3. The Australian Financial System

The Australian financial system remains resilient and its ability to withstand shocks continues to build. Capital ratios for banks are high by both historical and (comparable) international standards. They are well within the range that would be sufficient to withstand the loss of capital in most historical banking crises. Insurers' capital ratios continue to be well above their regulatory requirements. Liquidity risks are generally being well managed by banks and they currently have access to ample funding at low cost. Banks' asset quality also remains generally good (though a little weaker than the lows of a year ago). Profitability in the banking and general insurance industries has declined a little of late but remains at healthy levels that are above international peers and their cost of capital. In addition, financial market infrastructures in Australia have continued to support financial stability.

Despite this resilience, there continue to be vulnerabilities that must be addressed. Many of these vulnerabilities are non-financial in nature. The issues highlighted by last year's Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry (Royal Commission) have the potential to further erode public trust in financial institutions and to impair their financial position. Positive steps have been taken in this regard but there is much more to do. At the same time, it is important that institutions' efforts to strengthen their governance and management of compliance risks do not come at the expense of careful management of financial and other non-financial risks. The risk posed by information technology system malfunctions or malicious cyber attack is another important non-financial risk. The recent prudential standard issued by the Australian Prudential Regulation Authority (APRA) establishes principles for good practice in this regard, but institutions need to ensure that they continuously improve their practices in this area, given its rapidly evolving nature.

Some other vulnerabilities are more financial in origin. Profitability in the life insurance industry has declined further and is no longer at a sustainable level. Life insurers are taking steps to address this, but the long-term nature of life insurance contracts means it could take some time to correct. A long-term challenge for all of the financial industry is to better manage the broad range of risks arising from climate change (see 'Box C: Financial Stability Risks from Climate Change'). While these do not currently pose a substantial risk to financial stability, they could do so if left unaddressed.

Banks' asset quality has deteriorated somewhat over the past year

The decline in asset quality has largely been driven by housing loans. The ratio of non-performing housing loans now exceeds its peak in the economic downturn that followed the financial crisis (Graph 3.1). However, it is well below the levels reached during the early 1990s. The share of non-performing business loans remains low but has also increased a little, primarily due to a deterioration in the performance of loans to smaller, unincorporated, businesses.

Within the housing loans portfolio, the majority of non-performing loans are well covered by collateral and loan impairments are at low levels. While a substantial decline in the value of dwellings securing mortgages could increase the number of impaired loans, the recent improvements in housing market conditions in the eastern states should lower the likelihood of this. However, in Western Australia and the Northern Territory the risk of losses from impaired housing loans continues to rise (see 'Chapter 2: Household and Business Finances').

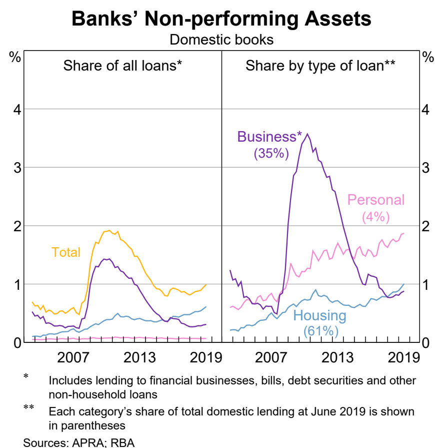
The rate of non-performance among Australian banks' offshore operations also remains at a very low level. Rates of non-performance on banks' New Zealand lending, which accounts for the majority of offshore lending, are close to their post-GFC low. Outside of New Zealand, Australian-owned banks' international lending to private firms and banks has contracted and is small, accounting for 8 per cent of total assets compared with 10 per cent in early 2014 (Graph 3.2). There are signs that this period of downsizing offshore lending has ended. This is particularly notable in relation to Asia, where exposures in Singapore and Japan have been growing at a reasonable rate and lending in other countries has stabilised. While these international exposures add complexity and new risks to Australian banks' business, they also allow them to diversify overall risks.

Foreign banks' share of Australian business credit continues to increase, and is now about 20 per cent (and is even larger for institutional lending; Graph 3.3). Historically, strong growth in foreign bank lending has typically amplified the credit cycle and created incentives for domestic banks to loosen lending criteria to maintain market share. However, greater regulatory scrutiny and a cautious approach by domestic banks appears to have contained this risk to date in recent years.

