foreign exchange markets, which was launched in May. The Code was developed under the auspices of the BIS and in partnership with industry, and sets out global principles of good practice in the foreign exchange market. Adherence to the Code should help to restore confidence in, and promote the effective functioning of, the wholesale foreign exchange market.

Misconduct risk is also being addressed by enhancing the integrity of major interest rate benchmarks, following past instances of manipulation. In particular, over recent years regulators have been working with benchmark administrators and market participants to strengthen the key interbank offered rates, including the bank bill swap rate (BBSW) in Australia. A recent focus has been the sustainability of benchmarks. The UK Financial Conduct Authority (FCA) recently expressed concern that wholesale funding markets are not sufficiently active for the London Interbank Offered Rate (LIBOR) – a set of key interest rate benchmarks for several major currencies including the US dollar and British pound – to be based on transactions. Banks on the LIBOR

panel are also reluctant to continue making submissions based on 'expert judgment'. To manage the risk of an unplanned cessation of LIBOR, the FCA has obtained agreement from the panel banks to voluntarily sustain LIBOR until 2021; beyond that, the FCA anticipates that it will no longer be necessary to persuade, or compel, banks to make submissions to LIBOR. Therefore, market participants and regulators must now focus on the transition to alternative benchmarks.

In the United States, a committee convened by the Federal Reserve Bank of New York proposed alternative reference rates to LIBOR that better reflect actual transactions. And in September, the European Central Bank stated that in coming years it will publish a new unsecured overnight interest rate based entirely on transactions, to complement existing benchmarks.

Domestically, the Australian regulators are currently working with market participants to strengthen BBSW. Importantly, for BBSW there are enough transactions in the local bank bill market each day relative to the size of the Australian financial system to calculate a robust benchmark, which is not the case for LIBOR. The ASX (the administrator of BBSW) is developing a new methodology that would measure BBSW directly from transactions. In October, the ASX issued guidance on the trading of bank bills during the 'rate set window' and on how these trades should be reported to the ASX to support the timely calculation of BBSW. The Australian regulators have also been working on a new regulatory framework for benchmarks, which should help to provide more certainty to market participants. A bill was recently introduced into parliament that would establish the regulatory framework, and the Australian Securities and Investments Commission (ASIC) has consulted with market participants about how the regulatory regime would be implemented.

More generally, in its July progress report to the G20, the FSB reviewed a number of other measures taken by international bodies relating to misconduct issues.

- In May, the FSB released a stocktake of efforts to strengthen governance frameworks. Drawing on these findings, the FSB plans to develop a toolkit for supervisors and firms to help strengthen financial institutions' governance in relation to culture, employees with a history of misconduct, and the responsibilities of the board and senior management.
- The FSB's *Principles for Sound Compensation Practices* and their associated *Implementation Standards* have now been substantively implemented for banks in all FSB member jurisdictions. These were developed to align compensation in the financial industry with prudent risk-taking. In June, the FSB issued for consultation supplementary guidance to the principles and standards. Once finalised, the guidance will provide information for firms and authorities on how compensation practices and tools (such as 'clawback' – the repayment of remuneration after it has been paid) can be used to reduce misconduct risk and address misconduct incidents.
- In June, IOSCO published a report on the regulatory approaches and tools used to prevent misconduct in wholesale markets. The report identified tools that are particularly important for minimising misconduct risk given the characteristics of wholesale markets; they are often opaque, increasingly automated, exhibit conflicts of interest and are dominated by organisationally complex market participants. Some of the tools discussed include whistleblower protection, supervisor liability, and information sharing to identify 'bad apples' and suspicious trades.

The FSB and other international bodies are continuing their work on assessing and addressing the decline in correspondent banking (due to 'de-risking'). In addition to adverse effects on financial inclusion, the concern is that the decline in the number of correspondent banking relationships may affect the ability to send and receive international payments, or may drive some payment flows to less regulated channels. In July, the FSB published its third progress report on this initiative, along with a separate update on the decline in correspondent banking, based on an FSB survey of banks in nearly 50 jurisdictions, including Australia. Similar to the experience of banks in peer countries, Australian banks reported a modest fall in the number of correspondent banking relationships, with more pronounced declines taking place in regions such as Africa and the Caribbean as well as in several Pacific island economies.

In a related development, the BCBS finalised revisions to its *Sound management of risks related to money laundering and financing of terrorism* guidelines in June. The revisions recognise that not all correspondent banking relationships bear the same level of risk. Accordingly, extra guidance is provided to banks on the application of a risk-based approach to managing relationships by including an updated list of risk indicators that correspondent banks should consider in their assessment of money laundering and financing of terrorism risks.

