Macroprudential policy framework

Mitigating the likelihood and severity of boom-bust cycles

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Summary

The macroprudential policy framework is the set of principles and processes that underpins the use of macroprudential instruments.

What is the purpose of macroprudential policy?

The purpose of macroprudential policy is to reduce the risk that the financial system amplifies a severe downturn in the real economy. Macroprudential interventions are necessary when the Reserve Bank identifies that market failures are operating to amplify boom-bust cycles in the financial system. An unsustainable boom in credit and asset prices can result in a bust that creates losses for banks, businesses and households, and hampers the ability of banks to continue lending to the economy. This can have serious and lasting consequences for the economy and society. During periods of exuberance, banks and borrowers may not take into account the impact of higher debt levels in worsening a future downturn. Macroprudential policy aims to reduce the likelihood and severity of these consequences.

Macroprudential policy is one part of the Reserve Bank’s toolkit for maintaining financial stability – the consistent supply of financial services the economy relies on. It complements the Reserve Bank’s baseline prudential requirements for banks in promoting the soundness and efficiency of the financial system. While the Reserve Bank has always taken a systemic view of prudential regulation, the use of macroprudential instruments and policy is relatively new.

The Reserve Bank’s baseline prudential requirements are intended to maintain the resilience of the financial system – ensure that banks can absorb losses in an economic downturn, remain solvent and retain market confidence. However, these minimum requirements may not be enough to protect the financial system and wider economy during periods of excessively heightened risks to the financial system. Macroprudential policies reduce the probability that the baseline prudential requirements need to be drawn on, by reducing the scale of losses that have to be absorbed and preventing an economic downturn becoming more severe.

Macroprudential instruments

The Reserve Bank can implement macroprudential policy by requiring banks to get more funding (capital and/or liquidity) for a rainy day and/or making borrowers more resilient to a storm.
The Reserve Bank’s macroprudential instruments include additional capital and liquidity buffers for banks and restrictions on lending to households. Additional capital buffers mean banks can absorb more losses in a downturn and, by cutting the requirement during a bust, support the economy through more lending. Loan-to-value ratio (LVR) restrictions can limit the level of household debt – and therefore the potential losses that banks have to absorb in a downturn. This can curb the extremes of the boom-bust cycle, making the financial system less vulnerable to a financial crisis.

**Macroprudential decision making**

Choosing when to act – when to impose or reduce capital buffers and/or LVRs – is difficult and requires judgement. The benefits of macroprudential policy (the absence of a financial crisis) are largely unobservable except over the long term, while the costs are immediate and visible. Adopting a systematic approach improves accountability and transparency of the policies, and reduces the risk that the Reserve Bank acts too late for the policies to be effective.

In deciding whether to act, the Reserve Bank looks at a wide range of data and analysis that relate to the probability of a correction in asset prices, banks’ lending standards (their willingness to lend large amounts relative to property values or borrower income) and measures of banks’ financial strength (their capital and liquidity positions). The Reserve Bank’s latest assessment of financial stability risks is published in the *Financial Stability Report*.

An important component of our macroprudential analysis relates to the risk that indebted households reinforce a severe economic downturn by cutting their consumption, selling their homes or defaulting on their loans. This informs our decision on whether to increase the resilience of banks directly through capital buffers, or to use LVRs. LVRs are more effective than capital at mitigating risks associated with elevated household debt because they directly constrain lending to borrowers with limited equity in their houses. To ensure the LVR policy has a net benefit for financial stability, it should be set at binding levels only when there is strong evidence that household risks are elevated.

The use of any prudential instrument, whether macroprudential or not, has implications for short-term economic activity and the efficient allocation of capital. For example, tighter capital requirements could increase the cost of credit, while LVR restrictions directly restrict some borrowers from accessing lending for house purchases. As with all prudential policy decisions, the Reserve Bank takes the efficiency costs into account when designing a macroprudential intervention and the calibration of the relevant instrument(s). The Reserve Bank consults on its cost-benefit analysis prior to using the instruments.
Limitations of macroprudential policy

Macroprudential policy is only part of the answer to the financial stability risks posed by economic and financial cycles. Macroprudential policy is not about eliminating risks for banks and households, reducing house prices, managing fluctuations in the business cycle, or directing credit to particular sectors. It can help reduce the likelihood of a crisis, and the effect of a severe economic downturn on banks and borrowers. However it cannot eliminate these risks or effects. And it cannot influence underlying non-financial causes of these cycles, such as housing supply and affordability.

Macroprudential policy does have implications for economic activity, and it supports monetary policy, at the margin, when business and financial cycles are synchronised. However, macroprudential policy enhances financial stability; it is not an inflation targeting tool.
Introduction

The Reserve Bank has responsibility for promoting and maintaining a sound and efficient financial system, and avoiding the significant damage to the financial system that could result from the failure of a registered bank. Macroprudential policy contributes to this objective by reducing the likelihood of a financial crisis and increasing the resilience of banks and households, to limit the scale of severe economic downturns. It complements the supervision of, and baseline prudential requirements for, banks.

This document sets out the Reserve Bank’s framework for macroprudential policy. It is intended to improve the quality, predictability and transparency of macroprudential policy decision making and provide a basis for holding the Reserve Bank to account for those decisions.

Adopting a systematic and transparent policy approach is important because the benefits of macroprudential policy may not be immediately apparent or easily attributable to policy decisions. Financial crises tend to be infrequent, while the short-run costs of macroprudential intervention are much more visible. A clear decision-making framework plays an important role in the accountability and transparency of policy, and ultimately in building legitimacy for the use of the instruments.

Clear and transparent communication may also be an important contributor to effective macroprudential policy, in so far as it shapes expectations and influences funding and lending strategies through the financial cycle. A credible commitment to imposing higher capital requirements or tighter lending standards on banks in the event of a credit boom may stabilise market expectations and the economy. The Reserve Bank may also be able to influence risk taking by banks through the Financial Stability Report, by presenting evidence and commentary on a deterioration in indicators and lending standards.

The Reserve Bank is entrusted by the Government to make macroprudential policy decisions to avoid a situation where politicians delay using the instruments due to their visible short-term costs.\(^1\) The operating objectives, instruments, and consultation requirements for macroprudential policy are set out in the Memorandum of Understanding between the Governor and the Minister of Finance.\(^2\) The Reserve Bank published an article in 2013 outlining its macroprudential policy framework and approach (Rogers, 2013). That framework and the policy decisions since 2013 have been the subject of a review that has resulted in the publication of this framework document and an accompanying article on the effectiveness of LVR policy (Lu, 2019).

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1 As the IMF noted, “timely prudential action requires a decision-making processes [sic] free from financial industry and political pressures”. See ‘New Zealand: Financial Sector Assessment Program: Financial System Stability Assessment’ (May 2017)
The Reserve Bank intends to publish additional guidance on each of the macroprudential instruments\(^3\) drawing on the review. The guidance will anchor future macroprudential policy decisions by providing detail on the:

- indicators\(^4\) of systemic risks and/or vulnerabilities that will trigger a more in-depth assessment of the case for using the macroprudential instrument;

- transmission channels through which the macroprudential instrument would operate to increase financial stability; and

- a summary of the evidence for the effectiveness of the policy instrument, the implementation process, and who would be affected by its use.

