



# AUSTRALIA

## FINANCIAL SECTOR ASSESSMENT PROGRAM

### TECHNICAL NOTE—SYSTEMIC RISK OVERSIGHT AND MACROPRUDENTIAL POLICY

February 2019

This Technical Note on Systemic Risk Oversight and Macroprudential Policy for Australia was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on September 14, 2018.

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## FINANCIAL SECTOR ASSESSMENT PROGRAM

January 22, 2019

# TECHNICAL NOTE

## SYSTEMIC RISK OVERSIGHT AND MACROPRUDENTIAL POLICY

Prepared By  
**Monetary and Capital Markets  
Department**

This Technical Note was prepared by IMF staff in the context of the Financial Sector Assessment Program in Australia. It contains technical analysis and detailed information underpinning the FSAP's findings and recommendations. Further information on the FSAP can be found at <http://www.imf.org/external/np/fsap/fssa.aspx>

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## Glossary

ADI	Authorized Deposit-taking Institution
APRA	Australian Prudential Regulation Authority
ASIC	Australian Securities and Investments Commission
BIS	Bank for International Settlements
CAR	Capital Adequacy Ratio
CCP	Central Counterparty
CCR	Comprehensive Credit Reporting
CET1	Common Equity Tier 1 Capital Ratio
CFR	Council of Financial Regulators
CCyB	Counter Cyclical Capital Buffer
CRE	Commercial Real Estate
DTI	Debt-to-Income Ratio
DSTI	Debt Service to Income Ratio
FMI	Financial Markets Infrastructure
FSR	Financial Stability Review
GFC	Global Financial Crisis
IO	Interest Only
LMI	Lender Mortgage Insurance
LTI	Loan-to-Income Ratio
LTV	Loan-to-Value Ratio
MoU	Memorandum of Understanding
NBFI	Non-Bank Financial Intermediary
NIS	Net Income Surplus
OECD	Organization for Economic Cooperation and Development
P&I	Principal and Interest
PC	Productivity Commission
RBA	Reserve Bank of Australia
RBNZ	Reserve Bank of New Zealand
RC	Royal Commission
RMBS	Residential Mortgage Backed Security
WEO	IMF World Economic Outlook

## EXECUTIVE SUMMARY

### *Systemic Risk Oversight*

**Australia has a relatively informal institutional arrangement for the coordination of financial stability policy, and responsibilities and tools for safeguarding financial stability are spread across several regulators.** The Council of Financial Regulators (CFR) serves as the discussion and information-sharing forum for the financial regulators on financial stability matters, but it has no powers or decision-making responsibilities. The Reserve Bank of Australia (RBA) has a mandate for overseeing financial system stability but has few policy levers, whereas the prudential toolkit is controlled by the Australian Prudential Regulation Authority (APRA), which has a statutory mandate to promote financial stability as it pursues its prudential objectives.

**Current arrangements have historically worked well and are based on a culture of strong inter-agency cooperation, and it is important that processes are appropriate to ensure ongoing focus on stability-related risks.** In this regard, a more concrete macroprudential framework should be put in place to strengthen accountability and promote policy action regarding financial stability risks.

**Greater transparency regarding the work of the CFR, along with a formalization of risk identification and analysis, should increase the accountability of the member agencies in their respective areas of responsibility, and strengthen their abilities to identify and address issues of systemic importance.** Together, these measures should increase the regulators' willingness and ability to act and enhance effective coordination and cooperation. In this regard, we recommend the CFR adopt the following:

1. Publication of CFR views on critical financial stability matters in an annual report, and regular publication by the CFR of a record of its discussions.
2. Enhancement of the stability-monitoring framework and measures of systemic risk.
3. Oversight of a broad cross-agency review of data and methods to strengthen analytical capabilities in the areas of financial stability and supervisory policy.

### *Macroprudential Policy*

**The authorities have implemented a range of measures to address elevated vulnerabilities in the household sector and real estate markets, focusing on areas of heightened credit risk.** Of particular importance are the temporary restrictions on investor loans and interest-only mortgage loans, given the growth in these traditionally higher risk and higher leverage products. Serviceability assessments have been strengthened and other areas of traditionally higher risk lending (e.g., CRE) given increased attention.

**These measures have been effective in reinforcing sound lending practices.** In addition, the pace at which household indebtedness is increasing has slowed and house prices have fallen in some areas. Given the recent evolution of the financial landscape, additional tightening of macroprudential measures does not appear warranted at this time.

**Significant structural vulnerabilities nevertheless persist in the financial system, such as a high level of household leverage and concentrated bank exposures to real estate markets, and we recommend that the authorities explore extending their policy toolkit to respond to them.**

The authorities evaluated a wide range of potential actions before implementing the targeted measures described above. However, in doing so, they eschewed several options that have been successfully used elsewhere, and which could enhance their ability to respond to these remaining issues. We recommend carrying out a ‘readiness’ assessment of potential options that would facilitate the introduction of new or expanded policy measures, if needed.

**If systemic risk rises, the authorities should consider activation of the Counter Cyclical Capital Buffer (CCyB) or other alternative options for adjusting capital requirements in a cyclical fashion.**

The CCyB builds resilience in the financial system to adverse shocks, helps constrain the growth of credit during cyclical upswings, and can be easily reduced under a lowering of risks. APRA, supported by the RBA, should continue to refine its CCyB metrics, leveraging new international work in this area. Other metrics that can be considered for potential adoption include time-varying sectoral risk weights adjusted to reflect cyclical variations in risk affecting specific portfolio segments.

**Borrower-based credit constraints have proven effective in constraining credit growth and overall indebtedness in similar economies.** A cap on loan-to-value (LTV) ratios for residential mortgages is one of the most commonly used instruments. Limits on loan-to-income (LTI) or debt-to-income (DTI) ratios are particularly effective when external forces are driving up housing prices (and mortgage sizes) much faster than household income is growing. A DTI measure would limit the growth of household debt and, in turn, lenders’ exposure to households. It can be complemented by other measures, such as caps under a debt-servicing test or a refinement of the existing net income surplus serviceability test, thereby providing additional flexibility in addressing ongoing levels of high household indebtedness.

**The authorities should be ready to implement borrower-based measures while sustaining recent emphasis on expanding supervisory oversight in these areas, as well as on improving needed data and analytical methods.** In recent years, APRA has required banks to pay particular attention to their high-LTV loans and, in April 2018, it indicated that banks should place an increased emphasis on borrower DTI metrics. Newly introduced DTI bank reporting requirements and the Comprehensive Credit Reporting (CCR) regime will help support the use of such measures.

**A set of prudential instruments to address risks that may originate from exposures to the Commercial Real Estate (CRE) sector should be developed.** CRE prices have risen sharply in recent years, buoyed by attractive returns in a low-rate environment. While bank exposures to the CRE sector are modest, the sector is highly cyclical and was the source of large bank losses in the

early 1990s. APRA conducted a thematic review of the CRE sector in 2016, and banks, in turn, improved their controls and underwriting standards. But, as in the housing market, a systematic approach would be helpful.

**It is recommended that APRA draws up advance plans for the use of its recently granted reserve powers in the non-ADI space.** Non-ADIs are growing their market share to become increasingly important lenders as prudential banking standards tighten, although their overall market share remains modest at around 5 percent. However, this is a relatively untested area of regulation that will require careful consideration of costs and benefits prior to any action.

**Table 1. Australia: Key Recommendations**

<b>Recommendations and Authority Responsible for Implementation</b>	<b>Time<sup>1</sup></b>
<b><i>Systemic Risk Oversight</i></b>	
Raise transparency of the CFR and accountability of the CFR member agencies, including through regular reporting on its discussions, as well as the publication and presentation of an Annual Report to parliament by the heads of the CFR member agencies.	I
Strengthen analysis of financial stability risks and stress-testing capabilities of the CFR agencies by improving analytical tools and leveraging the financial stability expertise of the RBA.	ST
The CFR should commission analysis by the member agencies on the financial stability implications of policies affecting household leverage.	MT
The CFR should strengthen analysis of factors affecting international investment flows and their implications for real estate markets and financial stability.	I
The CFR should oversee a broad review of data, identifying any gaps, in order to enhance analytical capabilities in the areas of financial stability and supervisory policy.	I
The CFR should assess the potential impacts of macroprudential regulatory measures on competition.	I
<b><i>Macroprudential Policy</i></b>	
The CFR should undertake a review of the readiness to apply borrower-based and other policies to address systemic risks, including data and legal/regulatory requirements. Address impediments to their deployment.	I
Increase weight on cyclical measures, such as the Counter Cyclical Capital Buffer (CCyB) and explore additional options for adjusting capital requirements in a cyclical fashion.	I
Develop a set of prudential instruments to address risks that may originate from exposures to the CRE sector.	I
Draw up advance plans for APRA's use of its recently granted reserve powers in the non-ADI space.	ST
<sup>1</sup> I Immediate (within 1 year); ST Short term (within 1-2 years); MT Medium Term (within 3-5 years)	

## INTRODUCTION<sup>1</sup>

**1. The evolution of Australia’s financial system since the Global Financial Crisis (GFC) has similarities to that of a number of other advanced economies, with many having experienced an extended period of exuberant financial conditions.** House prices and household indebtedness have often risen to elevated levels, and bank exposures have become more concentrated (typically to the household sector). The financial environment for many advanced economies is now becoming less accommodative, with a risk of heightened volatility as the financial cycle matures.

**2. The Australian authorities took measures to mitigate systemic risk during the upward portion of the cycle, strengthening lending standards and shifting demand away from investor mortgages.** In addition, the pace at which household indebtedness is increasing has slowed, and house prices have fallen back in some areas. Nevertheless, potential fragilities remain from ongoing high levels of household debt and Australian banks’ common exposure to mortgage credit. While substantial new measures are not required at this time, we recommend that the authorities expand their analysis and policy toolkit to increase their flexibility in dealing with cyclical and structural challenges to the financial system. This would be facilitated by a ‘readiness’ assessment of potential policy options that enables the authorities to address any necessary data requirements and tackle any legal or regulatory obstacles to their use.

**3. We also recommend changes to institutional structures to support effective coordination and cooperation in macroprudential policy, and to increase regulators’ willingness and ability to act.** While, overall, the Australian regulatory authorities appear to handle macroprudential issues in a productive and collaborative manner, the current institutional framework for coordination of macroprudential policy is quite informal, with the Council of Financial Regulators (CFR) serving as a purely consultative body. While this has significant benefits in terms of flexibility and cooperation, it may lead to a bias toward inaction on financial-stability-related issues. The institutional framework would be improved by a publication of financial stability risks by the CFR, greater transparency in the reporting of CFR discussions on financial stability, an enhanced focus on measures of systemic risk for the purposes of policy analysis, and a comprehensive data review.

**4. The note is structured as follows.** Section A surveys key concerns affecting the Australian financial system, including the substantial increase in house prices and household indebtedness, the rising concentration of bank exposures, and potential volatility from the commercial real estate sector. Section B examines the macroprudential policy response of the authorities. It was effective in reinforcing sound lending practices and dampening credit growth in the areas of greatest concern, but substantial structural challenges persist for the financial system. Section C describes the current institutional framework. The final two sections present recommendations with the objective of improving the authorities’ capacity to respond to ongoing challenges. Section D focuses on ways to

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<sup>1</sup> Prepared by Charles Cohen, Yu Ching Wong (both IMF), and Graydon Paulin (external consultant).



