12 December 2023 - Vol 86, No. 9

Reserve Bank of New Zealand
Te Pūtea Matua

Bulletin

Reflections on a decade of using macroprudential policy.

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Reserve Bank of New Zealand *Bulletin*
ISSN 1177-8644
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1. Introduction

This article was produced for a study group set up by the Bank for International Settlements (BIS) to reflect on the lessons from the use of macroprudential policies over the past decade to mitigate housing-related risks. This article on the New Zealand experience was produced alongside case studies for other jurisdictions and an overall summary, which are available here.[1]

A key macroprudential tool to address housing-related risks to the New Zealand financial system has been loan-to-value ratio (LVR) restrictions on new mortgage lending.[2] We first introduced LVR restrictions back in 2013. They have been adjusted through time to reflect the degree of risk that new lending flows present to the financial system. Our assessment is that LVR restrictions have successfully added to household and lender resilience.

The structure and content of this article were set out to make comparisons between jurisdictions easier. As such, this article covers the importance of housing-related risk for the New Zealand financial system, the objectives of macroprudential policy including to address these risks, practical aspects of implementing and calibrating LVR restrictions, measures of success, and how we have mitigated some of the unintended consequences.

We have also included a box that was not part of the BIS work, focusing on our experience with macroprudential policy during the COVID-19 pandemic. One thing this period highlighted again was the value of having a tool available to contain debt servicing risks. Reflecting this, we have recently published a framework for a debt-to-income (DTI) tool and banks are preparing their systems to be operationally ready for a DTI restriction from April 2024.[3]

2. Housing as a source of risk

Housing-related risks are a major focus in the New Zealand financial system. Mortgage lending makes up 60 percent of banking sector lending (figure 1). This makes up the vast majority of household debt, which is around 170 percent of household income in aggregate (figure 2). New Zealand household debt is relatively high compared to other developed economies.

Furthermore, this debt is concentrated in just 39 percent of households who have a mortgage.[4] The majority of households own their own home (65 percent) with the remaining houses largely owned by small-scale investors, i.e. households with an additional one or two houses that they rent to others.

Highly indebted mortgage borrowers are particularly vulnerable to house price and economic cycles. Prior to implementing LVR restrictions in 2013, higher-risk lending was building on banks' balance sheets. At that time, around 20 percent of banks' mortgage lending had an LVR at origination above 80 percent and this was increasing. This meant the banking sector was becoming increasingly vulnerable to housing risks, including house price corrections.

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1 See www.bis.org/publ/cgfs69.htm
2 LVR restrictions are known as loan-to-value (LTV) restrictions in other countries.
3 See www.rbnz.govt.nz/have-your-say/debt-serviceability-restrictions
4 Based on 2018 census data.

House price volatility

The median house price is currently around 9 times the median household disposable income, having increased over the past 20 years as long-term interest rates have trended lower globally. Strong population growth because of net immigration has also contributed to growing housing demand.

While house prices have generally increased over recent decades, there have been periods when house prices increased to unsustainable levels based on a range of metrics (figure 3).[5] Unrealistic expectations of capital gains and a fear of missing out from buyers entering the market have contributed to these episodes.

House price volatility has been made worse by constrained supply. Land use restrictions have meant that increasing demand for housing has been capitalised into higher land prices, which now make up a larger share of house prices, limiting the dwelling supply response to higher demand. A persistent shortfall in housing supply has contributed to expectations of capital gains in property ownership.[6]

Interest rate risk

Fluctuations in mortgage servicing costs present another risk to mortgage borrowers. The majority of mortgage lending is on fixed interest rates for 1 to 2 years. Banks pricing is most competitive at these durations and therefore they tend to be cheaper on average for borrowers.

Interest rates were very low during 2020 and 2021, given they had declined over the prior decade and were eased further at the onset of the pandemic. This led to an increase in the share of lending with high debt-to-income ratios. Low interest rates meant people could afford to service higher levels of debt relative to their income, contributing to strong housing demand. In addition, the stressed interest rates that banks use to assess loan affordability had gradually declined, which eased lending conditions and allowed borrowers to take on more debt (figure 4).

