

Financial Stability Review

APRIL 2022



RESERVE BANK OF AUSTRALIA

Financial Stability Review

APRIL 2022

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Overview

Global financial systems have continued to function well over the past six months with further waves of COVID-19 having limited impacts on financial institutions and markets. A new source of uncertainty has been Russia's invasion of Ukraine, which has accentuated some existing risks in the global financial system and created others. Commodity prices have increased sharply and there has been an increase in market volatility, which has resulted in some market participants facing liquidity shortfalls. However, most international banks have only minor links to the Russian and Ukrainian financial systems, and so direct losses from these exposures do not pose a significant risk to these institutions or the global financial system. Nevertheless, the large falls in Russian asset values have meant losses for some investors, with some essentially writing off the value of their Russian investments.

Since late 2021, long-term interest rates have increased significantly following higher-than-expected inflation in many countries. Expectations of future increases in policy interest rates have also been brought forward. As a result, the prices of some financial assets have declined, although there have not been widespread falls in residential or commercial property prices.

With inflation higher and more persistent than forecast, there is a risk that short- and long-term interest rates could increase by more than financial markets currently expect. It is possible that the current disruptions to supply chains persist, prolonging the period of higher inflation and contributing to a shift up in inflation expectations. If so, policy interest rates in major

economies might need to move higher than the currently expected peaks, which are low relative to the peaks in interest rates over recent decades.

In Australia, the financial system has remained highly resilient and supportive of the economic recovery. The banks remain very well capitalised, have high holdings of liquid assets and have ready access to wholesale funding. Loan arrears rates are low and have declined a little recently. Businesses and household balance sheets are in generally good shape, with many households having built up substantial buffers on their mortgages. Even so, housing credit growth has for some time exceeded growth in incomes, with the ratio of housing credit to income edging up from an already high level.

Key risks to financial systems

1. Highly indebted borrowers could struggle with rising interest rates and expenses

In many countries, debt-to-income ratios are at high levels in the household and business sectors. Higher interest rates will increase borrowers' debt payments, while high inflation will reduce the funds households and some businesses have available to make those payments, particularly if incomes stagnate. Loan performance could then deteriorate significantly. The risks of high indebtedness have been highlighted by the significant worsening in the financial health of property developers in China where efforts to reduce leverage risk a disorderly unwinding. A rise in global interest rates could trigger sharp capital outflows in

emerging market economies, particularly those with weaker economic fundamentals and significant foreign currency debt.

The high level of household debt relative to income in Australia has increased the sensitivity of households and their spending to higher interest rates and a rise in living expenses. While banks have generally maintained strong lending standards, a large share of new housing loans have been written with high debt-to-income ratios. With interest rates still at historically low levels, it is important that lending standards are maintained and that borrowers are prepared for an increase in interest rates.

2. Many asset prices remain high but could fall with increases in interest rates or risk aversion

Globally, asset prices generally remain high and there is ongoing risk that a disruptive adjustment will occur. This could be triggered by larger-than-expected increases in interest rates, an increase in risk aversion due to global

developments, dislocation in financial markets or weak income growth. Where assets are highly leveraged – in particular, residential and commercial property – large price falls could lead to significant losses for financial institutions, disrupting the functioning of financial systems.

3. Cyber-attacks continue to pose risks to financial systems and institutions

Cyber-attacks have become more frequent and more sophisticated in recent years and it is highly probable that at some point in time the defences of a significant financial institution will be breached. This would not only create problems for the institution concerned but could also undermine confidence in the broader financial system. It therefore remains critical that financial institutions and infrastructures have high resilience with the ability to quickly recover from a significant attack. ❖

1. The Global Financial Environment

The global financial system has so far proven relatively resilient to the consequences of Russia's invasion of Ukraine, increases in interest rates due to high and persistent inflation, and further waves of COVID-19. Nevertheless, these developments could be a source of financial instability. A sustained period of high inflation caused by higher commodity prices and supply disruptions may see policy rate expectations and interest rates rise significantly, alongside slowing economic growth. Hostilities in Europe could contribute to a sharp rise in risk premia and large declines in asset prices, while the resulting sanctions could trigger dislocation in parts of the financial system that could lead to broader market stress. In addition, further outbreaks of COVID-19 have the potential to disrupt economic activity due to mobility restrictions, such as those recently imposed in parts of China. While COVID-19 remains widespread and a large share of the global population is yet to be vaccinated, the risk endures of more virulent and transmissible variants emerging.

Any of these potential shocks could trigger a significant tightening in financial conditions resulting in global market disruptions. Asset price declines caused by a large increase in interest rates or risk aversion could be exacerbated by stress in non-bank financial institutions, some of which are vulnerable due to high leverage and liquidity mismatches. Higher inflation and interest rates, and lower real income growth, would also pose risks for households and businesses with high debt burdens. Emerging market economies (EMEs),

particularly those in Latin America and eastern Europe, remain vulnerable to capital outflows as a result of rising interest rates in advanced economies – this is especially the case in economies with large fiscal deficits, high levels of debt and a heavy dependence on external financing. Some EMEs are also vulnerable to higher commodity prices, including food prices, arising from the war in Ukraine.

Continued strong housing price and credit growth have led some regulators to express concerns about the risks from disruptive housing price adjustments and high household indebtedness. Corporate indebtedness also remains a concern in some countries, where higher interest rates will increase debt servicing costs. In China, stress among property developers has increased significantly, although spillovers to the broader financial system have, to date, been relatively contained.

International bodies continue work in several areas that have cross-border implications for financial stability. Focus remains on addressing cyber risks – which are currently judged to be elevated – and the resilience of financial systems to those risks (see 'Box C: Building Resilience to Cyber Risks'). The impact of climate change on financial institutions is also a major focus, particularly as part of the Financial Stability Board's (FSB) Roadmap for Addressing Climate-related Financial Risks. The Roadmap covers areas such as monitoring and assessing vulnerabilities, data gaps, climate-related stress testing and improving disclosures. Large banks globally are enhancing their disclosures of climate risk, as part of their response (see 'Box A: International

Banks' Response to Climate Risk'). The growth of crypto-assets, including 'stablecoins', continues to be the subject of regulatory attention. The FSB has assessed that these fast-evolving markets could reach a point where they represent a threat to global financial stability due to their size, structural vulnerabilities and increasing interconnectedness with the traditional financial system.

The war in Ukraine has added to financial stability risks, but financial stress has been contained so far

The flow-on effects of Russia's invasion of Ukraine have increased the risk that persistently high and supply-driven inflation will lead to a sharper-than-expected tightening in monetary policy or slower economic growth, and cause a disruptive adjustment in financial markets. Commodity prices have risen sharply in response to concerns over the supply of gas, oil, wheat and other commodities from eastern Europe (Graph 1.1). The prices of Brent oil, wheat and European natural gas have increased by 30 per cent or more since the start of 2022.

Foreign banks' direct exposures to Russia are not large enough to have a significant effect on their capital ratios. However, banks may be affected by derivative and indirect exposures, including to leveraged investment funds. In addition, banks are exposed to a decline in the real

incomes of households and businesses due to higher inflation and the possibility of weaker economic conditions. Reflecting these risks, European bank indices have fallen by more than 15 per cent, with global bank equity indices down by around 10 per cent since the invasion on 24 February (Graph 1.2). Cyber, operational, legal and compliance risks have become more prominent for banks and other firms as a result of intensifying sanctions.

Russian banks' subsidiaries in Europe have been significantly affected by the events in Ukraine:

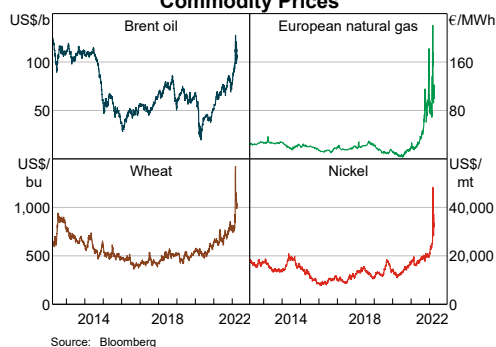
- Sberbank Europe's Austrian parent and its Czech and Hungarian subsidiaries became insolvent and were closed, while regulators facilitated the sale of Croatian and Slovenian subsidiaries to other banks.
- VTB's subsidiaries in Europe are winding down their operations.
- RCB Bank (a Cypriot bank) was forced to stop accepting new customers and will wind itself down. VTB had a controlling stake in RCB, though this was transferred to the bank's management on the day of the invasion.

Investors and investment funds have had to write down the value of Russian investments significantly, in some cases effectively to zero. A combination of sanctions and Russian capital controls have made it difficult or impossible for foreign investors to sell Russian assets, and could prevent the Russian Government from settling foreign-currency obligations. Credit default swap spreads remain elevated, reflecting the increased likelihood of a default event on Russian Government debt.

The pick-up in market volatility and credit risk has increased the chance that large losses accrue to financial industry participants. If they are unable to meet obligations, it would add to market disruptions and losses could spread to other participants. Market stresses have been most apparent in some commodity markets,

Graph 1.1

Commodity Prices



where large swings in prices triggered large margin calls, resulting in liquidity pressure on market participants. The nickel futures market on the London Metal Exchange (LME) was suspended in early March due to extreme price movements, to allow for an orderly unwinding of large short positions and limit disruptions from very large margin calls. The LME announced it will nearly double the size of its default fund, and authorities in the United Kingdom have announced a review into the LME's approach in managing the suspension and resumption of nickel trading. Nevertheless, markets are better prepared for stressed conditions than in the past, partly due to G20 reforms that led to the greater use of central counterparties.

In Russia, financial conditions have tightened drastically as a result of sanctions and a significant deterioration in the economic outlook. The Russian rouble depreciated by as much as 40 per cent following the invasion, but has since bounced back; the prices of Russian assets also fell significantly. At the same time, the Central Bank of Russia (CBR) and Russian financial institutions have had overseas assets effectively frozen, while other sanctions and the removal of some Russian banks from the SWIFT payment messaging system have made it very difficult for Russian financial institutions to

transact with the rest of the world. Concerns over the solvency of Russian banks led to large withdrawals of bank deposits. In response to these developments, the CBR tightened monetary policy significantly and authorities implemented capital controls. The CBR also supported domestic banks by lowering reserve requirement ratios and increasing the provision of liquidity.

Higher interest rates and the war in Ukraine have triggered a decline in financial asset prices

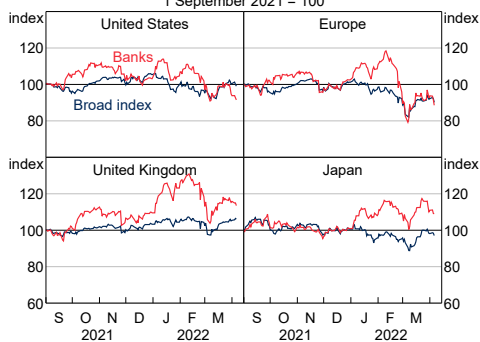
Financial asset prices have been volatile in recent months, largely reflecting developments in Ukraine and changes in the outlook for monetary policy. Government bond yields have increased in most advanced economies since late 2021 as market expectations of an increase in monetary policy rates have grown in response to persistently high inflation. Higher long-term interest rates have weighed on global equity prices, particularly among firms that were highly valued because of expectations of strong earnings growth in the future (such as some technology firms). In the United States, the NASDAQ index has declined by more than 10 per cent since the start of the year. Markets expect policy rates in many economies to generally remain below rates that historically have been needed to slow inflation back to central banks' targets. Further reassessments in the outlook for monetary policy are plausible, which could result in sharp increases in interest rates and disruptive adjustments in financial markets.

Following Russia's invasion of Ukraine, measures of compensation for investor risk increased from low levels and European equity prices fell sharply, although these moves were later reversed (Graph 1.3). A sharp and sustained rise in risk premia – triggered, for example, by an escalation in the conflict or a reassessment in the economic outlook – would result in

Graph 1.2

Equity Prices

1 September 2021 = 100



Source: Bloomberg

significant declines in asset prices, which could be amplified by pre-existing vulnerabilities in financial markets. Leverage in financial markets (some of which is hidden) can amplify large price falls as investors sell assets to meet margin calls. Reduced intermediation in government bond markets could generate dysfunction in the event of large movements in interest rates or risk sentiment, similar to the March 2020 ‘turmoil’ in financial markets. However, while liquidity conditions in government bond markets deteriorated following Russia’s invasion of Ukraine, this was by much less than at the onset of the COVID-19 pandemic.

Conditions in short-term funding markets have tightened amid recent market volatility, but funding markets have generally functioned well. Nevertheless, as demonstrated at the onset of the pandemic, money market funds (MMFs) remain vulnerable to sudden and disruptive redemptions and to challenges in selling assets, particularly under stressed conditions. In October 2021, the FSB issued policy proposals to address these vulnerabilities. The proposals include mechanisms such as ‘swing pricing’ to impose the cost of redemptions on investors, and rules that would reduce the degree of liquidity transformation undertaken by MMFs. In December, the US Securities and Exchange Commission proposed MMF regulatory reforms

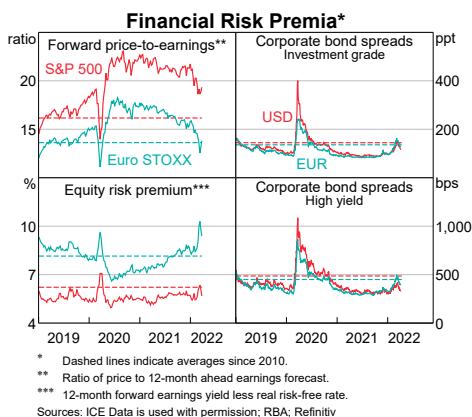
that included elements of the FSB’s recommendations; other jurisdictions are also progressing domestic MMF reforms.

Housing credit and price growth have slowed in some advanced economies, but remain high

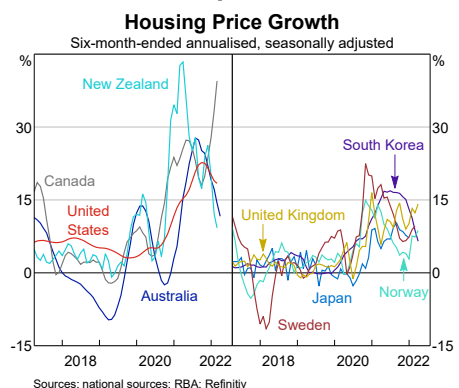
Housing prices have continued to rise strongly in many advanced economies (Graph 1.4). Regulators in Canada, New Zealand and several European countries have pointed to signs of overvaluation in housing. Rapid price growth and overvaluation increase the risk of a sharp fall in housing prices, which could cause indebted households to decrease consumption and increases the risk of losses from default. Demand for housing has been underpinned by low interest rates, a large build up in household savings during the pandemic and a shift in demand towards larger and/or better quality living space. Global supply chain disruptions are delaying housing completions and increasing building costs, exacerbating supply constraints. However, there are early signs that growth in housing prices is beginning to slow in some countries, with Canada a significant exception.

Housing credit growth has slowed in many advanced economies, with Australia and the United States notable exceptions (Graph 1.5). Nevertheless, strong housing credit growth

Graph 1.3



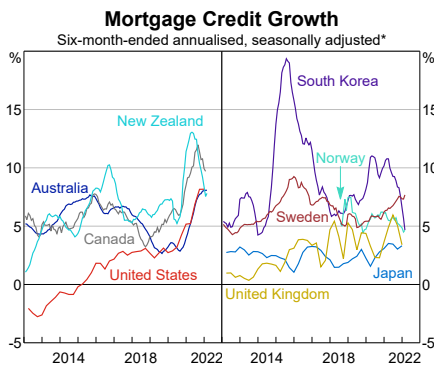
Graph 1.4



since the start of the pandemic has contributed to rising household indebtedness, which has been cited as a vulnerability by regulators in a number of jurisdictions. Some regulators have expressed concerns about debt serviceability alongside rising mortgage rates, particularly for those loans with high debt-to-income (DTI) or loan-to-income (LTI) ratios. High-DTI and high-LTI lending has increased in Australia, Canada, New Zealand, Sweden and in some euro area countries; debt serviceability will be more difficult for those borrowers if household income growth does not keep pace with rising inflation.

Authorities have continued to respond to housing market vulnerabilities. In Germany and Switzerland, sectoral capital buffers for housing exposures have been announced at 2 per cent and 2.5 per cent of housing risk-weighted assets, respectively. In New Zealand, a number of policy changes addressing high-risk lending and strong housing price growth have been implemented; legislative changes late last year require lenders to now conduct more extensive checks on borrowers' income and expenses, which – alongside other policy changes and higher interest rates – have led to a slowdown in credit growth.

Graph 1.5



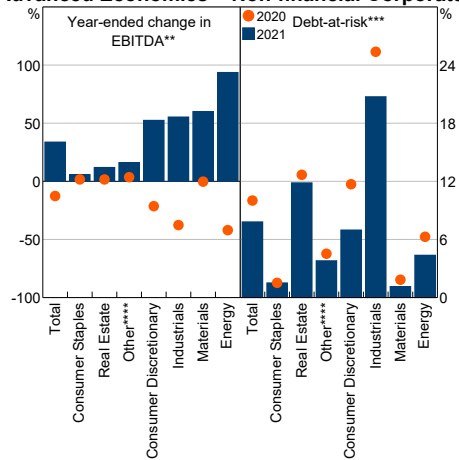
* Data for Japan, the United Kingdom and the United States are two quarter annualised rates.
Sources: national sources; RBA; Refinitiv

Corporate earnings have improved, but risks are still elevated in pandemic-affected sectors and for smaller businesses

Corporate earnings have continued to recover alongside stronger economic activity (Graph 1.6). Earnings of listed companies were around 23 per cent higher in 2021 relative to 2019 in the United States and 8 per cent higher in the euro area. Earnings are forecast to grow by around another 15 percentage points and 11 percentage points, respectively, in 2022. However, the recovery in earnings has lagged for companies in industries where the pandemic continues to restrict activity, such as the international travel and leisure sectors. In many advanced economies, small and medium-sized enterprises (SMEs) continue to recover more slowly than large companies and risks remain elevated for these firms. During the pandemic, SMEs took on significant amounts of debt and were also more reliant on government support, which has now been largely withdrawn.

Graph 1.6

Advanced Economies – Non-financial Corporates*



* Includes companies from Australia, Canada, Japan, New Zealand, the United Kingdom, the United States and 16 developed European countries.
** EBITDA = earnings before interest, tax, depreciation and amortisation.
*** Share of total debt for companies with interest coverage ratio below 1.
**** 'Other' includes utilities, information technology, health care and communication services.
Sources: RBA; S&P Capital IQ

Corporate debt as a ratio to GDP remains at historically high levels in some economies – at around 100 per cent in Canada and Japan, and nearly 80 per cent in the United States. Although strong earnings growth has improved businesses' overall debt servicing ability in most industries, tightening financial conditions could expose vulnerabilities, particularly for highly indebted corporations. Higher interest rates have already increased debt servicing costs for some businesses, and over time could be challenging for more firms, particularly for those whose margins have declined due to rising input costs. The share of firms in advanced economies with an interest coverage ratio below 1 (i.e. firms with interest expenses in excess of earnings) remains particularly elevated relative to pre-pandemic levels in the industrials and consumer discretionary sectors. Market analysts expect that weaker economic growth and higher interest rates will contribute to higher corporate default rates in 2022 – although default rates are expected to remain low by historical standards. Prior to the conflict in Ukraine, stronger economic conditions had seen 12-month trailing default rates for high-yield corporate bonds fall to around 1.5 per cent in the United States and 1.2 per cent in Europe.

Prospects for different types of commercial real estate (CRE) continue to reflect the impact of structural change, including from the pandemic. Industrial property prices have grown strongly, driven by demand for data centres and distribution centres. In the retail and office sectors, the shift toward e-commerce and remote working – as well as a growing appetite for environmentally friendly, health-conscious spaces – is reducing demand for lower quality properties. Financial stability risks stemming from CRE remain contained in many advanced economies, but valuations would face pressure if interest rates were to increase significantly.

Banks' capital requirements will increase in several countries

Capital ratios for a number of large banks have decreased over the past few months, due to capital distributions and/or increases in risk-weighted assets. Regulators in France, Germany, Norway, Switzerland and the United Kingdom have announced increases in their countercyclical and/or sectoral capital buffers, partly reflecting rising vulnerabilities. The European Central Bank (ECB) has increased overall capital requirements marginally for banks in the euro area, and reiterated concerns over some banks' internal governance, risk management, business models or capital planning. Large banks' capital ratios are high enough to meet these additional requirements without having to raise extra capital.