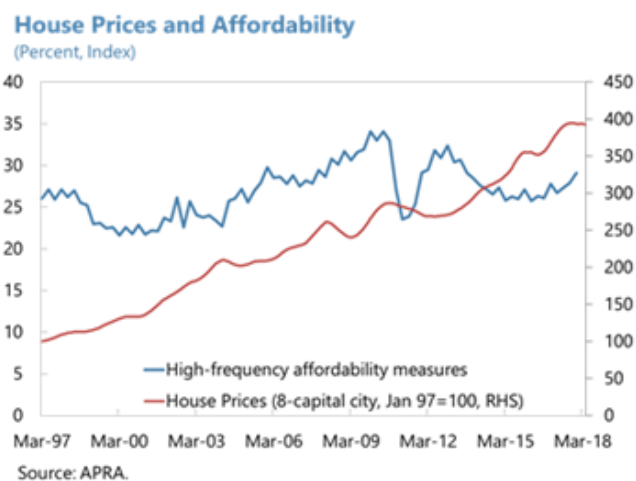
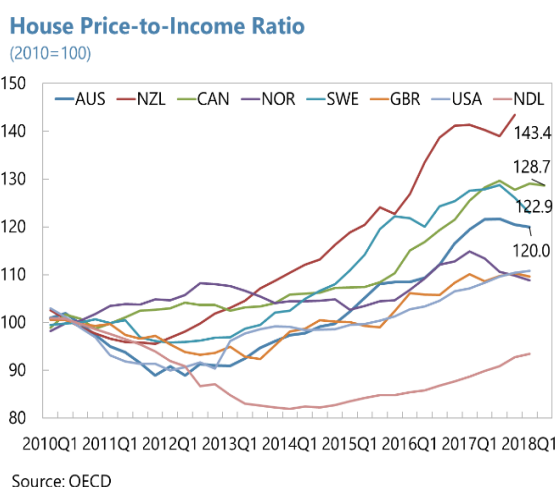
broaden the available range of macroprudential policies, tools, and analysis. Finally, Section E proposes changes in the institutional framework that would promote both accountability and policy action.<sup>2</sup>

## SYSTEMIC RISK OVERSIGHT AND MACROPRUDENTIAL POLICY

### A. The Real Estate Sector and Rising Household Indebtedness

**5. Systemic vulnerabilities arising from the household sector have been a central concern of the authorities for a number of years.** Household indebtedness renewed its upward path in the wake of the global financial crisis, reaching around 190 percent in 2017 (as measured by the total household debt-to-income (DTI) ratio), well above historical experience and very high by international standards. A large proportion of the increase in debt has been underpinned by rising exposure to the real estate sector. Mortgage credit has more than doubled over the past decade. A significant component of this is investor housing debt, with a rising proportion of tax payers owning investment properties.<sup>3</sup> A high level of indebtedness increases the vulnerability of households to adverse economic developments, while a substantial reversal in the real estate market and a rise in unemployment could expose a large number of households and investors to financial stress.

**6. The rise in household mortgage indebtedness has coincided with a sustained increase in house prices.** In a dynamic that has been repeated in a number of advanced economies (such as Canada and Sweden, see figures), percentage increases in house prices, especially in some of the



<sup>2</sup> Several other important areas of systemic risk are addressed elsewhere in the 2018 Australia FSAP. Structural vulnerabilities, including the concentration of the banking sector and the role of pension funds, are discussed in the FSSA. The technical note (TN) on stress testing covers funding and liquidity risks in addition to interconnectedness and corporate risks. Cross-border risks are covered in the stress testing and crisis management TNs.

<sup>3</sup> There has also been some increase in the proportion of individuals holding multiple investment properties. See RBA (2017c) for more detail on household property investments.

large population centers, have far outstripped the growth of prices and nominal incomes more generally. A number of factors have contributed to this, including the low-interest-rate environment in Australia and elsewhere, population growth, and considerable investor appetite (both foreign and domestic) for residential assets. Low interest rates have helped to offset the adverse impact on affordability from higher prices, although this could reverse in a rising interest-rate environment, especially as the majority of mortgages are issued as variable-rate loans. More broadly, a substantive decline in house prices could lead to negative equity for households (and investors), especially those with a high LTV ratio, reducing their flexibility in the face of economic and financial shocks.

**7. Interest-only (IO) mortgages are a significant proportion of overall mortgage lending.**

Although not unique to Australia, IO loans became especially important in the Australian market as their share in total mortgages rose over a period of years (see Box 1). They now represent about 15 percent of the stock of owner-occupier lending, and almost one-half of investor lending. The authorities have identified a number of concerns with IO lending. For example, it leads to a higher average indebtedness over the life of the mortgage relative to a comparable principal-and-interest (P&I) loan, increasing the borrower's potential vulnerability to shocks.

**8. The preponderance of investor mortgages taking the form of IO loans is of particular concern.**

Investors have a relatively large share of loans with current LTVs of 75 percent to 80 percent,<sup>4</sup> and may be more inclined to sell real estate assets in the face of financial hardship, adding to the downward pressure in the event of an economic downturn.

**9. Household indebtedness is high by historical and international standards and the household debt-to-income ratio has risen by some 20–25 percentage points since the previous FSAP in 2012.** However, household credit growth has remained slower relative to the pace set prior to the global financial crisis. Household credit has risen at about 7 percent per annum over the past several years. Personal credit (the proportion unsecured by mortgages) has remained fairly stable following rapid increases prior to the GFC. Although losses are typically somewhat higher on personal credit relative to mortgages, this now represents only 6 percent of banks' lending to the household sector.

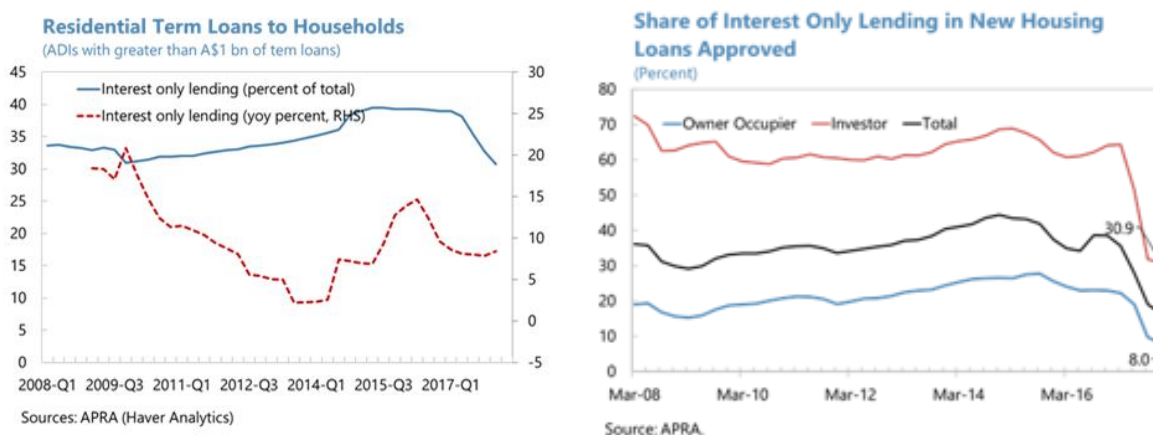
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<sup>4</sup> See Kent, C. (2017), 'Innovative Mortgage Data', speech by RBA Assistant Governor Christopher Kent, Moody's Analytics Australia Conference 2017, Sydney, August 14, 2017, p. 7.

### Box 1. Interest-Only Loans

Interest-only (IO) loans have captured a significant share of the Australian mortgage market, reaching almost 40 percent of total residential mortgages in 2015. In a P&I loan, the principal is paid off over the entire life of the loan. In an IO loan, principal is not paid during the first years of the loan (the period without principal payments is typically limited to five years, although it can be extended; particularly in the case of investor loans). As a result, the outstanding principal will be higher compared to a P&I loan over the life of the loan and the aggregate interest costs will be larger.<sup>1</sup>

IO loans are attractive to owner-occupiers owing to the additional flexibility they offer with respect to repayment. They are particularly attractive to investors in view of the benefit received from the tax deductibility of investment interest expenses, while allowing them to effectively maintain the leverage associated with their investment. As a result, investors have dominated the issuance of new IO loans.



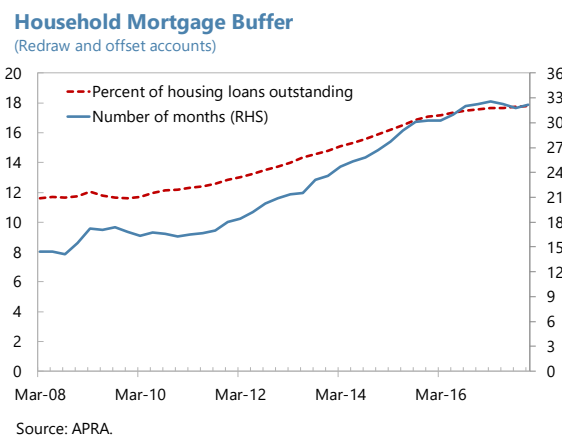
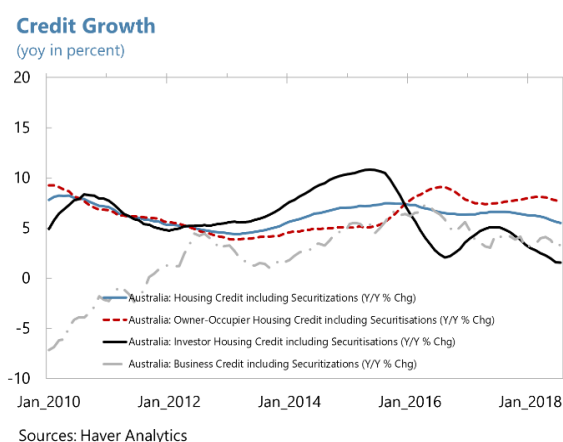
There are financial stability concerns associated with IO loans. In particular, loan balances are higher compared to a P&I loan over the life of the mortgage. This leaves the borrower more exposed to adverse developments. Some borrowers may also be vulnerable to the increase in servicing costs created by transferring an IO loan into a P&I loan at the end of five years (although serviceability assessments when the loan is originated will help to mitigate this).

APRA has tightened prudential standards on IO loans, particularly in 2017, with a benchmark limiting new IO lending by ADIs to 30 percent of total new residential mortgage lending.<sup>2</sup>

<sup>1</sup> For a more detailed review of the features of IO loans and the potential concerns that they raise, see RBA (2017b).

<sup>2</sup> In the Netherlands, where IO loans represent about 55 percent of outstanding mortgages, the Dutch financial authorities have voiced similar concerns.

**10. A unique feature of the Australian household credit framework is the use of offset accounts (and redraw facilities), which have grown rapidly over recent years.**<sup>5</sup> Mortgage holders may place funds in these accounts, the balances of which are then “offset” against outstanding loan balances, thereby reducing the interest payable on the loan. The borrower may draw upon the funds held in the account, and—if they wish—subsequently redeposit funds. This provides considerable flexibility and a way to use excess cash to reduce loan costs. As the funds held in these accounts are sometimes equivalent to many months of forthcoming payments, they can be a useful buffer in the event of financial stress. However, significant prepayments are less prevalent among the most vulnerable households with higher LTV ratios.



**11. Lenders mortgage insurance (LMI) provides an additional backstop for banks.** This is typically used in cases where the mortgage has an LTV ratio of 80 percent or higher. About one-fifth of housing loans are estimated to be insured.<sup>6</sup> LMI providers face highly correlated risks, being similarly exposed to mortgage defaults during an economic downturn.<sup>7</sup> APRA prudentially regulates LMI providers, requiring them to be ring-fenced from other insurance activities and to hold robust levels of capital. LMIs can contribute positively to financial stability in that they can help to offset the impact of mortgage defaults on banks (assuming they hold sufficient capital). However, caution is required to ensure that the presence of mortgage insurance does not lead to relaxed lending standards.