A joint Treasury-Reserve Bank team is currently reviewing the Reserve Bank of New Zealand Act. Phase 2 of that review will consider, among other topics, macroprudential policy: its scope and objectives; its use and its relationship to prudential and monetary policy; the macroprudential toolkit; decision making; and processes to provide transparency, accountability and review.\(^5\) The Reserve Bank expects that the principles set out in this document will be relevant within a wide range of potential legislative and institutional frameworks.

This document sets out:

- the purpose of macroprudential policy: the risks and market failures that make it necessary and what it seeks to achieve;

- the different macroprudential instruments and how they contribute to financial stability;

- the Reserve Bank’s decision-making process: how we assess risks to the financial system and whether a macroprudential intervention is necessary;

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\(^1\) The MoU does not override the Reserve Bank’s ability and responsibility under the Act to use its prudential powers to pursue its financial stability objective. The Reserve Bank has undertaken in the MoU to consult with the Treasury on the development of additional macroprudential instruments.

\(^2\) This approach is similar to the one taken in the United Kingdom. The Bank of England’s Financial Policy Committee publishes policy statements for its macroprudential powers to explain how it plans to use those powers and why.

\(^3\) The Reserve Bank monitors a broad range of indicators that inform its macroprudential policy decision making. A chart pack of indicators is already published quarterly on the Reserve Bank website, but there is no guidance on how the indicators are used to inform macroprudential policy decisions.

• the policy design process: how we assess the pros and cons of using different instruments; and

• the consultation process and how we make sure the instrument achieves its purpose and we limit unintended consequences.
The purpose of macroprudential policy is to reduce the risk that the financial system amplifies a severe downturn in the real economy. An unsustainable boom in credit and asset prices can result in a bust that creates losses for banks, businesses and households, and hampers the ability of banks to continue lending to the economy. This is important because financial instability – a disruption to the supply of essential services provided by the financial system – can have significant and lasting economic and social costs. Macroprudential policy aims to reduce the likelihood and severity of these costs.

As described below, damaging boom-bust cycles can develop due to the pro-cyclical interaction of the financial system with the real economy. The limited incentive for banks to recognise and internalise the costs of a future financial crises – that costs to the financial system and to the economy far exceed the private costs to banks and households – tends to amplify the boom-bust cycle. A tightening of macroprudential policy becomes necessary when these systemic risks are excessively heightened.

Table A illustrates how macroprudential policy complements baseline prudential requirements by lowering the likelihood of a crisis and reducing its impact on the financial system and wider economy. Baseline prudential requirements ensure banks retain market confidence during a stress scenario, and that the impact of a stress scenario can be managed in orderly fashion if banks become distressed or fail. Macroprudential policies lower the probability that the baseline prudential requirements need to be drawn on, by reducing the scale of losses that have to be absorbed and by preventing an economic downturn becoming more severe. Macroprudential policy can achieve this by (a) introducing additional capital or liquidity buffers to encourage banks to continue lending to the economy in a downturn, and/or (b) by limiting banks’ lending to risky borrowers, improving the ability of households to weather economic shocks. In either case, successful use of macroprudential policy requires robust baseline prudential requirements – to allow macroprudential buffers and lending restrictions to be eased during the downturn while maintaining market and supervisory confidence at a time when the financial system is likely to be under stress.

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6 A banking crisis has been estimated to cost, on average, 23 percent of a country’s GDP, as a deviation of actual GDP from its trend, with an associated average 12 percent increase in public debt. The percentages tend to be higher in advanced economies with deeply embedded banking systems. The consequences in terms of fiscal costs, for bailing-out the financial system, and unemployment can also be severe. See Laeven and Valencia (2012). For a survey demonstrating the protracted nature of recoveries and their halting, tentative nature see Reinhart and Rogoff (2014).
Box A provides more background on how macroprudential policy has developed internationally since the global financial crisis (GFC), and how it complements and operates alongside baseline prudential policy in New Zealand to reduce risks to depositors, creditors, taxpayers and the economy. Unlike the approach to macroprudential policy overseas, the main feature of macroprudential policy in New Zealand is to more actively mitigate risks that build up over the course of the financial cycle.
# Table A: Macroprudential policy and baseline prudential requirements

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Relevant instruments</th>
<th>Impact on financial system resilience</th>
<th>Impact on wider economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Macroprudential policy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce risk that the financial system amplifies a severe economic downturn</td>
<td>Borrower restrictions (LVRs)</td>
<td>Reduced losses in a severe economic downturn</td>
<td>More resilient households and banks reduces potential severity of an economic downturn</td>
</tr>
<tr>
<td></td>
<td>Capital and liquidity instruments (CCyB/SCR)</td>
<td></td>
<td>Lowers incentives on banks to deleverage in a downturn; supports higher credit supply and economic activity</td>
</tr>
<tr>
<td><strong>Prudential policy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain baseline resilience of the financial system</td>
<td>Capital buffers</td>
<td>Banks remain solvent through the economic cycle</td>
<td>Maintains market confidence and lowers risk of sudden increases in funding costs for households, businesses and the economy</td>
</tr>
<tr>
<td></td>
<td>Liquidity policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Governance and local incorporation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manage and limit impact of distress or failure</td>
<td>Collateral standards</td>
<td>Banks remain functioning parts of financial system</td>
<td>Maintains availability of credit and banking services necessary for economic activity</td>
</tr>
<tr>
<td></td>
<td>Outsourcing</td>
<td></td>
<td>Mitigates costs for creditors and taxpayers</td>
</tr>
<tr>
<td></td>
<td>OBR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimum capital</td>
<td>Losses absorbed by shareholders first</td>
<td></td>
</tr>
</tbody>
</table>
Procyclicality of the financial system

The financial system is inherently pro-cyclical (Diagram A). Booms in the financial cycle tend to be exacerbated due to banks, investors and households underestimating the level of risk (Borio, 2010). Investor and borrower behaviour can be shaped by an over-reliance on recent news and asset performance. As asset prices rise, provisions for non-performing loans fall and credit spreads narrow, banks and households assume that risks are lower than they are. These benign indicators, together with low volatility in markets, not only lower risk perceptions but also encourage banks and households to become more leveraged.

This process can continue until a macroeconomic downturn occurs, whether due to a specific shock (e.g., a global credit crunch) or a general economic slowdown that causes investors and borrowers to reconsider the serviceability of their debt. The process then works in reverse: a slowdown in the economy or an external shock undermines households’ ability to service their debt and/or to buy houses. Heightened risk perceptions will develop, particularly if borrowers have leveraged their positions in the expectation of capital gains. As defaults rise and collateral asset values fall, banks are incentivised to raise the cost of lending and/or deleverage – reduce their lending to the economy. This results in a contraction in the availability of credit, which causes a further contraction in lending and asset prices. In other words, the downturn in the financial cycle and the slowdown in the economy become mutually reinforcing.