Graph 3.1

Banks' Non-performing Assets

Domestic books



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

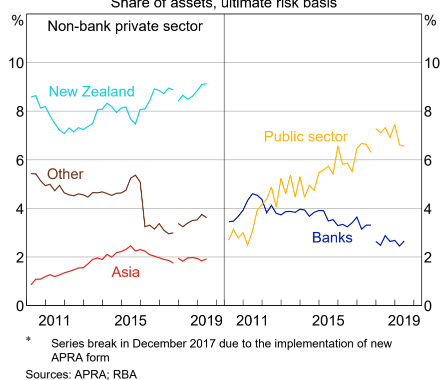
** Each category's share of total domestic lending at June 2019 is shown in parentheses

Sources: APRA; RBA

Graph 3.2

Australian-owned Banks' International Exposures*

Share of assets, ultimate risk basis



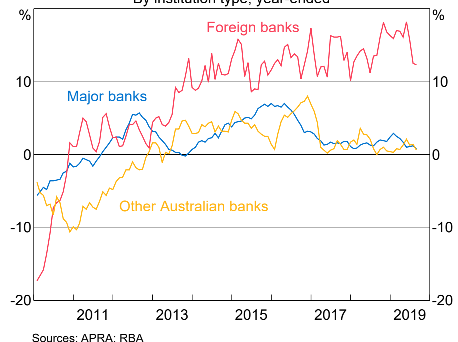
* Series break in December 2017 due to the implementation of new APRA form

Sources: APRA; RBA

Graph 3.3

Business Credit Growth

By institution type, year-ended



Sources: APRA; RBA

Australian banks' funding has become more resilient over the past decade

Banks' Liquidity Coverage Ratios (LCR) – which measure their holdings of liquid assets relative to the potential outflows of funding that could occur in a short-lived but severe stress scenario – have remained stable at around 125–135 per cent over recent years. Their Net Stable Funding Ratios – which measure the extent to which longer-term liabilities are used to fund illiquid assets – have risen to be around banks' target levels.

While most banks comfortably meet these regulatory requirements, APRA recently notified three banks of breaches in their reporting of the stability of their intra-group funding. Macquarie Bank, Rabobank and HSBC Bank had provisions in their intra-group funding agreements that allowed the parent to withdraw intra-group funding in times of stress, when it would have been most needed. This meant that these banks at times had true LCRs below 100 and so were not compliant with LCR requirements. These banks have subsequently removed these clauses from the intra-group funding arrangements and will restate their past liquidity metrics.

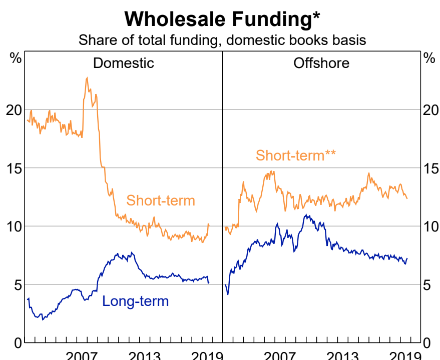
Australian banks' relatively significant use of offshore funding remains a potential vulnerability, given that offshore investors have tended to reduce cross-border funding in periods of stress (Graph 3.4). Offshore funding can also give rise to foreign exchange risk, but Australian banks fully hedge against this. Further, there is an important difference between how Australian banks use offshore funding and how it has been used by banks in some other countries that experienced a funding crisis. In particular, Australian banks mainly use the currency-hedged offshore funding to extend Australian-dollar loans. In the event of reduced willingness of foreign investors to fund Australian banks, the Australian dollar may depreciate, reducing the foreign currency funding need. The banks could also replace the hedged foreign funding with domestic sources with no change in their currency matching. If domestic markets cannot expand sufficiently quickly to fully replace reduced offshore funding, which would seem likely for larger shocks, as a last resort the Reserve Bank can provide liquidity.

Australian banks currently have ample access to a range of funding sources, and at lower cost than a year ago. Spreads on long-term wholesale funding have declined to around their lowest level since before the financial crisis, while spreads on short-term wholesale funding have fully unwound last year's increase, to be around their lowest level in several years (Graph 3.5). Banks have also taken advantage of the absence of term premium in bond markets to lengthen the duration of their funding over the past few years, reducing their future annual refinancing needs. However, Australian banks' average bond tenor is still well below that of other developed countries' banks, meaning they face more rollover risk (Graph 3.6). Further lengthening of the maturity of their offshore borrowing would reduce the rollover risk for banks and the broader financial system.

Movements in spreads on short-term wholesale debt over the past 18 months suggest those markets are not particularly resilient. During this

Graph 3.4

Wholesale Funding*



* Adjusted for movements in foreign exchange rates; wholesale debt is on a residual maturity basis; there is a structural break in the data from July 2019

** Includes deposits and intragroup funding from non-residents

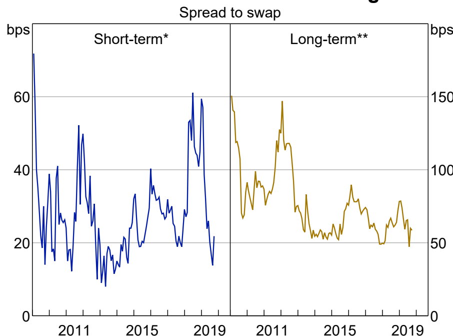
Sources: APRA; RBA

period, spreads for bank bills, repurchase and foreign exchange swaps increased substantially and then later declined just as rapidly, with no widely accepted explanation for the moves. However, the most plausible explanations imply that fairly small declines in domestic demand for bank debt and a modest increase in attempts to swap US into Australian dollars (both of which have since been unwound) were unable to be accommodated without significant impact on pricing. The apparent lack of depth in these markets appears to reflect structural changes that increase the resilience of banks but limit their willingness to supply liquidity – including