**12. The banking sector has remained highly profitable, but a rising share of its lending portfolio has become concentrated in the residential mortgage market.** Banks’ total return-on-equity is high relative to international peers, and nonperforming loans remain very low. However, residential real estate lending represents about 60 percent of total bank loans following a substantial shift in portfolio composition over the past couple of decades (away from business

<sup>5</sup> Offset accounts are offered as part of both IO and P&I mortgages.

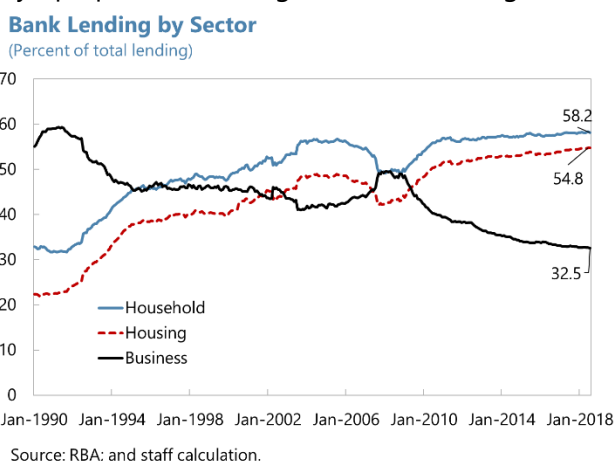
<sup>6</sup> This typically includes mortgages originating from the major banks, but the tax relief that IRB-based banks receive for the lower mortgage risk has been reduced because APRA requires a minimum 20 percent loss-given default assumption, whether or not the mortgage is insured. See RBA (2013).

<sup>7</sup> LMI providers typically reinsure a significant portion of their portfolios with global entities.

lending). Several major banks have also divested themselves of business activities viewed as ancillary in the current environment, such as wealth management and life insurance. In this manner, the balance sheets of the large Australian banks have become more similar, increasing their risk correlation. Turbulence in the real estate sector could expose banks as a group to substantial losses. Stress tests using an adverse scenario found that the major banks would experience large credit losses and significant reductions in their capital levels, although the latter remain above regulatory thresholds for CET1.<sup>8</sup>

**13. While direct credit losses from a severe downturn in the real estate market are unlikely to reduce banks’ capital below critical levels, it would increase market uncertainty and potentially expose them to pressures on their funding.** Markets are very aware of the extent that Australian banks (and banks in some of the other advanced economies) are exposed to the real estate sector.<sup>9</sup> In a severe scenario, contagion may occur across financial institutions and their portfolios, contributing to liquidity stress. This could amplify the negative impact on the financial system from adverse economic and financial developments.

**14. The commercial property sector is another area of concern.** Bank exposures to the CRE sector are much smaller than to the household sector, at just over 10 percent of bank loans. Historically, however, they have been the source of substantial losses during periods of stress.<sup>10</sup> Relative to residential real estate, the CRE sector tends to be more volatile (i.e., cyclical), with higher default rates during downturns. It is also relatively opaque and heterogeneous, increasing the difficulty of monitoring developments. A higher share of foreign and nonbank participants exposes the sector to changes in investor sentiment and external conditions. Investors are typically attracted by the relatively high returns available on commercial property compared to other investments, but a shift in market conditions could rapidly change the financial viability of this investment strategy.



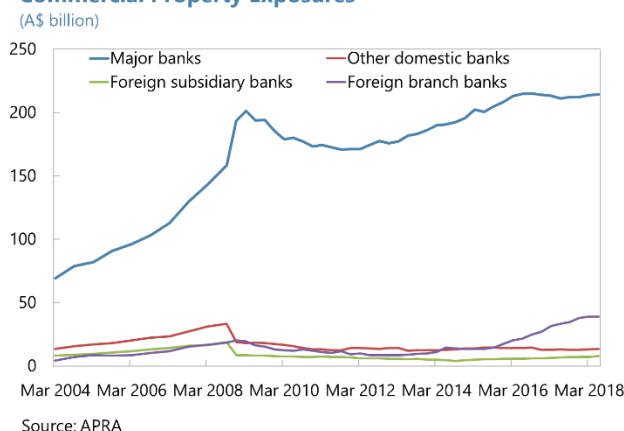
<sup>8</sup> See the FSAP Technical Note on “Stress Testing the Banking Sector and Systemic Risk Analysis.”

<sup>9</sup> For example, in late 2017 the Moody’s credit rating agency observed that “banks in Canada, Sweden and Australia are increasingly sensitive to adverse economic developments that could result if house prices were to slump...” See Moody’s Investors Services, November 20, 2017 at [https://www.moody.com/research/Moodys-Canadian-Swedish-and-Australian-banks-exposed-to-second-order--PR\\_37565](https://www.moody.com/research/Moodys-Canadian-Swedish-and-Australian-banks-exposed-to-second-order--PR_37565).

<sup>10</sup> In the late 1980s—early 1990s, Australian banks experienced a surge of losses during a downturn in the commercial property market. Over the period, they experienced losses of about 10 percent of their loans, concentrated in commercial property lending (see Kearns 2017). Australia was not alone, as banking systems in several countries similarly experienced large losses on their CRE exposures (including Canada, Norway, Sweden, the United Kingdom, and the United States).

**15. Prices for several key categories of commercial property have risen sharply in recent years in response to strong demand.** In concert, yields have fallen to low levels. Foreign banks have increased their share of new commercial property lending. Among banks, their share has more than doubled over the past several years to 14 percent (see figures). The current environment leaves the CRE sector vulnerable to a cyclical downturn, with the potential for significant investor losses and loan defaults.

**Commercial Property Exposures**



## B. Macroprudential Policy Response

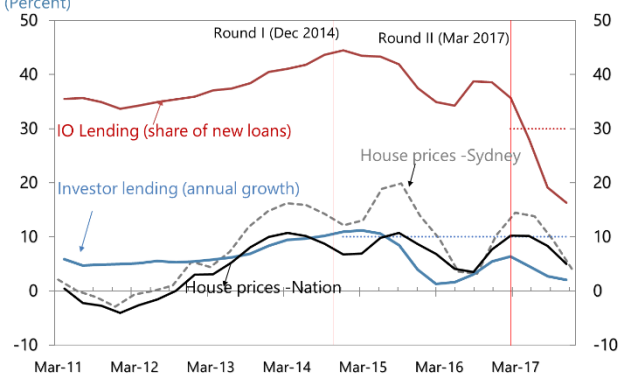
**16. In response to the growing vulnerabilities in the domestic financial system, the Australian authorities acted to improve the overall soundness of lending and the resilience of the banking system, focusing on those areas of credit viewed as the riskiest.** While most actions were implemented by APRA, they were reinforced with additional measures by ASIC in line with its mandate to enforce nationally legislated responsible lending laws for consumers (National Consumer Credit Protection Act, 2009). In addition, the RBA used its public communication channels (e.g., the semiannual *Financial Stability Review (FSR)* and speeches) to raise awareness of systemic risks to the financial system and support the improvement in the quality of lending.

**17. APRA took steps beginning in 2011 to ensure that banks' boards were fully aware of the importance of robust lending standards.** These efforts were substantially reinforced in subsequent years with highly visible and concrete measures (see Annex I for a detailed summary of the measures). A key set of actions were undertaken in 2014. APRA introduced a (temporary) 10 percent benchmark for the growth of ADI investor lending and heightened surveillance on higher risk mortgage lending (especially IO loans). Also, in 2014, ASIC announced a review of lenders' IO lending practices. In addition, APRA tightened the serviceability assessments for borrowers to strengthen their ability to weather higher interest rates, standardizing many elements of the assessments. In completing these assessments, lenders have given increased emphasis to the net income surplus (NIS), which uses in the calculation a borrower's maximum mortgage elements, such as their estimated living expenses and other existing financial commitments. The NIS approach, which is more granular, is deemed as being better tailored to the individual circumstances of the borrower than a DSTI. The RBA analysis comparing a DSTI measure with the NIS shows that higher income households can afford a higher DSTI, as their living expenses do not increase one-for-one with income.<sup>11</sup>

<sup>11</sup> See RBA (2018), Box B.

**18. A second key benchmark was introduced in 2017, when APRA announced a limit on new IO lending by ADIs of 30 percent of total new residential mortgage lending.** ADIs were expected to be especially strict on IO lending where the LTV exceeded 80 percent. At the same time, APRA emphasized the need to ensure that serviceability metrics were appropriate and the need for caution with respect to the higher risk loan categories. ASIC also announced further steps to ensure compliance with responsible lending practices, particularly in relation to IO lending.

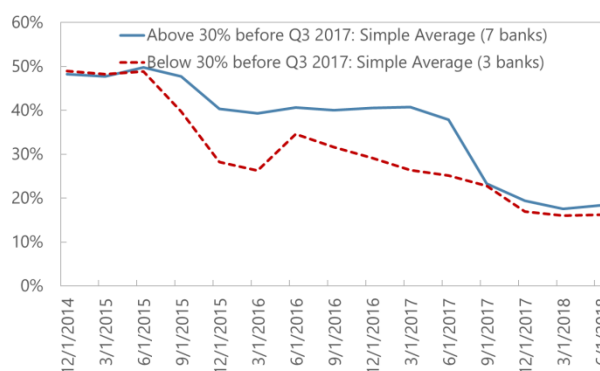
**Managing Systemic Risks with Macroprudential Policy**  
(Percent)



Sources: APRA and ABS.

**19. The measures taken by the authorities have been effective in modifying behavior, dampening growth in targeted areas of lending, and reinforcing sound lending practices in general.** Following the set of measures in 2014, the growth of investor loans slowed, particularly among ADIs where the growth rate had been relatively high. The share of IO loans in new approvals dropped sharply in the wake of the 2017 measures. This was the case for both owner-occupier and investor mortgages. Banks have increased interest rates on investor and IO loans relative to owner-occupier P&I loans. Strengthened serviceability assessments have also helped to underpin the improvement in lending standards, although their direct impact on the pace of overall credit growth is likely to have been modest.<sup>12</sup>

**Share of IO Loans**



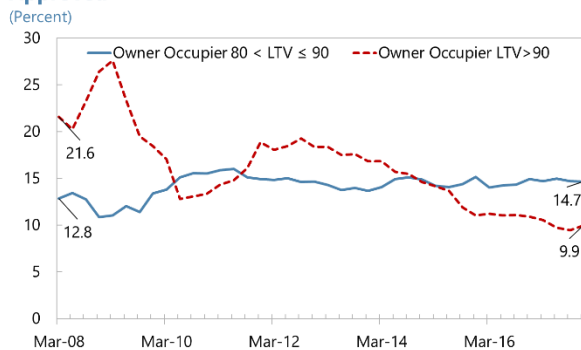
Sources: APRA and IMF staff's calculation.

**20. Importantly, banks have also moved to strengthen lending standards more broadly, especially with respect to high LTV borrowers.** The share of new lending for borrowers, with an LTV at or above 90 percent, has declined; particularly in the case of investor loans in recent years.

<sup>12</sup> For example, interest rate buffers used in the assessments are estimated to reduce maximum loan sizes by around 30 percent but, given that households typically borrow an amount smaller than their available maximum, the aggregate impact of measures related to serviceability assessments is believed to be modest. See RBA (2018), Box B (pp. 32–36) and Chapter 5 (pp. 80–91).

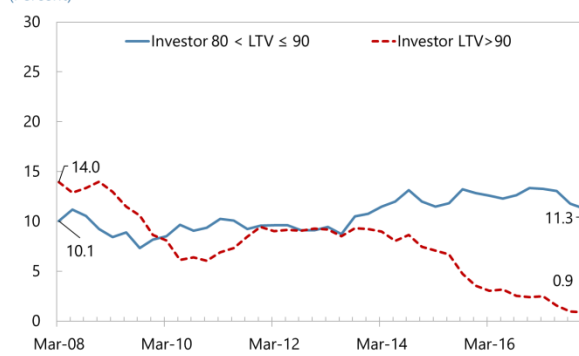


**Share of High LTV Lending in New Owner-Occupier Loans Approved**  
(Percent)



Source: APRA.