Large banks' profitability has risen further over the past six months, with return on equity now around 1–3 percentage points higher than pre-pandemic levels for most advanced economies (Graph 1.7). Elevated levels of corporate financing activity (partly driven by the low level of interest rates) have boosted investment banking revenues and supported bank profits. More recently, net interest income has also been supported by considerable lending growth for some banks. Most banks have continued to decrease their stock of loan-loss provisions alongside the strong global economic recovery to date. Non-performing loans (NPLs) have increased at a few large banks, although overall credit quality remains strong and NPL ratios are at low levels for most major banks. Regulators are closely monitoring the credit quality of banks' loans given the removal of pandemic support policies.

Notwithstanding recent profitability, low interest rates have compressed bank net interest margins (NIMs) for several years in some countries (particularly in the euro area and Japan) as lending rates have declined while deposit rates have generally not fallen below

zero. A sustained increase in policy and market interest rates should see NIMs increase as lending rates rise, supporting profitability. However, rising interest rates could be a risk to the credit quality of banks' assets if higher debt servicing costs are not matched by higher incomes. Rising interest rates could also lower demand for loans, capital market activity and investment-related advisory services (including mergers and acquisitions), which have been important sources of revenue for banks in recent times.

Structural challenges remain for banks in the euro area and Japan, where profitability continues to be constrained by overcapacity, low efficiency and compressed NIMs from low interest rates. Slower economic growth due to the war in Ukraine is likely to further weigh on bank profitability in the euro area. Euro area banks hold a large share of the pandemic-driven increase in sovereign debt and are vulnerable to sovereign debt sustainability concerns. Some euro area banks also entered the pandemic with high levels of NPLs, and the ECB has raised concerns about the adequacy of provisioning and other credit risk processes for several institutions. Nonetheless, euro area banks have improved provision coverage for NPLs considerably since the end of 2020, partly in anticipation of the implementation of Pillar

2 capital add-ons targeting inadequate provisioning for longstanding NPLs. In Japan, large banks continue to invest in riskier overseas credit products in search of higher yields given excess domestic deposits.

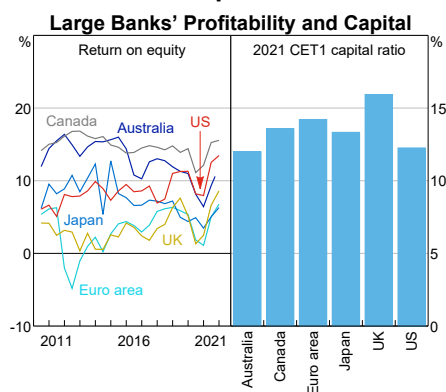
Stablecoins and other crypto-assets pose a small but increasing risk to financial stability

There has been strong growth in the market capitalisation of crypto-assets, particularly stablecoins, over the past year. Stablecoins are privately issued crypto-assets that are designed to maintain a stable value against fiat currencies (particularly the US dollar) or other assets (such as gold). The total market capitalisation of the largest stablecoins pegged to the US dollar increased by more than 400 per cent over 2021 to around US\$145 billion, while the value of all crypto-assets increased by 250 per cent to US\$2.2 trillion (close to 5 per cent of the value of the S&P 500) (Graph 1.8).

Stablecoin providers hold assets to back their stablecoins on issue, but are not required to disclose the composition of those assets. For some providers, these assets comprise a mix of commercial paper, other short-dated securities, cash, loans and other crypto-assets, which exposes these providers to credit, liquidity and currency risks. Some stablecoins are therefore vulnerable to runs, which could lead to fire sales of the assets that back them, potentially disrupting critical funding for traditional market participants. There is also a chance that a run on one stablecoin would precipitate a run on other stablecoins given the lack of transparency and assumed similar asset holdings.

At present, risks to the broader financial system from crypto-assets other than stablecoins remain contained due to their small scale relative to, and limited direct links with, the broader traditional financial system. However, the rapid growth of crypto-assets and expanding interest from traditional institutional

Graph 1.7



Sources: APRA; RBA; S&P Global Market Intelligence

investors suggest these risks are likely to increase in the future. Correlations between the prices of prominent crypto-assets and equities have increased since around 2020, consistent with rising interest from institutional investors over this time.

Central banks, regulators and international bodies are examining the financial stability risks related to crypto-assets by: considering the different types of crypto-assets and the links between them; identifying the gaps in existing supervisory and regulatory frameworks; and determining the infrastructure required to build better resilience against the risks. The Basel Committee on Banking Supervision recently consulted on its proposed capital requirements for bank exposures to crypto-assets, and the FSB is facilitating coordination of regulatory work on global stablecoins among standard-setting bodies.

EMEs remain vulnerable to tighter global financial conditions

The war in Ukraine is expected to affect EMEs largely through higher commodity prices, higher inflation and a shift in risk sentiment. While many EMEs export commodities, they are generally more vulnerable to commodity price increases and volatility than advanced economies given their relatively high

expenditure on energy and food. Direct financial linkages between Russia and other EMEs are minimal, with foreign banking claims on Russia accounting for less than 0.1 per cent of EMEs' banking assets.

EMEs remain vulnerable to capital outflows if increased inflation, and the relatively faster recovery in advanced economies, narrows interest rate relativities with advanced economies. Capital outflows would contribute to exchange rate depreciations, raising the cost of servicing and rolling over foreign-currency denominated debt, and lead to higher inflation. Some EMEs may also be less resilient to future COVID-19 outbreaks given their relatively low vaccination rates.

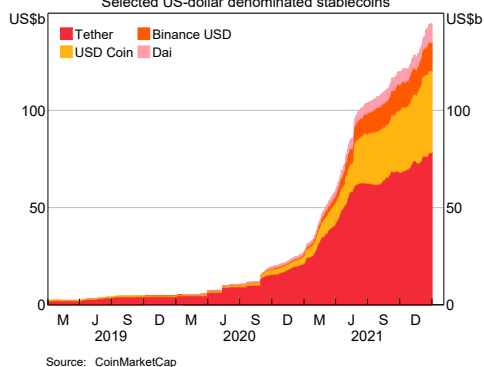
Vulnerabilities are higher in Latin America and Turkey. Central banks in Argentina, Brazil and Mexico have tightened monetary policy in response to high inflation, even as economic conditions remain weak, and markets expect further tightening (Graph 1.9). There have been net portfolio outflows, particularly from Latin America. The Turkish central bank cut its policy rate despite high inflation, and the Turkish lira has depreciated by around 40 per cent since September 2021 as a result. The share of foreign-currency denominated debt is relatively high in Turkey (around 40 per cent), and the depreciation has increased the cost of servicing and rolling over that debt.

Vulnerabilities are less prevalent among Asian EMEs, where financial systems have been resilient and there is less reliance on foreign-currency denominated debt. As a share of GDP, foreign exchange reserves in Asia are around one-third higher on average relative to other EMEs. Capital adequacy ratios increased in Asia in the fourth quarter of 2021; the average Common Equity Tier 1 capital ratio is 4 percentage points higher than in other EMEs (Graph 1.10). Inflationary pressures have also been more subdued in Asia. However, vulnerabilities in the Indian banking system remain

Graph 1.8

Stablecoin Market Capitalisation

Selected US-dollar denominated stablecoins



elevated, with higher NPL ratios and lower capital levels than other Asian banking systems. Forbearance measures have expired in India, but NPLs are expected to decline given the improved outlook for the Indian economy and efforts by banks to dispose of bad debt.

Temporary measures that allow EME banks to delay recognition of NPLs during the pandemic may be masking true asset quality, particularly on SME loans. NPLs are likely to rise as these measures expire, which will not be until 2023 for some EMEs. A high share of loans (around 30 per cent) was restructured under these

measures in Malaysia, compared with Indonesia and Thailand (around 15 per cent). The Bank of Thailand has recently encouraged banks to establish joint ventures with asset management companies to dispose of NPLs.

China's response to its latest COVID-19 outbreak could exacerbate global supply chain pressures and put pressure on its financial system

China has imposed stringent mobility restrictions in a few large cities over the past few weeks, including Shanghai and Shenzhen. If authorities impose extended restrictions in an effort to control outbreaks, then there is likely to be further pressure on global supply chains, potentially contributing to even higher inflation. In the absence of support measures, extended restrictions will also reduce incomes in these cities and constrain the ability of household and business borrowers to repay their loans, leading to losses for banks and shadow banking entities.

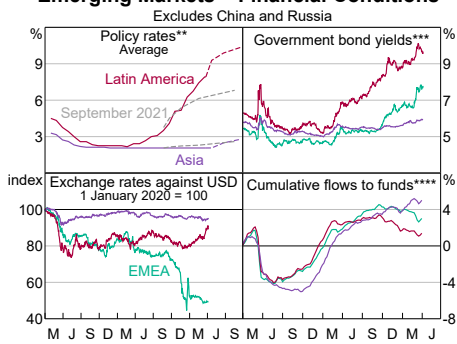
Stress among Chinese property developers remains acute but has not spread to the broader financial system

The financial health of Chinese property developers has deteriorated significantly since the previous *Financial Stability Review* and private developers now face severe funding difficulties. A number of major private developers have defaulted on US dollar bonds (including Evergrande and Kaisa), extended bond maturities and defaulted on loans. The sector now faces significant funding difficulties, with private developer bond yields increasing sharply over the past few months and equity prices falling by around 50 per cent since the start of 2021. Bond yields and equity prices have generally remained stable for most state-owned developers (Graph 1.11).

Some Chinese property developers have started debt restructuring processes that are likely to take several years to resolve, and markets expect

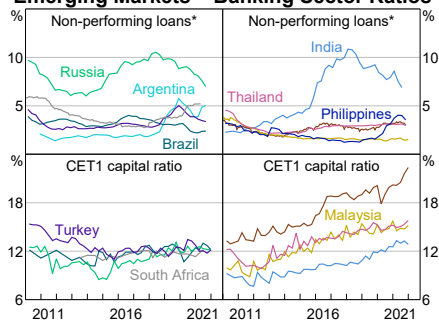
Graph 1.9

Emerging Markets – Financial Conditions*



Graph 1.10

Emerging Markets – Banking Sector Ratios



further defaults on the US\$36 billion of US-dollar denominated debt due to mature this year. Reliance on off-balance sheet financing may also obscure property developers' total leverage and cause investors to underestimate risks. Notwithstanding their longer-term goal of reducing leverage in the property sector, Chinese authorities have implemented a number of support measures amid elevated stress in the sector. Authorities have: lowered a few key policy rates and reserve requirement ratios; exempted any borrowing to fund mergers and acquisitions of stressed property assets from policies that restrict developer leverage; exempted lending to fund affordable housing projects from real estate loan concentration limits; and adjusted policy at local levels to strengthen demand for housing sales.

In addition to bonds and loans, some developers have also defaulted on off-balance sheet products, including trust loans and wealth management products. A loss of confidence in these products could spill over to the banking system because of the role banks play in their issuance and distribution, and their importance as a source of funding for the financial system. New regulations on asset management products that took effect in December

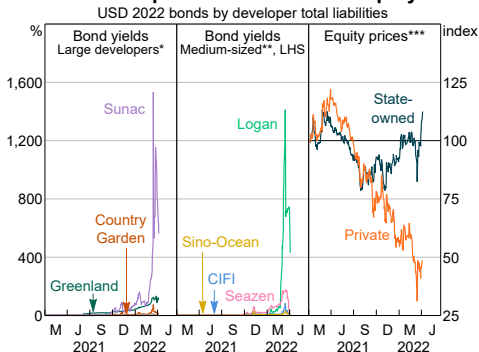
2021 have improved transparency, which should minimise the risk of a sudden loss of confidence stemming from product opacity, and serve to reduce both explicit and implicit guarantees. More broadly, shadow financing has also contracted, with the stock of shadow financing relative to GDP decreasing by 5½ percentage points since the start of 2021 (Graph 1.12).

Stress in the property development sector has increased risks surrounding local government financing vehicles (LGFVs). Weaker demand for land by private developers has reduced local governments' revenue from land sales, which is an important source of their financing. This is a particular concern for local governments with weaker balance sheets. In fact, LGFVs – which are now legally separate from local government balance sheets in line with government policy in recent years – have been purchasing land and using it as collateral when borrowing. A sharp fall in land prices will lead to losses for creditors if these vehicles were to default. The authorities have been trying to reduce LGFV leverage and implicit guarantees; however, a sudden unwinding could erode confidence in the implicit guarantees that underpin much of the financial system.

Stress in the property development sector has had a limited effect on the general loan quality

Graph 1.11

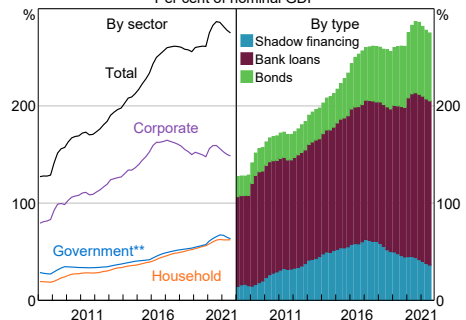
Chinese Developer Bond Yields and Equity Prices



* Developers with liabilities more than CNY500 billion.
 ** Developers with liabilities of CNY100–500 billion.
 *** Equity prices of largest developers excluding those that have defaulted on bonds; 4 Jan 2021 = 100.
 Sources: Bloomberg; RBA

Graph 1.12

China – Non-financial Sector Debt*



* Includes RBA estimates of shadow financing that is not included in total social financing.
 ** Includes some borrowing by local government financing vehicles.
 Sources: BIS; CEIC Data; RBA; WIND Information

of Chinese banks, despite the sector accounting for 6 per cent of bank loans at the end of 2021. NPLs as a share of total loans have been little changed at around 1.75 per cent, but are expected to increase slightly in coming months, particularly for loans to SMEs and the property sector. The authorities have been encouraging banks to increase asset write-offs and have strengthened frameworks for early detection and resolution of financial risks. The People's Bank of China also announced new measures to support continued lending to SMEs impacted by COVID-19, whereby banks negotiate repayment terms with SMEs; this could mask true asset quality until the program ends in 2023.

Capital adequacy at Chinese banks increased in 2021, but smaller banks continue to have lower levels of capitalisation and provisioning, higher NPLs and higher exposure to real estate and SMEs. Authorities are continuing to promote the consolidation of smaller rural and city commercial banks as a means of containing financial stability risks.

Corporate debt in China remains elevated, and has been a longstanding concern for the authorities. As a share of GDP, corporate debt decreased by 7½ percentage points over the first three quarters of 2021, but may increase in the short term alongside policies to stimulate economic growth. ❖

Box A

International Banks' Response to Climate Risk

Climate change can pose significant financial risks to banks and the broader financial system if left unmanaged.^[1] This is because more frequent and intense extreme weather events and higher average temperatures will reduce the value of certain assets and income streams of borrowers. As a result, banking regulators and banks have been increasingly focusing on climate risks.

However, assessing climate risks is complicated by the uncertainty of how climate change will affect banks. This box discusses how climate-related risks are being incorporated into regulatory frameworks and large banks' risk management practices in advanced economies.

Banks' exposure to climate-related risks

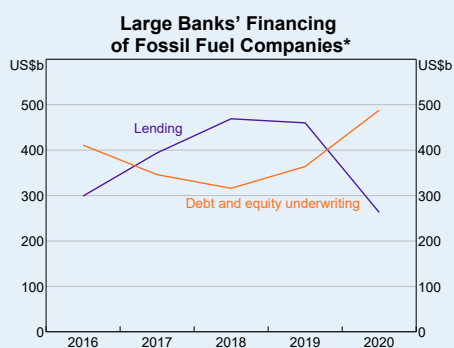
Climate risks are typically categorised as either transition risks or physical risks:^[2]

- **Transition risks** relate to potential losses that arise from the implementation of policies to address climate change, and from changes in technology, pricing and behaviours as a result of moving to a less emissions-intensive economy. These changes may occur via an 'orderly transition', allowing time for banks and firms to adapt, or they may occur rapidly in a 'disorderly transition', such that carbon-related assets could lose value quickly with some of these assets becoming economically unviable.
- **Physical risks** relate to financial losses from the direct physical effects of climate change – for example, where the

collateral underlying a loan is exposed to natural hazards intensified by climate change. Physical risks will intensify over time if limited transition takes place. Losses could be magnified if borrowers have inadequate insurance protection, including if climate change makes it prohibitively expensive or impossible to insure certain assets.

In advanced economies, banks' exposures to emissions-intensive industries are estimated to be 5–15 per cent of their total balance sheet assets.^[3] Globally, large banks' financing to fossil fuel companies (both direct lending and through facilitating capital raising in debt and equity markets) has been broadly flat since 2016 (Graph A.1).^[4] While debt and equity underwriting activities may not increase banks' climate-related exposures directly, they expose banks to reputational risks as a result of rising investor and public focus on climate change.

Graph A.1



* Over 2,300 companies financed by 60 banks in Australia, Canada, China, Europe, India, Japan, South Korea and the United States. Funding scaled by fossil fuel intensity.

Sources: BankTrack; Indigenous Environmental Network; Oil Change International; Rainforest Action Network; Reclaim Finance; Sierra Club

Banks are also exposed to climate risks via their interconnections (especially lending) with non-bank financial institutions (NBFIs), such as asset managers. Banks' assessment of these risks can be obscured as some NBFIs provide limited disclosures on the emissions intensity of their investments.^[5] As such, climate risk on banks' balance sheets could be realised rapidly, for example, if investors reprice climate risks because they become more certain about future policy and technology outcomes (which could lead to abrupt market adjustments) or if some of the physical effects of climate change are non-linear.

Regulators are taking steps to ensure banks manage climate risks

There are three aspects to how banking regulators have sought to manage climate-related risks to date: by seeking to understand the effects of climate change on banks; by strengthening disclosure and management requirements; and by addressing climate-related risks in regulatory policy and capital frameworks.

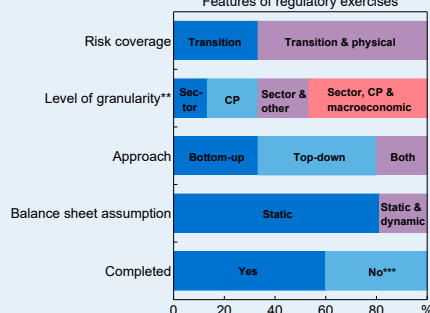
Understanding and assessing the effects of climate change on banks

Regulators have started to quantify (and to assess banks' own ability to quantify) climate risks. This work has a range of different objectives, from sectoral climate risk analysis to economy-wide climate vulnerability assessments, and employs a variety of methodologies (Graph A.2).^[6] For example, the approach may be top-down and/or bottom-up (which directly involves the financial institutions in the exercise), and may use varying assumptions about whether financial institutions' balance sheets are static or change over time. Authorities have

acknowledged that assessments conducted so far have limitations, but they provide useful starting points to understand the risks of climate change for banks.^[7] Regulators are working to refine their assessments for future tests in order to capture more aspects of climate risk.

Regulators in Canada, the euro area, France, Germany and the Netherlands have published the results of their pilot climate scenario analyses. Their results generally indicate that banks experience lower credit losses in orderly transition scenarios than in disorderly scenarios, because of smaller negative effects on banks' counterparties (e.g. companies) of an orderly transition. For example, the European Central Bank (ECB) found that the average increase in the probability of default for corporate loans with high climate risks by 2050 is much less in an orderly transition scenario than in a disorderly transition scenario, or in a 'current policies' scenario (that has no further action to mitigate climate change).^[8] Likewise, transition scenario analysis conducted by Canadian regulators highlighted that a

Graph A.2
Climate Scenario Analysis*
Features of regulatory exercises



* Based on analyses conducted by regulators from Australia, Canada, China, euro area, France, Finland, Germany, Hong Kong, Japan, Netherlands, Singapore, Spain, Switzerland and the United Kingdom.

** Level at which risks are considered. CP refers to counterparty, and sector & other refers to either sector and counterparty or sector and macroeconomic.

*** Some regulators have completed the initial phase and are working on the next phase.

Sources: Network for Greening the Financial System; RBA

delayed or sudden shift in climate policy poses greater risks of financial market dislocation and a larger overall impact on credit risks than an orderly transition.^[9] Regulators in the United Kingdom are in the midst of conducting a full bottom-up climate vulnerability assessment and intend to publish results later this year, while the US Federal Reserve is developing tools to conduct its own analysis.