Diagram A: Boom-bust cycles

Studies focusing on the behavioural reasons for the underestimation of risk include for example Kahneman and Tversky (1972) and Gennaioli (2015).
If left unchecked, the pro-cyclicality of the financial system can amplify the scale of the boom-bust cycle and cause significant damage both to the financial system and to the real economy. The downturn can be severe and prolonged as banks and households take time to repair their balance sheets, particularly if they have become excessively leveraged during the upturn in the expectation that relatively cheap funding will continue to be available and that asset prices will continue to rise.

The GFC led to much greater recognition of pro-cyclicality and its effects. Various studies have found that strong credit growth in the expansionary phase of a financial cycle tends to be followed by deeper recessions (Jorda, 2013). Rapid household credit growth (Bridges, 2017) combined with a house price bubble increases the risk of a financial crisis. And tends to lead to more severe and protracted recessions (Jorda, 2015) (figure 1 below).

![Figure 1: Recession and recovery paths: the role of bubbles and credit (1870-2013)](source: Jorda et al 2015)

For an overview of financial stability risks from housing market cycles, see Thornley (2016).

Figure 1 charts recessions and recovery paths in terms of the cumulative growth rate of output per capita measured in percent, and years from crisis, sorted depending on whether credit during the expansion grew above (high) or below (low) the historical mean. Jorda uses a definition of bubble that combines two common approaches: (1) that asset prices increase above their trend, and (2) that a large price correction occurs (a fall of 15 percent in a three year period). The data are from a worldwide sample between 1870 and 2013, excluding the World Wars and a window of five years around them.
Household indebtedness is an important channel for the amplification of the financial cycle. Elevated debt levels increase the sensitivity of households to rises in interest rates, unemployment and falls in house prices. Deleveraging by highly indebted households can exacerbate the effect of an economic shock (Eggertsson, 2012), and transform it into a major and prolonged downturn.

Box A: The GFC and the development of macroprudential policy

Following the global financial crisis (GFC), there was considerable international focus on reducing risks to the financial system, risks that came at great fiscal and economic cost.

The cross-sectional dimension and the time dimension

Macroprudential policy was developed and implemented – albeit in different forms – to manage the system-wide risks that can develop because of:

- common exposures and interlinkages within the financial system (the cross-sectional dimension); and
- the pro-cyclicality of the financial system that amplifies the boom-bust sequence of the financial cycle (the time dimension).10

The response to the cross-sectional dimension has been to calibrate prudential tools according to the contribution of financial institutions to systemic risk (for example by imposing capital buffers on large systemically important institutions).11

The response to the time dimension has been to impose counter-cyclical requirements intended to increase the resilience of the financial system during the upturn so that the financial system is more resilient in a downturn (for example by raising capital buffers during the expansionary phase of the credit cycle and then easing them for a downturn).12

Macroprudential policy can also be defined by reference to micro-prudential policy. Internationally, micro-prudential policy has tended to focus on the safety and soundness of individual financial institutions, whereas macroprudential policy has a system-wide focus. In New Zealand, the Reserve Bank’s objective is to promote the maintenance of a sound and efficient financial system as a whole – not of individual institutions – and to avoid significant damage to the financial system that could result from the failure of a registered bank.

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10 See Borio (2010) and Lowe (2002).
12 The Reserve Bank has proposed the introduction of a countercyclical capital buffer as part of its review of the capital adequacy framework for registered banks.
Market failures

The pro-cyclicality of the financial system is exacerbated by market failures. Banks and households may act rationally to optimise their individual positions but if they all act in the same way, and invest in the same assets, they contribute to the pro-cyclicality of the financial system and increase the risk and scale of a correction in asset prices.

Strategic complementarities

During the upturn in the financial cycle, banks and other financial institutions adopt the same strategy and become vulnerable to the same shock because:

- The pay-off increases as more parties adopt the same strategy. As credit is made available for a specific asset, its value goes up, and so does demand. This drives asset prices higher, encouraging more investors to take part.

- Good financial performance at one bank may put pressure on management at other banks to match that performance by adopting a similar strategy (or otherwise be exposed as underperforming the market).

- Adopting the same strategy provides management with some insurance that, if the bank suffers losses, it is likely that all banks will suffer at least some losses, and management will be judged more leniently by shareholders, funding markets, the public and regulators.

- Banks are incentivised to choose correlated asset portfolios because it shifts the downside risk of losses on to the system as a whole: the greater the scale of a potential system-wide failure, the more likely a government bail-out becomes (Acharya, 2009).

These strategic complementarities can lead to greater risk taking and a lowering of lending standards, as banks and financial institutions compete for customers and market share. A lowering of lending standards reduces the overall credit quality of banks’ lending books. This makes borrowers and banks more sensitive to a serviceability shock (such as a fall in income or a rise in interest rates) or a correction in asset values, and increases the potential scale of losses in a downturn (Lowe, 2002).

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13 The stigma of reporting weak financial performance relative to other banks can create an incentive to take on additional risk in an attempt to match the performance of others. See Haldane (2010) and Aikman (2014).
Strategic complementarities may also incentivise banks to under-estimate the risk that funding costs increase, and the effect this would have in terms of constraining lending and profitability. If the cost of funding increases, banks have a number of options: pass on the increased funding costs, reduce their profit margin, and/or reduce the amount of lending they undertake to the real economy. These outcomes can (further) slow down the economy and increase the probability and scale of borrower defaults for banks, particularly if borrowers and households are already highly leveraged and/or sensitive to a rise in interest rates.

**Interconnectedness and collateral fire sales**

If banks adopt the same funding and lending strategies, it greatly increases the risk of contagion – the risk that the distress or failure at one bank could increase the probability of failure for other banks – even when banks do not have direct exposures to a distressed bank. This is because:

- all banks will be perceived as riskier, leading to increased funding costs for all banks, and reduced availability of funding for all banks; and
- asset values are likely to fall, whether because of a fire sale\(^\text{14}\) of assets at the distressed or failed bank, or because the distress or failure of a bank reduces credit availability to the market and lessens demand for the asset.

If a type of collateral is common across different banks (such as residential property), this increases the risk of contagion and downward pressure on the price of that type of asset (Gai, 2017).

Having the same lending and funding strategies also means that these effects – higher funding costs, lower asset values – can be transmitted to the economy much more quickly. Banks will raise their lending rates, reduce their lending to the market and/or sell assets at the same time.

Fire sales also transmit to the economy through overly leveraged household balance sheets. Indebted households may be forced to sell their property during a severe downturn if they do not have the capacity to absorb the costs related to a rise in interest rates or unemployment. If many households are in the same position, the increase in forced sales will cause a significant reduction in house prices.