**Share of High LTV Lending in New Investor Loans Approved**  
(Percent)



Source: APRA.

**21. The transfer from IO to P&I loans can create an additional financial burden for some borrowers owing to the step up in payments that typically occurs.** As mortgages come to the end of the IO loan period (typically after 5 years), mortgage payments can rise by 30 to 40 percent if the borrower switches to principal and interest loans. The largest lenders have worked to identify borrowers who might be at risk, and to put in place programs to provide support during the transition. Although there has been a small increase in nonperforming loans associated with transfers, overall the impact on associated financial stress has been modest to date. Growth in offset account balances has slowed somewhat.

**22. The pace of growth in house prices has moderated, with prices having fallen back a little of late, but they remain high.** The decline has been most noticeable in large cities where price pressures have typically been the strongest. Housing markets are influenced by a broad array of factors, but tighter regulatory standards around mortgage lending, lower demand from foreign buyers, and a large increase in the supply of new dwellings have likely contributed to a reduction in price pressure. However, house prices remain at very high levels relative to historical experience. Although lending standards have improved, a substantial decline in prices could have adverse feedback effects to the rest of the economy and still expose borrowers (owner-occupiers and investors) to financial hardship.

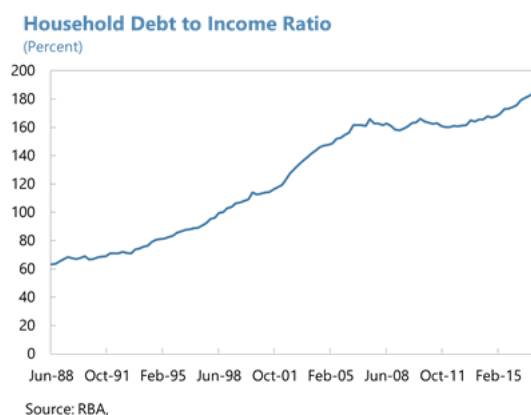
**Housing Price in Selected Major Capital Cities**  
(2011Q3-2012Q2=100)



Source: ABS and Haver Analytics.



**23. In addition, the pace at which household indebtedness is increasing has slowed.** This is consistent with outlook in the IMF 2017 Australia Article IV Consultation, which anticipated that household credit and debt growth would align with the growth of household income, such that household indebtedness would stabilize at about current levels (see IMF, 2018, p. 8). As noted above, there has been a significant reduction in higher risk mortgage lending, and financial institutions have supported the overall improvement in the quality of lending through a broad set of initiatives to raise lending standards.



**24. Despite the beneficial impact of the prudential measures implemented, significant structural vulnerabilities persist in the financial system.** Household indebtedness remains high and banks' portfolios continue to be concentrated in, and heavily exposed to, the residential mortgage sector. Banks are exposed to rollover risk on their overseas funding. The use of wholesale funding has diminished but remains around one-third of total funding, of which nearly two-thirds is from international sources.

**25. Policy leakages have been modest, but non-ADI mortgage lenders have experienced rapid growth (from a small base) over the past couple of years.** The non-ADI sector is not prudentially regulated by APRA. Non-ADI lenders, which provide consumer credit to which the National Consumer Credit Protection Act 2009 applies, are regulated by ASIC. This includes the requirement to comply with the responsible lending obligations. ASIC, in conjunction with APRA, has moved to increase the information it collects regarding non-ADI developments, but overall the sector is less closely monitored than the banks. It could be a growing source of potential risk as they compete to capture market share from the traditional banking system and the non-ADI presence in the financial sector increases. As a precautionary measure, the government has given APRA a new reserve power to use, should the aggregate impact of non-ADI lenders materially contribute to risks of financial instability. APRA has indicated that it views this very much as a reserve power to be used only when, and if, the relevant conditions arise. APRA's powers to collect data on non-ADIs have been strengthened.

**26. In April 2018, APRA announced a conditional withdrawal of the 10 percent benchmark on investor lending growth introduced in 2014.** The benchmark will cease to apply on a specific ADI when it can show that it has contained investor loan growth and is able to provide adequate assurances on the strength of its lending standards. APRA emphasized that the 2014 measure had been a temporary benchmark whose usefulness had run its course, given the improvement in lending standards and balance sheet resilience. It warned that renewed rapid growth in aggregate investor lending would raise systemic concerns, perhaps warranting the implementation of the "counter-cyclical capital buffer or some other industry-wide measure." Furthermore, APRA indicated that as part of the required measures ADIs should develop internal portfolio limits on the proportion

of new lending at very high debt-to-income (DTI) levels, and limits on maximum DTI levels for individual borrowers.<sup>13</sup>

**27. The authorities have also responded to concerns with respect to commercial real estate lending.** Cognizant of the potential risks arising from inadequate standards, APRA conducted a thematic review of the CRE sector in 2016. The review focused on the portfolio controls and underwriting practices of a number of larger domestic banks and foreign bank branches. In a letter to ADIs summarizing their findings, APRA noted concerns in a number of areas, including insufficient constraints on debt size and inadequate portfolio controls.<sup>14</sup> Major domestic banks, as well as regional banks and foreign banks, have steadily improved their controls and underwriting standards on CRE lending, including such items as lowering maximum LTVs, raising minimum interest coverage ratios, and capping the percentage of foreign presales in residential developments (where settlement risk tends to be higher).<sup>15</sup> Following the completion of this review, the exposures of the major banks have been reasonably stable while other lenders, including foreign banks, some smaller Australian banks, and the non-ADI sector have increased their participation in CRE lending.

### C. Institutional Framework

**28. Australia has a less formal institutional framework for financial stability policy than many other countries.** The CFR serves as a discussion and information-sharing forum on financial stability, but it has no powers or decision-making responsibilities. The CFR brings together the RBA—the governor acting as chair, APRA, the Australian Securities and Investments Commission (ASIC), and the Australian Treasury. No minutes are published by the CFR,<sup>16</sup> although the RBA includes a description of recent CFR work in its semi-annual FSR.

**29. The CFR focuses on facilitating collaboration between its members to promote effective regulation and financial stability.** While financial stability matters are central to its mandate, there have been few official statements or publications made jointly by the CFR on matters of financial stability. The CFR's current structure dates from the 2003 Royal Commission into the failure of HIH Insurance, a large general insurer. As part of the government's response to the recommendations from that inquiry, the treasury joined the CFR as its fourth member, and the CFR was also given a more explicit financial stability mandate. Its current charter was adopted in 2004 and is here reproduced in full (emphasis added):

<sup>13</sup> APRA, 2018, "Embedding Sound Residential Mortgage Lending Practices," April 26, available at <https://www.apra.gov.au/file/5976>.

<sup>14</sup> APRA, 2017, "Commercial Property Lending – Thematic Review Observations," March 7, available at <https://www.apra.gov.au/file/9361>.

<sup>15</sup> APRA adopted the more conservative slotting approach for capital under Basel II for CRE exposures, which has been carried over to Basel III.

<sup>16</sup> The CFR does, however, publish occasional specialist reports and consultation papers on regulatory issues relevant to multiple CFR members, including where advice to the government has been sought or is otherwise appropriate.

### Box 2. Charter of the Council of Financial Regulators

The Council of Financial Regulators (CFR) aims to facilitate cooperation and collaboration between the Reserve Bank of Australia, the Australian Prudential Regulation Authority (APRA), the Australian Securities and Investments Commission and The Treasury. *Its ultimate objectives are to contribute to the efficiency and effectiveness of regulation and to promote stability of the Australian financial system.*

The CFR provides a forum for:

- identifying *important issues* and trends in the financial system, *including those that may impinge upon overall financial stability*;
- ensuring the existence of appropriate *coordination arrangements for responding to actual or potential instances of financial instability*, and helping to resolve any issues where members' responsibilities overlap; and
- *harmonising regulatory and reporting requirements*, paying close attention to the need to keep regulatory costs to a minimum.

Note that the charter does not explicitly include the following topics, although these have been discussed at the CFR:

- Tracking systemic risk or considering the systemic impact of major regulatory actions;
- Using policy tools or other methods to address systemic risks; and
- Identifying significant data gaps or data-sharing issues across the regulators.

**30. However, the CFR has proven to be an effective body to coordinate decisions on significant regulatory matters.** Over the past five years, the CFR has played an important role in providing the Council members with a key consultative mechanism in relation to major regulatory actions, including:

- Implementation of Basel III and the design and implementation of the CCyB;
- Raising of “unquestionably strong” bank capital buffers; and
- The recent prudential measures taken in the mortgage sector.

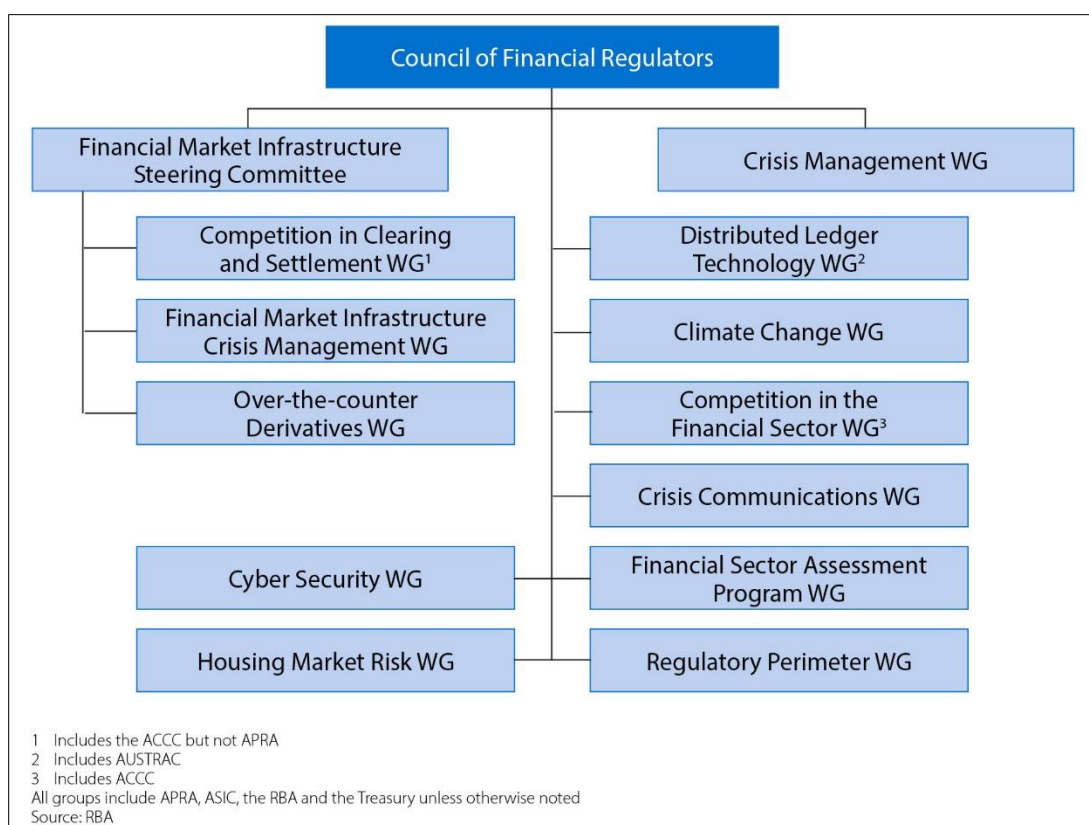
**31. The CFR meets formally four times a year, but members engage in ongoing dialogue on a broad range of topics.** The RBA, as Chair and Secretariat, has the responsibility for setting the agenda, but this is done in close liaison and coordination with each member agency, and also with non-members when they are attending meetings. Typically, each agenda has a mix of standing items (like a discussion of recent market and regulatory developments), work carried over from previous meetings, and new items raised by one or more member agencies.