In Asia, the People's Bank of China (PBC) carried out a climate analysis covering three emissions-intensive sectors under scenarios with varying levels of carbon prices. Overall, participating banks were found to be resilient to the increase in defaults, given banks' exposure to the three sectors comprised a relatively small share of total loans. The PBC intends to conduct further climate analysis covering more sectors and macroeconomic scenarios in the future.^[10] Results from the Hong Kong Monetary Authority's climate analysis found that banks faced higher costs under a disorderly transition relative to an orderly transition scenario, but were resilient overall. Banks were also found to face substantial losses linked to residential mortgages in Hong Kong in a separate physical risk scenario.^[11] The Monetary Authority of Singapore (MAS) indicated that a considerable share of Singaporean banks' lending could be exposed to transition risks.^[12] The MAS intends to incorporate scenarios with climate risks as part of its annual Industry-wide Stress Test in the near future. Japanese regulators have started to work on climate-related assessments and intend to complete their pilot scenario analysis on major banks in 2022.

Strengthening requirements around banks' disclosure and management of climate-related risks

Some regulators have issued (or plan to issue) supervisory expectations for banks to disclose, manage and incorporate sustainability and/or climate-related risks – including Canada, the euro area, France, Germany, Hong Kong, the Netherlands, Singapore, Spain and the United Kingdom.

Regulators in China have also published guidelines on climate-related disclosures for banks, and indicated their intention to set up a mandatory disclosure system with uniform standards for financial institutions and companies to promote information-sharing. Moreover, the euro area, Hong Kong, New Zealand, Singapore, Switzerland and the United Kingdom have announced mandatory disclosure requirements for large companies and financial institutions, based on recommendations by the Task Force on Climate-related Financial Disclosures (TCFD).^[13] The TCFD was established by the Financial Stability Board in 2015 to improve and encourage consistent reporting of climate-related financial information.

Addressing climate-related risks in regulatory policy and capital frameworks

The PBC intends to gradually incorporate climate risks into its macroprudential policy framework and could also consider calibrating risk weights based on its assessment of banks' 'green' and 'brown' assets (although the taxonomy on green and brown assets is still evolving).^[14] The United Kingdom's Prudential Regulation Authority stated that banks could face increased scrutiny and supervisory actions, including (Pillar 2) capital add-ons, if their responses to climate change are deemed insufficient.^[15]

Similarly, the ECB stated that Pillar 2 capital requirements could be used to address the climate risk exposures of individual banks.^[16]

Domestically, the Australian Prudential Regulation Authority (APRA) is working with Australia's largest five banks to gain a better understanding of their potential exposure to climate-related risks. As part of this work, APRA is leading a Climate Vulnerability Assessment (CVA) – a bottom-up exercise featuring two climate scenarios: a delayed transition scenario with high transition risks; and a current policies scenario with more severe physical risks due to limited climate action. Results from the CVA are expected to be released in the second half of 2022 (see 'Chapter 3: The Australian Financial System').^[17] In November 2021, APRA finalised a TCFD-aligned prudential practice guide on disclosing and managing climate-related financial risks for regulated entities. In March 2022, APRA commenced a survey of medium-to-large APRA-regulated entities that asks them to self-assess how their current practices align with APRA's prudential practice guide on climate risk.

Large banks are responding to climate risks on their balance sheets

Large banks in advanced economies are responding to climate-related risks via improved risk management, disclosure and governance, public commitments to reduce emissions and supporting the green economy.

Risk management

The 31 largest banks across major advanced economies have added climate-related risks to their risk management frameworks.^[18] For example, all of these large banks have carried out some materiality assessments, most

monitor climate-related risks on parts of their outstanding loans and over two-thirds have stated that they formally incorporate climate-related risks in their risk appetite statements. However, these frameworks are generally not comprehensive and remain mostly qualitative and selective, and banks often rely on loan officer or management opinions for climate-related considerations in credit decisions. Nonetheless, large banks increasingly report an intention to quantify emissions linked to their investment and lending portfolios, and to reduce their holding of emissions-intensive assets as part of managing their transition risks (Figure A.1). These banks have also communicated that they will increase financing and support for 'clean' energy sectors, including through the use of more renewable energy in their own operations.

All of the large banks analysed here have communicated that they are exploring methods to better quantify climate-related risks or are in the process of refining methods and improving data coverage and quality. Most have conducted at least a couple of climate scenario assessments apart from regulatory exercises; many have used scenarios developed by their regulators or international bodies. However, most assessments have covered only segments of their balance sheets and over two-fifths of these banks did not disclose their results. The area in which banks have made more progress is in embedding climate-related risks in credit risk management. This includes collecting climate-related information and emissions data from new and existing counterparties for risk assessments. The emphasis on credit risk over other types of risks is likely to reflect the concentration of climate-related vulnerabilities in – and the

securities are shorter dated and/or could be readily sold in financial markets. However, abrupt price adjustments could result from changes in investors' risk appetite or climate policies. Banks are also less progressed in considering how climate-related risks could affect their ability to access funding. In managing credit risks, banks have focussed less on incorporating climate-related risks in collateral valuation and loan pricing, particularly for the management of physical risks (Graph A.3). This leads to the possibility of vulnerabilities building up, such as for properties exposed to the impacts of climate change. Smaller banks are also generally less advanced than large banks in recognising the materiality and management of climate-related risks.

Disclosure and governance

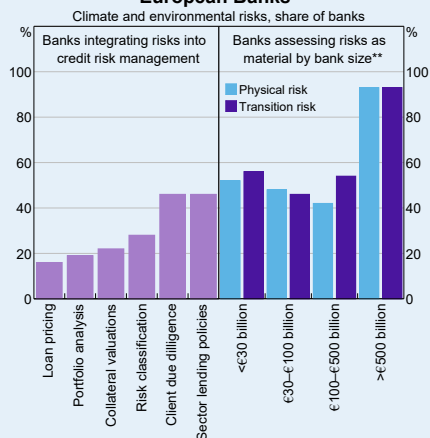
Most banks are increasingly aligning their climate reporting with TCFD recommendations, with large European banks providing relatively more detailed climate reporting than banks in other

jurisdictions. The banking sector as a whole was below average in the implementation of over half of the TCFD recommendations relative to other industries covered by the 2021 TCFD status report, such as for metrics and targets (although they were slightly above average for disclosing risk management practices).^[20] Moreover, disclosures remain largely qualitative with more emphasis on green financing or related topics. Disclosures also vary considerably in the level of detail between banks. Nonetheless, an increasing number of large banks have started to disclose emissions linked to their lending since late 2021, though mostly only for a small part of their corporate loan portfolio.

Almost all large banks in major advanced jurisdictions have improved their internal governance around climate-related issues, including through explicitly assigning responsibility to manage climate-related opportunities and risks. However, not many banks include specific climate-related metrics beyond operational emissions or sustainable financing targets in executives' variable payments, which could lead to selective and narrowly focused responses.

Graph A.3

European Banks*



* Based on 112 banks directly supervised by the ECB.
 ** Bank size by assets.
 Source: ECB

Public commitments and funding the green economy

The largest 31 banks in major advanced jurisdictions have all joined the Net-Zero Banking Alliance (NZBA), publicly committing to achieving net zero emissions in their operations, lending and investment activities by 2050. However, only three of these banks have so far committed to halve overall emissions linked to their financing activities by 2030. To date, around three-fifths of large banks have published some emissions-based interim targets or transition roadmaps for

shifting lending away from emissions-intensive sectors, and a small share have started tracking their performance against these commitments.

Banks also play a role in funding green activities and facilitating capital flows to these activities, both of which could be a source of significant revenue as countries work to mitigate climate change. For example, the value of green bonds that banks have helped bring to market globally has grown significantly over the past several years. Some banks offer discounted lending rates for energy-efficient homes and electric or hybrid cars (green mortgages and car loans). Regulators globally have actively supported the provision of sustainable finance, through improving the taxonomy on green finance and/or providing incentives to banks (e.g. the Bank of Japan and the PBC provide low-cost funding for green loans made by banks).

Banks need to do more to meet regulators' expectations

Major international banks have increased their efforts to improve governance and risk management practices regarding climate risks, and have made public commitments to reduce investing and lending in companies and activities that generate emissions. Nevertheless, regulators (including in the euro area,

Germany, the Netherlands and the United Kingdom) have indicated that banks need to further accelerate their response in order to meet supervisory expectations.^[21] For example, banks must disclose and assess exposures to climate risk more comprehensively and be more transparent about the methods and assumptions underlying their risk assessments, criteria and metrics.

A smooth transition to a less emissions-intensive global economy will require effective and comprehensive risk identification and management frameworks so that banks can correctly price credit and market risks. Effective assessment and market pricing of climate risk also require the banking system to have consistent and transparent disclosures. Standardised sustainability disclosures and metrics are emerging, including through the efforts of regulators, international bodies and private initiatives. For example, the newly established International Sustainability Standards Board recently launched a consultation on proposed standards. The ongoing work of the TCFD as well as private sector initiatives such as the NZBA will also encourage better and more standardised climate risk disclosures. ✎

Endnotes

[1] For further discussion of the financial risks posed by climate change, see Financial Stability Board (2020), 'The Implications of Climate Change for Financial Stability', 23 November.

[2] Climate-related risks will generally manifest for banks in the form of higher credit, market, liquidity and operational risks. Litigation risk is also emerging as a discrete risk category arising from

climate change, given the rapid increase in climate-related legal actions over the past years. See Kearns J (2021), 'Evolving Bank and Systemic Risk', Speech at the 34th Australasian Finance and Banking Conference, 16 December.

[3] See Financial Stability Board, n 1; Bank of Canada and the Office of the Superintendent of Financial Institutions (2021), 'Using Scenario Analysis to

- Assess Climate Transition Risk', November; European Central Bank (2021), 'Climate-related Risk and Financial Stability', July; other climate-related reports from large banks in advanced economies. Industries included in these calculations vary between sources.
- [4] See Rainforest Action Network, BankTrack, Indigenous Environmental Network, Oil Change International, Reclaim Finance, Sierra Club and Urgewald (2022), 'Banking on Climate Chaos: Fossil Fuel Finance Report 2022', 30 March.
- [5] The share of asset managers reporting on Scope 1, 2 and 3 emissions is low, at 8 per cent. For more details, see Financial Stability Board (2021), 'Task Force on Climate-related Financial Disclosures 2021 Status Report', 14 October.
- [6] For more information, see Network for Greening the Financial System (2021), 'Scenarios in Action: A Progress Report on Global Supervisory and Central Bank Climate Scenario Exercises', October.
- [7] For example, static balance sheet assumptions may overestimate climate impacts resulting from shorter-dated assets. Conversely, some exclusions of exposures (e.g. to households) in these assessments are likely to underestimate climate impacts for banks.
- [8] See European Central Bank (2021), 'ECB Economy-wide Climate Stress Test', September.
- [9] See Bank of Canada and the Office of the Superintendent of Financial Institutions, n 3.
- [10] See People's Bank of China (2022), 'Box 5: Exploring Climate Risk Stress Testing', PBC *Monetary Policy Report*, 11 February. The climate scenario analysis covered thermal power, cement and steel sectors.
- [11] See Hong Kong Monetary Authority (2021), 'Pilot Banking Sector Climate Risk Stress Test', December.
- [12] The MAS also estimated emissions linked to activities and sectors financed by these loans with higher transition risks, and found around half of them are lent to the housing (building and construction) sector with relatively lower emissions intensity (emission per million dollars). See Monetary Authority of Singapore (2021), *Financial Stability Review*, December.
- [13] The US Securities and Exchange Commission also recently released draft climate disclosure rules for public comment. See US Securities and Exchange Commission (2022), 'SEC Proposes Rules to Enhance and Standardize Climate-Related Disclosures for Investors', Press Release, March.
- [14] Yi Gang (2021), 'Green Finance and Climate Policy', Opening Remarks at a High-Level Seminar on Green Finance and Climate Policy, 15 April; Yi Gang (2021), 'Central Banks and Climate Change: How to Manage Expectations, Balance Actions and Communication and Contribute to Coordinate with Other Important Actors?', Concluding Panel Speaker at the Green Swan Conference, 4 June.
- [15] Bank of England (2021), 'PRA Climate Change Adaptation Report 2021', 28 October.
- [16] Baranović I, I Busies, W Coussens, M Grill and H Hempell (2021), 'The Challenge of Capturing Climate Risks in the Banking Regulatory Framework: Is there a Need for a Macroprudential Response?', ECB *Macroprudential Bulletin*, 19 October.
- [17] See also RBA (2021), 'Box A: Australian Financial Regulators' Actions on Climate Change-related Risks', *Financial Stability Review*, October.
- [18] The assessments of banks in this section are mainly based on latest available climate or sustainability reports from 31 large banks in Canada, the euro area, Japan, Switzerland, the United Kingdom and the United States at the time of writing.
- [19] For example, the ECB estimates that 52 per cent of corporate loans in the euro area are in climate policy sensitive sectors, compared with 39 per cent in securities holdings: European Central Bank, n 3.
- [20] The TCFD status report presents the share of companies across eight industries that disclosed climate-related financial information aligning with the TCFD recommendations in 2020. See Financial Stability Board, n 5.
- [21] For more information, see BaFin (2021), 'Sustainability Risks – Executive Summary of BaFin's Status Survey', 18 November; Bank of England, n 15; European Central Bank (2021), 'The State of Climate and Environmental Risk

Management in the Banking Sector',
22 November; European Central Bank (2022),
'Supervisory Assessment of Institutions' Climate-
related and Environmental Risks Disclosures',
14 March; De Nederlandsche Bank (2021),
'Balancing Sustainability: Integrating Sustainability
Risks into the Core Processes of the Financial
Sector', 7 December.

2. Household and Business Finances

Household and business balance sheets have in aggregate strengthened over the past six months, aided by the resilience of the Australian economy to further waves of COVID-19. Business revenue has increased and household incomes have been supported by strong employment growth as fiscal assistance has tapered off. Most indebted households have benefited from strong growth in housing prices over the past year and, coupled with higher mortgage payments in excess of scheduled requirements, the vast majority have accumulated substantial additional equity in their homes. The low interest rate environment has also helped many households and businesses to add to their already-substantial buffers and the incidence of financial stress remains very low. In addition, there continue to be few signs of financial stress for commercial property landlords, despite challenging conditions in some retail and office markets.

Near-term financial stability risks stemming from the COVID-19 pandemic have eased, but a small share of borrowers remain vulnerable to declines in their cash flows. For households, this includes those that are both highly indebted and have low excess payment buffers to draw on if required. For businesses, it is those with relatively low cash buffers, and those facing ongoing weak revenue growth and/or rising cost pressures. Increases in interest rates – which are anticipated by market participants over the next couple of years – would result in higher debt repayments for many households and businesses, but most are well placed to absorb these. However, there are some risks around

borrowers' capacity to pay if rising inflation is not accompanied by faster household income growth and rising business profitability.

Looking further ahead, medium-term systemic risks remain elevated and so it is critical that lending standards remain strong. Although the vast majority of households are well placed to repay their debt, the aggregate household debt-to-income (DTI) ratio has edged higher, and the increased share of new housing loans with a high DTI ratio indicates that some new loans could be relatively risky (see 'Box B: How Risky is High-DTI and High-LVR Lending?'). Against this backdrop, the recent increase in the interest rate buffer that the Australian Prudential Regulation Authority (APRA) expects lenders to use in their loan serviceability assessments will have reduced the supply of credit to new borrowers who are most susceptible to finding difficulty in making repayments. It is important that lending standards do not slip and that borrowing and lending decisions are resilient to higher interest rates and the potential for falls in housing prices and/or real incomes.

Strength in household balance sheets has been underpinned by high savings, the strong labour market and rising housing prices

The financial resilience of the household sector as a whole has improved since the start of the pandemic. Growth in aggregate household assets has exceeded that in household debt since mid-2020 (Graph 2.1). This reflects broad-based growth in housing prices and high saving rates. Moreover, with unemployment and

underemployment rates at low levels, households are less vulnerable than previously to a sustained fall in labour income.

Increases in equity and liquidity buffers have not only been evident in aggregate, but also for most individual households, including those that hold debt. The broad-based strength in housing prices has resulted in substantial increases in home equity for almost all indebted homeowners. Estimates using the Reserve Bank’s Securitisation dataset indicate that only around 5 per cent of loans have an outstanding loan-to-valuation ratio (LVR) greater than 75 per cent, compared with almost one-quarter at the beginning of 2020. The share of loans in negative equity is also estimated to be exceptionally low, at less than ¼ of a per cent, down from 2¼ per cent in January 2020 (Graph 2.2).

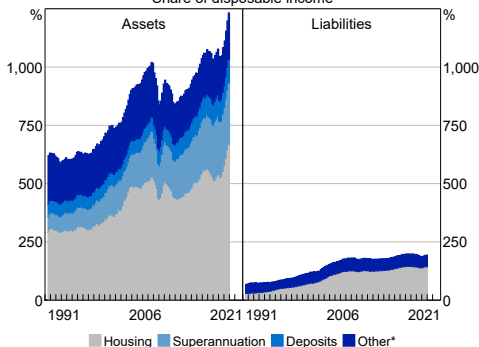
Increases in savings have also been evident for most households over the past couple of years. This largely reflects a combination of reduced consumption opportunities due to the pandemic, low interest payments on existing debt and significant fiscal policy support for household incomes. Although dated, survey data for 2020 indicate that real household disposable income and household saving

increased across the income distribution over the first year of the pandemic. That said, around 10 per cent of households surveyed reported that they had needed to draw on their savings due to the impact of the pandemic.

Indebted owner-occupier household saving is largely in the form of payments into mortgage offset and redraw accounts. The flow of these payments in excess of scheduled requirements was equivalent to around 2.5 per cent of household disposable income in the December quarter of 2021, compared with an average of around 1 per cent in the two years preceding the pandemic. Securitisation data suggest that the median excess payment buffer for owner-occupiers with a variable-rate loan was equivalent to around 21 months’ worth of scheduled payments in February 2022, up from around 10 months’ worth at the start of the pandemic (Graph 2.3). However, for those with lower initial payment balances, the increase has been much smaller. The increase in payment buffers partly reflects the impact of lower interest rates on minimum repayments. If interest rates were to increase by 200 basis points, current excess payments would be equivalent to just under 19 months of scheduled payments.

Graph 2.1

Household Balance Sheet
Share of disposable income

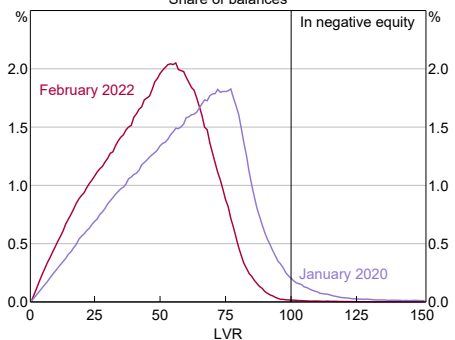


* Other assets include financial assets held outside of superannuation or deposits, consumer durables and all other non-housing non-financial assets; other liabilities include personal credit, student loans and all other non-housing liabilities.

Sources: ABS; APRA; RBA

Graph 2.2

Outstanding LVR Distribution*
Share of balances



* Loan balances adjusted for redraw and offset account balances; property prices estimated using SA3 price indices.

Sources: ABS; CoreLogic; RBA; Securitisation System

Increases in payment buffers for owner-occupier variable-rate loans have been broad based, with almost two-thirds of these loans recording higher buffers since the start of 2020. Of these, around 70 per cent have increased the stock of their buffers by six months or more. More broadly, around three-quarters of owner-occupier variable-rate loans currently have excess payment buffers of at least three months, compared with around two-thirds at the start of the pandemic.

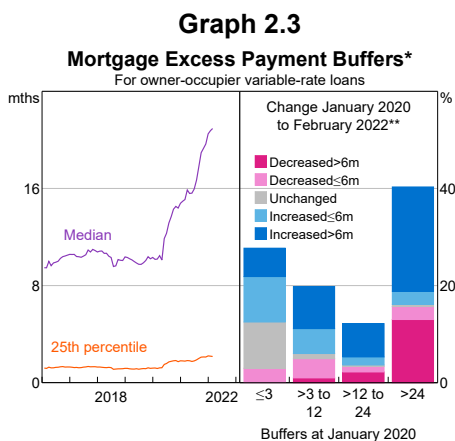
It is more difficult with available data to gauge the size of liquidity buffers for households with investment or only fixed-rate loans. These borrowers face disincentives to prepay their mortgages and so are more likely to hold their savings in other forms. While there has been an increase in the share of fixed-rate lending over the past couple of years, some fixed-rate borrowers have a split loan and have accumulated large payment buffers in the variable-rate component of their loan.

The incidence of household financial stress is low and declining, but a small share of households are vulnerable to cash flow shocks ...