\(^{14}\)The forced sale of assets below their fundamental value (the expected economic return on the asset in terms of income and capital appreciation, relative to its purchase price), particularly when potential buyers of that asset are also distressed or unwilling to pay what was the market price in a liquid market, is referred to as a fire sale.
Macroprudential instruments

The Reserve Bank has a defined list of macroprudential tools or instruments (see Table B below)\textsuperscript{15} to mitigate the build-up of systemic risks, the pro-cyclicality of the financial cycle and the potential impact of externalities on the financial system and wider economy. The macroprudential instruments can be divided into two groups: capital and liquidity instruments that operate by improving the resilience of bank balance sheets, and transactional instruments that operate by improving the resilience of borrowers, typically households.

**Table B: Macroprudential instruments**

<table>
<thead>
<tr>
<th>Capital and liquidity instruments</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countercyclical Capital Buffer (CCyB)</td>
<td>An additional capital buffer the Reserve Bank can require banks to meet. The Reserve Bank can ease the requirement where there are signs of potential losses or deleveraging.</td>
</tr>
<tr>
<td>Sectoral Capital Requirement (SCR)</td>
<td>An additional capital buffer the Reserve Bank can require banks to meet due to the build-up of credit in a specific sector (e.g. lending to the dairy industry, residential mortgages or credit cards) that has systemic risk implications. The Reserve Bank can then ease the requirement where there are signs of potential sectoral losses or deleveraging.</td>
</tr>
<tr>
<td>Core Funding Ratio (CFR)\textsuperscript{16}</td>
<td>At present banks are required to source at least 75 percent of their funding from retail deposits, long-term wholesale funding or capital. The Reserve Bank can ease the requirement in the event of market dislocation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transactional instruments</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan-to-value ratio (LVR) restrictions\textsuperscript{17}</td>
<td>A restriction the Reserve Bank can impose that limits the amount of credit that banks can extend to borrowers with high LVRs.</td>
</tr>
</tbody>
</table>

\textsuperscript{15} Section 78(1)(fa) of the Reserve Bank of New Zealand Act gives the Reserve Bank the power to impose risk management conditions on registered banks. The 2013 Memorandum of Understanding (MoU) between the Minister of Finance and the Governor provided clarity on the instruments of macroprudential policy for this purpose.

\textsuperscript{16} Phased in as a prudential requirement from 65% in 2010, to 70% in 2011, to 75% in 2013. The Reserve Bank is planning a review of the liquidity requirements that currently apply to all locally incorporated banks (ie, the one-week and one-month mismatch ratios as well as the CFR). The Reserve Bank will also consider whether liquidity requirements should apply to banks that operate in New Zealand as branches, and the nature of liquidity disclosure requirements.

\textsuperscript{17} Introduced in October 2013, adjusted in November 2015, tightened in October 2016, eased in January 2018 and November 2018.
Other macroprudential instruments may be added over time – and there may be a role for these tools – as the financial system and risks evolve. This will be considered in Phase 2 of the review of the Reserve Bank Act. The Reserve Bank’s view is that a serviceability restriction (eg, a debt-to-income (DTI) threshold limit for borrowers) at which banks can only make a certain percentage of new lending would be a useful addition.¹⁸

**Transmission to financial stability**

Macroprudential instruments transmit to financial stability and sustainable economic growth by directly improving the resilience of the financial system, mitigating the amplitude of the financial cycle, and reducing the potential decline in economic activity and asset prices in a downturn (see Diagram B).

Capital and liquidity instruments transmit directly to financial stability via bank balance sheets. Capital instruments (the CCyB and SCR) do this by increasing the amount of capital that banks have available to absorb losses. Liquidity instruments (the CFR) do this by increasing banks’ use of stable funding, reducing the vulnerability of banks to disruptions in funding markets.

In contrast, LVRs enhance the resilience of banks via household balance sheets, reducing the potential for large mortgage defaults and losses in the event of a significant correction in the housing market.

**Capital and liquidity instruments**

During a severe downturn, easing capital and liquidity instruments can reduce incentives on banks to deleverage. This may reduce the amplification of a stress scenario by improving the capacity of banks to continue lending to credit-worthy borrowers. Specifically:

- The CCyB or SCR could be eased so that banks do not have to restore their capital buffers immediately to their previous level. This would allow banks to lend more than they otherwise would.

¹⁸ The Reserve Bank has suggested that a serviceability restriction (eg a DTI instrument) would be a useful addition to the tools specified in the MoU. The Reserve Bank published a consultation document on this issue in June 2017. It is intended that this proposal will be revisited as part of the Phase 2 review of the macroprudential framework. A DTI instrument would be particularly useful when used in combination with LVR restrictions. It would give more effective control over banks’ loan origination standards and would improve the resilience of the financial system, where housing market vulnerabilities exist. Combining multiple transactional instruments (e.g. complementing LVR restrictions with a DTI restriction) would also reduce efficiency costs.
Diagram B: Transmission channels

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Upturn</th>
<th>Downturn</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital and liquidity</td>
<td>Increased capital or liquidity buffers</td>
<td>Reduced risk of bank failure or deleveraging</td>
<td>Sustainable economic growth and financial stability</td>
</tr>
<tr>
<td>LVRs</td>
<td>Limit excessive credit and asset bubbles</td>
<td>Reduced decline in economic activity and asset prices</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fewer risky borrowers</td>
<td>Reduced mortgage losses and defaults, greater consumption</td>
<td></td>
</tr>
</tbody>
</table>
• The CFR could be eased if there is a significant dislocation in funding markets and the CFR requirement is incentivising banks to deleverage and thus constrain the flow of credit to the real economy.

Evidence from previous crises suggests that there is a strong link between capital, lending and economic activity. Banking systems with more capital prior to the crisis undertook more lending during the crisis, and this was associated with a smaller decline in economic activity (Jorda, 2015). There is only limited evidence on the impact of easing requirements during a crisis, although some recent studies suggest an association between regulatory capital requirements and subsequent lending by individual banks after the GFC.

An important point is that the impact from easing capital or liquidity requirements depends on the existence of robust baseline requirements. Easing capital or liquidity buffers will have little effect in promoting credit growth if banks are approaching the point of failure or are under pressure to restore their funding levels. In these circumstances, banks are likely to deleverage even if the regulatory requirements are cut, in an attempt to convince the market that they are resilient to future stress. The capital requirements demanded by the market tend to increase substantially in the midst of a crisis, suggesting that the impact of macroprudential easing of capital requirements may be more effective once the height of the stress has passed (Francis and Osborne, 2010).

Capital and liquidity instruments may also impact on the credit cycle during an upturn. For example, an increase in sectoral capital requirements could reduce the likelihood of banks pursuing complementary strategies in a particular sector – both directly, by increasing the cost of the strategy and indirectly by lowering the expectation of other banks pursuing the same strategy and therefore diminishing the incentive to compete for market share (Haldane, 2010). However, the extent of transmission will depend on the underlying economic fundamentals. If growth and profitability in a sector are very strong, the cost of capital will tend to be compressed and increased capital requirements may do little to restrain exuberance.