Graph 3.5

Australian Banks' Debt Pricing

Spread to swap



* Three-month bank bill swap rate to overnight indexed swap

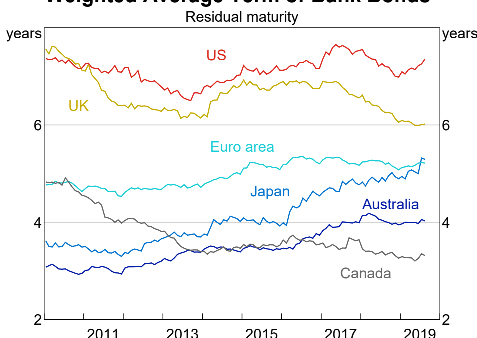
** Major banks' three-to-five A$ bonds on a residual maturity basis to four-year interest rate swap

Sources: AFMA, Australian Branch; Bloomberg; RBA; Tullett Prebon (Australia) Pty Ltd; UBS AG

Graph 3.6

Weighted Average Term of Bank Bonds*

Residual maturity



* Includes unsecured bonds, covered bonds and Tier 2 instruments; data are based on the legal maturity of bonds, not first call date, other than for Tier 2 and perpetual instruments where maturity is calculated to call date

Sources: Bloomberg; ICE Data is used with permission; RBA

the Dodd-Frank Act, leverage ratios, a change in banks' risk appetite and greater focus on conduct in money markets.[1] The limited ability of short-term money markets to accommodate changes in supply and demand indicates that these markets might be quite volatile during periods of stress. If so, it would imply greater funding and profit vulnerability for banks because short-term rates are a critical determinant of their overall funding costs.

Improving non-financial risk management is a priority for the financial sector …

Shortcomings of culture and governance within banks, insurers and superannuation firms have been well documented, as part of the Royal Commission. Some of the findings from the Royal Commission were echoed by APRA's summary of last year's self-assessments of culture and risk governance by 36 large financial institutions. The summary highlighted common themes of institutions: having under-developed frameworks for managing non-financial risk; not always being clear about who was accountable for such risks; taking excessively long to address known deficiencies; and having insufficient understanding of their own risk culture to determine if it supports the behaviour its board is seeking.

The absence of an appropriate culture in the financial sector has clear social costs. It can also have financial stability implications. International experience has shown that pervasive misconduct may be indicative of poor control of risks and can ultimately significantly impair bank profitability and capital. Australian banks have started to see some of this. Remediation costs associated with poor customer outcomes and regulatory non-compliance have amounted to $7½ billion across the financial sector over the past two years and are expected by bank analysts to increase. In addition, the cost to banks of upgrading their risk and compliance

functions has been considerable, though in a sense this corrects for past underspending. APRA has also imposed additional capital requirements on the major banks and an insurer to account for poor operational risk management practices.

… and a number of changes are underway to address this

Financial institutions and regulators have already taken important steps to improve culture and governance in the financial system. To date, these have mostly focussed on addressing poor incentives, consistent with the Royal Commission's view that this was the root cause of much of the observed misconduct. This has included a proposed end to the grandfathering arrangements for conflicted remuneration in financial advice and a move to cease paying commission to mortgage brokers on undrawn funds or upon achieving volume-based targets. Banks have also now implemented the recommendations of the Sedgwick review of bank product sales commissions, including not directly rewarding customer-facing roles for sales performance. APRA has proposed a prudential standard for executive remuneration that imposes a maximum weight of 50 per cent on financial performance metrics when determining bonus payments, along with longer vesting periods and stricter clawback clauses to better align executive incentives with long-term performance. (Further details on APRA's proposal can be found in 'Chapter 4: Regulatory Developments'.) These reforms all complement the maps of accountable senior executives and directors that have been developed over the past 18 months to comply with the Banking Executive Accountability Regime (BEAR). These accountability maps are now in place across all Australian authorised deposit-taking institutions (ADIs), following the expansion of BEAR industry wide on 1 July 2019.

Regulators are also taking a more assertive approach to enforcing the law. APRA and the Australian Securities and Investments Commission (ASIC) have both initiated a number of court proceedings for alleged misconduct by financial institutions. APRA has also been more public in its resolution of prudential issues.[2] And in a variety of instances, it is clear that APRA and ASIC are taking a more 'constructively tough' approach to enforcement.

The reforms flowing from the recommendations of the Royal Commission should be implemented in a timely manner to improve the financial system. They should reduce the risk of future misconduct, ensure that financial services provided in Australia meet community expectations regarding fairness and suitability, and protect the reputation of Australian banks among international creditors. It is important, though, that the large body of work required to address these issues does not distract financial institutions from a sufficient focus on other risks. It is also important that there is not an excessive tightening in the supply of credit which, by its nature, requires taking calculated risks to support investment, innovation and so economic growth. The Australian financial system is well placed to manage these challenges, given it is well capitalised and generally starting from a position of high profits.