Since 2021, interest rates have increased causing mortgage servicing costs to increase significantly for households. This has created challenges for some borrowers, particularly those who purchased in 2020 and 2021 with high debt-to-income ratios, as their fixed-rate mortgages reprice substantially higher.[7]

Spillovers to the broader economy

Housing downturns can amplify recessions by impacting spending and employment. Equity in housing makes up more than half of household wealth and we have seen a close relationship between consumption and house prices over several decades (figure 5). Research also suggests house price impacts on consumption may be largest in downturns.[8] Housing cycles also affect residential construction activity and employment.

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[5] See Brunton M. (2021) "Measures for Assessing the sustainability of house prices in New Zealand" at www.rbnz.govt.nz/hub/publications/analytical-note/2021/an2021-08

[6] Most houses in New Zealand are standalone dwellings, although we have seen an increase in multiunit dwellings in recent years.

[7] A relatively small share of lending is on interest only repayments, making up around a quarter of investor lending and an insignificant share of owner occupier lending.

[8] See Roiste et al (2019) "Household Leverage and Asymmetric Housing Wealth Effects - Evidence from New Zealand" at www.rbnz.govt.nz/hub/publications/discussion-paper/2019/dp2019-01

Figure 1: Banking sector lending

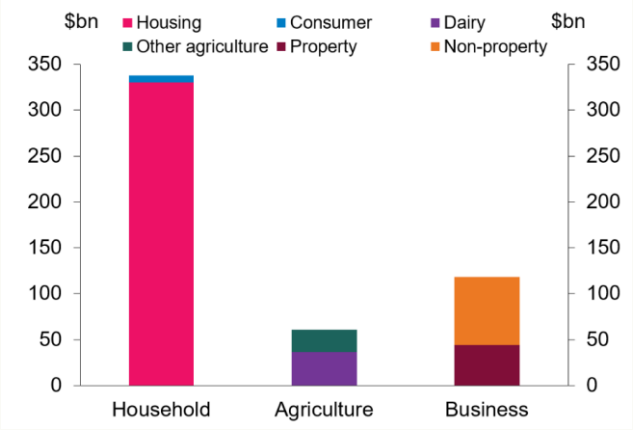


Figure 2: Household debt relative to income

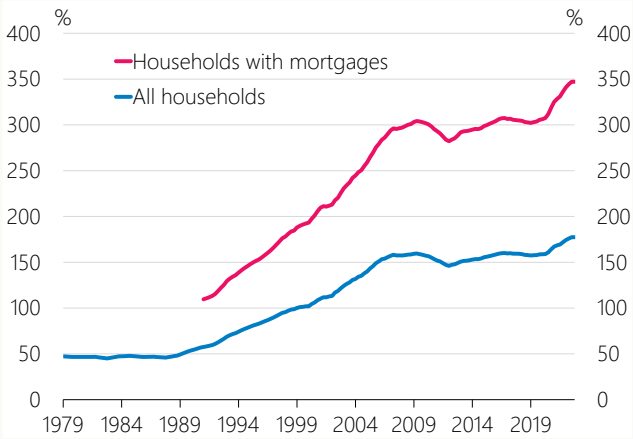


Figure 3: House prices relative to indicators of sustainable levels