Consistent with the broad-based strength in aggregate household balance sheets, the incidence of household financial stress remains very low. The share of APRA-regulated lenders' non-performing housing loans was just 0.9 per cent at the end of 2021 – lower than before the pandemic (see 'Chapter 3: The Australian Financial System'). Almost all borrowers who have exited loan payment deferral arrangements available earlier in the pandemic are now up to date with their repayments. The recent strength in employment is likely to have offset the unwinding in fiscal policy support for most indebted households. For the small number of borrowers who are currently experiencing repayment difficulties, liaison with banks indicates that the vast majority had been experiencing problems prior to the pandemic, and that early indicators of financial stress in other borrowers (such as households reducing their prepayments) remain very low.

Households in flood-affected areas of New South Wales and Queensland are facing significant challenges. To alleviate near-term financial challenges, government disaster-relief payments and hardship assistance from lenders have been made available. Recent estimates suggest that the number of insurance claims is higher than following the 2011 Queensland floods and Cyclone Yasi; although, to date, the total value of claims has been lower as fewer homes require rebuilding. Banks direct exposures to the most heavily affected households are small relative to total lending.

More broadly, the small share of borrowers with low liquidity buffers are more likely than other borrowers to have their financial resilience tested if they experience an adverse shock to their incomes or expenses, including through



* Offset plus redraw balances; measured in months of minimum repayments; excludes split loans.
 ** Expressed as a share of owner-occupier variable-rate loans.
 Sources: RBA; Securitisation System

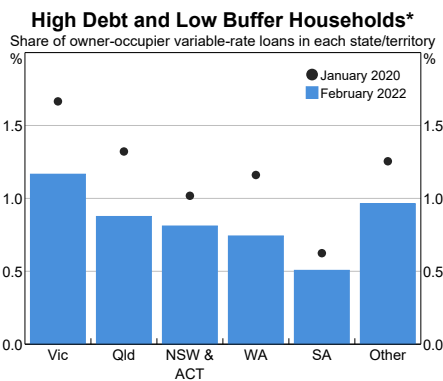
higher inflation. The risks for households with low liquidity buffers are likely to be even higher for those whose payment buffers have been declining (as opposed to low and stable) and for those who also have high levels of debt. The Securitisation data indicate that, for owner-occupiers with variable-rate loans, the overall share of borrowers with a loan six or more times their income and a buffer of less than one month of minimum repayments has declined since the beginning of the pandemic, to just below 1 per cent (Graph 2.4). The share of owner-occupier variable-rate borrowers with low and declining buffers has decreased to around 2 per cent over the same period. Declines in the shares of both groups of vulnerable borrowers are partly due to lower interest rates.

Historically, renters have been more likely to experience financial stress than indebted owner-occupiers. According to the Household, Income and Labour Dynamics in Australia (HILDA) survey, around one-third of renters reported at least one instance of financial stress (such as being unable to pay a bill on time or heat their home) in 2020, compared to one-sixth of owner-occupiers (Graph 2.5). Although renters are unlikely to pose direct risks to the stability of the financial system (as they have less debt),

financial stress for renters could translate to repayment difficulties for indebted landlords or pose indirect risks by constraining household consumption and so economic activity. Renters with a combination of low liquidity buffers prior to the pandemic (equivalent to less than one month of disposable income) and high housing cost burdens (rental payments equivalent to more than 30 per cent of disposable income) were much more likely to report financial stress than other households. Around 15 per cent of renters were vulnerable based on this metric in 2020.

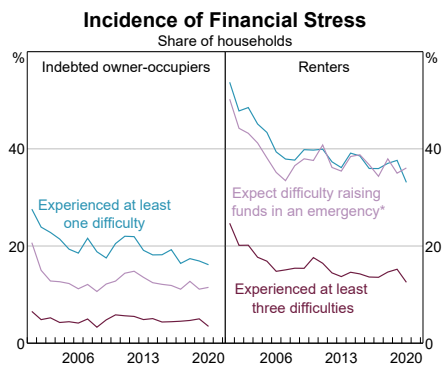
Although the value of consumer debt has declined over recent years, there has been strong growth in households using buy now, pay later (BNPL) services. BNPL services are generally a form of short-term financing that allow consumers to pay for goods and services in instalments. It is estimated that the value of BNPL transactions increased by around 40 per cent over the year to the December quarter of 2021, and the total number of BNPL accounts was equivalent to around one-third of the adult population (although some people have more than one account). There have been some increases in the incidence of late payments on these products. However, the value of BNPL transactions remains relatively small compared to other forms of personal

Graph 2.4



* Those with a loan-to-income ratio above six and less than one month of excess payment buffers (offset and redraw balances, measured in months of minimum repayments).
Sources: RBA; Securitisation System

Graph 2.5



* \$2,000 from 2001–2008; \$3,000 from 2009–2019; \$4,000 in 2020.
Sources: HILDA Survey Release 20.0; RBA

finance, with the value of domestic personal credit and charge card purchases on Australian-issued cards around 15 times larger than BNPL transactions in the December quarter of 2021.

... including a small share of borrowers who could struggle to service their debts as a result of higher interest rates and/or inflation

With economic activity continuing to recover and inflation picking up, market participants are expecting interest rates to increase from their current exceptionally low levels over the next couple of years. Overall, the majority of indebted households are well placed to manage higher minimum loan repayments. Sizeable interest rate buffers are built into loan serviceability assessments, which are designed to ensure that borrowers are able to service higher interest rates (based on their financial situation at the time they took out the loan). Moreover, interest payments have declined for most borrowers since they first took out their loans, with interest rates on new variable housing loans having fallen since 2011. In recent years, many borrowers have also actively refinanced to low fixed-rate loans.

Around 60 per cent of all borrowers currently have variable-rate loans, with around two-thirds of these being owner-occupiers. Scenario analysis using information in the Securitisation dataset indicates that if variable mortgage rates were to increase by 200 basis points:

- just over 40 per cent of these borrowers made average monthly payments over the past year that would be large enough to cover the increase in required repayments (Graph 2.6)
- a further 20 per cent would face an increase in their repayments of no more than 20 per cent
- around 25 per cent of variable-rate owner-occupiers would see their repayments

increase by more than 30 per cent of their current repayments; however, around half of these borrowers have accumulated excess payment buffers equivalent to one year's worth of their current minimum repayments that could therefore help ease their transition to higher repayments

- the share of borrowers facing a debt servicing ratio greater than 30 per cent (a commonly used threshold for 'high' repayment burdens) would increase from around 10 per cent to just under 20 per cent.

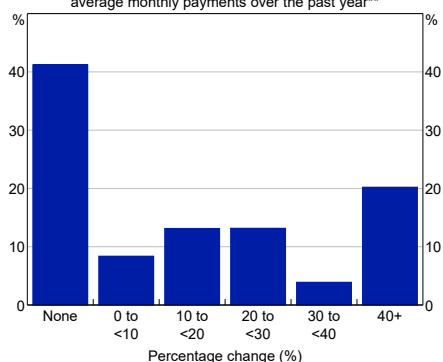
One caveat is that households' average monthly mortgage payments over the past year may have been larger than might reasonably be expected going forward, especially as previous spending patterns resume alongside the recovery in economic activity. It is difficult to draw inferences about the capacity of investors with variable-rate loans to make higher repayments, as they tend not to make excess mortgage payments (and other forms of saving are less visible in available data).

Most borrowers with fixed-rate loans are also likely to be able to handle the increases in their repayments when their fixed-rate terms expire.

Graph 2.6

Repayment Increases for Variable-rate Loans*

Changes between new required repayments and average monthly payments over the past year**



* Changes in repayments in response to a 200 basis point increase in interest rates.

** Share of variable-rate loans (excluding split loans) as at February 2022.

Sources: RBA; Securitisation System

Many borrowers have taken advantage of very low interest rates on fixed-rate products in recent years; in late 2021, almost 40 per cent of outstanding housing lending had fixed interest rates – roughly double the share at the start of 2020. Around three-quarters of currently outstanding fixed-rate loans will expire by the end of 2023.

Assuming all fixed-rate loans roll over to variable rates at the end of their fixed-rate period, and variable rates increase by around 200 basis points by the end of 2023, estimates from the Securitisation dataset suggest:

- over 90 per cent of those fixed-rate loans that are due to expire in the next two years will face an increase in repayments; for over half of borrowers, the increase would be in the range of 0–20 per cent (Graph 2.7)
- around one-quarter of fixed-rate borrowers have terms that expire beyond 2023, but could ultimately face larger shocks depending on how rates evolve over the next two years
- investors with interest-only loans are among the fixed-rate borrowers that would face the largest adjustment in repayments, reflecting the additional adjustment to principal and interest repayments when their fixed-rate periods expire.

Although the estimated increases in repayments are sizeable for some borrowers, it should be manageable for most. The risk of fixed-rate borrowers experiencing repayment difficulties would be partly mitigated by some splitting their mortgages between fixed and variable rates, which would result in smaller and more gradual increases in their total repayments than if they had only a fixed-rate loan. Moreover, given the broad-based increase in household saving rates over recent years, it is likely that many fixed-rate borrowers will have accumulated liquidity buffers during the fixed loan term (particularly as many will have

demonstrated a capacity to service higher interest rates prior to refinancing at lower fixed rates).

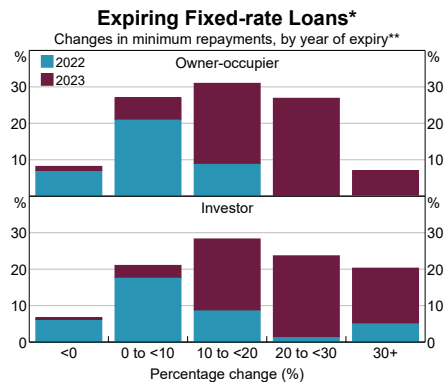
These calculations assume household income after other expenses is unchanged (or in effect that any changes are perfectly offset). If rising inflation was to erode real household incomes, some borrowers may have to draw down their accumulated excess payment buffers much more quickly and/or cut back on other spending.

Macprudential policy has reduced some riskier lending at the margin ...

Growth in housing credit has picked up through the past year, alongside the strong growth in housing prices. As a result, the ratio of household credit to income has increased slightly from an already-high level, which contributes to elevated systemic risks (Graph 2.8).^[1] Growth of housing credit to investors has also picked up but remains well below its 2015 peaks.

In response to the risks associated with rising household indebtedness, in October 2021 APRA increased the interest rate buffer that it expects prudentially regulated lenders to use to assess the ability of new borrowers to service their debt

Graph 2.7



* Excludes fixed-rate loans that will expire beyond 2023; assumes future variable rates increase by approximately 200 basis points to 2023.

** Share of fixed-rate loans (excluding split loans) as at February 2022.

Sources: RBA; Securitisation System

by 50 basis points (to be at least 300 basis points above the prevailing loan interest rate). The increase works to reduce maximum loan sizes, and so reduces the amount of credit extended to riskier borrowers who seek to borrow very close to their maximum borrowing capacity (and as a result are more prone to repayment difficulties if they experience a fall in income or a rise in expenses).

The direct effect on aggregate credit growth is difficult to discern as the timing of the policy change broadly coincided with the end of lockdowns in Sydney and Melbourne, leading to unusual seasonality in the housing market. However, the impact on aggregate credit growth was expected to be modest given the majority of borrowers do not take out loans near their maximum. Further, some borrowers would have responded to the policy change by declaring more complex sources of income that were previously not required to support their desired loan amount, or by making other adjustments to their finances such as closing unused credit card facilities. Looking ahead, upcoming increases to the Household Expenditure Measure living expenses benchmarks to account for price increases could reduce maximum loan sizes further for some borrowers (maximum loan sizes are set at the

amount of debt that a borrower can repay after factoring in their living expenses).

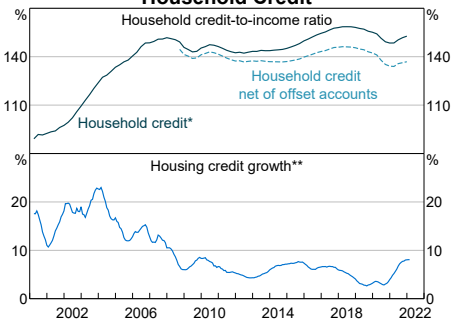
... but the share of new lending at high DTI ratios remains significant

While banks' loan underwriting policies remain sound overall, strong demand and some lenders' accommodative practices have pushed the share of high-DTI loans to very high levels. The share of new lending with a DTI \geq 6 is elevated, at around one-quarter of all new loans. This is noticeably higher than one year earlier; although, more timely monthly data indicate that the share of high-DTI lending moderated a little in early 2022 (Graph 2.9). The shares of new loans with high LVRs or interest-only terms remain low.

An increasing share of both investors and owner-occupiers have been taking out high-DTI loans. The increased share of high-DTI lending partly reflects low interest rates, as well as increased lending to investors who are more likely to have multiple housing loans and therefore higher DTIs. Around 60 per cent of the increase in high-DTI lending since early 2021 has been for loans with DTI ratios of between 6 and 7. There has also been a modest rise in the share of new owner-occupier loans with very high DTI ratios (\geq 10); however, almost all of this increase

Graph 2.8

Household Credit



* Sum of housing credit and personal credit; housing credit is net of redraw balances.

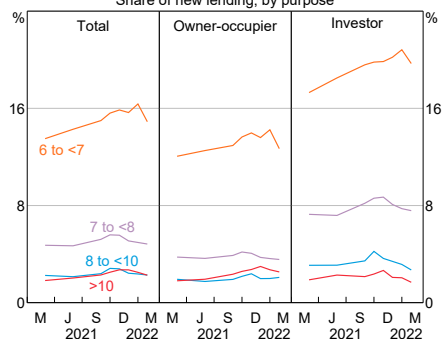
** Six-month-ended annualised terms.

Sources: ABS; APRA; RBA

Graph 2.9

High-DTI Lending*

Share of new lending, by purpose



* For the largest mortgage lenders; data provided on a 'best endeavours' basis.

Sources: APRA; RBA

reflects higher demand for temporary bridging loans.

All else equal, a higher DTI loan is riskier than a lower DTI loan as it is more likely that a fall in income or an increase in expenses will cause the borrower to have difficulties in meeting their repayments. However, household survey data suggest that individual borrower characteristics – such as the size of their liquidity buffers (cash, deposits and equities relative to disposable income), as well as levels of income and wealth – are also important determinants of self-reported mortgage stress (see ‘Box B: How Risky is High-DTI and High-LVR Lending?’). Liaison with banks indicates that some high-DTI loans are originated with relatively large offset account balances.

To help mitigate potential financial stability risks associated with lending to highly indebted households, APRA has strengthened its prudential oversight of individual banks to ensure standards are being maintained and the risks associated with high-DTI portfolios are being properly scrutinised. APRA has also recently completed a consultation with lenders on its plans to require regulated lenders to be operationally ready to implement limits on high-DTI, high-LVR, investor or interest-only lending (or a combination of any two of these metrics).

The possibility of swings in housing price growth should be factored into borrowing and lending decisions

After nationwide housing prices increased by 22 per cent over 2021 (the strongest annual growth rate since the late 1980s), the pace of housing price growth moderated in most markets in early 2022. It is important that lenders and borrowers consider the potential for falls in housing prices, particularly for loans at high LVRs. Housing demand and the outlook for prices are uncertain due to a range of factors, including significant changes in population growth. Future increases in interest rates could

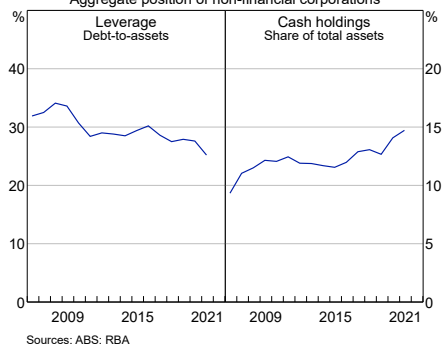
also weigh on housing and other asset prices (see ‘Chapter 3: The Australian Financial System’). Estimates using a model of the housing market that takes into account historical relationships between interest rates and both demand and supply factors suggest that a 200 basis point increase in interest rates from current levels would lower real housing prices by around 15 per cent over a two-year period, relative to the baseline model projection in the absence of an interest rate shock.^[2]

Overall, business balance sheets have strengthened further ...

In aggregate, non-financial businesses have reduced their debt since the start of the pandemic, while the value of their assets has increased. In June 2021, the aggregate business debt-to-assets (leverage) ratio was about 25 per cent, down from 28 per cent two years prior (Graph 2.10). Overall, businesses have increased their resilience by building their liquidity buffers; at the end of June 2021 (the latest available annual data), total business cash holdings were about 30 per cent larger than their pre-pandemic level.

Most businesses have been easily meeting their debt repayment obligations, aided by low interest rates. Low loan arrears rates (see ‘Chapter 3: The Australian Financial System’) are

Graph 2.10
Corporate Balance Sheet Health
Aggregate position of non-financial corporations



consistent with detailed financial information available for listed companies, which suggests large businesses generally had little difficulty in servicing their debts at the end of 2021. In debt-weighted terms, only around 8 per cent of these firms had an interest coverage ratio (ICR) of below 2 (i.e. annual earnings that were less than twice their interest expenses) (Graph 2.11). An ICR below 2 has historically been associated with an increased risk of insolvency.

Most listed firms had adequate earnings at the end of 2021 to absorb a 200 basis point increase in average business lending rates, which is roughly equivalent to their level in late 2019. Estimates based on the recent short-term relationship between interest rate changes and firm-level interest expenses suggest that such an increase would not lead to a materially larger share of firms with low ICRs. Key reasons for this are that many of these businesses have fixed rates or use short-term interest rate swaps, both of which would moderate increases in interest expenses. In a scenario that assumes that increases in interest rates pass through fully to interest expenses (akin to a long-run outcome), the debt-weighted share of firms with low ICRs is estimated to increase to around 11 per cent; however, in practice, the share would likely be lower as rising interest rates typically accompany a stronger economy and business earnings.

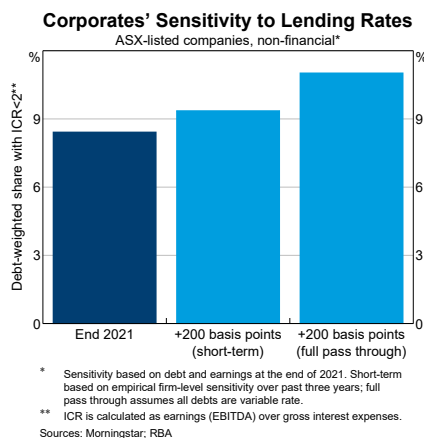
... but around one-fifth of businesses have low cash buffers, partly because revenues remain low for some

While aggregate business cash holdings remain high, a considerable share of businesses have very low cash buffers, leaving them more vulnerable to cash flow disruptions. Survey data up to January 2022 suggest around one-fifth of firms had very small buffers of less than one month's worth of expenses, up from around 10 per cent earlier in the pandemic (Graph 2.12). More than one-fifth of businesses with low cash buffers were in the construction sector,

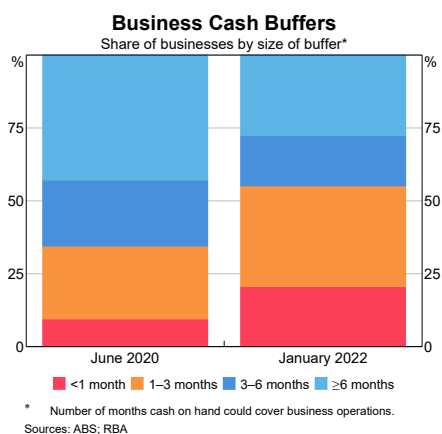
consistent with delays due to shortages of both building materials and labour, as well as a sharp rise in input costs. There was also a relatively high share of businesses with low cash buffers in the education, manufacturing and transport sectors.

Declining cash buffers in part reflect the slow recovery in some businesses' revenues. Although aggregate business revenue continued to grow in the second half of 2021 and is now 11 per cent higher than before the pandemic, some businesses continue to lag behind this broader recovery. As of the September quarter of 2021, around 7 per cent of

Graph 2.11



Graph 2.12



businesses recorded revenues that had persistently been at least 40 per cent below their pre-pandemic average, up from around 3½ per cent at the end of 2019 (Graph 2.13). The increase in this share was generally greater in service-oriented industries where lockdowns and social distancing restrictions have weighed on demand.

Businesses with low cash buffers or already-weak revenues are more vulnerable to the current supply chain disruptions and staff shortages, which are weighing on revenues and raising costs. In March 2022, 16 per cent of businesses reported that supply chain disruptions were significantly affecting their revenues, up from around 11 per cent in April 2021. Governments and banks are providing support – including through grants and loan repayment deferrals – to smaller businesses affected by lockdowns, as well as to those affected by the recent flooding in New South Wales and Queensland.