Risks related to cyber attacks and information technology (IT) failures have grown

Risks to financial institutions' IT systems – from both malicious attacks and malfunction – have grown as systems have become more complex and digital platforms have become ingrained in all aspects of the operations of financial institutions. This has resulted in some prominent cyber attacks on financial institutions during 2019. There has also been an increase in the number of outages in retail payments systems over the past year, mostly because of software

failures.[3] The risk of malfunction or cyber attack is especially pronounced for ageing legacy IT systems. However, cyber risk is constantly evolving and has a high degree of uncertainty so even state-of-the-art IT systems are vulnerable. This therefore requires financial institutions to stay highly vigilant and regularly upgrade their defence to mitigate new vulnera-bilities.

While cyber attacks and incidents are most likely to involve manageable financial losses for specific institutions, they could have systemic implications in some circumstances. This is particularly the case when the failure is caused by malicious attacks that aim to cause damage, perhaps across multiple institutions. An example could be an attack that erodes data integrity, thereby creating uncertainty about banks' asset or liability positions. An extended disruption to the Australian wholesale payment network would also adversely affect the broad financial sector. The use of common third party IT systems, encompassing both software and hardware, across institutions also provides a systemic vulnerability. And the impact of cyber attacks or a significant malfunction on the financial system could be amplified by a loss of creditor confidence in certain circumstances, potentially leading to a withdrawal of funding.

A lack of precise data on cyber incidents, in part stemming from a desire not to publicise information that may assist those with malicious intent or carry reputation risk, adds to the challenge of managing these risks. While some public and commercial datasets exist, they are often incomplete. The information that does exist is often piecemeal, making it hard to compare and analyse reported figures. Improved data collection and reporting, as well as sharing of information about threats and attacks, will assist institutions in responding quickly. It will also help regulators in monitoring the frequency and nature of incidents, and institutions' responses and preparedness for cyber risks.

In recognition of this, APRA's new prudential standard on information security, which came into effect in July, requires all regulated entities to promptly report any material security incidents. The standard also aims to ensure that APRA-regulated entities maintain strong cyber security capabilities, commensurate with the size and extent of threat to their information. This is done by requiring entities to: clearly define information security roles and responsibilities; identify information assets and classify them according to criticality and sensitivity; regularly conduct system testing and internal audits; develop formal response procedures to security incidents; and extend such measures to third parties, including evaluating their security capabilities to ensure compliance.

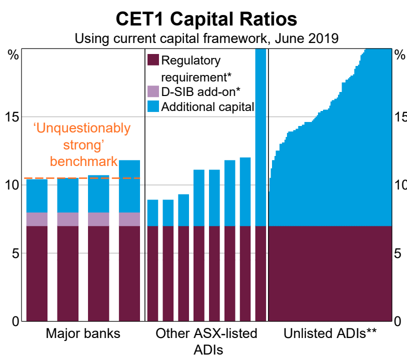
Banks' capital positions are strong and some further enhancements are expected

Australian ADIs all meet APRA's 'unquestionably strong' capital benchmarks that will apply from next year. Major banks' Common Equity Tier 1 (CET1) ratios are all around APRA's benchmark of 10½ per cent (Graph 3.7). Other ADIs are also expected to have sufficient capital to meet the increase in their minimum capital requirements under the revised capital framework.

The significant improvement in capital positions that ADIs have made since the global financial crisis has made them more resilient to potential losses. Major banks' Tier 1 capital ratios are now more than one and a half times what they were before the financial crisis, and are likely within the top quartile of large banks internationally when measured on a comparable basis (Graph 3.8). Their Tier 1 capital ratios (12¾ per cent overall) are also well within the range that would have been sufficient to withstand the majority of historical bank crises.[4] The major banks' leverage ratios (the ratio of Tier 1 capital to non-risk-weighted

exposures) have also increased by more than one-third over the past decade, to be well above APRA's proposed minimum requirements of 3.5 per cent. In recognition of this increased resilience, equity market pricing implies that the probability of an Australian bank defaulting is minimal.[5]

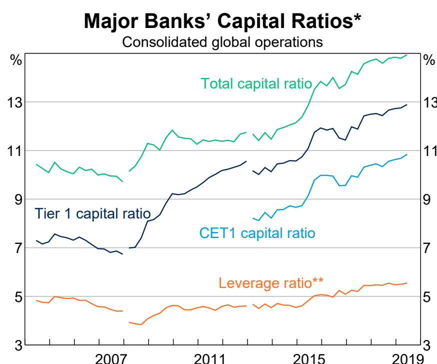
Further increases to the major banks' capital requirements are expected over the next few years. The Reserve Bank of New Zealand's proposed regulatory changes would substantially increase the minimum capital requirements for banks operating there, which will affect the major banks' through their



* Requirement includes capital conservation buffer; domestic systemically important bank (D-SIB) add-on only applies to the major banks