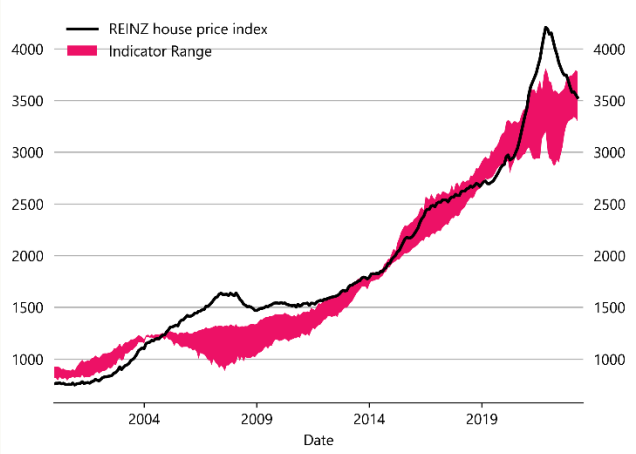


Figure 4: Loan affordability test rates compared to advertised mortgage rates

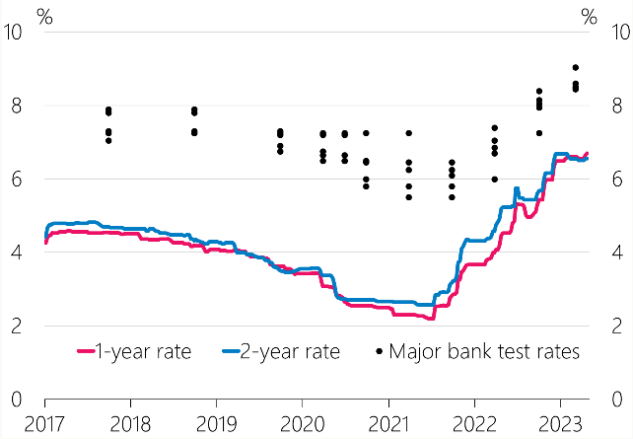
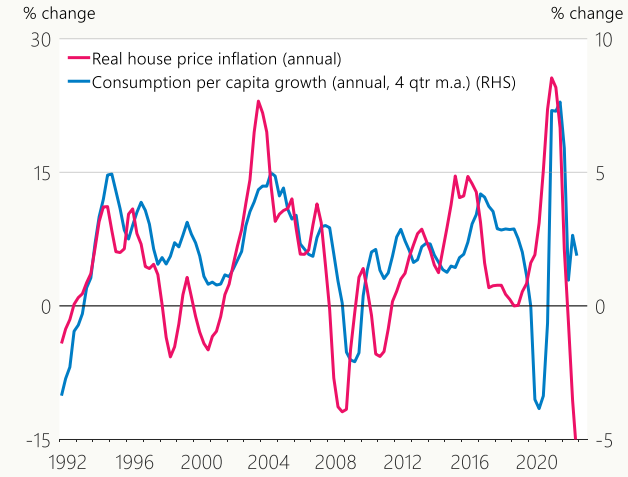


Figure 5: Consumption per capita and house price growth



3. Governance and objectives

Governance

The Reserve Bank is empowered through the Banking (Prudential Supervision) Act 1989 to use regulatory and supervisory tools (including macroprudential policy) for the purposes of:

- promoting the maintenance of a sound and efficient financial system; or
- avoiding significant damage to the financial system that could result from the failure of a registered bank.[9]

Given the systemic nature of housing-related risks in New Zealand, macroprudential policy aims to promote financial system resilience to cope should these risks crystallise. This complements microprudential policy, which aims to promote the resilience of individual entities, in maintaining financial stability. The Banking (Prudential Supervision) Act allows us to apply borrower-based measures (e.g. LVR and DTI restrictions) via banks' Conditions of Registration.

A Memorandum of Understanding between the Minister of Finance and the Governor of the Reserve Bank (MoU) sets out agreed operating guidelines for when the Reserve Bank is considering the use of macroprudential policy.[10] A MoU was first entered into in May 2013 and updated in August 2021. While the Banking (Prudential Supervision) Act provides the legal basis for formulating and implementing macroprudential policy, the MoU contains the definition and objective of macroprudential policy, and the instruments considered useful for this.