LVRs

This section draws heavily on a recently published analysis of the experience with the LVR policy over the past five years (Lu, 2019), along with more formal modelling of the impact of the LVR policy on the resilience of the banking system (Bloor and Lu, 2019). This work suggests that LVR policy since 2013 has significantly reduced potential mortgage losses as a share of bank capital, even after accounting for reduced bank capital ratios due to lower LVRs reducing bank capital requirements. The resilience benefit of the LVR policy arises chiefly from its impact in mitigating the decline in house prices and economic activity during a stress scenario (discussed below).
LVRs are more effective than capital and liquidity instruments at moderating the amplitude of the financial cycle during the upturn because they constrain lending volumes directly. Several studies have estimated that LVR policy can reduce house price inflation in New Zealand by approximately 3 percent and mortgage lending by 1 percent. By lowering the degree of house price over-valuation, this may help to reduce the scale of a severe downturn in the housing market. However, quantifying these impacts is uncertain. And one of the lessons of LVR policy since 2013 is that the effect of each tightening on the rate of housing demand growth is likely to be moderate and temporary (typically six to 12 months).19

LVR policy can also dampen the amplitude of the financial cycle by limiting the number of distressed house sales and the level of household indebtedness. Absent these impacts, the financial cycle can amplify the vulnerability of the economy to negative shocks through falling house prices, reduced consumption and greater defaults on business loans, resulting in tighter credit conditions. Quantifying the effects of LVR policy on these transmission channels is difficult. Reserve Bank estimates suggest that (a) LVR policy may have reduced stressed mortgage defaults by approximately 10 percent, and (b) without LVR policy, household debt-to-income ratios would sit at 172 percent, compared to the actual level of 164 percent.

This emphasis of LVR policy – on moderating the amplitude of the financial cycle during the upturn and mitigating the feedback effects on the economy during the downturn – represents a shift since 2013 when house price inflation was emphasised more as a policy goal. LVR restrictions are now considered to be most effective, and efficient, when there are signs of negative feedback effects between bank lending standards, household indebtedness and consumption, and the economy.20

Potential costs to efficiency

The benefits of macroprudential policies must be weighed against the risk that these requirements needlessly curtail economic activity and impair the efficiency of the financial system.

- Capital and liquidity instruments increase the cost for banks of providing credit. Part of this cost may be borne by the shareholders of the bank, but some of it may be passed on to customers in the form of an increase in lending rates and a reduction in credit supply, which could lower economic growth.

19 See also the IMF Working Paper by Z Alam et al, based on data from 34 advanced and 29 emerging economies, that finds that, in line with other earlier cited studies, loan-targeted instruments have significant impacts on real credit to households while the effects on house prices are weaker.
20 The relative efficiency of different macroprudential instruments is considered further below in section 3 ‘The Reserve Bank’s macroprudential policy decision making process’.
• Transactional instruments are likely to increase the cost of credit above the collateral or income threshold specified by the policy. They also directly constrain the ability of banks to lend to borrowers above the threshold. Both these effects could impact on economic activity. The LVR instrument is more potent at reducing risky lending and mitigating the scale of economic downturns than capital instruments, but also more significantly curtails the choices of banks and borrowers and is likely to have larger impacts on short-run economic activity.

The use of macroprudential instruments can also create incentives for financial institutions to avoid the policy by undertaking activity outside of the regulatory boundary. This could undermine the financial stability benefits of the policies and add to their efficiency costs. The risk of disintermediation – that the restricted activity moves outside the regulatory perimeter as a result of intervention – needs to be considered as part of the case for implementing policies, and in monitoring their ongoing effectiveness. The experience with the LVR policy suggests that disintermediation has been limited over the past five years.

Macroprudential instruments may have a net negative impact on allocative efficiency and long-term economic growth if used in inappropriate circumstances. The following section describes the Reserve Bank’s approach to assessing the appropriate time to intervene, based on an assessment of whether market failures are increasing risks to the financial system excessively, and how these potential costs are taken into consideration in the design and calibration of the policy.

The Reserve Bank intends to publish guidance notes on the LVR and capital-based macroprudential instruments. The guidance will include further details about transmission channels. The Reserve Bank intends to review its liquidity policy in due course, and further clarification of the role of the core funding ratio as a macroprudential instrument will follow this review.
Macroprudential policy decision-making process

Approach to decision-making

The Reserve Bank’s approach to macroprudential policy decision-making is:

- to identify and assess the source of emerging systemic risks and their feedback effects with the real economy;
- to design an appropriate policy response to maintain financial stability; and
- to test that policy response through consultation and impact assessments.

The Reserve Bank then assesses the effectiveness of the policy once implemented.

Liaison with Minister and Treasury

The Reserve Bank keeps the Minister of Finance and the Treasury regularly informed on its thinking on significant macroprudential policy developments and of emerging risks to the financial system. The Reserve Bank consults with the Minister of Finance and the Treasury when it is actively considering a macroprudential intervention. The Reserve Bank informs and consults with the Minister of Finance and the Treasury before any decision is made to implement, remove or alter the calibration of a macroprudential instrument.

Systemic risk monitoring

The Reserve Bank monitors risks to the financial system as part of its ongoing supervision and oversight of the financial system, its in-depth thematic reviews and stress testing. The Reserve Bank reports on its assessment of systemic risks in the six-monthly Financial Stability Report.

21 Stress tests of financial institutions help the Reserve Bank investigate and understand the implications of current and emerging risks to financial stability and to assess the resilience of individual institutions and the financial system as a whole.
The Reserve Bank utilises a range of quantitative data – referred to as ‘indicators’ – that have been demonstrated to have some predictive power in terms of pointing to risks and vulnerabilities that can lead to systemic distress. A quarterly chart pack of indicators is published on the Reserve Bank website, and further guidance on relevant indicators for each macroprudential instrument will be published in due course. As discussed in Box B, judgement needs to be exercised in interpreting the indicators and in determining whether, at any point in time, a macroprudential policy response should be considered.

For the purposes of macroprudential policy development, the Reserve Bank uses the indicators as the basis of three, inter-related, assessments: (a) the probability of a correction in the credit cycle, (b) financial system resilience, and (c) potential feedback effects with the economy.

**Probability of correction in the credit cycle**

The Reserve Bank focuses on indicators of credit growth and of the levels of asset prices to assess the probability of a correction in the credit cycle. This provides an initial flag that systemic risks are increasing, and macroprudential intervention should be considered.

As noted above, sustained momentum in house price inflation and credit growth has a strong empirical link to the likelihood and severity of a housing downturn. We monitor the extent that asset prices exceed the level implied by economic fundamentals to gauge the potential decline in asset prices. We also remain alert to and take into account a wide range of other indicators of irrational exuberance and behaviour.