** Some ADIs have capital ratios above 20 per cent (not shown)

Sources: APRA; RBA



* Break in March 2008 due to the introduction of Basel II; break in March 2013 due to the introduction of Basel III

** Estimated prior to September 2015 as Tier 1 capital as a per cent of assets

Sources: APRA; RBA

subsidiaries. This will likely require an increase to their group capital ratios, particularly given APRA's recent decision to halve the maximum allowable exposure of an ADI to a related entity. This will ensure that these increases in New Zealand capital do not come at the expense of the Australian banking system. It should also improve the resilience of the financial system by reducing the risk of contagion. APRA also recently imposed additional capital requirements on the major banks to reflect the increased operational risks identified in their self-assessments of risk governance. Further small increases in capital will be required following the adoption of new accounting standards in the second half of 2019. However, the major banks remain well placed to manage these adjustments, especially those that have impending asset sales.

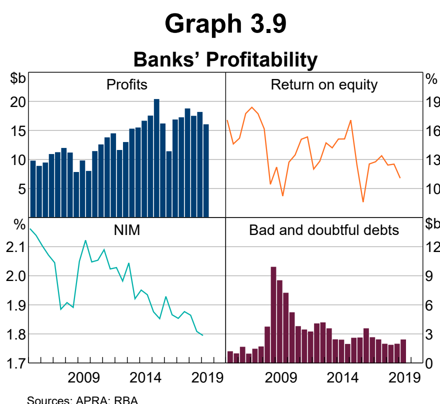
More significantly, the amount of capital protecting the financial system from a disorderly bank failure will increase further to comply with APRA's framework for loss-absorbing capacity (LAC). APRA announced in July that the major banks will be required to increase their total capital ratios by 3 percentage points by 2024 (and possibly 4–5 percentage points eventually; see 'Chapter 4: Regulatory Developments'). This would align the quantum of major banks' LAC with global peers, after accounting for differences in capital frameworks. It is likely that banks will meet this increased requirement by issuing additional Tier 2 capital instruments. The major banks have issued about $12 billion of Tier 2 instruments in the two months after APRA's announcement, but will still need to issue around $40–50 billion more in net terms.

The resilience of Australian banks will be further improved by APRA's proposed revisions to the capital framework, which were updated in June. While the proposed changes will be 'capital neutral', in that they do not increase banks' overall capital requirements, they aim to ensure that the capital held against assets is more

sensitive to their riskiness. This will be achieved by recalibrating risk weights. In particular, risk weights for interest-only and investor housing loans will rise relative to owner-occupier principal & interest (P&I) loans, risk weights on mortgages calculated under the standardised approach will become more sensitive to the loan-to-valuation ratio (LVR), and commercial property risk weights under the standardised approach will vary more with both LVR and the extent to which the borrower relies on income from the property. The revisions are also aimed at reducing the structural concentration of residential mortgages on banks' balance sheets. This will be achieved by increasing the average risk weight for housing loans while lowering it for some other assets classes (most notably, loans to small and medium enterprises secured by non-housing collateral), which should reduce the relative attractiveness of housing lending. Further revisions to the framework will be released later this year, before being finalised next year and becoming effective in 2022.

Australian banks' profits are high but likely to decline

Australian banks remain very profitable, with return on equity well above their cost of equity and high by international standards. However, banks' profits fell somewhat in the first half of 2019 (Graph 3.9).



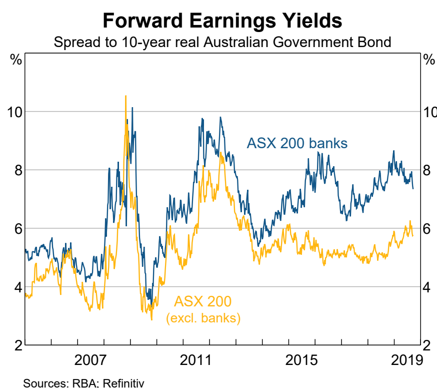
The recent decline in profits was primarily driven by customer remediation costs arising from misconduct – mostly within banks' wealth management and financial planning businesses. However, underlying profits have also declined. Non-interest income has fallen as banks have sold or scaled back fee-generating activities. Interest income growth has been limited amid slowing housing credit and a persistent narrowing in the net interest margin (NIM). The NIM has been declining because of pricing competition for housing loans and switching from (higher-margin) interest-only to (lower margin) P&I lending, although this has been somewhat offset by last year's repricing of standard variable home loan rates and the easing in short-term wholesale funding costs this year. Remediation charges for incorrect (earlier) interest charges have also temporarily lowered NIMs by a few basis points over the past year.

Analysts expect little growth in banks' profits, given forecasts for ongoing weak credit growth, ongoing pressure on NIMs and further costs relating to customer remediation and the need to improve compliance and risks management. Bad and doubtful debt charges are also expected to increase, in part because of the rise in housing loan arrears but more broadly because they are at cyclical lows.