Insolvencies are rising, but from low levels

Policy support and cash buffers built earlier in the pandemic have helped many struggling businesses to weather ongoing disruptions or to successfully resolve their debts before winding down. Consistent with this, insolvencies and

other financial stress indicators (such as the non-performing share of banks’ business loans) remain very low. However, company insolvencies started to rise through last year.

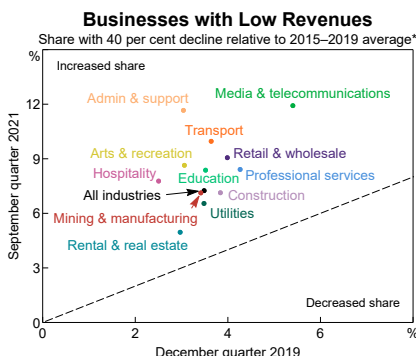
Construction accounted for close to one-quarter of insolvencies over 2021. Some larger construction businesses have recently entered into administration, with the industry facing large increases in costs and thin margins on fixed price contracts (Graph 2.14). Looking ahead, contractors and suppliers to these firms are vulnerable to payment delays and defaults, particularly as contractors typically have unpaid receivables of around 1.25 times their monthly turnover, which is higher than most other industries. Some developers are also facing a higher-than-usual level of uncertainty about the timing of proposed apartment developments, unpredictability around demand as borders reopen, high pre-sale requirements from lenders, and the rise in construction costs. However, risks to banks are low overall as loans to construction businesses and developers account for only a very small share of assets for all domestic banks.

Further increases in insolvencies are also likely across a number of other industries, particularly as vulnerable businesses continue to draw down on cash buffers to cover lost revenue or higher costs.

Conditions in retail and office property markets remain challenging, but risks to banks remain low

Tenant demand for retail and office property remains weak. Vacancy rates in retail shopping centres remain elevated, with the impact of the pandemic amplifying longer-term structural challenges such as the shift to online retailing (Graph 2.15). Reflecting the weakness in tenant demand, retail rents and valuations have also continued to drift lower. While there are signs that demand for high-quality office space is

Graph 2.13



* 40 per cent below firm-level average revenue in each of the previous four quarters, controlling for firm-specific quarterly seasonality; includes ~950,000 businesses; selected industries.

Sources: ABS; RBA

starting to increase, conditions in secondary-grade office markets remain more challenging. Financial stability risks from the commercial property sector remain low. Large listed Australian real estate investment trusts (A-REITs) directly own around 60 per cent of retail shopping centres by gross lettable area and roughly 10 per cent of total office space, mostly concentrated in prime grade assets. Overall, A-REITs have maintained healthy balance sheet positions since the onset of the pandemic, with steady profits and higher liquidity positions, slightly lower leverage and increasing ICRs (Graph 2.16). This suggests A-REITs' balance

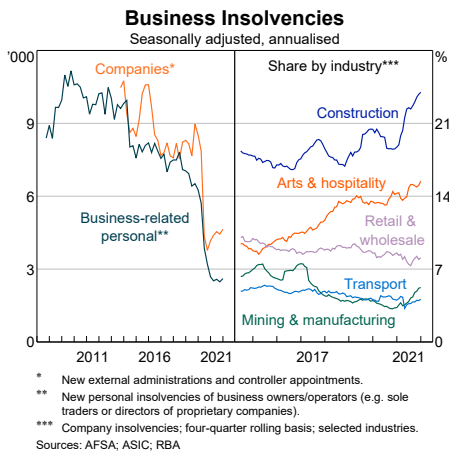
sheets are well positioned to handle ongoing earnings uncertainty and future increases in interest rates. Direct financial stability risks to banks are further mitigated by the fact that around three-quarters of A-REITs' outstanding debt has been sourced from capital markets, with the vast majority not due to mature until at least 2024.

There is little information available on the financial health of smaller landlords. While some will have experienced declines in rents or rising vacancies during the pandemic, there is little evidence of indebted commercial property owners facing difficulties making loan repayments to banks. Impairment rates on banks' commercial property lending remain negligible, and banks' exposures to the sector remain low, at around 6 per cent of assets.

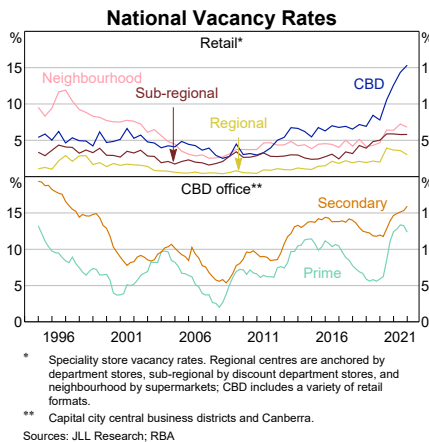
Comprehensive information on the commercial property exposures of non-banks is not readily available and so it is possible that impairment rates are higher in that sector.

Looking ahead, increases in interest rates could be expected to weigh on commercial property valuations, but less so if the rate increases were to occur in an environment of rising rents. Large falls in property valuations could put some commercial property borrowers at risk of breaching their loan covenants unless they are

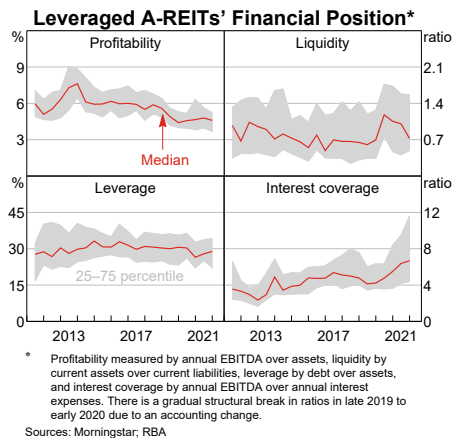
Graph 2.14



Graph 2.15



Graph 2.16



able to contribute more equity to their loans. However, the incidence of negative equity is

likely to remain very low, as commercial property loans tend to have relatively low LVRs. ✎

Endnotes

- [1] For background, see RBA (2021), 'Chapter 5: Mortgage Macprudential Policies', *Financial Stability Review*, October.
- [2] For further details on the model specification, see Saunders T and P Tulip (2019), 'A Model of the Australian Housing Market', RBA Research Discussion Paper No 2019-01.

Box B

How Risky is High-DTI and High-LVR Lending?

The share of new high debt-to-income ratio ($DTI \geq 6$) mortgage lending increased significantly to 24 per cent in the December quarter of 2021 (Graph B.1). More timely information from a subset of lenders suggests that the share of such lending has remained at a high level during early 2022 (see 'Chapter 2: Household and Business Finances in Australia'). There was also notable growth in the share of new high loan-to-valuation ratio ($LVR \geq 90$) loans over 2020 as the share of lending to first home buyers increased, though this has since declined.

Household survey data indicate that high-LVR and high-DTI borrowers have been more likely to self-report missing a mortgage repayment due to financial difficulties than other borrowers. Previous Bank research has shown that borrowers who previously missed a mortgage payment were more likely to miss subsequent payments and so are at greater risk of default.^[1]

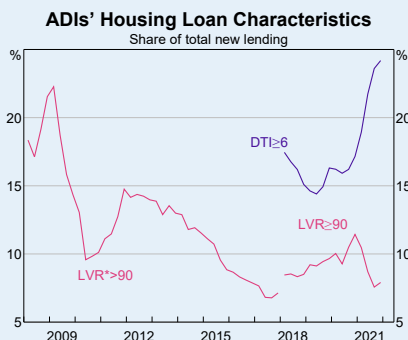
Borrower characteristics influence the riskiness of high-DTI and high-LVR lending

The higher incidence of mortgage stress among high-LVR and high-DTI borrowers could be due to their high LVRs or DTIs alone, or it may be that borrowers who take out these loans have other characteristics that make their loans riskier. The risks associated with high-DTI and high-LVR lending may also vary at different points in the economic cycle depending, for example, on the outlook for housing price and income growth as well as interest rates.

For a given borrower, a high-LVR or high-DTI loan will be riskier for the lender. All else equal, having a higher DTI – and so higher repayments relative to income – makes it more likely that a borrower who experiences an adverse shock to their income or expenses will miss mortgage repayments. High-DTI loans can also increase macroeconomic risks as these borrowers are more likely to need to reduce their consumption when faced with a cash flow shock. Borrowers with high-LVR loans may also be more likely to face repayment difficulties in the event of a shock because their lower levels of equity mean they are less able to avoid such difficulties by selling their property or refinancing their loan.^[2] A loan with a higher initial LVR is also more likely to lead to larger losses for lenders in the event of default, as the loan is more likely to be in negative equity at the point the property is actually sold (for a given rate of amortisation and housing price growth).

However, the riskiness of these loans will also be influenced by borrower characteristics

Graph B.1



* LVR series breaks at March 2018 due to reporting changes.

Sources: APRA; RBA

such as their levels of income and wealth, and the size of their liquidity buffers (i.e. their holdings of liquid assets such as cash and bank deposits relative to disposable income).

This box uses data from the Household Income and Labour Dynamics in Australia (HILDA) survey to examine whether borrower characteristics amplify or mitigate the risks represented by their reported difficulties repaying their mortgages.^[3] Limitations of this approach include that the most recent available data are from 2018, as well as that the relatively small sample size may introduce some uncertainty. It should be noted that the characteristics of the relevant borrowers may have changed since the last survey, particularly given the significant increase in the number of borrowers taking out high-LVR and high-DTI loans over recent years. Moreover, it is not possible to observe all borrower characteristics that could influence their decisions to take out these loans and their potential to experience repayment difficulties (such as their willingness to take risks and attitudes towards saving).

Borrowers with high initial LVRs have tended to be riskier, but the riskiness of those with high initial DTIs has varied widely

The survey data indicate that borrowers with high initial LVRs have tended to have certain characteristics that increase the likelihood of repayment difficulty. In particular, they have tended to have lower liquidity buffers, lower incomes and lower total wealth than other borrowers.

In contrast, the risk characteristics of borrowers with high DTIs have historically been mixed. High-DTI borrowers tend to have slightly higher liquidity buffers than

low-DTI borrowers, which, on average, reduces the risks associated with these loans. However, there is considerable variation among borrowers with high DTIs: those with low liquidity buffers have been more likely to report mortgage repayment difficulties than other borrowers, while those with high buffers have generally been less likely to report repayment difficulties. The income and wealth characteristics of high-DTI borrowers vary depending on whether the borrower is an owner-occupier or an investor. Within both groups of borrowers, those with high DTIs are more likely to have lower incomes (which tends to amplify the risks associated with these loans) but higher wealth (which tends to reduce risks). But among high-DTI borrowers, owner-occupiers have tended to be riskier than investors as they tend to have lower income and lower relative wealth. Borrowers with loans that have high DTIs and other high-risk characteristics such as high LVRs, low net income surpluses (NIS) or interest-only payments are likely to be especially risky. Taken together with the complex nature of high-DTI borrowers' risk characteristics, this underscores that lenders should closely scrutinise their high-DTI loans to ensure their overall portfolio risks remain contained.

Owner-occupiers with high LVRs have had lower liquidity buffers, incomes and wealth than other borrowers

Owner-occupier borrowers whose initial LVR was greater than or equal to 90 have been more likely to report mortgage repayment difficulties than owner-occupiers with lower LVRs. This is consistent with evidence that borrowers with high LVRs are more likely to have lower liquidity buffers, lower incomes and lower total wealth than other borrowers

– partly reflecting the fact that first home buyers account for a large share of high-LVR loans.^[4]

Owner-occupier borrowers with high initial LVRs have tended to have lower liquidity buffers than other owner-occupier borrowers (Graph B.2). Households with small liquidity buffers are less able to use those liquid assets to make mortgage repayments if they experience unanticipated shocks to their income or expenses. They are therefore more likely to fall behind on their debt repayments. While low buffers increase the incidence of mortgage stress for all borrowers, the effect has been more pronounced for borrowers with high LVRs.

Owner-occupiers with high initial LVRs have been more likely than other borrowers to have low liquidity buffers and report mortgage repayment difficulties throughout the life of their loans. The persistence of low liquidity buffers and mortgage stress among borrowers with high initial LVRs might reflect that high-LVR owner-occupiers have also been more likely to have a low NIS at origination.

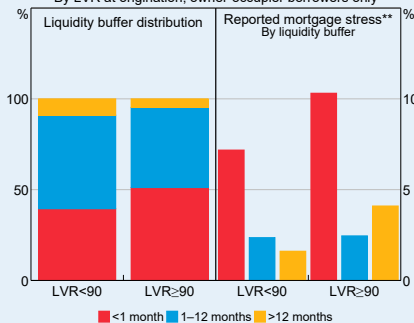
Owner-occupiers with a high initial LVR have also tended to have lower incomes than other borrowers (Graph B.3). This amplifies the riskiness of these loans, in part because lower income borrowers are more likely to face repayment difficulties in the event of an unanticipated increase in their expenses. This is not surprising as lower-income borrowers are less able to save a large enough deposit to avoid paying lenders mortgage insurance (LMI) (borrowers with an LVR>80 are required to pay LMI). While a lower income increases the probability of mortgage stress for all borrowers, this has been especially true for lower-income borrowers with high LVRs.^[5]

High-LVR owner-occupiers have also been much less likely to be wealthy than other borrowers: only around one-quarter had wealth exceeding \$1 million in 2018, compared to around half of other (lower-LVR) owner-occupiers.^[6] Borrowers with lower total wealth are likely to be more risky as they are less able to sell other assets in order to maintain loan repayments or avoid default.

Graph B.2

Risk Metrics for High and Low LVR Borrowers*

By LVR at origination, owner-occupier borrowers only



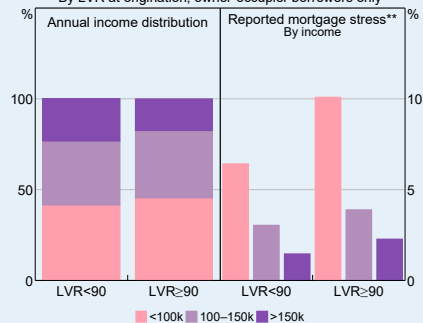
* Liquidity buffers are a ratio of liquid assets to disposable income.
 ** Reflects an inability to meet a housing loan repayment due to financial difficulties.

Sources: HILDA Survey Release 20.0; RBA

Graph B.3

Risk Metrics for High and Low LVR Borrowers*

By LVR at origination, owner-occupier borrowers only



* Incomes are expressed as 2018 dollars.
 ** Reflects an inability to meet a housing loan repayment due to financial difficulties.

Sources: HILDA Survey Release 20.0; RBA

High-DTI borrowers have been more likely to report mortgage stress, but only those with low buffers

Similar to borrowers with high LVRs, borrowers with high DTIs have been more likely to report mortgage stress than other borrowers.^[7] However, in contrast to high-LVR borrowers, high-DTI borrowers have tended to have slightly higher liquidity buffers than other borrowers, which mitigates the risks associated with some high-DTI loans (Graph B.4). This is particularly true for investors with high-DTI loans – who are actually more likely to have high liquidity buffers (>12 months of income) than other borrowers. These investors with high-DTI loans and high buffers have, in turn, been less likely to report mortgage repayment difficulties than other borrowers. In contrast, those owner-occupiers and investors with high DTIs and low buffers have been more likely to report mortgage stress than other borrowers.

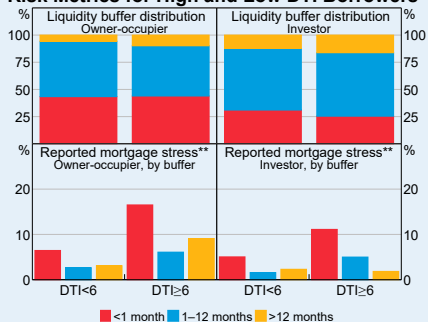
The income distribution of high-DTI borrowers varies depending on whether the borrower is an owner-occupier or an investor. Overall, owner-occupiers with high-DTI loans

have tended to have lower incomes than other borrowers (Graph B.5). This adds to the risks associated with these loans, as a lower income increases the probability of mortgage stress. In contrast, investors with high DTIs have tended to have higher incomes than owner-occupier borrowers (regardless of their DTIs) but lower incomes than low-DTI investors.

Borrowers with high-DTI loans have tended to be wealthier than other borrowers, which could mitigate the risks associated with some of these loans. This has been particularly true for investors with high-DTI loans, with around three-fifths holding more than \$1 million in net wealth in 2018 compared to around one-third of all indebted households. High-DTI investors are also likely to face fewer barriers to deleveraging by selling their investment properties, further reducing both their probability of default and the lender's loss in the case of default.

Graph B.4

Risk Metrics for High and Low DTI Borrowers*



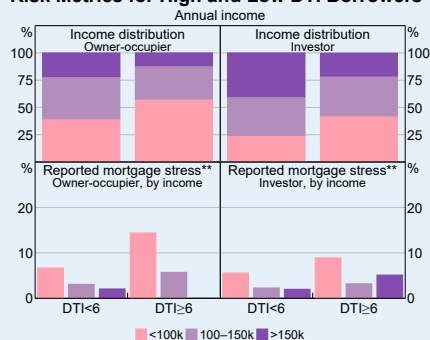
* DTIs are calculated at loan origination for owner-occupiers, but dynamic DTIs are used for investors as the age of an investment loan – and therefore the borrower's debt and income at origination – is not available. Liquidity buffers are a ratio of liquid assets to disposable income.

** Reflects an inability to meet a housing loan repayment due to financial difficulties.

Sources: HILDA Survey Release 20.0; RBA

Graph B.5

Risk Metrics for High and Low DTI Borrowers*



* DTIs are calculated at loan origination for owner-occupiers, but dynamic DTIs are used for investors as the age of an investment loan – and therefore the borrower's debt and income at origination – is not available. Incomes are expressed as 2018 dollars.

** Reflects an inability to meet a housing loan repayment due to financial difficulties.

Sources: HILDA Survey Release 20.0; RBA

Borrowers with both a high DTI and a high LVR appear especially risky, but account for a very small share of new loans

APRA data show that new loans that have both a $DTI \geq 6$ and an $LVR \geq 90$ continued to account for a very small share of loans in the December quarter of 2021, at around 1½ per cent. Most of these loans are owner-occupier loans. Owner-occupiers with both

high DTIs and high LVRs have historically been around four times more likely to report mortgage stress than other borrowers, and three times more than those with only a high DTI or a high LVR. Consistent with this, these borrowers have also been much more likely to have low liquidity buffers and lower incomes than other borrowers. 🏠

Endnotes

- [1] 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.
- [2] See Bergmann M (2020), 'The Determinants of Mortgage Defaults in Australia – Evidence for the Double-trigger Hypothesis', RBA Research Discussion Paper No 2020-03.
- [3] The survey asks respondents if they have been unable to meet a payment by the due date on any housing or property loan in the previous 12 months because of financial difficulties. This question has been asked in 'wealth modules' every four years since 2006.
- [4] For more detail on the drivers of recent trends in first home buyer lending, see Alfonzetti M (2022), 'Are First Home Buyer Loans More Risky?', RBA *Bulletin*, March.
- [5] While the increased incidence of mortgage stress among lower-income borrowers is likely to partly reflect their lower liquidity buffers (which is also an important determinant of mortgage stress), there is evidence that income is important in its own right.
- [6] Data limitations do not allow for a comparison of the wealth distributions of high- and low-LVR investors.
- [7] The results of owner-occupiers and investors are not directly comparable. DTIs are calculated at loan origination for owner-occupiers, but dynamic DTIs are used for investors as the age of an investment loan is not available in the survey data. This means the estimates are biased towards investors with higher initial DTIs, which could overstate the differences in risk characteristics for high- and low-DTI investors based on the threshold of 6. Acting in the opposite direction, the surveys also report net rental income (net of interest costs) when gross rental income would be the better measure. This causes DTIs for investors to be overstated, and could understate the differences in risk characteristics for genuinely high- and low-DTI investors.

3. The Australian Financial System

The Australian financial system remains robust, and is well placed to continue supporting the economic expansion. Australian banks have strong capital positions. The strong economic recovery from the impact of the COVID-19 pandemic has contributed to healthy profits, which have enabled banks to unwind around half of the provisions they made at the start of the pandemic and return capital to shareholders. Banks' liquidity positions also remain strong. The upcoming wind-down of the Committed Liquidity Facility (CLF) and the refinancing of funds borrowed from the Term Funding Facility (TFF) over the next two years are not expected to pose a challenge for the banking sector. Market participants expect large increases in short-term interest rates, with market pricing implying an increase of some 300 basis points over the next couple of years. Banks – and financial institutions more broadly – face little direct risk to their balance sheets from rising interest rates but exposures will still need to be managed, including those that are indirect through their customers and policyholders.