**32. There are multiple working groups that have been organized under the auspices of the CFR.** A broad range of financial stability relevant issues are discussed in such groups, for example:

- As detailed in the April 2018 FSR, “The Housing Market Risk Working Group has also been active in recent times, providing analysis of developments in the housing market and industry responses to the recent regulatory measures.”

- The Financial Market Infrastructure (FMI) Crisis Management Working Group is working on a resolution framework for FMIs, with a focus on CCPs. Plans are to send drafting instructions for legislation in 2019.<sup>17</sup>
- A currently inactive working group on shadow banking considered the implementation of FSB shadow banking recommendations. The RBA delivers an annual update to the members of the CFR on this topic.

Overall, the regulators seem to have engaged in active dialogue and sharing of information, although there are important areas (such as bank-level data from prudential regulators and the securitization database) where data sharing across all agencies has been restricted due to legal issues and confidentiality concerns.



**33. While the current regulatory structure creates clear areas of accountability for the agencies, responsibilities and tools for safeguarding financial stability are spread across several regulatory agencies.** The RBA has a mandate for overseeing financial system stability, but it has no direct regulatory policy levers outside the payments system. It has responsibility for monetary policy, and for maintaining low and stable inflation and sustainable economic growth, which will be generally conducive to, and facilitated by, financial stability. The prudential toolkit is

<sup>17</sup> See the FSAP technical note on “Supervision, Oversight and Resolution Planning of Financial Market Infrastructures.”

controlled by APRA, which must balance its financial stability objectives against those of financial safety and efficiency, competition, contestability, and competitive neutrality. ASIC and the treasury also have roles in promoting financial stability. The Australian authorities published the following division of responsibilities for financial stability policy in 2012 (RBA and APRA 2012):

- The RBA has had a longstanding responsibility for financial stability, which was reconfirmed in the context of the 1998 reforms to financial sector regulation in Australia (which, inter alia, created APRA), and more recently was outlined in the September 2010 Statement on the Conduct of Monetary Policy;
- Under the APRA Act, APRA is required to promote financial system stability in Australia while balancing its objectives of financial safety and efficiency, competition, contestability and competitive neutrality. In addition, the Banking Act states that, it is the duty of APRA to exercise its powers and functions for the protection of the depositors and for the promotion of financial system stability in Australia;
- ASIC is responsible for taking certain regulatory actions to minimize systemic risk in clearing and settlement systems, working with the RBA; and
- The Australian Treasury has responsibility for advising the government on financial stability issues and on the legislative and regulatory framework underpinning financial system infrastructure.

**34. Stress testing is done through a close collaboration between APRA and the RBA.**

APRA works closely with the RBA to develop the stress scenarios, which are then passed on to the banks to run. Given the role of the Australian banks in New Zealand, the RBNZ is also consulted during the stress testing exercise, as appropriate. Results are then shared by APRA with the RBA for use in their own macroeconomic and stability analyses.

**35. APRA is the sole regulator with “macroprudential” powers in the Australian financial system.** The authorities indicate that macroprudential outcomes will typically be guided by prudential regulation. As is detailed in the RBA & APRA 2012 (emphasis added):

“The main tools for macroprudential supervision in Australia are only exercisable by APRA. APRA is the only agency which has power to act to directly change the behavior (and if necessary, the balance sheets) of entities to achieve macroprudential outcomes. *The main tool that APRA exercises is to vary through the cycle the intensity of supervision, backed up as appropriate by APRA’s prudential tools (particularly capital) and, in extreme cases, its direction powers.*”

### Systemic Responsibilities of the Financial Regulators

	CFR	APRA	RBA	ASIC	Treasury
Identifying the buildup of systemic risk	✓	✓	✓	✓	✓
Recommending action(s) to be taken (on macroprudential policy)	✓	✓	✓	✓ (a)	✓
Deciding on action(s) to be taken (macroprudential regulation)		✓		✓ (a)	
Implementing and enforcing macroprudential policy decision(s)		✓		✓	
Assessing the impact of the macroprudential measures	✓	✓	✓	✓ (a)	✓
Reporting to the parliament about systemic risks and corrective actions		✓	✓	✓ (a)	✓
Others (please specify)					

(a) As part of ASIC's involvement with the CFR and through liaison with RBA and APRA (i.e. participation in the CFR Housing Market Risk Working Group)

**36. APRA is the sole regulator with “macroprudential” powers in the Australian financial system.** The authorities indicate that macroprudential outcomes will typically be guided by prudential regulation. As is detailed in the RBA & APRA 2012 (emphasis added):

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**37. While APRA does communicate on the implications and effects of significant regulatory actions, it does not typically focus on macrofinancial issues.** As an example, while APRA has discussed the impact on overall credit growth from the measures undertaken in the housing market,<sup>18</sup> this did not typically extend to their effect on housing prices.

**38. APRA has sole authority over the CCyB, which was introduced in 2016.** A variety of inputs are considered, including an identified set of core indicators (developed in consultation with the RBA) for the financial cycle that are regularly updated.<sup>19</sup> However, the Australian authorities emphasize that the final decision is not mechanical but involves significant judgment. While APRA

<sup>18</sup> See Wayne Byres, APRA Chairman, “Preparing for a rainy day,” speech on July 11, 2018.

<sup>19</sup> Nine core indicators are currently used, including those reflecting credit growth, asset prices, lending indicators, and financial stress (the latter represented by the level of nonperforming loans). However, in practice, many other indicators and information sources can be reviewed to provide additional insight.

presents its views to the CFR for consultation and discussion, the decision regarding the level of the CCyB is APRA's alone.

**39. Assigning authority over the CCyB and stress testing to APRA is consistent with international practices.** Of the 53 countries globally that have established CCyBs, all but 7 have given the authority to set the CCyB to the prudential bank regulator (which, in 30 of these cases, is the central bank) (Edge and Liang 2017). For stress tests, international comparisons are similar: in 51 out of 57 comparison countries, the stress testing authority rests with the banking regulator (which, in 33 cases, is also the central bank).

**40. Internationally, the central bank is often more closely involved in the calibration of the CCyB than it is in the Australian case.** As of September 2017, in all eight countries that had set their CCyB buffers at a non-zero level, the central bank had proposed the actual level, even though final authority only rested with it in three of the cases.

**41. APRA has also recently been given powers over non-ADI lending.** APRA was recently granted enhanced powers to collect data on a wider range of nonbank lenders, and reserve powers to address the risks of credit provision by nonbanks, should these threaten systemic stability.

## D. Enhancing the Policy Toolkit

**42. We recommend that the authorities explore options for further extending their macroprudential toolkit, providing additional flexibility in responding to significant shocks, and reducing systemic vulnerabilities.** The GFC and its aftermath demonstrated the benefits of extending the microprudential perspective and adopting a broader macroprudential emphasis on the systemic health of the financial system. Globally, macroprudential policy making remains a work in progress, but international evidence is accumulating with respect to a variety of policy options and the useful benefits they provide. The Australian authorities, in addressing risks in the financial system, have considered a range of options and implemented a set of measures that have led to positive results. In doing so, however, they have eschewed a number of other available options that have been successfully implemented elsewhere (including among economies with similar financial structures and systemic challenges). In view of the continuing structural vulnerabilities in the Australian financial system—which have the potential to worsen under an adverse scenario—it would be prudent for the authorities to continue to consider the application of a broader array of macroprudential measures and enhance their ability to implement them in a timely fashion, should they be necessary.

**43. The slowing in the growth of household indebtedness and lower house prices suggest that substantial new measures are not required at the current juncture, but a 'readiness' assessment would help to facilitate the introduction of new or expanded policy measures when required.** This would enable the authorities to address any necessary data requirements and tackle any legal or regulatory obstacles to their use. Some of the options that should be prioritized are discussed below. Priorities for review include capital buffers and time-varying risk weights,



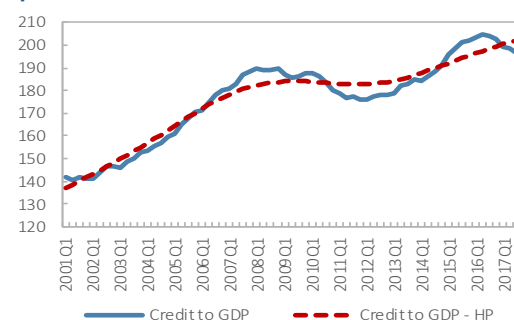
DTI/DSTI and LTV restrictions, as well as tools to address risks from non-ADIs and from highly cyclical CRE exposures.

**44. The authorities have implemented strong capital standards for banks.** These standards were buttressed in 2017, with an initiative to establish “unquestionably strong” capital standards, responding to a recommendation from the 2014 Financial System Inquiry.<sup>20</sup> Guided by a range of quantitative factors as well as judgement, minimum capital requirements were raised for banks operating under both the IRB and standardized approaches. These new benchmarks are expected to be met by the beginning of 2021 at the latest. Note that capital increases resulting from this initiative are in addition to capital required as part of the capital conservation buffer (generally equal to 2.5 percent of risk-weighted assets), and a buffer applicable to domestic systemically important banks (currently the four largest banks) set at 1.0 percent of risk-weighted assets.

**45. APRA has continued to refine the capital framework, releasing several key consultation papers in 2018.** A consultation paper released in February 2018 reviewed the Basel III reforms and proposed modifications to the current framework, including addressing the concentration of banks in residential mortgage lending by raising capital requirements on targeted areas of higher risk lending.<sup>21</sup> These refinements are not intended to further increase the overall quantum of capital (i.e., require capital raising by banks). A second consultation paper (August 2018) addresses the issue that in implementing the Basel capital framework, APRA has traditionally adopted a more conservative approach than internationally agreed minimum capital requirements.<sup>22</sup> In addition, APRA has used national discretion available within the Basel capital framework to adopt a more conservative approach towards banks’ risk-weighted assets.<sup>23</sup>

**46. APRA introduced a framework for the CCyB in 2016, consistent with Basel III standards.** In doing so, it has given itself access to an explicit cyclical macroprudential tool. The CCyB differs from other capital requirements in that it is expressly designed to counter procyclicality in the financial system. Under the Basel framework, the (appropriate) authorities within a jurisdiction choose when to activate the buffer based on their assessment of changes in the degree of systemic risk, and in doing so enhance the resiliency of the banking system. The buffer can be released if the risk materializes, helping to sustain lending and mitigate adverse economic

**Credit Cycle Measures (percent)**



Source: APRA, Haver Analytics, and IMF staff estimates.

<sup>20</sup> The final report of the inquiry is available at <http://fsi.gov.au/publications/final-report/>.

<sup>21</sup> See “Implementing Basel III Capital Reforms in Australia,” APRA Discussion Paper, February 2018.

<sup>22</sup> See “Improving the transparency, comparability and flexibility of the ADI capital framework”, APRA Discussion Paper, August 2018.

<sup>23</sup> In November 2018, after the FSAP mission, APRA announced proposed changes to the application of the capital adequacy framework for ADIs to support orderly resolution in the event of a failure. See <https://www.apra.gov.au/increasing-loss-absorbing-capacity-adis-support-orderly-resolution>.



outcomes. It can also be released if the authorities conclude that systemic risk is otherwise diminishing, and the buffer is no longer necessary (see Box 2).