One reason that analysts expect NIMs to narrow is that a portion of bank deposits already receive zero or very low rates of interest. Deposit interest rates can technically fall below zero and, for institutional deposits, they are negative in many other countries. But in those countries with very low interest rates it has been very rare for retail deposits to be negative due to concerns that customers will convert deposits to cash. Most deposits in Australia currently receive interest well in excess of zero, so the extent of pressure on margins from these deposits will be smaller than in many other countries. Consistent with this, average deposit rates appeared to fall

roughly in line with cuts to lending rates following rate cuts in June and July. Larger banks hedge the interest rate risk on their non-interest bearing deposits (i.e. those that never pay interest), along with their capital. These hedges will increase in value after an interest rate reduction, and then protect banks from lower rates for the remaining life of the contract. However, these hedges are less effective if rates stay low for a very prolonged period, given they would roll over to lower rates. A slightly larger proportion of rates will also be constrained if deposit interest rates fall further.

The uncertain outlook for profitability has increased Australian banks' implied cost of capital relative to other shares over the past three years, as measured by the spread of forward earnings yields to the risk-free rate (Graph 3.10). The premium on banks' implied cost of capital is currently about as high as it has been for many decades. The gap between the premium applied to banks and other shares has narrowed somewhat this year, mainly due to an increase in mining companies' forward earnings yields, but it remains well above its historical average.



Risks from non-ADI lending remain limited

Total debt financing from the non-ADI sector has remained steady at around 7 per cent of system assets, well below its pre-GFC share. The risk of contagion from non-ADI lenders to banks is also limited given banks' low exposure to the sector, which is only a few per cent of their financial assets. APRA now also has 'reserve' powers that allow it to impose rules on non-ADI lenders if a material risk to financial stability is identified.

While total non-ADI lending activity has been growing in line with the financial system, housing credit extended by non-ADIs has been growing more rapidly (despite slowing a little of late; Graph 3.11). As a result, non-ADIs have increased their market share over the past few years, but they still only account for less than 5 per cent of total housing credit.[6] Rapid growth in non-ADI housing credit can create risks if it exacerbates credit and asset price cycles, or prompts banks to weaken their lending standards. However, this is unlikely to have occurred in the recent period, given housing prices and credit growth has been weak and banks have been tightening lending standards. Instead, the recent expansion of non-ADI lending has been a helpful support to avoid an excessive contraction in the provision of credit.

Information from the RBA liaison program indicates that non-bank lenders have also remained active in providing funding for residential construction projects. Non-ADI lending to property developers can be stabilising by allowing construction projects to commence when a lack of pre-sales makes it difficult to obtain bank credit. However, there can also be risks if competition from non-banks is significant enough to lead to an overall decline in lending standards. There is little evidence of the latter at present.

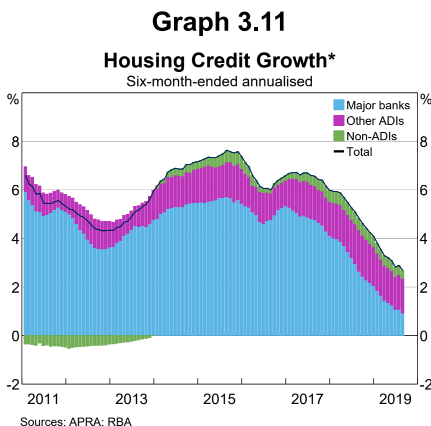
The general insurance industry is profitable and well capitalised …

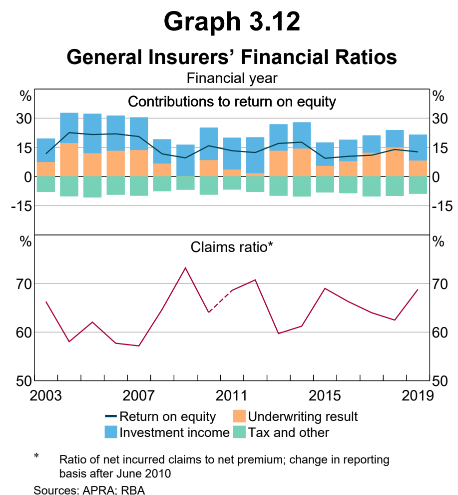
General insurers' profits remain at a healthy level after improving over the past few years (Graph 3.12). Recent profitability has been underpinned by very strong investment returns, partly offset by weaker underwriting results. Strong investment returns were driven by valuation gains from the decline in risk-free rates, though this also increased the discounted value of future claims liabilities and so weighed on underwriting performance. Underwriting performance was also impacted by higher claims from hailstorms and floods, which resulted in an increase in the claims ratio (net incurred claims relative to net premiums). This offset continued increases in insurance premiums for consumer and some commercial business lines. General insurers remain well capitalised, with capital equivalent to 1.8 times APRA's prescribed amount.