Other financial institutions are also in a strong position and have benefited from the economic recovery. Insurer's capital levels remain well above regulatory minimums, supported by the increase in profits over 2021, leaving them well placed to address claims following the recent floods in New South Wales and Queensland. The value of superannuation funds' assets has increased steadily, while the composition of their investments has shifted back towards riskier asset classes on account of the economic recovery and rising asset prices. Non-bank

lending for housing continues to grow rapidly. However, given the small size of the sector, this increase would only pose risks to financial stability if non-bank housing lending standards were to materially ease and spill over to the banking sector.

The Australian financial system faces a number of important challenges. Cyber risks – which have grown over recent years, and are currently elevated – are a substantial threat to financial institutions and the financial system. Reflecting this, financial institutions, regulators and governments are taking actions to bolster the resilience of the financial system to cyber threats (see 'Box C: Building Resilience to Cyber Risks'). Likewise, risks to the financial system from climate change, if not managed, will also grow over time; authorities and financial institutions are making some progress towards understanding and managing these risks. Finally, improvements have been made to address governance shortcomings in the financial system over the past few years, but this continues to be an area of focus.

Banks have strong capital positions ...

Australian banks' capital ratios were little changed over 2021 from their already high levels (Graph 3.1). The four major banks' Common Equity Tier 1 (CET1) capital ratios are currently 1 percentage point above pre-pandemic levels. The positive impact on banks' capital ratios from strong earnings in 2021 was offset by banks returning capital to shareholders – through share buybacks and dividends – as well as higher risk-weighted assets from strong loan

growth. Given banks' capital levels are well above regulatory capital requirements, some banks are expected to buy back additional shares this year.

The Australian Prudential Regulation Authority (APRA) has finalised its 'unquestionably strong' capital framework, which includes larger capital conservation buffers for major banks and a non-zero countercyclical capital buffer for all banks that can be drawn down in periods of stress.^[1] This framework – which is consistent with the 'unquestionably strong' benchmarks set by APRA previously and is effective from January 2023 – increases the CET1 ratio requirement by 2.25 percentage points to 10.25 per cent for the major banks and 9.25 per cent for other advanced banks, and by 1 percentage point to 8 per cent for standardised banks (Graph 3.2). Banks are expected to have their own capital targets above APRA's minimum requirement. Risk weights will be adjusted to improve the allocation of capital to risk and reinforce incentives for sound lending practices. In particular, risk weights for some loans made to small and medium-sized enterprises will be reduced, while risk weights for higher-risk mortgages (investor, interest-only and highly leveraged loans) will be increased. The decline in the average risk weight will result in capital

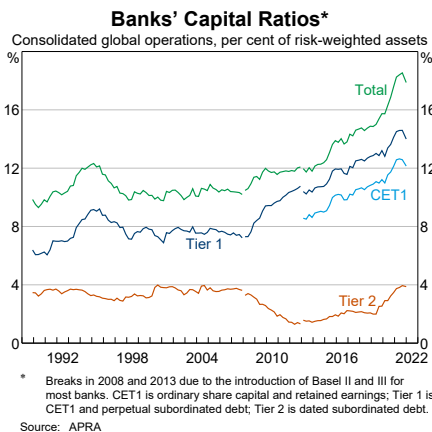
ratios increasing for the banking system, but the change will vary by bank due to differences in risk profiles. Since banks' capital ratios are already well above regulatory requirements, banks will not be required to raise additional capital to meet the new CET1 requirements.

APRA has also finalised its requirement for the four major banks to increase their total loss-absorbing capacity. Such loss-absorbing capacity can come in the form of Additional Tier 1 and Tier 2 capital instruments that could be used to recapitalise a distressed bank, supporting an orderly resolution and limiting the effects on the financial system. The implementation will see minimum Total Capital requirements for major banks increase by 4.5 percentage points to 18.25 per cent of risk-weighted assets from 2026, replacing APRA's interim requirement of a 3 percentage point increase by 2024.

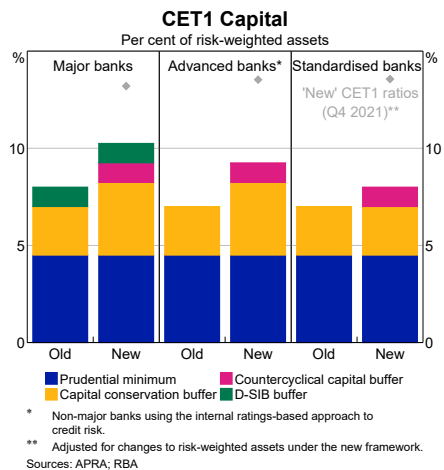
... supported by healthy profits, despite some pressure on interest rate margins

Overall, banks' profits remain healthy, supported by strong credit growth and low funding costs. However, of late, profits have decreased as net interest margins (NIMs) have narrowed (Graph 3.3). The banking sector has seen a

Graph 3.1



Graph 3.2



period of increased competition, which has contributed to strong growth in housing credit. Until recently, banks were offering lower interest rates on fixed-rate loans, which – along with borrower preference and loan refinancing – resulted in a shift towards fixed-rate mortgage products that have lower margins. Banks also increased their holdings of liquid assets over the second half of 2021, in part to meet the upcoming changes to the CLF (discussed below), which further compressed NIMs. Over the coming period, market analysts expect increased interest rates to support NIMs and profitability. While higher lending rates support profits, competition for funding will push the cost of these funds higher. The overall effect on NIMs will depend on the extent of competition in lending and funding markets (discussed further below).

Better-than-expected economic conditions have contributed to declines in the share of loans that are non-performing and resulted in banks releasing further provisions, which has in turn supported headline profits. The share of non-performing loans has declined to 0.7 per cent, the lowest level in recent years (Graph 3.4). This has been mostly driven by fewer non-performing housing loans; the share of non-performing business loans has declined from its recent peak but remains slightly above its pre-

pandemic level. The number of COVID-19 loan repayment deferrals picked up slightly in the second half of 2021 due to lockdowns in parts of the country, but was much lower than earlier in the pandemic. Lenders have offered hardship assistance to borrowers affected by the recent floods in New South Wales and Queensland (see ‘Chapter 2: Household and Business Finances in Australia’). However, banks’ exposures to the most affected regions are limited and, consistent with this, they have not been offered regulatory relief for these loans.

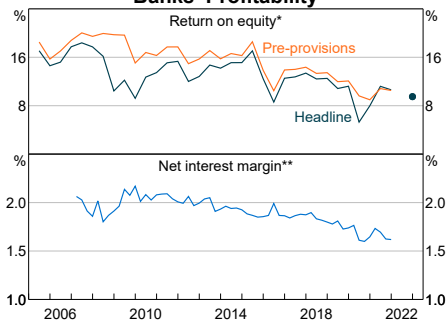
Banks have now unwound most of the increase in provisions that were built up to cover anticipated losses from the impact of the pandemic (Graph 3.5). Provisions are currently around 10 per cent above pre-pandemic levels. This is due to uncertainty around the economic outlook, including the ongoing effects of the pandemic on some parts of the economy and as fiscal policy support continues to be unwound.

Robust liquidity positions also support system resilience ...

Banks’ holdings of high-quality liquid assets (HQLA) remained at high levels. The increase in holdings since 2020 reflected an initial desire by banks to increase their liquidity as a precaution, as well as increased deposits relative to lending.

Graph 3.3

Banks’ Profitability

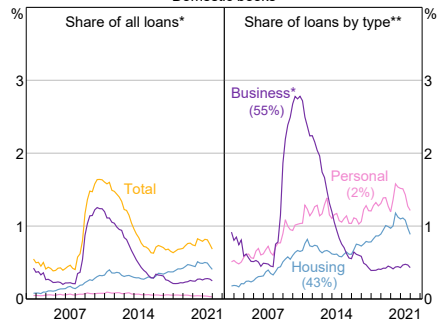


* Dot represents forecast based on 12-month forward earnings.
 ** Interest income received less interest expenses paid, expressed as a percentage of assets.
 Sources: APRA; RBA; Refinitiv

Graph 3.4

Banks’ Non-performing Loans

Domestic books



* Includes lending to financial businesses, bills, short-term and long-term debt securities and other non-household loans.
 ** Share of total domestic lending shown in parentheses.
 Sources: APRA; RBA

It also reflected policy measures implemented by the Reserve Bank that increased Exchange Settlement (ES) balances at the Bank. Consistent with this, banks' Liquidity Coverage Ratios (LCRs) – which measure holdings of liquid assets relative to the potential outflows that could occur in a short-lived but severe stress scenario – have remained comfortably above regulatory requirements (Graph 3.6).

APRA and the Reserve Bank consider there is now sufficient HQLA (such as government debt and ES balances) available for banks to meet liquidity requirements without the need for the Reserve Bank's CLF. The amount of both

Australian Government Securities (AGS) and securities issued by state and territory governments ('semis') has increased over recent years as a result of pandemic-related fiscal stimulus spending. Total allocations under the CLF have already been reduced by more than half since the start of the pandemic, and are to be reduced incrementally to zero by the end of 2022 unless financial market conditions materially deteriorate. Banks are expected to be able to comfortably manage the remaining reduction in CLF allocations. For instance, this could be achieved through additional purchases of HQLA (such as AGS and semis); liaison suggests that banks have already started to do this. Banks could also shift to more stable or longer-term sources of funding (such as term deposits, more stable retail deposits and wholesale debt), which would result in lower net cash outflows, helping banks meet their LCR targets without raising additional funding to purchase HQLA.

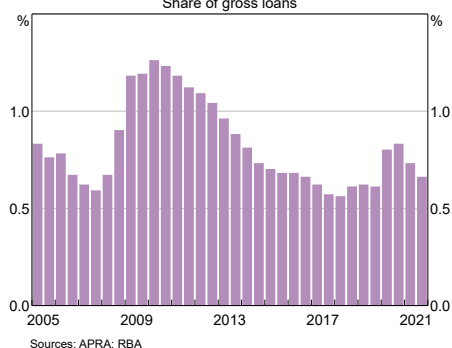
... and the upcoming TFF refinancing task is not expected to pose a challenge for the banking sector

Over the next two years, banks will need to repay the \$188 billion that they borrowed under the Reserve Bank's TFF. Together with other bonds maturing, the refinancing task for banks in the six months around each of the two TFF maturity dates will be approximately \$130 billion – equivalent to around 3 per cent of banks' total liabilities (Graph 3.7).

The TFF refinancing task, while sizeable, is not expected to pose a challenge for the banking sector, absent a dislocation in funding markets. Liaison suggests that banks plan to repay these funds mostly by issuing wholesale debt, but there are other options. Their final funding decision will depend on a number of factors, including growth of their assets and deposits and the relative cost of funds. Since the TFF closed to new drawdowns in mid-2021, banks' issuance of wholesale debt has increased, and

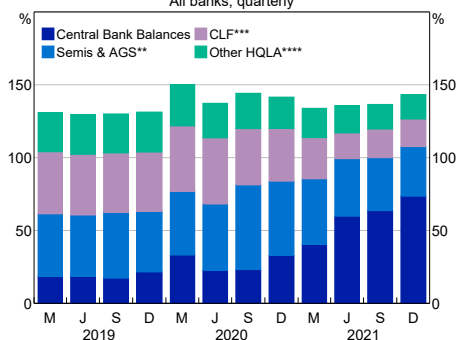
Graph 3.5

Banks' Provision Balances
Share of gross loans



Graph 3.6

Liquidity Coverage Ratio Components*
All banks, quarterly



* LCR is decomposed into HQLA relative to net cash outflows.
 ** Includes semi-government and Australian Government Securities.
 *** Refers to eligible amount for LCR calculation.
 **** Includes HQLA type 2, coins and notes, RBNZ securities and other.
 Source: APRA

some of this has been at longer tenors than typical in recent years. The lead time before the TFF funds need to be repaid allows banks to spread issuance over a longer period, adjusting their funding plans as appropriate.^[2]

Non-bank lending to households is growing rapidly, but there is no evidence that risks to financial stability are increasing

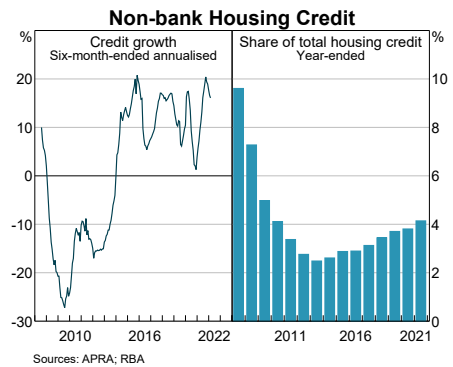
Non-bank lending to households has continued to grow rapidly, and is close to a decade high of around 20 per cent on a six-month-ended annualised basis. However, this increase has contributed less than a percentage point to the 8 per cent growth in total housing credit on the same basis. This is because, while non-bank lenders' share of housing credit has increased, its share of total lending is still small at less than 5 per cent (Graph 3.8).

In a period of high lending growth it is important that lending standards are maintained so that credit quality does not deteriorate. Data from the Reserve Bank's Securitisation dataset show that there has been some increase in high loan-to-income (LTI) loans securitised by non-banks over recent years, but a similar trend is evident in bank lending and coincides with a period of low interest rates and

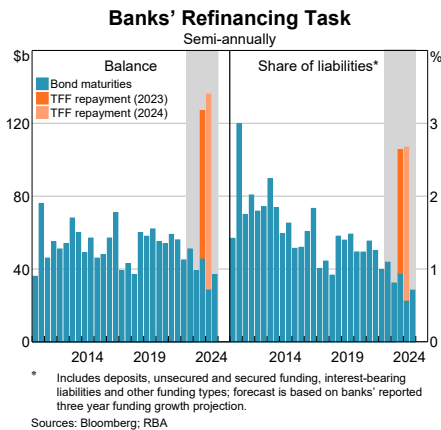
rapidly rising housing prices (see 'Box B: How Risky is High-DTI and High-LVR Lending?') (Graph 3.9). Over the same time period, non-bank loan-to-valuation ratios (LVRs) have increased slightly but the proportion of lending with a LVR above 90 per cent has been steady. Liaison with non-bank lenders suggests that lending standards have been maintained through this period, and that some lenders are taking measures to limit the share of new loans that have a high LVR.

In October 2021, APRA increased the interest rate serviceability buffer for banks, which – for a small proportion of borrowers – will constrain their maximum loan size, making them more resilient to income or expense shocks (see

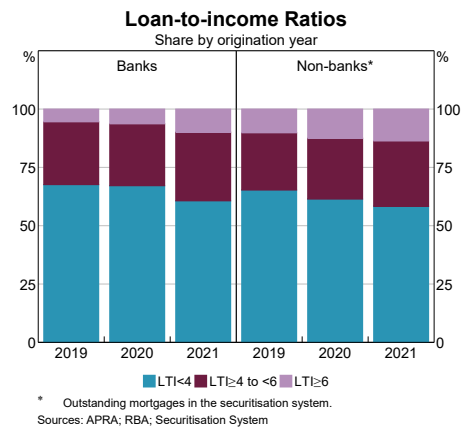
Graph 3.8



Graph 3.7



Graph 3.9



‘Chapter 2: Household and Business Finances in Australia’). This increase in buffer can flow through to the lending measures of non-bank lenders. This is because non-banks typically fund their lending initially by using warehouse facilities provided by banks and subsequently by selling residential mortgage-backed securities (RMBS). As banks have regulatory requirements to hold capital against warehouse facilities, banks tend to require loans in these facilities to be of high quality, and therefore many want warehoused loans to be broadly consistent with APRA’s macroprudential policies. Further, most investors in RMBS expect loans to broadly conform to APRA standards. Finally, if non-bank lenders were to pose a risk to financial stability, APRA could use its reserve powers to regulate the sector.

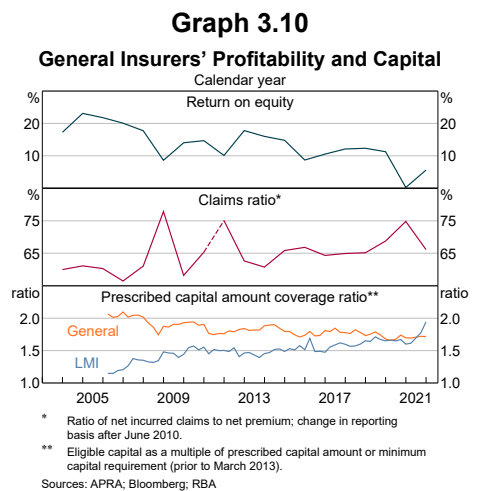
Insurers remain well capitalised and profits have recovered further

General insurers’ profits increased over 2021, from the very low levels experienced in 2020 (Graph 3.10). The rise in general insurers’ profits mostly reflected a decline in the amount of claims and higher premiums, partly offset by lower investment income. The number of claims has risen more recently due to the flooding in New South Wales and Queensland, but insurers do not expect this to materially change their outlook for natural disaster costs. Insurers continue to maintain their reinsurance cover, which will provide significant protection from natural disaster claims. General insurers have maintained a strong capital position, equivalent to 1.7 times APRA’s prescribed capital amount (PCA), leaving them well placed to absorb the impact of an unexpected increase in claims or investment losses.

Lenders mortgage insurers’ (LMIs) profits have increased to be around pre-pandemic levels. Profits have been supported by fewer claims (in part reflecting Australian Government stimulus payments to households), rapid housing price

growth and the release of provisions for COVID-19-related claims. The strength of housing market activity during the pandemic has seen greater demand for mortgage insurance from owner-occupiers, in particular first home buyers. LMIs have a strong capital position, and their internal stress tests suggest they could withstand a substantial rise in insurance payouts in the event of large falls in house prices or increases in unemployment.

Life insurers’ profits increased significantly over the past year, resulting in a positive return on equity for the first time since 2018 (Graph 3.11). Profitability has improved across most products, but particularly for individual disability income insurance (DII). Longstanding issues with DII have weighed on profits in recent years due to chronic under-pricing, loose product definitions and higher-than-expected claims. However, life insurers have significantly improved their risk management, design and pricing of DII products, reflecting APRA’s intervention to improve the sustainability of the sector. DII capital charges imposed by APRA have incentivised insurers to make capital injections, lifting the industry-prescribed capital coverage ratio to 1.95 times the PCA (up from 1.77 times in 2020). However, given the long-term nature of DII contracts, exposure to historical contracts



and competitive pressures in the industry, these issues are expected to persist for some time.

Superannuation and managed funds have strong balance sheets and have displayed robust liquidity management strategies

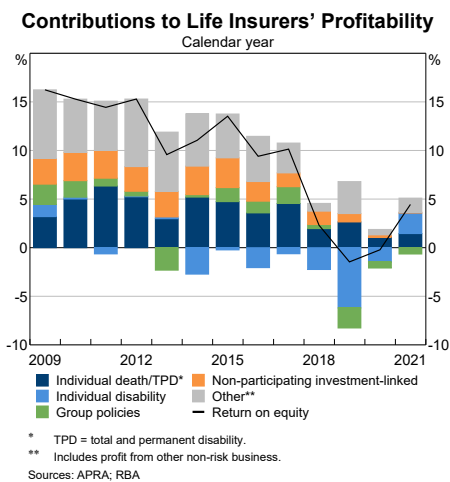
Superannuation funds' holdings of financial assets have steadily increased over the past year and now sit well above pre-pandemic levels. The composition of funds' assets has also changed, as favourable market conditions have encouraged a return to investing in riskier assets such as equities and away from cash (Graph 3.12). APRA's regulation and supervision of the industry continue to evolve in an effort to increase its resilience and improve outcomes for members. This has included improving liquidity management practices, the adequacy of liquid asset holdings and trustees' maintenance of financial resilience. These improvements are designed to ensure individual funds are well positioned to meet future liquidity challenges.

One way in which superannuation funds manage liquidity flows from member contributions, withdrawals and portfolio rebalancing is through the use of derivatives. An example of this is the use of total return swaps

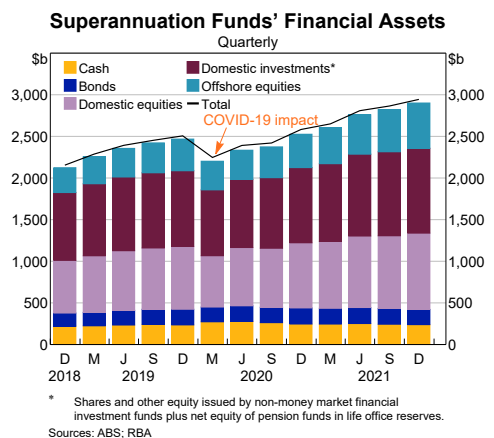
to temporarily gain exposure to asset classes (with minimal cash outlay), rather than purchasing the assets outright and incurring additional transaction costs. Another important use of derivatives is to hedge risks that arise from their holdings of foreign-currency denominated assets (such as investments in foreign equity and securities). Australian-regulated superannuation funds invest around one-third of members' funds offshore and survey data indicate that about half of these are hedged.^[3] Hedging these exposures reduces the risks to members that arise from large changes in the value of these assets due to movements in the Australian dollar exchange rate.