**Financial system resilience**

Once a systemic risk has been identified, the Reserve Bank assesses the resilience of the financial system to that risk, and whether the risk is adequately mitigated by the baseline prudential requirements – having regard to the objective and purpose of macroprudential policy. A macroprudential perspective requires that banks’ resilience is sufficient to enable them to continue to lend to the economy, and not amplify, a downturn.

The Reserve Bank has a range of tools to assess financial system resilience. This includes monitoring bank capital and liquidity ratios, stress testing of the financial system, and undertaking analysis of the vulnerability of credit portfolios. Household indebtedness is an important indicator of the potential scale of losses that would need to be absorbed and therefore the likelihood of triggering pro-cyclical behaviour by banks.

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22 The quarterly chart pack is to be refreshed as the guidance documents for the macroprudential instruments are developed.
Box B: The role of indicators in macroprudential policy

Publishing a set of indicators that guide macroprudential policy helps to improve understanding of the circumstances under which a macroprudential intervention will be considered, supporting accountability and transparency of policy.

The use of indicators also supports timely intervention, which improves the effectiveness of policy. There is always a time lag in macroprudential instruments taking effect and having an impact on the risks or vulnerabilities identified. Prompt intervention also minimises costs for banks and the financial system, as the requirements or restrictions may be calibrated at a more moderate level, and those affected can be given longer to adjust.

However, macroprudential indicators do not provide a sufficient degree of certainty to enable the Reserve Bank to set rules defining in advance when a macroprudential intervention would be necessary. No single indicator or group of indicators can fully capture or predict the source or scale of systemic risks, and different indicators may point to different conclusions. Mechanical decisions about instruments and their calibration – for example, pre-determined thresholds based on credit and house price growth – can provide misleading signals, and do not inform the type of macroprudential instrument to be used or its calibration. As a result, the Reserve Bank must exercise judgment in operating macroprudential policy.

The Reserve Bank exercises informed discretion in deciding when to use a macroprudential instrument, and in calibrating the instrument. It must guard against the risk of inaction bias – the risk that the Reserve Bank acts too late because the benefits of macroprudential policy (the absence of a financial crisis) are largely unobservable except over the long-term, while the costs are immediate and visible. This is one of the main reasons the Reserve Bank is entrusted by Government with the power to act independently to make these types of decisions.23

Feedback effect with the economy

Finally, the Reserve Bank assesses the potential feedback effect of the identified systemic risk with the real economy, to understand (a) how the identified systemic risk is expected to develop, and (b) whether banks’ resilience is expected to deteriorate. If the risk of significant feedback effects with the economy is elevated, this could cause further deterioration in the housing market, the broader economy and bank balance sheets.

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Bank lending standards form an important component of the assessment. An industry-wide easing of lending standards could reduce the resilience of the financial system over time, even if the system is currently resilient. Lending standards are monitored through the credit conditions survey, loan-to-value and debt-to-income ratios of new lending, and supervisory interactions. The Reserve Bank also has regard to the outlook for asset prices, and whether this could add to risks around household indebtedness.

**Policy design**

If the Reserve Bank’s systemic risk monitoring suggests that a macroprudential intervention may be required, an options analysis will consider the most appropriate response.

The Reserve Bank will consider the extent to which the risk is accounted for by baseline prudential standards and how this affects the options analysis. There may be instances where the baseline prudential standards are not performing as expected in light of our systemic risk monitoring. For example, heightened risks around mortgage lending in 2013 prompted a review and subsequent increase of risk weights for high-LVR loans.

The Reserve Bank also monitors whether individual institutions are prudently managing their risks as part of its prudential supervision. Macroprudential intervention is likely to be preceded by supervisory discussions on lending standards and how individual banks are mitigating the identified risk. Effective supervision of lending standards may help prevent systemic risks emerging in the first place, thereby reducing the need for macroprudential intervention.

The Reserve Bank will also weigh the risk that a macroprudential response is not timely – and therefore ineffective – against the risk that the response is used in the wrong risk environment or is counter-productive. Below we discuss some of the factors that affect the choice between LVRs and capital and liquidity instruments (see also Table D below).

**Capital and liquidity instruments**

If the indicators suggest a lack of resilience in the financial system there could be a case for using a capital or liquidity instrument. Capital and liquidity instruments can enhance the resilience of the financial system by increasing the ability of banks to absorb losses and to continue lending during a downturn, thus supporting long-term, sustainable economic growth. The counter-cyclical use of these instruments is also cost efficient because capital and other funding is more likely to be available, and pricing more likely to be favourable, to banks during the upturn.

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24 There are no baseline mortgage origination standards in New Zealand as in, for example Australia, where APRA’s APG 223 guides mortgage origination by Australian banks. Transactional instruments like LVRs can be a useful and effective complement to the Reserve Bank’s supervisory approach.
Additional capital and liquidity buffers can be built up when the Reserve Bank identifies heightened risks to the financial system. This does not preclude building up a component of the buffers as part of, for example, an ‘early-set’ CCyB rate strategy (ie, setting the CCyB rate as a positive number before risks become excessively heightened). This approach reduces the risk that buffers are not built up in a timely fashion prior to a crisis. Regardless of how the CCyB and/or CFR is increased, having the buffer in place provides flexibility to cut it and allow banks to operate with lower capital and/or less stable liquidity in a downturn.

The proposed calibration of the instruments will be based on an assessment of the capital or liquidity required to mitigate banks deleveraging during a stress scenario. Stress tests can help calibrate the response by shedding light on the loss-absorbing capacity required in a severe downturn. The Reserve Bank will have regard to different categories of systemic risk and indicators in determining the appropriate capital or liquidity instrument, as set out in Table C below. Compared to transactional instruments, additional capital buffers can help mitigate a wider range of risks that may affect the banking system. All else equal, a stronger baseline capital requirement for the banking system would suggest a weaker case for tightening or deploying macroprudential policies.

Table C: Categories of systemic risk, indicators and instruments

<table>
<thead>
<tr>
<th>Categories of systemic risk</th>
<th>Examples of indicators</th>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excessive credit growth</td>
<td>Credit-to-GDP gap, house prices/credit growth, household debt</td>
<td>CCyB</td>
</tr>
<tr>
<td>Excessive sectoral credit growth</td>
<td>House prices/commercial property prices/farm prices, sectoral credit growth</td>
<td>SCR</td>
</tr>
<tr>
<td>Funding risk and maturity mismatch</td>
<td>Core funding ratio, deposit growth rates, offshore funding levels, banks spreads and financial market conditions</td>
<td>CFR</td>
</tr>
</tbody>
</table>

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26 The table provides a high level overview of the relationship between categories of systemic risk, types of indicators and relevant instruments. Other indicators may be relevant to each category of systemic risk and/or to identify other sources or categories of systemic risk.
Transactional instruments

If our systemic risk monitoring suggests a high level of potential feedback between the identified risks and the economy then LVR restrictions (and other transaction instruments, should these become available) are expected to be a more effective mitigant than capital instruments. This is because LVRs are also more efficient than capital instruments at dampening the upturn in the financial cycle and reducing the likelihood of a financial crisis, because they directly constrain lending to riskier borrowers and reduce the likelihood of fire sale dynamics. Transactional instruments, in addition to increasing the resilience of the financial system, more directly mitigate the market failures that can lead to excessive household debt, and can play a greater role in mitigating the amplification of a future downturn due to elevated debt levels.