**47. The CCyB has not been activated (i.e., consecutive decisions have left the buffer at zero).** In December of 2017 APRA published a paper describing its decision process underpinning the CCyB (see APRA 2017). A key component is “forward looking judgements” around a set of core indicators and evidence of financial stress. A broad set of other data and input, including qualitative analysis, is also reviewed. Taken together, APRA considers the evidence does not currently warrant activation of the buffer. In detailing its reasons to keep the buffer at zero, APRA has stressed the substitutability of other prudential measures for the CCyB (emphasis added):

*The decision to maintain the buffer at zero takes into account the continued strengthening of capital ratios within the banking system, as well as APRA’s other supervisory activities and prudential measures targeting property-related risks, particularly on housing lending standards and the establishment of benchmarks on investor lending growth and interest-only lending. A targeted response that focuses on specific risks has the additional benefit of not impacting credit to other sectors. (APRA 2017, p. 4).*

**48. Bank capital levels in Australia are robust but if systemic risks rise, the authorities should consider activation of the CCyB to buttress financial system resilience as a potential response.** If activated and risks to the system subsequently diminish, the buffer can be reduced in a timely fashion, lowering the cost-burden on banks. APRA, supported by the RBA, should continue to refine its core indicators, drawing upon, among other things, the work underway at the international level. Although the final decision rests with APRA, the RBA’s input with respect to the evolution of systemic risk in the financial system is a key element underpinning whether to activate the CCyB.

**49. A number of jurisdictions have established CCyB frameworks globally, and a dozen—mostly in Europe—have announced activation of the buffer at a non-zero level.** Experience with the CCyB remains limited, but several countries have found it useful as a component of their macroprudential response to the cyclical upswing in financial conditions. Judgement is used in all cases, but each jurisdiction has developed a set of core indicators. These financial indicators can vary markedly among jurisdictions, and they continue to evolve as experience is gained and the associated analysis improves.<sup>24</sup>

**50. Alternative options exist for adjusting capital requirements in a cyclical fashion.** For example, the authorities could consider time-varying risk weights, adjusted to reflect cyclical variations in risk affecting specific portfolio segments. This has the advantage of being better able to target sectoral risks, assuming there is good knowledge of where risk lies. Leakages are more likely, however, when sectoral tools are used.

<sup>24</sup> Although the credit-to-GDP gap has been identified by the BIS as one important indicator in decisions regarding the CCyB, it also emphasizes that it does not always work well in all jurisdictions at all times. Indeed, the gap is currently negative in the majority of jurisdictions that have activated the buffer (see Table B1 in Box 2). The judgement of the authorities is an integral part of the CCyB regime.

### Box 3. International Implementation of the Counter-Cyclical Capital Buffer

A key innovation of the Basel III regulatory standards is the introduction of the counter-cyclical capital buffer (CCyB). The buffer is expressly designed to help counter procyclicality in the financial system. During periods of rising systemic risk, as might occur during an extended cyclical upturn, the buffer can be activated so that banks are required to hold additional capital. The primary objective is to build resilience in the financial system to adverse shocks, although a secondary benefit may be to help constrain the risk of excessive growth of credit during cyclical upswings.

If the financial system comes under pressure, the buffer can be released in order to help sustain credit growth and mitigate adverse economic outcomes. In addition, the buffer can be reduced if systemic risks diminish without a financial downturn, thereby ensuring the banking system does not hold levels of capital that are no longer warranted. Buffers held as part of the CCyB are reciprocated by other Basel members, i.e., their banks will be required to hold similar buffers on their exposures to the activating jurisdiction. A large number of countries in addition to Australia have implemented the CCyB framework. A dozen jurisdictions have activated the buffer, mostly within Europe (including those which have announced a future increase to the buffer)—see Table B1.

#### Jurisdictions with a non-zero rate for the CCyB (as of August 22, 2018)

Selected Jurisdictions <sup>1</sup>	Current Rate (%) <sup>2</sup>	Proposed Rate (%)	Credit-to-GDP Gap (% of GDP) <sup>3</sup>
Denmark	0	0.5	-31.6
France	0	0.25	3.0
Hong Kong SAR	1.875	2.5	29.8
Ireland	0	1.0	-100.5
Norway	2.0		-5.4
Sweden	2.0		-5.0
Switzerland	2.0 <sup>4/</sup>		9.2
United Kingdom	0.5	1.0	-15.6

Source: BIS, ESRB, SNB.

A period of excessive credit growth, defined as the positive gap between the credit-to-GDP ratio and its long-term trend, was identified by the Basel Committee as a key indicator to be used in the decisions to activate the buffer. However, the Basel Committee emphasized that activation should not be associated with the credit-to-GDP gap in a mechanical fashion. Rather, a broader range of information should be used to determine the level of systemic risk in the financial system, and ultimately judgement would be required as to its activation (and deactivation).

In practice, the credit-to-GDP gap has more often been negative than positive in the countries that have chosen to activate it. The authorities have instead relied upon sets of indicators that best reflect systemic risk in their jurisdictions, together with their expert judgement. These sets of indicators tend to vary significantly among different jurisdictions, reflecting not only structural difference in their economies but the continued evolution of experience and analysis. Whatever the precise set of indicators, the process usefully requires authorities to think rigorously about the evolution of systemic risk in their economies.

<sup>1</sup> Four jurisdictions that are not included in this table but have also activated the buffer are the Czech Republic, Iceland, Lithuania, and Slovakia.

<sup>2</sup> As of August 22, 2018.

<sup>3</sup> Calculated by the BIS relative to trend as of the first quarter of 2018.

<sup>4</sup> On residential mortgage loans only (i.e., it is a sectoral CCyB).

**51. Other advanced economies with similar vulnerabilities to those of Australia have found borrower-based credit constraints to be effective.** There is a growing body of international analysis and practical experience that demonstrates their ability to help mitigate household and banking sector vulnerabilities. Studies based on cross-country data show they are effective in dampening credit growth and house prices (see Annex II). Caps on LTV ratios, especially with respect to residential mortgages, have been among the most commonly used instruments. An LTV limit constrains the funding available to borrowers, screening marginal borrowers out of the market. Such limits can thereby reduce housing demand, decreasing credit and house price growth, and reducing procyclical feedback effects between credit and asset prices. It will bolster borrowers' resilience to house-price shocks and contain potential losses faced by lenders.

**52. Caps on LTV ratios may become less binding when house prices (valuations) increase.** This would become particularly evident during a strong cyclical upswing in prices. It raises concerns about the longer-term effectiveness of LTV requirements, as successive tightening of the cap may be necessary to achieve the same level of constraint.

**53. Income-based ratios, such as a loan-to-income (LTI) ratio or the broader debt-to-income (DTI) ratio, share some of the transmission channels of an LTV, but become more binding when housing prices (and mortgage loans) grow faster than households' disposable income.** This automatic stabilizer feature allows the LTI/DTI to remain more effective through upswings in the cycle, helping, for example, to smooth credit booms. Another option is to implement a debt-service-to-income (DSTI) ratio. Low DSTI's enhance the borrower's ability to withstand shocks, being associated with lower delinquency rates. A concern is that during periods of cyclically low interest rates, the DSTI may itself be low but borrowers are vulnerable to rising interest rates. Assessing borrowers at a higher interest rate (i.e., adding an interest rate buffer to serviceability assessments) protects against this risk. As discussed in section B, Australian lenders implement serviceability assessments and, in recent years, have emphasized the NIS, which incorporates a broader range of household expenses in their assessment.

**54. Borrower-based credit constraints can be relaxed to help offset feedback loops that might occur between falls in credit and house prices.** These instruments can therefore be used as a cyclical macroprudential tool but clearly, care must be taken not to encourage a potentially damaging decline in lending standards. Evidence on loosening such standards remains relatively limited, although, as noted in Annex II, New Zealand recently lowered constraints associated with its LTV requirements.

**55. APRA does not have comprehensive maximum limits or caps for LTV or income-based ratios but has nevertheless used these ratios in a variety of ways.** In particular, as APRA has focused on the riskier areas of lending in recent years, it has required banks to pay particular attention to their high-LTV loans. APRA has also strengthened serviceability assessments in several stages, including standardizing minimum interest rate buffers and floor assumptions, and requiring haircuts on income from certain less reliable sources (such as bonuses, overtime or rental income by at least 20 percent). In its April 2018 announcement, APRA indicated that banks should place an

increased emphasis on borrower DTI metrics. In a useful initiative, banks are now required to submit information on borrowers' DTI in a new data reporting standard (ARF223).

**56. Limits on the DTI ratio should become a more formal component of the macroprudential toolkit.** If risks to financial stability mount, the DTI should be an available option that can be introduced quickly. Implemented comprehensively, such limits can be effective in building resilience in the financial system, limiting the growth of household debt and, in turn, lenders' exposure to households. Although LTVs have received more common usage internationally, price increases tend to reduce their effectiveness. DTIs are more likely to retain their effectiveness over a longer-term horizon, as they tend to become more binding as prices rise relative to incomes. Establishing a broad-based DTI requirement is both analytically and operationally challenging and requires good borrower-based data. For these reasons, the authorities should proactively engage in the design of an effective framework, setting a high priority on collecting the relevant data. The introduction over 2018 and 2019 of the Comprehensive Credit Reporting (CCR) regime will provide lenders with a richer data set and support the use of such measures.

**57. The authorities may wish to consider complementing a DTI with caps on a broad-based DSTI ratio.**<sup>25</sup> This would provide additional flexibility in addressing ongoing levels of high household indebtedness. The DSTI ratio reflects serviceability beyond simply the magnitude of the debt. However, assessments must be "stress tested" with higher interest rates to promote borrower resilience during a period of rising rates. APRA and ASIC have steadily strengthened serviceability assessments. APRA requires, for example, interest rate buffers of at least 2 percentage points above the effective variable rate applied for the term of the loan, and a minimum floor assessment rate of at least 7 percent. However, in the event of rising systemic risk, setting a clear DSTI limit would formalize the application of the DSTI to lending decisions, helping to improve the overall quality of lending. As there can be an interplay between the calibration of the DTI and DSTI and their impact on lending decisions, making an advance investment on how best to implement them (if required) is very useful.

**58. It is recommended that a set of prudential measures be developed for potential future application to non-ADI lenders should their contribution to systemic risk rise materially.** Non-ADI lending in the mortgage space has grown rapidly over the past several years, albeit from a low base. This has led to an increase in their share of mortgage lending, although the share remains small. Views differ on the capacity of non-ADIs to continue to increase their share of lending<sup>26</sup> but, as a precautionary measure, the government has given APRA new reserve powers to use should the aggregate impact of non-ADI lenders materially contribute to risks of financial instability. APRA has moved to strengthen its surveillance of the non-ADI sector under new data-collection powers. In addition to improving its data collection, APRA should also define a set of policy measures applicable to the non-ADI sector in the event that they are required. ASIC is also improving its

<sup>25</sup> As noted above, the NIS approach has been emphasized by Australian lenders in recent years and may be an appropriate substitute for a DTI or DSTI.

<sup>26</sup> Some observers argue that funding constraints will limit growth in the non-ADI sector. However, it is notable that there has been considerable interest in pursuing ownership of some of the more successful non-ADI firms.

capacity to address issues in the non-ADI sector by, for example, increasing its contact with non-ADI firms and collecting more information. These efforts are important and should continue to be emphasized.

**59. The CRE sector is susceptible to volatility, given the rapid increase in prices in some areas and the potential for rapid changes in investor behavior as economic and financial conditions change.** While bank exposures to the CRE sector have declined relative to other segments of their portfolio, the risk of adverse spillovers remains in the event of a sharp market correction.

**60. A set of instruments to address risks that may originate from exposures to the CRE sector should be developed, so that they can be implemented promptly in the event that concerns mount.** International experience with using macroprudential measures to address vulnerabilities emanating from CRE is less than that for residential real estate. Nevertheless, the ESRB observes that almost 40 percent of EU members have implemented CRE-related macroprudential measures in response to financial stability concerns.<sup>27</sup> Other jurisdictions have used CRE macroprudential measures (e.g., Hong Kong SAR and Singapore). A variety of instruments are available for consideration, including sectoral capital requirements, stricter large exposures criteria, and stricter lending standards (for example, limits on LTVs, the debt-service coverage ratio, or the interest coverage ratio). Some of these measures were discussed in the context of the 2016 thematic review by APRA, although no limits were imposed. They could be considered in the context of the proposed 'readiness assessment.'