This case study reflects on our experience and actions over the past decade so the focus here is on the existing Banking (Prudential Supervision) Act and frameworks that come from that legislation. The Deposit Takers Act 2023 (DTA) has been recently enacted. Once the DTA is fully in force, it will repeal and replace the Banking (Prudential Supervision) Act. Standards under the DTA will replace the conditions of registration model currently in place. A lending standard will be developed over the next few years that will underpin borrower-based measures.

The Reserve Bank of New Zealand Act 2021 came into force in July 2022 and replaced the single decision maker model with a new governance board.[11] The new governance structure protects the Reserve Bank's independence while ensuring it operates in an accountable and transparent manner.

Objectives

The objectives of macroprudential policy set out in the MoU are to:

- increase the resilience of the financial system; and
- counter instability in the financial system arising from credit, asset price or liquidity shocks.

Our emphasis across these objectives has shifted over the past decade increasingly towards building the resilience of the financial system. For borrower-based tools, we interpret this objective

[9] These purposes are from section 68 of the Banking (Prudential Supervision) Act.
[10] Memorandum of Understanding between the Minister of Finance and the Governor of the Reserve Bank of New Zealand (rbnz.govt.nz)
[11] See Our Board members - Reserve Bank of New Zealand - Te Pūtea Matua (rbnz.govt.nz).

as including building borrower resilience to reduce defaults and credit losses in a downturn which would impact lenders.

However, the objectives continue to highlight a role for dampening housing credit and price cycles by varying policy settings with the cycle. The MoU outlines that macroprudential policies can be used to provide additional buffers that vary with the macro-credit cycle. These policies may also help dampen extremes in the credit cycle and capital market flows, and therefore can play a useful secondary role in stabilising the macro economy.

This cyclical role was highlighted again in February 2021 when the Minister of Finance issued a direction requiring the Reserve Bank when exercising its financial stability powers, including in relation to macroprudential policy, to have regard to the Government's policy objective:

"to support more sustainable house prices, including by dampening investor demand for existing housing stock which would improve affordability for first-home buyers." [12]

While we do not target house prices as an end goal, they are part of a set of key indicators that help to inform macroprudential policy settings. Large house price overvaluation from levels suggested by economic fundamentals increases the risk of a correction, which can cause large losses for the financial system and broader economic consequences. In part this also reflects that unsustainable house price developments (and related excessive growth in credit) can impinge adversely on financial system efficiency, through credit misallocation.

4. Macroprudential instruments in practice

The MoU includes a list of instruments that are considered 'useful' for addressing systemic risks to financial stability. Although the MoU does not legally prevent us from using macroprudential tools other than those listed, in practice agreement from the Minister of Finance is sought before making use of new tools. The list of instruments is comprised of:

- Capital/liquidity instruments: core funding ratios (CFR), the counter-cyclical capital buffer (CCyB), and sectoral capital requirements (SCR); and
- Borrower-based instruments: loan-to-value ratio (LVR) restrictions and debt serviceability restrictions (including debt-servicing to income (DSTI) and debt-to-income (DTI) restrictions, and stressed interest rate floors), which were added to the MoU in August 2021.

LVR restrictions have been the only instrument used to date to address housing risks. We considered other macroprudential instruments, including sectoral capital ratios (overlays) and the CCyB, but these were deemed to be less effective at mitigating risks on the household side, being mainly focused on institutional resilience.[13]

In 2017, we held a public consultation on debt serviceability restrictions for residential mortgage lending, recommending that these be added to our macroprudential toolkit. The Minister decided not to add them at that time. However, they were added to the MoU in 2021 following the

[12] See The Minister of Finance's Section 68B direction and accompanying correspondence - Reserve Bank of New Zealand - Te Pūtea Matua (rbnz.govt.nz). This direction has now been repealed but a similar policy objective is contained in the Financial Policy Remit, which was introduced in July 2022 under the new Reserve Bank Act 2021. The Minister may amend or replace the Financial Policy Remit at any time.