To maximize the benefits of LVR restrictions in dampening the credit cycle and limiting excessive household indebtedness they should be deployed primarily when housing risks are elevated. As noted above, indicators related to lending standards, mortgage portfolio resilience and the outlook for credit and house price growth, are most relevant to our assessment of whether the use of LVRs may be necessary. Calibration of LVR restrictions is based on their potential to mitigate mortgage lending losses during a stress scenario, including through their effect in limiting the scale of an economic downturn. The Reserve Bank draws on a range of information to inform this assessment.27

LVR restrictions may reduce the ability of relatively sound bank customers to borrow (for example by limiting the lending that banks can do to customers who may have sufficient income to service the debt). This impact depends on the specific calibration and design of the instrument – for example, the blunt nature of LVRs is mitigated by the use of a speed limit approach, rather than a ban on all lending at a specified threshold. The speed limit allows banks to allocate the available capacity of loans above the threshold to the available borrowers taking into account the banks’ own risk management and lending policies. This may have the added benefit of increasing resilience by incentivising banks to be more discriminate in their choice of high-LVR borrowers.

LVRs and capital instruments could be used together, if bank and household resilience are declining at the same time or if there is uncertainty as to the most important transmission channel in the event of a downturn. This approach could also be more efficient, for example if directly increasing bank resilience through capital instruments allowed a looser calibration of the LVR restrictions.

27 The Reserve Bank has recently published an analytical framework used to model mortgage portfolio resilience under different assumptions for lending standards and the scale of a plausible house price decline. See ‘Box A – Impact of LVR restrictions on mortgage portfolio resilience’, Financial Stability Report, November 2017.
### Table D: Considerations when choosing between macroprudential instruments

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Transmission to financial stability</th>
<th>Benefits</th>
<th>Limitations and operational considerations</th>
</tr>
</thead>
</table>
| Capital    | • Increases banks’ ability to absorb losses  
             • Supports the provision of credit in a downturn | • Directly increases bank resilience and reduces likelihood of bank deleveraging  
                                                • Higher bank capital is a buffer against a range of financial system risks  
                                                • Can be in response to sectoral growth | • Limited impact on borrower indebtedness, or credit growth/asset prices in upturn  
                                                        • Needs time to build up |
| Liquidity  | • Reduces banks’ vulnerability to market funding shocks  
             • Supports the provision of credit in a downturn | • Addresses a key structural vulnerability in financial intermediation (liquidity and maturity mismatch) | • Limited impact on borrower indebtedness, or credit growth/asset prices in upturn  
                                                        • Needs time to build up |
| LVRs       | • Reduces impact of household debt in amplifying severe economic downturns  
             • Reduces potential loan losses | • Increases bank resilience by improving household balance sheets  
                                                • Most beneficial when excessive household debt is likely to amplify a future downturn | • Creates stronger incentives for non-mortgage or informal lending, or other forms of disintermediation  
                                                        • Direct restrictions on borrowing capacity could mean higher impact on short-term economic activity  
                                                        • Takes time to work through from its impact on the flow of new lending to the stock |
Policy Assessment

Consultation

Once the Reserve Bank has identified that a macroprudential policy response appears to be necessary, and the macroprudential instrument(s) it intends to use, it will consult on its policy proposal. The primary purpose of consultation is to seek views on whether the intervention is necessary. Feedback from the public, regulated entities and other stakeholders also can help determine the scope and calibration of the proposal and any necessary exemptions. A consultation paper can be expected to present evidence from systemic risk monitoring and explain how the proposal could contribute to the soundness and efficiency of the financial system.

Consultation will include a provisional cost-benefit analysis or, if appropriate, Regulatory Impact Assessment. These will be reviewed in light of consultation feedback. The use of a macroprudential instrument would be justified only if the benefits outweighed the costs. The principal benefit of implementing a macroprudential decision would stem from a reduction in the costs of a financial crisis and in the magnitude of an economic downturn, including reduced risk of a loss of output. The main costs of implementation are expected to stem from a reduction in near-term economic activity. Consultation is an important opportunity for the Reserve Bank to consider feedback on the impact a proposal may have, including on efficiency costs and how those costs are distributed across society (see further below).

The cost-benefit analysis and the consultation will have regard to all relevant factors, including:

- impact of the policy proposal in terms of impact on the risk and severity of a crisis;
- efficiency costs of the policy in the absence of a crisis;
- compliance costs for registered banks;
- the timeframe for implementation;
- the implications for monetary policy (see further in Box C); and
- the potential for unintended consequences.

It may be difficult to be precise on the conditions for an eventual easing or removal of the proposed policy response. The easing or removal of an instrument will happen in a different risk environment. The source of risk, the indicator(s) originally relied on, the effect of the policy on resilience and strength of the feedback effects with the economy, may all change as the instrument takes effect. Different indicators to those relied on at the outset may be influential in the decision to ease or remove the restrictions or requirements.

The Reserve Bank will publish its response to submissions on its consultation paper, together with its final policy position and a Regulatory Impact Statement (if appropriate).
The Reserve Bank is required to give registered banks a reasonable opportunity to make submissions on the proposed macroprudential instrument before implementing it. One factor that will affect the length of the consultation is whether anticipation of the macroprudential instrument being implemented may incentivise changes in behaviour from borrowers or banks. This is particularly a concern with LVRs, as borrowers could bring forward their purchases to avoid the restrictions.

Efficiency costs

Macroprudential policy intervention comes with efficiency costs, as well as benefits. In common with other prudential requirements, a tightening of macroprudential policy is expected to slow economic activity and impair the efficiency of the financial system. See above under ‘Macroprudential instruments – Transmission – Potential costs to efficiency’ for a description of how different macroprudential instruments are expected to affect efficiency.

LVR restrictions are more effective at reducing risky lending and mitigating the scale of economic downturns than capital and liquidity instruments, but this comes at an efficiency cost of curtailing the choices of some economic agents. This cost can be mitigated through the design of macroprudential policy. For example, the current LVR policy uses a speed limit for high-LVR loans (ie, the amount of high LVR lending that is permitted), and banks allocate high-LVR loans based on their underlying risk characteristics and value to the bank.

There is a risk with any macroprudential instrument that it may have a net negative impact on allocative efficiency and long-term economic growth if used in the wrong risk environment. If risks from the household and housing sectors are not high, then the benefits of tightening policy are unlikely to justify the attendant efficiency costs. As noted above, the risk environment and the transmission of the different instruments inform the decision whether to use capital or transactional instruments.

Disintermediation could increase efficiency costs and needs to be considered when choosing the appropriate instrument, implementing the policy, and in monitoring its ongoing effectiveness.