Self-managed superannuation funds (SMSFs) continue to use risky leveraged property loans – known as 'limited recourse borrowing arrangements' (LRBA) – which allow an SMSF trustee to borrow for investment purposes (Graph 3.13). If the trustee defaults on the loan, the lender's rights are limited to the specific asset bought with the loan and there is no recourse to other assets held in the SMSF. The Australian Taxation Office and other agencies are monitoring ongoing concerns around this product because the additional direct leverage exposes SMSF members to greater financial risks. However, the take-up of SMSF borrowing

Graph 3.11



Graph 3.12



arrangements has remained steady in recent years and major banks and other main lenders have ceased lending to the sector (although this gap has been filled somewhat by non-bank lenders).

Australian financial institutions are well positioned to manage rising interest rates

Market pricing implies that participants expect large increases in short-term interest rates in Australia over the next couple of years, of around 300 basis points. In many economies, financial institutions' profits are seen to move with interest rates.^[4] However, Australian financial institutions are generally less sensitive to the direct effects of changes in interest rates due to the composition of their balance sheets and regulatory incentives to hedge remaining interest rate risk. Most of the interest rate risk is borne by customers and policyholders. As a result, financial institutions face indirect exposure through channels such as loan impairments and demand for financial services (see 'Chapter 2: Household and Business Finances in Australia').^[5]

Banks face interest rate risk due to the nature of their activities, whereby they fund longer-term assets (loans) with shorter-term liabilities (such as deposits and wholesale debt). This maturity

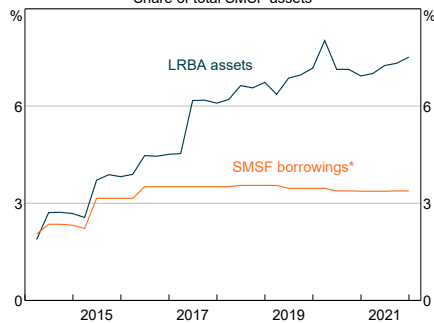
mismatch can cause NIMs to expand or narrow when short- and long-term interest rates move by different amounts. However, there are two key features of Australian banks' balance sheets that help them to mitigate this interest rate risk:

- Banks typically have more liabilities due within one month than assets that will mature in that time (Graph 3.14, lower panel), but the assets on Australian banks' balance sheets can generally be repriced more quickly than their liabilities. This is because a large share of banks' assets are variable-rate loans, notwithstanding the sharp rise in fixed-rate loans in 2020.
- Banks further hedge their interest rate risk by engaging in derivative trades that make their repricing maturity schedule more balanced (Graph 3.14, upper panel). While a large share of banks' liabilities are fixed-rate bonds and deposits, these are typically hedged to reprice in line with short-term interest rates, and more closely match the repricing of their assets.

Another way banks are exposed to interest rate risk is through their holdings of fixed-income securities in their trading book. However, Australian banks' holdings of such assets are small, comprising about 3 per cent of their total assets.

Graph 3.13

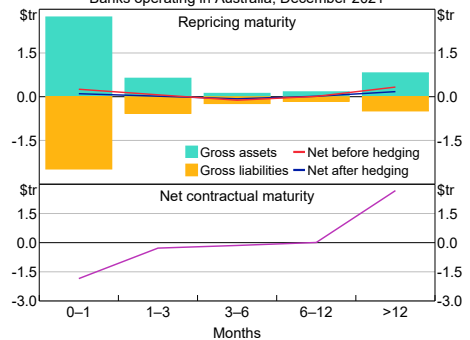
Total Value of LRBA Assets and Borrowings
Share of total SMSF assets



* Includes LRBA borrowings.
Sources: ATO; RBA

Graph 3.14

Mismatch of Assets and Liabilities
Banks operating in Australia, December 2021



Sources: APRA; RBA

Australia's major banks report to APRA their level of interest rate risk from a 200 basis point increase in interest rates, and these scenarios suggest that such an increase would have very little impact on major banks' capital levels. Only 2 per cent of major banks' CET1 capital (28 basis points of CET1 capital ratios) would be needed to absorb expected losses (Graph 3.15). The effect on capital would be smaller still if such an increase in interest rates was spread over a longer period of time, enabling banks to respond.

Estimates of interest rate risk that general and life insurers report to APRA suggest that the impact of higher interest rates on capital is small (Graph 3.15). Insurers in Australia typically invest in assets that have a similar duration to their liabilities, thereby offsetting impacts on their balance sheets. For example, an increase in nominal interest rates is likely to reduce the value of both assets and liabilities, although the net effect on their capital can depend on what caused interest rates to increase. Higher nominal interest rates typically reduce the discounted value of insurers' liabilities. However, if interest rates increased because future inflation was expected to be higher, insurers might adjust

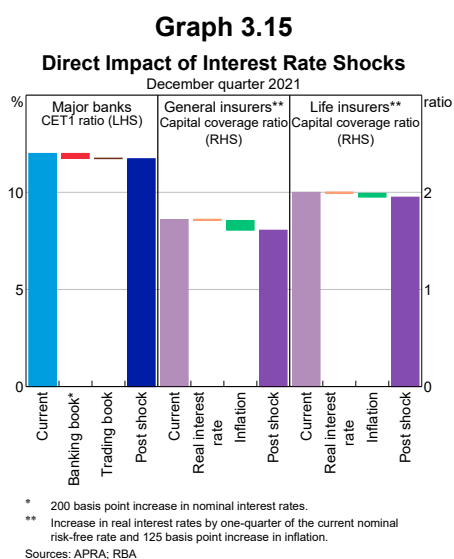
their assumption for future policy payouts since many policies link payouts to future prices or wages, leaving the discounted value of insurers' liabilities little changed. Insurers can also offset impacts on their balance sheets by passing some of the impact on to policyholders, such as when a life insurance policy offers a variable payout that is linked to the return on underlying assets.

Superannuation funds in Australia are resilient to rising interest rates because of their benefit structure and asset composition. The majority of superannuation and other managed funds are 'defined contribution' funds – that is, there is no guaranteed fixed return and members bear all the interest rate (or investment) risk. In the case where superannuation funds guarantee a fixed return to members ('defined benefit' funds), only a small share of funds' assets are directly affected by rising interest rates, such as fixed income securities (7 per cent of assets) (Graph 3.12). Nevertheless, other assets held by superannuation funds can be indirectly affected through higher debt servicing costs.

Financial market infrastructures continue to focus on improving resilience

Financial market infrastructures (FMIs) – such as central counterparties, securities settlement facilities and high-value payment systems – enable financial system participants to manage credit and liquidity risks. The Reserve Bank's 2021 assessments of Australian FMIs concluded that, on balance, all had conducted their affairs in a way that helped to promote overall stability in the Australian financial system. However, it also found that FMIs must respond effectively to previous incidents and emerging risks to enhance their resilience.

In November 2021, the Australian Securities and Investments Commission (ASIC) concluded an investigation into an outage affecting the Australian Securities Exchange (ASX) market in



late 2020. As a result of the investigation, ASIC imposed additional conditions on the licences of the entities that operate ASX systems for trading, clearing and settlement of equities and equity options. The conditions require the ASX to remediate underlying issues with its operations that led to the 2020 market outage, and to appoint an independent expert to assess whether the ASX's assurance program for the replacement of its CHES clearing and settlement system is fit for purpose. The ASX plans to replace the aging CHES system, which supports clearing and settlement of nearly all listed Australian equities, in 2023.

The ASX's futures market (ASX24) also experienced an incident on 17 March 2022, resulting in a four-hour trading halt. The outage was due to a hardware fault rather than the software issues that caused the 2020 ASX Trade outage. ASIC and the Reserve Bank view outages of this nature with significant concern and are engaging with the ASX on its review of the incident.

The Reserve Bank Information and Transfer System (RITS) settles high-value payments between Australian banks, FMs and other payment service providers. Given this critical role in the broader payments system, it is important that members of RITS are themselves resilient and secure. In December 2021, RITS issued revised Business Continuity and Security Standards, which include new cybersecurity standards for members. These strengthened standards are consistent with the Committee on Payments and Market Infrastructures' strategy to reduce the risk of wholesale payments fraud related to endpoint security.

Agencies continue to work with financial institutions to address longer-term challenges

The threat from cyber incidents on financial institutions and the broader financial system has grown over time. While the impact of incidents

in Australia has been limited to date, a significant cyber event is inevitable and could have systemic implications. Consequently, financial institutions and authorities in Australia and abroad are investing considerable resources to make the financial system more resilient to cyber incidents (see 'Box C: Building Resilience to Cyber Risks').

Another ongoing challenge for the financial system is climate change (see 'Box A: International Banks' Response to Climate Risk'). The Australian financial system is directly affected through the physical risks to assets, as well as through the transition risks that arise from policies and technologies implemented to address climate change and assist in the transition to a lower emissions economy. Australian financial institutions are vulnerable to these growing risks and, if not adequately managed, there could be implications for financial stability. As a result, agencies within the Council of Financial Regulators (CFR) are working with Australian financial institutions and corporations to better understand and manage the associated financial risks. The major banks have commenced a range of climate risk management strategies, including aligning their lending portfolios to net zero emissions by 2050, improving their climate-related disclosures and working with their customers to decarbonise and build climate-related resilience. APRA released its final prudential practice guide on climate change financial risks in November 2021 to assist entities in managing their climate-related risks.

APRA and the Reserve Bank – together with other CFR agencies – have been conducting analysis and research on climate-related issues, including by leveraging the experiences of other central banks and prudential regulators.^[6] APRA is leading a bottom-up supervisory Climate Vulnerability Assessment (CVA), which will provide estimates of the impact from two potential climate scenarios on Australia's five

largest banks. The Reserve Bank has published a preliminary top-down analysis to assess the climate risk to the Australian banking system that complements the CVA.^[7] Additionally, the Bank is conducting analysis to further develop its understanding of the financial risks of climate change.

Issues relating to culture and governance also remain an area of longer-term focus. If left unaddressed, these issues can lead to the erosion of trust in financial institutions – trust that is essential to the effective operation of the financial system. In the past, issues relating to culture and governance have led to large remediation costs, as well as penalties and operating restrictions imposed by regulators. ASIC recently commenced legal proceedings against three large banks: ANZ, for alleged breaches of the Credit Act related to its ‘introducer program’; Westpac, for alleged widespread compliance failures across multiple lines of business; and Macquarie Bank for alleged failures to properly monitor and control third-party transactions on customers’ accounts. In addition, the Reserve Bank of New Zealand (RBNZ) instructed the New Zealand subsidiary of Westpac (Westpac NZ) to commission an independent report into risk governance, which

found material risks to effective risk governance and underinvestment in risk management capabilities. While the RBNZ noted that Westpac NZ had made some progress towards addressing these concerns, it expects them to continue prioritising the findings of the report.

To better monitor risk culture, APRA is conducting a risk culture survey across a range of 60 banking, insurance and superannuation entities. APRA expects that entities will be able to complement their own internal risk metrics using insights from the survey to build a more comprehensive picture of risk culture. In 2021, APRA finalised its guidance on its prudential standard for remuneration, which will strengthen incentives to prudently manage risk; APRA will also be increasing its supervisory oversight over remuneration practices ahead of the implementation of the standard in January 2023. Finally, the Australian Government, APRA and ASIC are working together to extend the Banking Executive Accountability Regime to include insurance and superannuation institutions under the Financial Accountability Regime. ✎

Endnotes

- [1] Buffers include: the capital conservation buffer, which provides a layer of capital on top of the prudential minimum to be drawn down when losses are incurred; the countercyclical capital buffer, which helps to protect the banking sector from periods of excess credit growth; and the domestic systemically important bank (D-SIB) buffer to increase the major banks’ ability to absorb losses on a going-concern basis. For further details, see BIS (2019), ‘The Capital Buffers in Basel III’, November; APRA (2013), ‘Information Paper: Domestic Systemically Important Banks in Australia’, December.
- [2] See Fitzpatrick R, C Shaw and A Suthakar (2022), ‘Developments in Banks’ Funding Costs and Lending Rates’, *RBA Bulletin*, March.
- [3] See RBA (2021), ‘Box C: What Did 2020 Reveal About Liquidity Challenges Facing Superannuation Funds?’, *Financial Stability Review*, April.
- [4] See Hack M and S Nicholls (2021), ‘Low Interest Rates and Bank Profitability – The International Experience So Far’, *RBA Bulletin*, June
- [5] RBA (2018), ‘Box C: Interest Rate Risk in the Australian Financial System’, *Financial Stability Review*, April.
- [6] APRA and RBA (2021), ‘Network for Greening the Financial System Pledge’, Joint Statement, 3 November.
- [7] See Bellrose K, D Norman and M Royters (2021), ‘Climate Risks to Australian Banks’, *RBA Bulletin*, September.

Box C

Building Resilience to Cyber Risks

Cyber incidents can have systemic implications

Cyber risk is the potential for the disruption or destruction of information technology (IT) systems that results in the interruption of businesses and financial loss. In the case of banks, such incidents could lead to financial distress within an institution and have flow-on effects to its lending and deposit-taking business, with implications for the wider economy. This disruption could be due to an error or a malicious cyber-attack. It could affect a financial institution's IT operations directly or indirectly through a third party, such as a software service provider. Cyber risk resembles other operational risks, but is particularly challenging for institutions and regulators because it is difficult to identify, constantly evolving, borderless and often started by malicious actors.

While cyber incidents have, so far, mostly been contained within an institution, a key concern of authorities is that a significant incident could be broad in impact and affect the functioning of a large part of the financial system.^[1] An incident is systemic if it disrupts or disables critical functions of the financial system, such that it cannot operate effectively.^[2] Cyber-attacks are more likely than other types of incidents to be systemic: a well-resourced and sophisticated adversary seeking to cause widespread distress will actively exploit cyber vulnerabilities to maximise the impact of their attack (including by affecting multiple institutions). Cyber-attackers could be motivated by financial gain or a desire to disrupt – the latter is more concerning because it is harder

to defend against such attacks. Incidents that reduce the integrity or availability of IT systems or data could have systemic implications. Cyber incidents that impair the confidentiality of IT systems seem less likely to cause systemic stress, but they could lead to severe reputational damage for the institutions affected.^[3]

Whether a cyber incident could become systemic is often characterised by three transmission channels summarised in Table C.1: confidence; interconnectedness; and lack of substitutability.^[4] An incident could propagate through one or more of these channels, and through the financial system or broader IT systems.^[5]

The risk of a major incident occurring has increased ...

Cyber-attacks have become more frequent and sophisticated. Publicly available data are incomplete, but the number of known cyber incidents globally has tripled over the past decade and various reports suggest that the number of serious cyber-attacks has been trending higher.^[6] In Australia, there has been an increase in the number and severity of cybersecurity incidents of late; around 55 per cent of reported data breaches of Australian financial institutions over the past two years have been malicious.^[7]

The financial system has become more exposed to cyber risk over time because of a number of factors. The importance of digital platforms and service channels has increased, and innovation in these technologies continues at a rapid pace. Often, this further

Table C1: Cyber Risk Transmission Channels

	Confidence	Interconnectedness	Lack of substitutability
Description	A loss of confidence could cause market participants to be reluctant to transact and seek to reduce their exposures to others, thus spreading the impact to other participants. Confidence is likely to erode more the longer an incident lasts.	The links within the financial system and/or between IT systems could expose them to a common vulnerability or rapidly transmit the impact of a cyber incident from one institution to another.	The unavailability of critical infrastructure or a key institution could mean that market participants are unable to, or have sufficient difficulty in being able to, switch to an alternative provider.
IT example	Concern that key infrastructure will not be able to recover (e.g. payments system), that funds or transactions will be lost, or that other institutions have similar vulnerabilities.	Direct attack that spreads via IT links between institutions (e.g. supply chain attacks that make use of malware, phishing or ransomware).	Disruption at a key third-party service provider (e.g. cloud services).
Financial example		Disruption to liquidity/solvency of large institutions resulting in financial spillovers (e.g. loss of data integrity of account balances at a key institution).	Disruption at a financial market infrastructure (e.g. payment or settlement systems).

increases the complexity and interconnectedness of these systems, as well as potential vulnerabilities (such as from legacy systems). Although the Australian Prudential Regulation Authority (APRA) directly supervises around 680 financial institutions, the financial system has around 17,000 interconnected entities, including third-party service providers.^[8] Further, many key IT services such as cloud computing and storage are provided by a small number of providers, and while their scale can help to bolster their IT security, it also contributes to a lack of substitutability and has the potential to connect financial institutions to a common vulnerability.^[9] In addition, the shift to working-from-home during the COVID-19 pandemic has created potential vulnerabilities as organisations further open their systems to computers outside their networks. At the same time as these exposures have been increasing, the knowledge and skills

required to conduct a cyber-attack have become more accessible and the tools available to malicious attackers have become more sophisticated.^[10]

There have been a number of high-profile incidents in recent years:

- Recently, the financial sectors of Ukraine and Taiwan have been disrupted by significant cyber-attacks; liaison indicates that Russia's invasion of Ukraine has further increased the perceived risk of a sophisticated attack.
- From 2019 to 2021, the Solarwinds, Microsoft Exchange and log4j incidents allowed attackers to potentially access hundreds of thousands of IT systems.^[11]
- In 2020, the New Zealand stock exchange suffered a distributed denial-of-service attack that resulted in a trading halt for a number of days.^[12]

- In early 2021, a data breach involving a legacy file-sharing service run by Accellion (a third-party technology provider) affected a wide range of entities, including the Australian Securities and Investments Commission and the Reserve Bank of New Zealand.^[13]
- The Australian Federal Parliament has faced multiple cyber disruptions in recent years, including in a malicious intrusion by a ‘sophisticated state actor’ in 2019.^[14]
- In 2020, Service NSW experienced a cyber-attack that resulted in the theft of the personal information of 100,000 people.^[15]
- In mid-2021, an outage at a web services provider resulted in a temporary outage for the websites of three major Australian banks and the Reserve Bank of Australia.^[16]

The direct costs of cyber incidents are difficult to establish but they can be significant. The average annual cost of cybercrime to firms in the banking and insurance industries in 2018 was estimated to be US\$18 million and US\$16 million, respectively.^[17] One estimate put the average annual expected loss for cyber incidents in New Zealand’s banking and insurance industries at 2–3 per cent of net profits per year and found that there was a 5 per cent chance that costs could exceed 25 per cent of net profits.^[18] These costs also refer to publicly known incidents, which have been contained. By their nature, costs associated with a potential systemic cyber incident are likely to be much higher. Unsurprisingly, research has found that firms which invest in IT skills and incorporate cyber resilience into their business practices generally experience smaller losses from cyber incidents.

... but ongoing actions aim to bolster the resiliency of the financial system

To date, the financial sector has demonstrated greater resilience to cyber-attacks than other sectors.^[19] In recent years, the financial system has significantly improved its cyber defences, in part by developing compliance frameworks, as well as regulators and institutions devoting more resources to cybersecurity. Having established this foundation, financial institutions and regulators are increasingly focusing on cyber resilience – that is, the ability of an institution to anticipate and adapt to cyber threats and to withstand, contain and rapidly recover from a cyber incident.^[20]

Institutional resilience

Banks have increased their investment in managing cyber risk, including by establishing crisis management teams to respond to cyber-attacks and engaging in simulation exercises to test and improve their ability to identify, respond to and recover from attacks.

In Australia, the agencies that comprise the Council of Financial Regulators (CFR) continue to support financial institutions’ efforts to strengthen cyber resilience.^[21] The CFR agencies have developed a domestic cyber-attack protocol so as to better coordinate their efforts during a significant threat or attack affecting one or many regulated entities.

The CFR recently completed its Cyber Operational Resilience Intelligence-led Exercises (CORIE) pilot program to test and demonstrate the cyber maturity and resilience of institutions within the Australian financial services industry.^[22] The CORIE framework was used to help prepare and

execute cyber resilience exercises, and utilised intelligence gathered on institutions to simulate targeted attacks. These exercises mimicked the tactics, techniques and procedures of real-life adversaries, using tools and techniques that may not have been anticipated and planned for. They measured the ability of an institution to detect, respond to and recover from the operations of a real adversary. While many financial institutions already carry out simulated cyber-attacks against their own infrastructure, CORIE brings a fresh perspective, enabling cyber resilience to be benchmarked across institutions. The attacks were also performed on live production systems and targeted institutions' staff. This ensured the attacks reflected real-world conditions as closely as possible.