**61. The authorities should continue their efforts to enhance their stress testing capabilities and integrate it with their policy analysis.** Stress testing has evolved enormously in the post-crisis period to become an essential tool for macroprudential authorities as well as prudential supervisors. Stress testing is typically used to assess the resiliency of the banking system in response to a variety of adverse economic and financial scenarios. Depending on the framework, additional feedback effects (as may arise, for example, from counterparty risk and asset fire sales) may be evaluated. The RBA is developing a top-down model to supplement the bottom-up approach used by APRA. In addition to providing useful cross-checks on the credit losses and solvency impact from periods of financial stress, a top-down model (typically enhanced with various satellite models) can be used to support the analysis and evaluation of at least some macroprudential policy options. The authorities should therefore seek to integrate stress testing more closely with their policy analysis. An important benefit would be derived from expanded data collection to support the analytic and modeling efforts.

**62. Comprehensive and timely data are critical for the evaluation of the impact of macroprudential policies.** For example, understanding the distribution of risk within aggregate categories is important, as research has shown that potential losses are typically concentrated in

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<sup>27</sup> This compares to about 70 percent in residential real estate. See ESRB (2018), p. 22 and Annex III (p. 101).

particular segments of the household sector. The RBA has undertaken valuable analysis in this area, drawing upon a variety of existing datasets. These include, for example, the Household, Income and Labour Dynamics in Australia (HILDA) survey (as well as the ABS Survey of Income and Housing which is conducted every two years).<sup>28</sup> Some detailed loan-level data is available to the RBA through its Securitization Database.<sup>29</sup> This data allows for analysis of loan and borrower characteristics, able to track, for example, shifts in mortgage interest rates and LTVs, and the expiry of interest-only loan terms.<sup>30</sup> The RBA has also used tax data to throw light on the investment property exposures of households (RBA, 2017c). This analysis shows, for example, that many investors are in the lower-to-middle income categories, and a small but rising proportion of investors hold multiple properties.

**63. Quantitative analysis of the impact of macroprudential measures would be facilitated by more complete loan-level data.** It allows for a more detailed analysis of the characteristics of borrowers, shedding light on the evolution of household vulnerabilities in response to policy initiatives. In addition, the new Comprehensive Credit Reporting regime provides a richer set of data for financial institutions.

## E. Strengthening Institutional Arrangements

**64. Greater transparency regarding the work of the CFR, along with a formalization of risk identification and analysis, should help further align systemic analysis with prudential actions, and increase the regulators' willingness and ability to identify and address issues of systemic importance.**

**65. The CFR should regularly publish views of its member agencies on critical financial stability matters,** for example in the form of an annual report. Such a report would not be a substitute for the RBA's FSR, but should be a relatively short document that highlights views of the member agencies on the most significant risks present in the Australian financial system and steps to address them to promote stability. It could also summarize the broader work of the CFR on emerging risks, data gaps, and other issues. The report could be tabled and presented to parliament by CFR agency heads. This would serve to support the efficiency and effectiveness of regulation and to promote stability in line with the CFR charter.

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<sup>28</sup> The HILDA data set collects data on owner-occupier mortgage debt every year, and a detailed breakdown of total household debt every four years (most recently in 2014). Using this data, the RBA studied the characteristics of households with high DTI ratios (i.e., the top 10 percent). They found that most owner-occupiers in this group had a DTI above 550 percent, accounting for 35–40 percent of total debt. A significant share of this was investor housing debt. For more discussion, see RBA (2017a).

<sup>29</sup> The RBA is constrained from sharing the data with other authorities owing to legal considerations.

<sup>30</sup> The Securitization Database collects data on mortgages in approximately 280 "pools" of securitized assets, with a monthly frequency. Although the data is not completely representative, it nevertheless covers 1.6 million individual mortgages with a total value of around A\$400 billion. This represents about one-quarter of the total value of outstanding home loans. For more discussion, see Kent (2017).

- Such a report should improve regulatory accountability with respect to the prudential agencies and their collaboration in meeting the objectives of the Council.
- While recently there has been strong collaboration between the agencies with regards to financial stability matters, institutionalizing such a report would ensure that future CFR agency heads continue to focus on these issues and communicate plans for addressing significant risks and vulnerabilities.

**66. The CFR should publish a record of its meetings.** While it is important that regulators maintain the ability to have open discourse on these important issues, increased transparency would help garner greater understanding and support for their policy actions.<sup>31</sup>

**67. The CFR should enhance its monitoring framework for systemic risk, and member agencies should leverage this to analyze the financial stability implications of regulatory policy and coordinate on action steps.** To help facilitate this, we recommend that the authorities develop and publish a series of metrics to track systemic risk and key vulnerabilities, recognizing that such metrics will often need to be augmented by case-specific analysis of structural issues and emerging factors. Such metrics would be useful for measuring changes in financial vulnerabilities over time and could be directly applied in the calibration of prudential measures.

**68. The CFR should oversee a broad review of data to enhance analytical capabilities in the areas of financial stability and supervisory policy.** As noted elsewhere, there are currently significant data gaps that impede the ability of agencies to analyze systemic risk and conduct system-wide analyses, such as stress tests. While much of the review will necessarily be undertaken by individual agencies, the CFR is the natural body through which to coordinate this effort.

**69. CFR member agencies should bring more analysis of financial stability relevant policy issues to the Council, in order to better understand their systemic implications and coordinate on responses.** In particular:

- **The CFR should commission analysis by the member agencies on the financial stability implications of policies affecting household leverage.** As highlighted in successive Article IV reports, the tax system—through its combination of capital gains tax discounts and unlimited negative gearing—may encourage leveraged investment by households.<sup>32</sup> However, this may be particularly relevant to some asset classes over others. We recommend that the relevant CFR member agencies study the issue and how it may interact with prudential policy settings, particularly in regards to mortgage servicing risks and other affordability metrics.

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<sup>31</sup> While the RBA does publish a description of recent CFR work in its semi-annual Financial Stability Review, greater accountability and transparency would be better achieved by a standing commitment by the CFR itself to publish a record of its discussions in support of its objectives.

<sup>32</sup> Recent IMF Article IV reports have noted that broader tax reforms could over time reduce structural incentives for leveraged investment by households, including in residential real estate (see Annex III).<sup>33</sup> Australian Government Productivity Commission (2018), p. 180.



- **CFR member agencies should strengthen analysis of factors affecting international investment flows and their implications for real estate markets and financial stability.** The authorities have pursued a multipronged approach to manage housing related imbalances and vulnerabilities. These included, on the demand side, at the Commonwealth level, limits on sales to foreign investors by developers, and the withdrawal of the primary residency exemption from capital gain taxes of non-resident investors. At the states level, measures included stamp duty surcharges on non-resident buyers, and land tax surcharges on foreign residential property owners. While these measures are not aimed at financial stability goals and may not have a large impact, the CFR should take these measures into account when considering housing market prospects and implications for financial stability.

**70. The CFR should assess the potential impacts of macro-prudential regulatory measures on competition.** Prudential measures may have wide-ranging consequences for financial markets, which may in turn effect competition and financial stability in ways that merit further analysis and consideration. For example, as was noted by the Productivity Commission in its recent report, the prudential measures to limit investor and interest-only lending resulted in a significant repricing of existing loans, which could in turn have a negative impact on household balance sheets. On the other hand, this repricing encouraged existing borrowers to switch to principal and interest loans, which was desirable for reducing household sector risk.<sup>33</sup>

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<sup>33</sup> Australian Government Productivity Commission (2018), p. 180.



## Annex I. Prudential Policy Measures, 2014–18

Date	Authority	Measures
Dec 2014	APRA	<p>Introduce Prudential Practice Guide (APG223), which outlined APRA's expectations for sound mortgage lending practices:</p> <ul style="list-style-type: none"> <li>• Speed limit curtailing annual growth in a bank's investor housing lending to 10 percent;</li> <li>• Serviceability assessments for new mortgage lending to include interest rate buffers of at least 2 percentage points above the effective variable rate applied for the term of the loan, and a minimum floor assessment rate of at least 7 percent to allow borrowers to accommodate future increases in interest rates; and</li> <li>• Supervisors would be alert to high levels of higher-risk mortgage lending with: <ul style="list-style-type: none"> <li>○ high LVR and/or loan-to-income ratio; and</li> <li>○ owner-occupier loans with lengthy interest-only periods.</li> </ul> </li> </ul>
Dec 2014	ASIC	<p>ASIC commenced a review of interest-only home loans and published Report 445. The review found lenders had been falling short of their responsible lending obligations in the provision of interest-only loans and all 11 participating lenders agreed to change their practices in line with ASIC's recommendations</p>
2015	APRA	<p>To assess and compare lending standards across ADIs, in early 2015, APRA request a number of the larger ADIs to complete a Hypothetical Borrower Exercise (HBE), providing serviceability assessments for four hypothetical mortgage borrowers—two owner-occupiers and two investors—using their policies in place as at December 31, 2014.</p> <p>In a second HBE conducted in late 2015, ADIs that were the least conservative in December 2014 generally reported a significant drop in calculated net income surplus using their September 2015 policies.</p>
Jul 2015	APRA	<p>Announced an increase in capital adequacy requirements for residential mortgage exposures for ADIs accredited to use the internal ratings-based (IRB) approach to credit risk, effective from July 1, 2016.</p> <p>This change requires an increase of average risk weights to at least 25 percent from about 16 percent, equivalent of increasing minimum capital requirements for major banks by approximately 80 basis points.</p>
Jan 2016	APRA	<p>Countercyclical capital buffer (Basel III) was incorporated into the capital standards for locally incorporated ADIs. APRA has determined that the Australian jurisdictional countercyclical capital buffer applying from January 1, 2016 will be zero percent of risk-weighted assets. This rate will remain in force until APRA determines otherwise.</p>

Date	Authority	Measures
Oct 2016	APRA	Released for consultation a revised draft of Prudential Practice Guide APG 223 Residential Mortgage Lending to incorporate measures announced or communicated to ADIs since 2014.
2016	APRA	Conducted a thematic review of commercial property lending over 2016.
2016	ASIC	ASIC published Report 493 following a review of the lending practices of 11 large mortgage brokers. The review was intended to promote responsible lending and consumer confidence in the credit industry.
Mar 2017	APRA	<ul style="list-style-type: none"> <li>• Limit the flow of new interest-only lending to 30 percent of new residential mortgage lending<sup>1</sup>, and within that: <ul style="list-style-type: none"> <li>○ Strict internal limits on the volume of interest-only lending at loan-to-valuation ratios (LVRs) above 80 percent; and</li> <li>○ Strong scrutiny and justification of any instances of interest-only lending at an LVR above 90 percent;</li> </ul> </li> <li>• Lending to investors to comfortably remain below the benchmark of 10 percent growth (first introduced in 2014). An ADI operating in excess of this level will prompt an immediate review of the adequacy of the ADI's capital requirements;</li> <li>• Serviceability metrics, including interest rate and net income buffers, to be set at appropriate levels for current conditions; and</li> <li>• Lending growth in higher risk segments of the portfolio, e.g., high LTI loans, high LVR loans and very long-term loans, continue to be restrained.</li> </ul>
2017	APRA	Targeted review of mortgage origination controls – Large ADIs.
Apr 2017	ASIC	ASIC announced the findings of a review of practices at 8 lenders in relation to inquiring into consumer's living expenses when assessing their capacity to make repayments. ASIC also announced it had commenced a project to examine whether lenders and mortgage brokers were recommending interest-only loans in appropriate circumstances.
2018	APRA	Targeted review of mortgage origination controls – Small ADIs.
Apr 2018	APRA	<p>The 10 percent investment lending growth benchmark will no longer apply from July 1, 2018, where an ADI has been operating below it for at least the past six months, and the ADI's Board has provided the required assurance to APRA on both lending policies and practices:</p> <ul style="list-style-type: none"> <li>• Interest rate buffers comfortably above 2 percentage points over the loan product rate, and interest rate floors comfortably above 7 percent;</li> </ul>

<sup>1</sup> ADIs with levels of interest-only loans below the benchmark are expected to remain below it and not increase the share of new interest-only loans materially from current levels.