[13] While we have had in place liquidity requirements as well, these have not been used to address housing-related risks. Similarly, in 2013 we made baseline housing risk weights more stringent for high-LVR lending and property investment lending (for both IRB and standardised banks) but again this was seen as part of our microprudential regulation.

direction by the Minister to have regard to supporting more sustainable house prices. Our analysis indicated that debt serviceability restrictions, and specifically DTI restrictions, would be most effective in supporting financial stability and sustainable house prices, while having smaller impacts on first-home buyers compared to investors. By linking credit availability to income, DTI restrictions were seen to be more effective in constraining debt levels through the cycle compared to other macroprudential tools.

We have since published a regulatory framework for DTI restrictions on residential mortgage lending, and banks are preparing their systems to be ready to activate DTI restrictions from April 2024.

Operationalising LVR restrictions

We have defined LVR restrictions in terms of a threshold and a speed limit. For owner-occupier loans, the threshold has been kept at 80 per cent while the speed limit has been varied between 10 and 20 percent. This means that no more than 20 percent of banks' new lending to owner occupiers can have an LVR greater than 80 percent after certain policy exemptions. For investors, the threshold has been adjusted between 60 and 80 percent while the speed limit has been largely fixed at 5 per cent. This speed limit approach has helped to mitigate some of the unintended consequences of LVR restrictions, which are outlined in section 6 below.

LVR restrictions apply to all residential mortgage loans made by registered banks.[14] The regulatory framework for LVR restrictions is set out in section BS19 of the Banking Supervision Handbook. The requirement to comply with the LVR restrictions, and the specific settings for LVR restrictions (speed limit and threshold), are set out in banks' Conditions of Registration. This means that prior to making changes to LVR restrictions, we must notify banks of the proposed change and provide them a consultation period of at least seven days.

Transmission channels

There are two main transmission channels through which LVR restrictions can alleviate housing risks:

- Asset quality channel – LVR restrictions reduce the share of new high-LVR mortgage lending, and consequently reduce the stock of high-LVR lending over time. This increases the resilience of the banking system to housing downturns by reducing losses on defaulted loans. However, it should be noted that loans with low LVRs also carry lower risk weights for capital adequacy, which partially offsets the improvement in asset quality.
- Indirect feedback effect channel – The LVR policy can dampen the potential magnitude of a house price correction in a scenario where borrowers are under stress. First, by reducing borrowing capacity, the LVR policy can reduce the prevalence of distressed house sales through a reduction in the likelihood of borrowers experiencing serviceability difficulty. Second, the LVR policy can dampen (at the margin) house price overvaluation, nudging prices towards economic fundamentals. This helps to make house prices less volatile. All else equal, a lower

[14] They do not currently apply to non-bank deposit takers, but we are considering whether to extend the restrictions to non-banks as part of the implementation of the new Deposit Takers Act.

amplitude of house price cycles helps to maintain the value of the housing collateral, and therefore reduce mortgage losses.

Calibration of LVR restrictions

The calibration of the LVR policy, in terms of the threshold and speed limit (and buyer types to a lesser extent), has been based on a combination of modelling and judgement.

We have reviewed settings regularly (approximately every 6-12 months) and have looked to tighten LVR restrictions when financial stability risks are elevated and ease when risks reduce. We assess the level of risk by examining the following criteria.[15]

1. Probability of a correction in house prices
2. Resilience of households
3. Resilience of the financial system
4. Spillovers to the wider economy

We use a range of models to make this assessment. In addition, calibration has been supported at times by modelling of high-LVR lending flows and how the stock would change for different calibrations of the policy.

Table 1 outlines the progression of LVR settings over the past 10 years.