Domestic Regulatory Developments

Council of Financial Regulators

The CFR is a non-statutory body whose role is to contribute to the efficiency and effectiveness of financial regulation and to promote stability of the Australian financial system. The CFR provides the primary mechanism for coordination

between financial regulatory agencies, both on ongoing policy matters and in response to financial disruption, such as occurred during the 2008 financial crisis. Its membership comprises the Reserve Bank (which chairs the CFR), APRA, ASIC and the Australian Treasury. It meets quarterly, or more frequently when required. Over the past year, the CFR met in December, March, June and September, focusing on crisis management and resolution frameworks for banks and FMI, housing lending, competition, cyber security and distributed ledger technology (DLT). At the June meeting, the CFR convened with a broader group of agencies with an interest in regulation of the financial sector and the CFR will continue to engage with these agencies in the future.

A key role of the CFR is to ensure Australian agencies are jointly prepared for any financial disruption and to coordinate the response in such an event. In this context, CFR agencies have continued work in two important areas that affect agencies' ability to deal with a distressed bank – crisis management powers and the level and structure of loss-absorbing capacity.

In August, the government released draft legislation for consultation that would enhance APRA's crisis management powers. The draft legislation would align APRA's powers more closely with the FSB's *Key Attributes*. In particular, the new legislation provides APRA with:

- clear powers to set requirements for resolution planning and to ensure banks and insurers are better prepared for a crisis (for example, giving APRA the power to direct an entity to take actions to change its organisational structure so as to ensure that critical functions could continue if the firm needed to be resolved)
- an expanded set of crisis resolution powers that would allow APRA to act decisively to facilitate the orderly resolution of a distressed

bank or insurer (such as by enabling APRA to appoint a statutory manager to an authorised holding company and certain subsidiaries where necessary).

Development of an FMI crisis management framework is also underway. Drafting of legislation that will grant the relevant resolution authority crisis management powers to resolve a failing domestic FMI is expected to start later this year.

A second important workstream has been Australia's approach to implementing an appropriate loss-absorbing capacity framework for Australian banks. While none of the Australian banks are G-SIBs bound by the FSB's TLAC standard, APRA continues to consider options for a loss-absorbing capacity framework, consistent with a government-endorsed recommendation by the Financial System Inquiry. The CFR has supported this work during 2017, discussing possible approaches and considering the implications of those approaches for Australia.

Crisis simulations are an important tool to both test the preparedness of the CFR to manage the failure of a financial institution and to identify areas that require further attention. In March, the CFR undertook an exercise to step through the range of decisions and actions that would need to be taken in the event that a major Australian bank became distressed. This domestically focused exercise was followed by a larger cross-border crisis simulation in September. The simulation involved all CFR agencies and their New Zealand counterparts under the auspices of the Trans-Tasman Council on Banking Supervision (TTBC). The TTBC has been working to strengthen the cross-border crisis management framework over a number of years, recognising the need for effective cooperation and coordination on crisis resolution. The September simulation was aimed at testing parts of that framework and identifying further

refinements to crisis management arrangements. Findings from both exercises will be incorporated in the work programs of the CFR and the TTBC in the period ahead.

In addition to crisis management, a key focus of the CFR over the past year has been vulnerabilities related to lending standards in the housing market and household indebtedness. The CFR has considered developments in the housing market and emerging risks at each of its meetings over the past year. Given concerns about trends in some types of housing lending in early 2017, it discussed the merits of various policy actions. APRA subsequently announced additional measures in March (see 'Household and Business Finances' chapter). The CFR continues to assess the effects of those measures and broader developments in housing markets.

The CFR has recently undertaken two competition-related workstreams, both in collaboration with the Australian Competition and Consumer Commission (ACCC).

- In early 2017, the CFR considered recommendations from the Review of the Four Major Banks conducted by the House of Representatives Standing Committee on Economics, along with other possible measures for improving competition in the banking sector.
- In September, it published guidance on competition in the settlement of cash equities in Australia, complementing existing guidance on competition in the clearing of cash equities. The policy framework also includes regulatory expectations for conduct in operating cash equity clearing and settlement services. These apply to a market structure in which the ASX remains a monopoly provider of cash equities clearing or settlement services. The CFR and ACCC will work with the government over the coming

year to develop and consult on legislative amendments to provide the relevant agencies with the powers necessary to fully implement the framework.