Lenders mortgage insurers (LMIs) are also well capitalised, but their profits have been under pressure in recent years. Revenue has declined due to the lower volume of high-LVR mortgage originations (which tend to require insurance) that have resulted from ongoing improvements to lending standards since early 2015 (see 'Chapter 2: Household and Business Finances'). At the same time, claims have also increased due to the deterioration in housing loan impairments, particularly in Western Australia. In light of these challenges, along with a change in ratings methodology, Standard & Poor's downgraded its credit rating for two major Australian LMI providers in July (to A).

… but conditions remain challenging for life insurers

Life insurers' profitability has declined to below their cost of capital (Graph 3.13). Poor profitability reflects persistent structural issues, including historical underpricing of long-dated policies, loose product definitions, overly generous benefits and higher-than-expected claims, particularly for mental health. These issues have particularly affected individual disability income insurance (DII), which accounts for much of the recent decline in profits. APRA has undertaken a thematic review of the DII industry, and has requested that insurers take steps to address shortcomings which have resulted in unsustainable product design and pricing decisions.[7] But these issues will take a long time to resolve given the long-term nature of these insurance contracts and the pressure to retain market share in a competitive market.

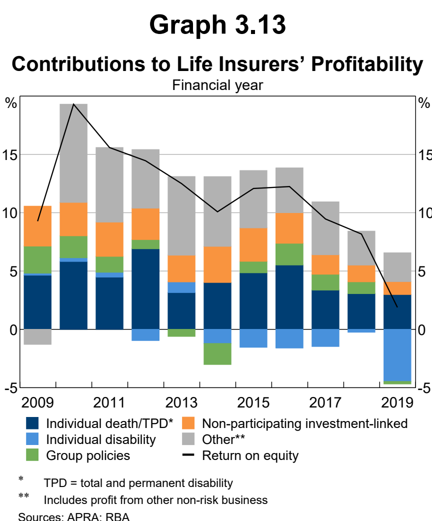




Recent and forthcoming changes to the industry will pose further challenges. Under recently passed legislation, superannuation funds will no longer be allowed to provide insurance by default for members aged under 25 or with inactive or low balance accounts. This will affect revenues from group life insurance policies unless premiums are increased for other members, and has already resulted in a material writedown of the value of AMP's life insurance businesses. A proposed ban on unsolicited telephone sales of direct life insurance and review of life insurance commissions will also impact revenues, while costs will be incurred to address deficiencies in culture and governance identified by the Royal Commission. The change in ownership of life insurers over recent years will help life insurers to manage this change. Almost all Australian banks have sold, or announced the sale of, their life insurance businesses to large global insurance specialists. These new owners have underwriting expertise, scale and strong financial resources which should have them well placed to undertake the necessary change. High levels of capital – equivalent to 1.8 times the prescribed amount – will also support insurers in addressing these issues.

Graph 3.13

Contributions to Life Insurers' Profitability



* TPD = total and permanent disability

** Includes profit from other non-risk business

Sources: APRA; RBA

Systemic risks in superannuation are limited due to the absence of leverage

The superannuation sector is a large part of Australia's financial system and an important source of funding for Australian institutions. Significant changes to the regulation and supervision of superannuation are underway following findings from the Royal Commission and the Productivity Commission's review of superannuation.[8] Recently passed legislation limits the fees that trustees can charge on low-account balances. APRA has also increased its scrutiny of underperforming funds and will begin publishing assessments of fund performance. This could lead to fund closures or outflows from underperforming funds. There are also major changes in the ownership of retail superannuation funds impending, with most major banks arranging an exit from this industry. While these changes will pose challenges and give rise to operational risk, the lack of debt within APRA-regulated funds – which are not generally permitted to borrow – makes these risks manageable without risk to members' funds.

Given their large size, superannuation funds could potentially amplify market instability if they were to sell assets during periods of market stress. This could be particularly important for banks if the likely increase in their cost of capital during periods of stress was amplified by superannuation funds reducing their holdings of bank stocks. While this could happen if superannuation fund managers change their asset allocations and/or members switch between investment choices rapidly, historical experience suggests that these risks are minimal. Members are mostly inactive and fund managers generally have a longer-term investment focus. Indeed, superannuation funds increased their net purchases of domestic equities, including bank shares, during the GFC.

Financial market infrastructures remain sound, with further strengthening underway

Financial market infrastructures (FMIs), such as central counterparties (CCPs), securities settlement facilities and payment systems, occupy a central place in the financial system, because of their role in facilitating payments, trades and risk management. As a result, their continued resilience is critical for financial stability. FMIs operating in Australia have generally performed their functions in a way that promotes financial stability over the past year, and are working to address some remaining vulnerabilities.