Distributional consequences

The distribution of efficiency costs across different borrowers will depend on a range of factors, including the type of macroprudential instrument used and its transmission channels. Banks can decide how to allocate changes in pricing across their lending books, whether as a result of an increase in capital requirements through the CCyB or a tightening of LVR policy. LVR restrictions intrude more on the bank-customer relationship than a capital buffer in that LVRs require banks to restrict lending to specified groups (eg, investors and owner occupiers).
LVR policy initially affected first-home buyers disproportionately. This was partly because the LVR settings in 2013 did not distinguish between lending to investors and to owner occupiers. A differentiated LVR policy, with tighter restrictions on investors than owner-occupiers, is one reason the market share of first-home buyers has rebalanced to historical norms.

The distributional effect of macroprudential policy is one aspect of the Reserve Bank’s consultation with the Minister of Finance and Treasury before a measure is implemented.

Unintended consequences

An important consideration in policy formation is the risk of unintended consequences.

- The Auckland investor LVR restrictions (introduced in November 2015 and discontinued in October 2016) demonstrated that, while region-specific interventions can be effective in mitigating housing market vulnerabilities in the targeted region, they can boost house price inflation in neighbouring regions and across the country.

- LVR restrictions have led to a noticeable increase since 2016 in mortgage lending by non-bank lending institutions (NBLI). However, their aggregate share of mortgage lending remains very low compared to banks and has not undermined the purpose and objectives of LVR policy, as was originally feared.

Disintermediation could increase efficiency costs and needs to be considered when choosing the appropriate instrument, implementing the policy, and monitoring its ongoing effectiveness.

Exemptions

Exemptions to macroprudential policy can play an important role in limiting unintended consequences. Consultation is an important step in determining the need and scope of these exemptions.

LVR restrictions have not applied to lending for certain types of construction as well as the Government’s Kiwibuild programme. The exemption can also be used to cover top-ups arising from construction cost overruns during the building process. This ensures that the LVR restrictions do not constrain finance for new housing stock, the supply of which is one of the root causes of housing risks to financial stability.

Assessment of effects

Once a macroprudential instrument has been implemented, the Reserve Bank monitors its effects and publishes an assessment of those effects in the six-monthly Financial Stability Report. The assessment will include consideration of whether:

- the basis for the policy response has changed;
there are any material unintended consequences (eg, disintermediation); and

- the mix of instruments used and/or their calibration is optimal,

and therefore whether, on balance, the policy response should be altered or discontinued. If the policy response is to be maintained, the ongoing assessment will consider the conditions necessary for an eventual easing or removal of the restrictions or requirements.

More generally, this assessment will help the Reserve Bank acquire more evidence on the effectiveness of macroprudential policy interventions and make the policy design process more precise.

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**Box C: Interaction between macroprudential policy and monetary policy**

Macroprudential policy and monetary policy have distinct objectives – macroprudential policy is concerned with financial stability while monetary policy is primarily concerned with stability in consumer prices. The operation of policy in one area is expected to have small and unsystematic effects on the other (Svensson, 2018). However, the two interact and have implications for policy makers in each area (Dunstan, 2014).

In general, macroprudential policy and monetary policy will be complementary over the long term and work together to enhance the strength of New Zealand’s macro-economic framework. Where the financial and business cycles are not synchronized, there may be spill-overs and short-term trade-offs that have to be managed.

**Complementarity**

Macroprudential policy and monetary policy can be complementary, both during an upturn in the financial cycle (when macroprudential risks and inflationary pressures are rising) and during a downturn (when risks and pressures are easing). This can make the two policy areas marginally more efficient.

During an upturn, where macroprudential instruments are used to curb rapid credit and house price growth, this can support monetary policy at the margin by lowering inflationary pressure due to greater household wealth and household demand. This may be advantageous if it reduces the need to raise the OCR, particularly where raising the OCR might lead to undesired upward pressure on the exchange rate.

Conversely, where the OCR is raised in response to an over-heating economy, this can support macroprudential policy by raising mortgage rates and slowing credit growth. This could be helpful, for example, where there is evidence of regulatory leakage reducing the effectiveness of macroprudential policy.

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28 The Reserve Bank’s primary function is to “formulate and implement monetary policy directed to the economic objective of achieving and maintaining stability in the general level of prices”, s8 Reserve Bank of New Zealand Act 1989.
Transactional instruments (e.g., LVRs, DTIs) are more effective than other macroprudential instruments at dampening credit and asset prices and are therefore more likely to be complementary to a tightening of the OCR during the upturn. Capital and liquidity instruments are less effective in this regard because the increased costs of capital and liquidity buffers may be modest and may not be passed on in full to borrowers.

The same principles apply during a downturn, with easing of policy in both areas working together to reduce constraints on lending and stimulate the economy. Further, if transactional instruments have been used during the upturn to reduce banks’ exposures to high-LVR (or DTI) borrowers, this will increase the resilience of households during the downturn, which will support greater consumption and economic activity.

**Spill-overs and short-term trade-offs**

When the financial cycle and the wider economy are not synchronised, the two policy areas can lead to spill-overs that need to be managed through short-term trade-offs. Loose monetary policy can lead to lower mortgage rates and add to destabilising growth in credit and asset prices, increasing pressure to tighten macroprudential policy. And conversely, a tightening in macroprudential policy may reduce credit and asset price growth, slow the economy, and increase pressure to ease monetary policy (further).

For example, in 2013 when the LVR restrictions were first introduced, the Reserve Bank’s forecast for inflation was high due to booming commodity prices and construction activity. Therefore the two policy areas appeared to be complementary, with any subsequent increase in the OCR likely to help LVR policy in dampening credit and house price growth. However, by mid-2014 the outlook for inflation had weakened, mainly due to global economic conditions and falling commodity prices. As a result the OCR was cut from 3.5 percent in mid-2014 to 1.75 percent by the end of 2016. The loosening in monetary policy contributed to house prices remaining inflated and LVR policy was tightened in November 2015. The Reserve Bank manages these spill-overs by sharing data and analysis between policy areas and considering the likely impact of a range of potential policy decisions on each area.

The Reserve Bank is required to explain its policy decisions in its *Financial Stability Report* and *Monetary Policy Statement*.

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29 In November 2015 both the speed limit and the LVR threshold were tightened for Auckland property investors: to 5% and 70% from 10% and 80%.
Conclusion

This document sets out the Reserve Bank’s framework for macroprudential policy. It is intended to improve the quality, predictability and transparency of the Reserve Bank’s decision making. It provides a basis for holding the Reserve Bank to account for macroprudential policy decisions, and ultimately in building legitimacy for the use of macroprudential instruments.

A clear decision-making framework may also be an important contributor to effective macroprudential policy, in so far as it (a) reduces the risk that the Reserve Bank acts too late for policy to be effective and (b) shapes expectations and influences funding and lending strategies through the financial cycle.

This macroprudential framework document will be updated from time to time to reflect any changes to (a) relevant legislation and/or (b) the Reserve Bank’s approach to macroprudential policy.
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