Other areas of focus of the CFR over the past year have been cyber security and DLT. A CFR working group has been exploring the regulatory approach to cyber security by CFR agencies. As part of this effort, the group has been working on a comprehensive stocktake of the cyber risk landscape in the financial sector, drawing on supervisory information and industry liaison, as well as information from cyber-focused bodies and programs such as the Australian Cyber Security Centre and the government's Cyber Security Strategy. Another working group has been reviewing regulatory gaps that may be relevant to the uptake of DLT and has identified a number of areas where regulation could be updated or clarified in order to promote financial innovation.

Where CFR discussions are relevant to other government agencies, the heads of those agencies are invited to join the meeting or those agencies are consulted. This has included the ACCC attending recent CFR discussions on competition matters. The CFR this year sought to put in place more formal arrangements with other regulators that have an interest in the financial sector. In June, a meeting was held between the CFR agencies, the ACCC, the Australian Taxation Office and the Australian Transaction Reports and Analysis Centre (AUSTRAC). Topics discussed included the activities of the CFR, the work of the Black Economy Taskforce and the Productivity Commission's inquiry into competition in the financial system. The respective chairmen of the Black Economy Taskforce and the Productivity Commission attended.

Other domestic regulatory developments

A number of other regulatory developments reflect the focus of the main international workstreams discussed earlier in this chapter.

In addition to its announcement on 'unquestionably strong' bank capital (discussed further in 'The Australian Financial System' chapter), APRA has continued its program of implementing internationally agreed BCBS reforms. In August, it released a discussion paper on the standardised approach for measuring counterparty credit risk. The discussion paper outlines a series of modifications to an earlier version of the framework, made in response to issues raised during consultation. Among other measures, APRA is proposing a simpler methodology for the measurement of counterparty credit risk exposures for authorised deposit-taking institutions (ADIs) with immaterial exposure to such risk.

APRA has also released the final version of its prudential standard on the margining requirements for non-centrally cleared derivatives. Margin is collateral exchanged to reduce both the counterparty credit risk posed by the default of a market participant and the potential contagion stemming from such a default. Under the standard, compliance with the margining requirements of foreign authorities listed in the standard – such as those in the European Union, Japan or United States – will satisfy APRA's margining requirements in some cases ('substituted compliance'). Substituted compliance is intended to alleviate the burden of foreign firms having to comply with the rules of multiple jurisdictions.

Another area of focus has been mitigating misconduct risk. CFR agencies continue to monitor and encourage improvements in the culture of banks and other financial institutions.

In particular, over recent years, APRA has heightened its supervisory focus on culture for all regulated entities. For ADIs as well as general and life insurers, this has emphasised the need for their boards to identify desired changes to risk culture and ensure steps are taken to address those changes. The importance of enhancing culture was highlighted by apparent deficiencies in anti-money laundering practices at the Commonwealth Bank of Australia that were recently revealed by AUSTRAC (discussed further in 'The Australian Financial System' chapter).

As noted above, global bodies have increased their focus on fintech (including DLT), and assessing its possible implications for financial stability. A key theme of these efforts is to balance the facilitation of fintech, given its potential benefits, with effectively managing any risks it poses. There have been a number of developments domestically regarding fintech:

- In the May federal budget, the government announced several new measures to facilitate the development of the fintech sector, such as reducing barriers for new entrants into the banking sector (see below). The government also stated that it would legislate an enhanced 'regulatory sandbox'. This will build on an existing licensing exemption by ASIC, allowing eligible fintech businesses to test certain services on a limited scale without an Australian financial services or credit licence. Firms operating under the sandbox arrangements remain subject to consumer protection and disclosure requirements.
- In August, APRA proposed revisions to its licensing framework for ADIs. Consistent with government policies noted above, these revisions aim to increase competition and innovation in the banking sector, by making it easier for new entrants (including fintech firms) to navigate the ADI licensing process.

APRA's proposals would introduce a phased approach to ADI authorisation and would allow eligible firms to obtain a 'Restricted ADI' licence, so that they can begin limited operations without yet fully meeting APRA's prudential standards. The Restricted ADI licence would be granted for up to two years. So as not to compromise financial stability, APRA expects these ADIs to conduct banking business on only a small scale during this time, with explicit limits applying to deposits covered by the Financial Claims Scheme. Within the two years, the ADI would be expected to build up the capabilities and resources to fully meet prudential requirements and progress to a full ADI licence, or to exit the banking industry in an orderly manner. ✎

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HILDA

The following Disclaimer applies to data obtained from the HILDA Survey and used in the chapter on 'Households and Business Finances' and reported in 'Box C: Large Falls in Household Income' in this issue of the *Review*.

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The Household, Income and Labour Dynamics in Australia (HILDA) Survey was initiated and is funded by the Australian Government Department of Social Services (DSS), and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views based on these data should not be attributed to either DSS or the Melbourne Institute.



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