CCPs have the potential to significantly reduce risks to participants through the multilateral netting of trades and by imposing more-effective risk controls on all participants. This means that participants only have to manage their exposure to a single counterparty that holds a conservative pool of financial resources. However, if a CCP's risk controls fail to work as designed, it can transmit risk to its participants by calling on them to contribute towards losses or by undermining confidence in the markets that the CCP serves. Given this, Australian regulators have continued to monitor whether Australian-licensed CCPs have identified all issues that were highlighted by a default at the Swedish CCP Nasdaq Clearing AB in 2018 and are addressing those that are relevant to Australia. (The default at Nasdaq created unexpectedly large losses for the CCP, much of which were absorbed by contributions from its participants.) Most of the issues faced by Nasdaq were already mitigated by Australian-licensed CCPs. However, some additional measures taken by ASX Clear (Futures) to address residual risks are summarised in the RBA's 2019 Assessment of ASX.[9]

While the management of financial risks by FMIs is of continuing importance, addressing non-financial risks has also been a focus in the RBA's 2019 Assessments of FMIs. ASX has now implemented most of the recommendations of a 2018 review of its technology governance and operational risk frameworks. The 2018 review highlighted that, in these areas, it had fallen behind best practice in financial services. ASX's program to improve its enterprise risk management and governance practices builds on related initiatives identified prior to the review.

An operational outage affecting an FMI can have a significant impact on its participants and the broader financial system since there are typically limited substitutes available for critical FMI services. Given this, the RBA's 2019 Assessment of the Reserve Bank Information and Transfer System (RITS) – a high-value settlement system used by banks and other approved institutions to settle payment obligations on a real-time basis – reviewed the remediation actions taken in response to an incident on 30 August 2018. This incident resulted in power loss to most IT systems at the RBA's head office, including those supporting RITS.[10] All initial actions arising from the incident have been completed. The RBA is currently working with financial institutions to review contingency arrangements for extreme scenarios such as an extended outage of RITS or other key infrastructure. The RBA also conducts regular contingency testing with RITS members to maintain a high level of readiness to deal with operational incidents.

The threat of a cyber attack is another important source of operational risk for Australian FMIs and their participants. An effective response to such threats requires coordination between FMIs, participants and other stakeholders that may be affected. Given this, the Bank plans to hold a 'table top' exercise in late 2019 with selected RITS members and industry stakeholders, to simulate a cyber event affecting the RITS ecosystem. The Bank will also be working with members to enhance security for their connections to wholesale payments systems, in

line with a strategy developed by the international Committee on Payments and Market Infrastructures. This work adds to an initiative of SWIFT, an international provider of payments messaging services, to establish a common set of security controls for its users, including RITS members. More broadly, a working group of the Council of Financial Regulators and the Department of Home Affairs has been established to share information on cyber-related matters affecting financial sector entities. The working group is developing a framework for testing the strength of institutions' defences against cyber attacks; this framework is intended to be applied to a pilot set of firms during 2020. The results would be conveyed to each institution and any identified themes reported back to the broader industry.

Another key source of non-financial risk to FMIs is the risk that the legal basis for their operations is inadequate, uncertain or unclear. Without a sound legal basis, an FMI may face unintended, uncertain or unmanageable credit, liquidity or operational risks, which could in turn create or amplify systemic risk. The 2019 Assessment of ASX found that there are strong legal foundations for the operating rules governing its clearing and settlement activity. However, it also found gaps that could hinder entities operating ASX's clearing and settlement facilities from accessing capital held to cover their business, operational and investment risks. ASX has addressed a number of these gaps and plans to take further action to ensure that its clearing and settlement facilities have legally certain access to this capital.

Endnotes

[1] The impact of leverage ratio requirements has been exacerbated at quarter-ends by 'window dressing' among some foreign banks looking to reduce their reported leverage ratios.

[2] Examples include APRA's response to breaches of prudential liquidity standards by Macquarie Bank, Rabobank Australia and HSBC Bank Australia and its imposition of a fine on Westpac for failing to meet legal reporting requirements.

[3] See Bullock, M (2019), 'Modernising Australia's Payments System', Speech at the Central Bank Payments Conference, Berlin, 25 June.

[4] An IMF study found a Tier 1 capital ratio of 15 to 23 per cent is appropriate for many advanced economies (see Dagher *et al* (2016), 'Benefits and Costs of Bank Capital', IMF Staff Discussion Note No 16/04). The major banks' Tier 1 capital ratio is equivalent to 17½ per cent on an internationally comparable basis accounting for APRA's stricter application of global bank standards.

[5] The implied probability of default can be derived using a Merton-style 'distance-to-default' model, as done in MacDonald C, M van Oordt and R Scott (2016), 'Implementing Market-Based Indicators to Monitor Vulnerabilities of Financial Institutions', Bank of Canada Working Paper No 2016–05.

[6] For more details, see RBA (2019), 'Non-bank Lending for Property', *Financial Stability Review*, October, pp 56–59.

[7] APRA (Australian Prudential Regulation Authority) (2019) 'APRA Demands Life Insurers Improve Sustainability of Individual Disability Income Insurance', Media Release, 2 May.

[8] Productivity Commission (2018), 'Superannuation: Assessing Efficiency and Competitiveness' Inquiry Report', December.

[9] RBA (2019), 'Assessment of the ASX Clearing and Settlement Facilities', Assessment Report, September.

[10] RBA (2019), 'Assessment of the Reserve Bank Information and Transfer System', Assessment Report, May.