Explanation of policy adjustments

- October 2013: LVR restrictions were first introduced because of concerns that rising house prices were leading to vulnerabilities in the financial system. House prices were rising again after only a small correction during 2008-2009 and following the house price boom of 2003-2007. Annual house price inflation was approaching 10 percent at the time. In addition, a significant and rising proportion of the stock of mortgage lending was at high LVRs (see figure 6). As such, banks were becoming more vulnerability to a large correction in house prices.
- November 2015: Auckland experienced rapid house price growth during 2015, which peaked at an annual rate of around 25 percent - significantly higher than the rest of the country. With nearly half of new mortgage lending being in Auckland, this was seen as a significant risk to financial stability. Therefore, we imposed tighter LVR restrictions in Auckland than the rest of the country and introduced a more stringent LVR limit for investment property.[16] A higher share of investor lending (especially at high LVRs) was seen as increasing the risk of fire-sales if house prices were to correct, owing to both defaults (as rental incomes deteriorate) and a trader-like incentive to exit the housing market.

[15] For a more detailed explanation of the decision making process, see Macroprudential policy framework (rbnz.govt.nz)
[16] There were some data gaps at the beginning of LVR policy implementation in 2013. Before late 2015, we did not have reliable data identifying property investor lending, which hindered the potential implementation of investor-specific calibration. This was eventually addressed, allowing an investor-specific calibration to be used.

Table 1: LVR settings over the past 10 years

		All Non-Auckland	Owner Occupier	Auckland Owner Occupier	Investor	Auckland Investor
2013 October	Speed Limit		10		10	
	Threshold		80		80	
2015 November	Speed Limit	15		10		5
	Threshold	80		80		70
2016 October	Speed Limit		10		5	
	Threshold		80		60	
2018 January	Speed Limit		15		5	
	Threshold		80		65	
2019 January	Speed Limit		20		5	
	Threshold		80		70	
2020 April	Speed Limit		No restriction		No restriction	
	Threshold		No restriction		No restriction	
2021 March	Speed Limit		20		5	
	Threshold		80		70	
2021 May	Speed Limit		20		5	
	Threshold		80		60	
2021 November	Speed Limit		10		5	
	Threshold		80		60	
2023 June	Speed Limit		15		5	
	Threshold		80		65	

Source: Timeline for loan-to-value ratio restrictions - https://www.rbnz.govt.nz/regulation-and-supervision/oversight-of-banks/standards-and-requirements-for-banks/macroprudential-policy/timeline-for-loan-to-value-ratio-restrictions

- October 2016: Despite LVR restrictions remaining in place, growth in house prices and credit was still elevated. Annual house price inflation was 15 percent nationally. Auckland house price growth had eased but house price inflation in the rest of the country had picked up. There was evidence that tighter LVR restrictions in Auckland were leading to a 'spillover' effect, with high LVR lending moving to areas outside of Auckland. Accordingly, the Auckland/non-Auckland split was removed and LVR restrictions nationally were tightened further.

- January 2018: Annual house price inflation slowed significantly to single digits in 2017. An increase in mortgage interest rates in early 2017 contributed to this, along with the tighter LVR restrictions from October 2016 which led to a decline in new high-LVR lending, especially to investors. In response to the slowdown, LVR restrictions were loosened somewhat.

- January 2019: House price growth continued to ease in 2018 and credit growth had returned to more sustainable levels. Banks continued to implement tight lending standards, and the housing market was expected to remain subdued throughout 2019. LVR restrictions were loosened further.

- April 2020: A severe economic downturn was widely anticipated at the beginning of the COVID-19 pandemic, and house prices were expected to fall by around 5-10 percent. LVR restrictions were removed to support lending conditions, with a stated intention to leave them off for one year (see box below). A rise in risky lending was not anticipated due to the economic conditions at the time.

- March and May 2021: Following the initial COVID-19 lockdowns in 2020, the economy performed much better than expected and the housing market took off. Both lending activity and house prices rose strongly, with annual house price inflation rising to above 15 percent by the end of 2020 and continuing to accelerate in early 2021. Over the second half of 2020, there was a significant increase in high-LVR lending to investors and a smaller increase to owner-occupiers. While the share of high-LVR loans on banks' mortgage books were at historic lows due to past LVR restrictions, there were concerns that a flow of new high-LVR lending would lead to a deterioration in banks' lending portfolios. Therefore, LVR restrictions were reinstated in March 2021 and tightened for investors in May 2021.