The CORIE pilot identified common strengths among the participating institutions, as well as weaknesses that could present a risk to the integrity and stability of Australian financial institutions. It also provided data and reports to help Australian regulators and financial institutions to identify actions needed to uplift their cyber resilience. The CFR has endorsed further enhancing the CORIE framework, its use as an ongoing assessment tool and a rollout of the testing program to other financial institutions over the coming years.

As the primary regulator for banks, insurance companies and superannuation funds, APRA has taken a number of steps to strengthen the cyber resilience of regulated entities. Building on its Prudential Standard CPS 234 Information Security that came into effect in July 2019, APRA launched its Cyber Security Strategy in November 2020. A key focus of the strategy is to establish a core set of cyber controls for financial institutions. The strength of these controls will be

independently assessed against APRA's information security requirements. As part of this strategy, APRA has collected data from financial institutions on their cybersecurity practices, which has helped to inform priority areas for improving resilience; this knowledge has been shared to facilitate entities' self-assessments and industry benchmarking. As a result of these exercises, along with insights from its supervisory activities, APRA highlighted that boards must strengthen their ability to oversee cyber resilience,^[23] and expects them to have the same level of confidence in reviewing and challenging information security issues as they do when governing other business issues.

Financial market infrastructures (FMIs)

The cyber resilience of FMIs – such as high-value payment systems, central counterparties and securities settlement facilities – is critical given the central role that FMIs play in the smooth functioning of specific parts of the financial system. As a result, the Australian Government and regulators are working on additional initiatives to further increase their resilience.

The Reserve Bank oversees a number of FMIs that operate in the Australian financial system, and regularly assesses their cyber resilience and identifies areas for improvement. This process takes into account guidance on cyber resilience from international bodies that set standards, and includes working with home regulators of overseas entities that operate in Australia, as appropriate.^[24] In the case of the Reserve Bank Information and Transfer System (RITS) – Australia's real-time gross settlement system – the Bank has dual roles as overseer and operator, with these roles conducted by

separate departments in the Bank. Its operator role means that the Bank also supports broader initiatives that engage RITS members, including contingency exercises with industry participants.

Likewise, the Bank has dual roles with respect to SWIFT – a global provider of the critical messaging and connectivity services for the financial system. As a member of the SWIFT Oversight Forum, Bank staff oversee the ongoing work to ensure SWIFT members' defences against cyber-attacks are up to date and effective. As a user of the SWIFT network and RITS operator, the Bank is compliant with SWIFT's Customer Security Controls Framework.

Global regulatory coordination

The borderless nature of cyber risks requires a coordinated effort across jurisdictions to identify risks, to promote resilience of all systems and to respond to international disruptions. Examples of this work include:

- The Cyber Security Working Group is producing a joint response protocol with agencies in New Zealand.

- The Financial Stability Board has been developing further guidance for oversight of financial institutions' reliance on critical service providers.
- The World Bank has been working to strengthen the resilience of payment systems in developing and emerging economies through its Financial Inclusion Global Initiative, and has launched a new global fund to improve cybersecurity development and offer technical assistance.
- The Bank for International Settlements, the World Bank and the International Monetary Fund have participated in simulated cyber-attack exercises on the global financial system to improve cooperation across countries.
- Bank staff members have taken part in various other international working groups promoting industry coordination in managing cyber risks and related contingency measures. 🌐

Endnotes

[1] For discussions of bank and systemic risks, including cyber risks, see Kearns J (2021), 'Evolving Bank and Systemic Risk', Speech to the 34th Australasian Finance and Banking Conference, 16 December; Byres W (2021), 'Banking On an Unpredictable Future', Speech to the 2021 AFR Banking Summit, 30 March.

[2] European Systemic Risk Board (2020), 'Systemic Cyber Risk', February.

[3] RBA (2018), 'Box D: Cyber Risk', *Financial Stability Review*, October.

[4] Adelman F, I Ergen, T Gaidosch, N Jenkinson, A Morozova, N Schwarz and C Wilson (2020), 'Cyber Risk and Financial Stability: It's a Small

World After All', IMF Staff Discussion Note No 2020/007.

[5] For example, an attack on a cloud service provider could provide access to many institutions (IT interconnectedness) or could take down the key service provider (lack of IT substitutability), or both. A ransomware attack could become systemic by spreading to multiple institutions through the internet (IT interconnectedness) or by disrupting the liquidity of a key financial institution and causing financial stress (financial interconnectedness).

[6] See Australian Cyber Security Centre (2022), '2021 Trends Show Increased Globalized Threat',

- Joint Cybersecurity Advisory from Cybersecurity Authorities in the United States, Australia and the United Kingdom, 9 February; RBNZ (2021), *Financial Stability Report*, November; Sveriges Riksbank (2021), *Financial Stability Report*, May; Aldasoro I, L Gambacorta, P Giudici and T Leach (2020), 'The Drivers of Cyber Risk', BIS Working Paper No 865.
- [7] See Australian Cyber Security Centre (2021), 'ACSC Annual Cyber Threat Report 1 July 2020 to 30 June 2021', September; Office of the Australian Information Commissioner (2022), 'Notifiable Data Breaches Report: July-December 2021', February.
- [8] Summerhayes G (2020), 'Strengthening the Chain', Speech at the Financial Services Assurance Forum, 26 November.
- [9] Healey J, P Mosser, K Rosen and A Tache (2018), 'The Future of Financial Stability and Cyber Risk', Brookings, October.
- [10] Adelman *et al*, n 4.
- [11] Government Accountability Office (2022), 'Federal Response to SolarWinds and Microsoft Exchange Incidents', January.
- [12] Financial Markets Authority (2021), 'Market Operator Obligations Targeted Review – NZX', January.
- [13] See ASIC (2021), 'Accellion Cyber Incident', 25 January; KPMG (2021), 'Reserve Bank of New Zealand Incident Assessment', May.
- [14] Brangwin N and H Portillo-Castro (2019), 'Cybersecurity', Parliamentary Library Briefing Book, Parliament of Australia.
- [15] Legislative Council (2021), 'Cyber Security', Report to Portfolio Committee No 1 – Premier and Finance, 26 March.
- [16] Chalmers S and M Janda (2021), 'Akamai Says a Technical Problem Not Cyber Attack Was Behind Mass Bank, Corporate Web Outage', *ABC News*, 17 June.
- [17] Accenture (2019), 'The Cost of Cybercrime', Research Report, 6 March.
- [18] Collins R, C O'Connor-Close and A Zhang (2020), 'Cyber Incident Cost Estimates and the Importance of Building Resilience', *RBNZ Bulletin*, 84(2).
- [19] Aldasoro *et al*, n 6.
- [20] Financial Stability Board (2018), 'Cyber Lexicon', 12 November.
- [21] The CFR agencies are the Australian Prudential Regulation Authority, the Australian Securities and Investments Commission, the Australian Treasury and the Reserve Bank of Australia.
- [22] Similar such initiatives exist in other jurisdictions, which many foreign financial institutions and FMI's that operate in Australia have been subject to for a number of years. See, for example, the United Kingdom's CBEST <<https://crest-approved.org/schemes/cbest/index.html>>.
- [23] See APRA (2021), 'Improving Cyber Resilience: The Role Boards Have to Play', Insight, 23 November.
- [24] RBA (2021), 'Box B: Assessing the Cyber Resilience of FMI's', *Payments System Board Annual Report*.

4. Domestic Regulatory Developments

The Council of Financial Regulators (CFR) coordinates the activities of Australia's key financial regulatory agencies: the Australian Prudential Regulation Authority (APRA); the Australian Securities and Investments Commission (ASIC); the Australian Treasury; and the Reserve Bank of Australia. The CFR is chaired by the Bank, which also provides the secretariat. CFR agency heads typically meet quarterly; ongoing inter-agency collaboration occurs through a number of working groups, as well as through frequent informal bilateral contact between individual agencies.

Over the past six months, the CFR has monitored the effects on the financial system of the COVID-19 pandemic and associated restrictions, and of Russia's invasion of Ukraine and resulting sanctions. Risks from housing lending have been an ongoing focus, in particular the increased share of lending at high debt-to-income ratios in recent times. The CFR has also sought to maintain a forward-looking agenda, including considering how the regulatory environment could respond to advances in technology, and addressing the financial risks of climate change. In addition, a substantial work program aimed at enhancing cybersecurity is underway.

The CFR has been closely monitoring the effects of the pandemic and sanctions on Russia and Belarus

In order to effectively coordinate their regulatory and policy activities, the CFR members share information on key developments that may affect the financial system. Over the last two years, this has included the effects of successive

waves of COVID-19 infections and associated restrictions. In the six-month period since the last *Financial Stability Review*, the focus has been on the Omicron variant, which has had a less sustained impact on the economy than previous variants. In light of this and the support measures put in place earlier in the pandemic, household and business balance sheets remain strong and the financial system is well placed to maintain the necessary financing of economic activity.

A second key development has been Australia's imposition of sanctions on Russian and Belarusian entities – in line with the international community – in response to the invasion of Ukraine. Many of these sanctions are operating through the financial system, although Australian financial institutions have very little exposure to, or interactions with, Russian entities. The direct effects on the Australian financial system have therefore been modest so far. Nonetheless, developments in Ukraine and Russia have increased risks to the global economy as well as to financial systems in some countries, and the CFR agencies continue to monitor developments closely.

Risks in housing lending remain a key focus for the CFR

In response to growing financial stability risks from banks' residential mortgage lending, APRA decided in October 2021 to increase the serviceability buffer for home lending. CFR members supported this decision and have been monitoring ongoing developments closely. While difficult to isolate from broader

trends, the increase in the serviceability buffer has reduced riskier lending at the margin. A particular focus of the CFR has been the share of lending at high debt-to-income ratios, which remains elevated. The CFR has discussed the actions being taken by banks to manage the risks within their portfolios and will continue to assess the need for further macroprudential measures. The CFR has continued to stress the importance of lending standards being maintained.

Given the increased focus over recent years on the use of macroprudential policy to promote the stability of the financial system, in November 2021 APRA published an information paper on the use of macroprudential policy tools. The framework covers the risk factors APRA uses to identify emerging threats to financial stability and the available policy tools. In conjunction with the information paper, APRA conducted a public consultation on an update of its credit risk management prudential standard. The update would require banks to ensure they could implement limits on higher risk residential mortgage and commercial property lending in a timely and effective manner. While the responsibility for determining and implementing macroprudential policies rests with APRA, the information paper stresses the importance of consulting with other members of the CFR as part of APRA's decision-making process. CFR meetings provide an important venue for these consultations, supported by working level discussion and analysis.

While much of the CFR's focus is on the banking sector, the CFR also monitors and assesses the role played by non-bank lenders. While this sector makes up a small share of the market, it is growing quickly (see 'Chapter 3: The Australian Financial System'). There is little evidence to date that it is contributing to increasing risks to financial stability.

The Australian Government, supported by the CFR, is considering how the regulatory framework should adapt to innovation

Both CFR members and the Australian Government recognise the need for regulatory frameworks to be sufficiently flexible and forward-looking to deal with innovations in financial services. The pace of innovation in the sector is currently high, with offerings such as mobile wallets, crypto-assets, stablecoins and decentralised finance providing the potential for financial services and products to be delivered in a very different way.

The Australian Government announced a series of reforms in December 2021 aimed at modernising elements of the regulatory framework to support this innovation and promote competition in payment and crypto technologies. The reforms include: developing a strategic plan for the payments system; developing a new, tiered payments licensing framework; consulting on the licensing of digital currency exchanges and a possible custody or depository regime for digital assets; and modernisation of the *Payment Systems (Regulation) Act 1998*. Much of this work is being undertaken by the Treasury, supported by the other CFR agencies. Existing CFR work in related areas has been brought together under a new working group examining the regulation of the crypto-ecosystem. The working group includes representatives from the CFR agencies, the Australian Competition and Consumer Commission (ACCC), the Australian Transaction Reports and Analysis Centre (AUSTRAC), the Australian Taxation Office and the Department of Home Affairs.

The Australian Government released a consultation paper in March 2022 outlining its proposed approach to licensing of service providers for crypto-assets. The paper proposes a licensing regime for 'crypto-asset secondary service providers', including exchanges,

brokerage services, dealers and custody services. Obligations would be similar to those applied under the financial services licensing regime, aimed at ensuring minimum standards of conduct and operational resilience. They would include obligations to maintain adequate custody arrangements for the safeguard of 'private keys' for crypto-assets.

While not explicitly part of the Australian Government's reform package, the regulation of stablecoins – a type of crypto-asset that aims to maintain a stable value against one or more currencies or assets – will be an important element of a forward-looking regulatory regime. In March 2022, the CFR discussed possible regulatory approaches to payment stablecoins, which have characteristics that may make them attractive as a store of value and means of payment. While there has been limited issuance or adoption of these instruments in Australia to date, the potential for increased use has made them a focus for regulators globally. Given some similarities with stored-value facilities (SVFs), the CFR has agreed to work on options for incorporating payment stablecoins into the proposed regulatory framework for SVFs. The proposed SVF framework was released by the CFR in late 2020 and is being implemented as part of the government's reforms to the payments licensing framework announced in December 2021.

One constraint on some financial technology firms, and on some firms providing remittance services, has been an inability to access banking services. Banks declining to offer or withdrawing their services is commonly referred to as 'de-banking'. De-banking is often a consequence of banks' management of financial crime risks, but can have a significant impact on the affected firms and individuals relying on them for services. The issue highlights the challenge of balancing the objectives of controlling financial crime and promoting innovation and competition in financial services. The Treasurer

has requested advice from the CFR by the end of June on key trends in de-banking, its underlying causes and possible policy responses. The ACCC, AUSTRAC and the Department of Home Affairs are joining the CFR agencies in this work.

CFR agencies have continued to work on enhancing cyber resilience

The CFR's Cyber Security Working Group is pursuing a program of work aimed at further improving the cyber resilience of the Australian financial system. The CFR agencies have developed a domestic cyber-attack protocol in order to better coordinate activities during cyber threats or incidents. A similar cyber-attack protocol is also being developed with New Zealand financial regulators, given the strong links between the Australian and New Zealand financial systems. CFR agencies recognise the important operational role the Australian Cyber Security Centre (ACSC) plays prior to and during such incidents, and engage closely with it, including through the Working Group. With Australia and other countries facing a heightened cybersecurity threat environment following Russia's invasion of Ukraine, the CFR agencies have coordinated on disseminating the ACSC's advice to regulated firms on their cybersecurity posture.

In March 2022, the CFR reviewed the outcomes of a pilot exercise under the Cyber Operational Resilience Intelligence-led Exercises (CORIE) framework, which was completed in October 2021. The pilot included several large financial institutions and financial market infrastructure providers. It involved mimicking the tactics, techniques and procedures of real-life adversaries to test and demonstrate institutions' cyber resilience levels. The pilot provided valuable information, both for the participating institutions and for the CFR agencies on the design of future exercises. The CFR has endorsed the adoption of an updated CORIE framework for a broader rollout of the testing program.

CFR agencies have also been working with the Department of Home Affairs on the development and implementation of new obligations to help protect 'critical infrastructure' against cybersecurity and other threats. New legislation: expands the critical infrastructure framework to cover the financial services and markets sector; enables the government to assist entities responsible for critical infrastructure during an extreme cyber incident; and introduces a requirement for entities to report significant cyber incidents to the ACSC. In addition, certain entities will be required to maintain a risk management program for identifying and mitigating threats, while a subset of entities responsible for 'systems of national significance' may be subject to enhanced cybersecurity obligations. CFR agencies are working to ensure the new regime is as aligned as possible with existing cybersecurity obligations placed on entities in the financial sector. The Reserve Bank has been assisting with the application of the reforms to the operators of payment systems specified as critical in Australia. These are the Mastercard debit and credit card systems, the Visa debit and credit card systems, the EFTPOS card system and the New Payments Platform.

Several work streams are aimed at addressing the financial risks from climate change

The CFR, supported by its Climate Working Group, remains focused on addressing the financial risks associated with climate change. In December 2021, it discussed developments related to the COP26 climate summit and in particular the establishment of the International Sustainability Standards Board (ISSB). The ISSB is developing high-quality global baseline climate and sustainability disclosure standards to meet the information needs of investors, and will work in close cooperation with the International Accounting Standards Board. This is a major step forward in setting global climate and

sustainability reporting standards. ASIC is monitoring developments and consulting with stakeholders to understand the implications for Australian firms. In the meantime, ASIC is encouraging listed companies to use the Task Force on Climate-related Financial Disclosures recommendations as the primary framework for voluntary climate-related disclosures. The CFR supports this approach.

The CFR has also discussed the development of sustainable finance taxonomies. These taxonomies establish standards that allow investors to assess the sustainability credentials of specific projects and financial products. They have been developed in a number of other jurisdictions, including the European Union and China. The CFR welcomes work underway by the Australian Sustainable Finance Institute to develop an industry-led taxonomy – with involvement from regulators – that suits the structure and trajectory of the Australian economy and builds on international work on sustainable finance taxonomies.

APRA is leading a Climate Vulnerability Assessment (CVA) on behalf of the CFR (see 'Chapter 3: The Australian Financial System'), which will estimate the impact of two potential climate scenarios on Australia's five largest banks. The Reserve Bank has published analysis to assess the climate risk to the Australian banking system, which complements the CVA. APRA's prudential practice guide on climate change financial risks, released in November 2021, will assist banks, insurers and superannuation trustees to manage the financial risks of climate change.

Finally, ASIC has been seeking opportunities to improve consumer outcomes by changing industry practices to mitigate the risk of 'greenwashing'. ASIC is conducting targeted surveillance of financial products to identify misleading statements relating to environmental, social and governance claims, particularly across social media.

The CFR has considered a wide range of other issues affecting the financial sector

Other recent topics of discussion by the CFR have included:

- *The availability and affordability of insurance for businesses.* The business insurance market globally is seeing a rise in premiums and deductibles, more exclusions and reduced coverage.
- *Regulatory developments related to financial market infrastructures (FMIs).* Much of the cooperative work on FMIs is undertaken through the FMI Steering Committee, which reports to the CFR. Recent areas of focus have included progress with ASX's CHES Replacement System, the licensing of international central securities depositories, and open access principles for clearing services. A regulatory reform package for FMIs, which includes the creation of an FMI resolution regime, has been agreed by the Australian Government, but is yet to be legislated.
- *The phasing-down of the Committed Liquidity Facility (CLF).* In light of the increased availability of government debt securities, APRA expects banks to purchase the high-quality liquid assets necessary to eliminate the need for the CLF and reduce their usage to zero by the end of 2022. CFR members discussed banks' anticipated progress towards meeting this expectation, with all affected banks expected to comply.
- *Forthcoming work on the use of derivatives by superannuation funds.* In November 2021, the Treasurer requested that the CFR report by

June 2022 on the use of derivatives by superannuation funds. The report is expected to cover: the operational capability of funds to properly manage large volumes of derivative transactions; prudential implications for the operation of individual funds and the outcomes for members of those funds; and any broader implications in terms of financial system stability. The CFR discussed a proposed approach to this work in December 2021.

The CFR continues to engage with other regulators in Australia and New Zealand

The CFR agencies meet with their New Zealand counterparts through the Trans-Tasman Council on Banking Supervision (TTBC). The TTBC currently meets separately at the agency heads, deputies and working levels. The TTBC Heads met most recently in December 2021, with members providing updates on recent policy announcements, regulatory interventions and significant work to be undertaken.

The TTBC agreed its work plan for 2022, which includes continued information-sharing on key issues such as housing markets and climate-related risks to the financial system. The TTBC will continue to collaborate on responding to cyber risks and enhancing crisis preparedness. This work program will complement the ongoing bilateral engagements between TTBC member agencies.

The CFR invites other Australian Government agencies to its meetings when appropriate. Both the ACCC and AUSTRAC attended the CFR's March 2022 meeting. 🇳🇿

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HILDA Disclaimer

This document uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The unit record data from the HILDA Survey was obtained from the Australian Data Archive, which is hosted by The Australian National University. The 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 the data, however, are those of the authors and should not be attributed to the Australian Government, DSS, the Melbourne Institute, the Australian Data Archive or The Australian National University and none of those entities bear any responsibility for the analysis or interpretation of the unit record data from the HILDA Survey provided by the authors.

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The results of these studies are based, in part, on Australian Business Register (ABR) data supplied by the Registrar to the Australian Bureau of Statistics (ABS) under *A New Tax System*

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