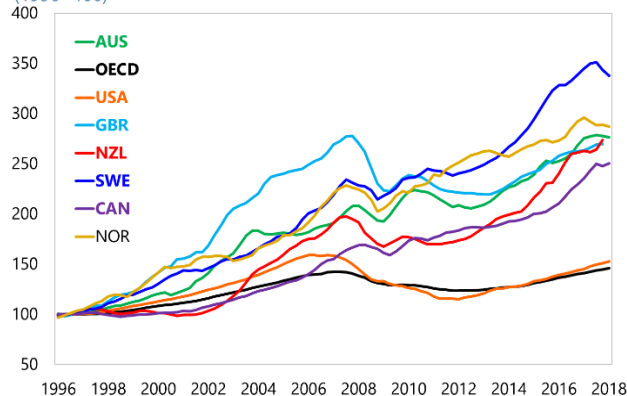
Date	Authority	Measures
		<ul style="list-style-type: none"> <li>• application of these interest rate buffers and floors to both a borrower’s new and existing debt commitments, with sufficiently conservative proxies used where necessary;</li> <li>• discounts on uncertain and variable income, with haircuts of at least 20 percent for most types of non-salary income and expected rental income;</li> <li>• for interest-only loans, an assessment of serviceability for the period over which the principal and interest repayments apply (i.e., excluding the interest-only term);</li> <li>• prudently managing overrides to lending policies, with risk tolerances set by the Board on the extent of exceptions to serviceability policy (negative serviceability) and serviceability verification waivers; and</li> <li>• developing internal risk appetite limits on the proportion of new lending at very high debt to income levels (where debt is greater than six times a borrower’s income), and policy limits on maximum debt to income levels for individual borrowers.</li> </ul>

## Annex II. International Experience with LTV and DTI Ratios

- 1. In the post-crisis period, several advanced economies have faced mounting challenges from combinations of rising house prices, increasing household indebtedness, and substantial exposure of the banking system to household credit, especially residential mortgages (see charts).** Unlike Australia, however, many countries have included as part of their macroprudential response explicit targets for various borrower-based constraints on new mortgage lending. These have variously included the LTV, LTI, DTI, and DSTI ratios. While the broad-based application of these ratios remains a relatively new phenomenon, there is growing evidence of their potential to help mitigate household and banking vulnerabilities.
- 2. The IMF has reviewed the early experience with LTV and DSTI ratios, surveying the evidence that emerged over the period 2011–2014 (IMF 2014).** It identified a range of studies using different country experiences that pointed to the usefulness of LTV and DSTI ratios in enhancing household resilience and dampening the feedback mechanism between credit growth and house price inflation (see IMF 2014, pp. 34–35). More recently, Cerutti, et. al. (2017) find that caps on LTV and DTI ratios are very effective in restraining credit growth, especially household credit, while Richter, et. al. (2018) find that changes in maximum LTV ratios have substantial effects on credit and house price growth.
- 3. In the following, we examine some of the most recent developments in several advanced economies with respect to these macroprudential measures.** In each, however, it is important to recognize that the authorities typically introduced a range of measures, such that it can be challenging to isolate the effects of individual macroprudential initiatives.

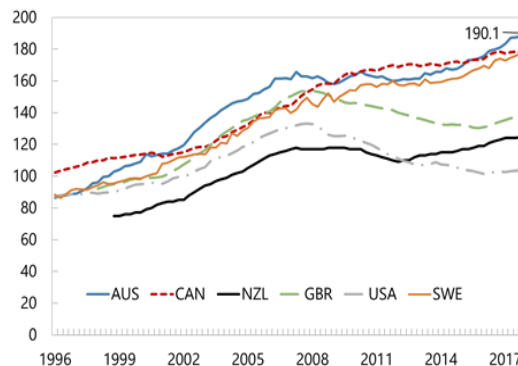
**Real House Prices**

(1996=100)



**Household Debt**

(Percent of disposable income)



Source: Haver Analytics.

**4. In New Zealand, the Reserve Bank of New Zealand (RBNZ) introduced several rounds of measures involving, among other elements, LTV ratios.** In October 2013, the RBNZ placed an exposure limit on high LTV lending for residential mortgages. Banks were required to restrict the flow of new mortgages at LTVs over 80 percent to no more than 10 percent of their total residential mortgage lending. In 2015, in response to a renewed pick-up in house prices, the requirements were tightened for residential property investors in Auckland, where the maximum share of loans with an LTV of more than 70 percent was set at 5 percent. In 2016, the geographic differences introduced earlier were eliminated and the 10 percent limit for loans at LTVs greater than 80 percent in Auckland for owner-occupiers was extended to the entire country. For residential property investors, a 5 percent limit was set for new lending at LTVs greater than 65 percent.

**5. The LTV approach is viewed as successful by the authorities, leading to a reduced concentration of lending at high LTVs and a reduced share of lending to investors.** To reflect the easing in risks related to household debt, the RBNZ announced a modest easing in November 2017, allowing a somewhat higher proportion of loans to be made at high LTVs. However, a significant share of lending still involves high DTI ratios. In 2017, about one-third of borrowers had a DTI of 500 percent or more. In response, the RBNZ initiated a consultation on introducing a DTI (or similar instrument) into its active macroprudential toolkit.<sup>1</sup> This initiative has been overtaken by a broader review of the macroprudential framework in New Zealand that is forthcoming.

**6. In Canada, successive rounds of tightening occurred beginning in 2008, responding to the surge in mortgage credit and house prices.** Although a variety of measures were implemented, caps on LTV and DSTI ratios played a large role.<sup>2</sup> The LTV limits on new mortgages was reduced from 100 percent to 95 percent in 2008, and in 2016 to 90 percent on the portion of the house price more than C\$500,000. The cap on the LTV for investment properties was reduced from 95 percent to 80 percent in 2010, and the LTV cap on mortgage re-financings reduced from 95 to 80 percent over a period of three years beginning in 2010. A cap on total debt service-to-income was introduced in 2008 and tightened in 2012. Additional measures were introduced over the period 2014-2017. In particular, the requirement for mortgage interest rate stress tests was extended to all mortgages. Household credit growth has subsequently slowed, with the authorities noting that fewer mortgages were going to highly indebted borrowers.

**7. These and other macroprudential measures implemented by the Canadian authorities were assessed in the context of the 2017 IMF Article IV review.** Among the various measures, tighter LTVs for new mortgages and refinancing loans were the most effective.

<sup>1</sup> The consultation paper includes a cost-benefit analysis of a DTI based on a reasonably strict calibration, finding overall positive net benefits. See RBNZ (2017).

<sup>2</sup> Note that in Canada these measures were typically imposed on mortgages that were insured through a government affiliated mortgage insurance provider (CMHC). Federal legislation requires mortgages with an LTV of 80 percent or higher to have mortgage insurance.

For example, a one percent reduction in the LTV was found to reduce the annual growth of credit by 0.5 percent. In conjunction with other measures, a substantial reduction in the household debt-to-income ratio was achieved relative to where it otherwise would have been (although the trend of the DTI remained upward). These results are supported by analysis from Kuncel (Bank of Canada, 2016), where an approach using a VECM model found a strong impact on credit growth from successive rounds of tightening that included changes to LTV caps.<sup>3</sup>

**8. Member countries in the European Union have been active in introducing macroprudential instruments in the post-crisis period.** Currently, about two-thirds of EU members have implemented restrictions on LTVs.<sup>4</sup> Authorities in the **United Kingdom** have implemented an LTI rather than an LTV. New residential mortgage loans with LTI $\geq$ 4.5 times income are expected to be less than 15 percent of the aggregate volume of new loans. Other countries in Europe with financial system vulnerabilities not dissimilar to those of Australia have taken measures to address them. For example, in **Sweden** an LTV cap of 85 percent has been in place since 2010. Amortization requirements, linked to the borrower's LTI have been tightened as well, most recently in early 2018. House prices in Sweden have fallen from their peaks, but the authorities remain concerned by continued increases in household indebtedness. Credit growth has been relatively subdued in **The Netherlands** in recent years, but household indebtedness remains at high levels and house price have risen sharply. The LTV was gradually reduced to 100 percent in 2018 (from 106 percent in 2012), while LTI/DSTI limits, introduced in 2012, have been gradually tightened. The Dutch Financial Stability Committee has recommended further reductions in the LTV to 90 percent.

**9. Similar to Sweden, Norway introduced an LTV cap of 85 percent in 2010. At end-2016, existing macroprudential instruments were renewed and, in some cases, tightened.** A supplementary LTV cap of 60 percent was set for secondary homes in Oslo. The requisite LTV for certain amortizations was lowered. In addition, a DTI cap was introduced (with total debt limited to five times the borrower's gross annual income). A study completed by the central bank (Norges Bank, 2017) used income statistics and home purchase data to examine the risks from household debt associated with different income levels. As might be expected, first time home buyers tended to have relatively high LTV and DTI ratios. However, Norges Bank noted that, at least in the period up to 2015, there had been few signs that first time home buyers had faced unusual difficulty in entering the housing market (e.g., the proportion of home owners under the age of 35 had actually risen).

<sup>3</sup> In the context of the Canadian Article IV, the IMF also updated the cross-country macroprudential dataset in Lim et. al. (2013) and examined the international experience over 2000-2016. LTV ratios, DSTI ratios, risk weights on bank credit, and provisioning requirements were all found to have a material impact on mortgage credit and house price growth. See IMF (2017), p. 48.

<sup>4</sup> ESRB (2018), Figure 3, p. 13 (as of the fourth quarter of 2017).

## Annex III. Taxation of Residential Real Estate

<p><b>Negative Gearing</b></p>	<p>Consistent with the treatment of all investments, negative gearing allows investors to apply their net loss against other income as a deduction which may reduce the tax they pay on other types of income, such as salary, wages or business income, with no total ceiling of the deduction. Where the other income is not sufficient to absorb the loss, it is carried forward to the next income year.</p> <p>A rental property is negatively geared where the deductible expenses (including depreciation and costs such as interest on the loan to finance the property purchase) exceed the income earned from the property.</p>
<p><b>Capital Gains Tax Discount</b></p>	<p>Consistent with the treatment of all assets earning a capital gain, capital gain tax applies to assets acquired after September 20, 1985 (with an exemption for the principal place of residence). Provided the asset has been held for more than one year a 50 percent discount is applied to the realized capital gain which is not included in taxable income.</p>
<p><b>Land or Property Tax</b></p>	<p>States collect land tax usually with exemption for owner-occupied properties, or below state-specific thresholds. Land tax applies as a proportion of the total value.</p> <p>States also enable each council to levy rates and charges on properties to help fund local infrastructure and services.</p> <p>Some surcharges are on vacant land or absentee owners.</p>
<p><b>Land or Property Transfer (Stamp) Duty</b></p>	<p>Stamp duty is applied by individual States to the sale or transfer of land or a business, with assistance and concessions to the first-home buyers. Stamp duties are an upfront tax on the full capital value of the asset.</p>

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