- November 2021: House prices continued to increase through mid-2021 to what appeared to be unsustainably high levels, with national annual house price inflation reaching around 30 percent in the second half of 2021.[17] This was driven predominantly by very low mortgage rates. Despite reinstating LVR restrictions earlier in 2021, high-LVR lending to owner-occupiers remained elevated. Left unchecked, borrower and bank resilience would have deteriorated. Consequently, LVR restrictions were tightened further for owner-occupiers.

- June 2023: In the context of higher interest rates, risks to new borrowers reduced over 2022 and 2023 to a level where previously tight LVR restrictions were no longer necessarily. The risks to new borrowers had declined as house prices were seen as more sustainable after falling around 15 percent from the peak in 2021, while banks serviceability assessments tightened as stressed interest rates increased. As a result, LVR restrictions were eased.

[17] Box A of our August 2021 *Monetary Policy Statement* outlined our house price assessment at the time.

Box: Macroprudential policy during the COVID-19 pandemic

COVID-19 emerged in late 2019, triggering a global health crisis and unprecedented economic shock. Many countries, including New Zealand, imposed stringent public health restrictions, restricting social gatherings and the movement of people.

Forecasting the economic effect of COVID-19 and the associated public health restrictions was difficult due to the many novel factors involved, such as uncertainty around the length of restrictions and the persistence of any impact on economic activity. In any case, there was broad agreement across the public and private sector that the economic impact would be severe.

Macroprudential response in early 2020

As part of the initial response to this, we removed LVR restrictions in April 2020 and stated they would remain off for at least 12 months. At the same time, we reduced the minimum Core Funding Ratio (CFR) requirement from 75% to 50%. This response coincided with a broader policy package that included expansionary monetary policy and fiscal stimulus. This broader package was vital given the forecast of high unemployment, loss of income, and falling house prices at the beginning of the pandemic.

We decided to temporarily remove LVR restrictions in early 2020 because of the weak economic outlook, given our approach had been to set LVR restrictions based on our assessment of housing-related risks. This was designed to support access to credit for households and businesses. We were concerned that an acute tightening of financial conditions could reinforce any slowdown in the economy by further dampening investment and spending. It was important to break that negative feedback loop by removing potential barriers to accessing credit. For this purpose, the LVR restrictions were seen as the larger obstacle than the CFR requirement, as they directly impact access to credit.

We also did not want to impede banks from supporting their customers through the anticipated challenges. There was a concern that LVR restrictions could potentially impede the mortgage deferral scheme, which was implemented to make it easier for banks to support customers with temporary cashflow issues.

We took comfort in that the stock of high-LVR loans was low at the time, reflecting the success of the LVR policy in constraining risky lending since restrictions were first introduced in 2013 (see figure 6). A short-term increase in the flow of high-LVR lending would have a minimal impact on the overall stock of high-LVR lending. This was important because it is on the stock of lending that banks could face potential losses from in a housing downturn.

Reinstatement of LVRs

Strong public health measures meant that New Zealand effectively contained COVID-19 through most of 2020 and 2021, allowing the domestic economy to recover. By the end of 2020, it had become clear that the New Zealand economy was stronger than expected at the time of the initial response. In particular, the housing market was much stronger as low mortgage rates led to accelerating house price growth.

Strong growth in house prices occurred alongside an increase in high-risk lending, which posed risks to financial stability. While the share of high-LVR loans on banks' mortgage books were at historic lows, we had concerns that a large flow of new high-LVR lending would lead to a deterioration in banks' lending portfolios if left unchecked. Investor activity was particularly strong given investors were more sensitive to interest rates and that they were previously more constrained by LVR restrictions.

In addition, the low interest rate environment led to lower test rates being used by banks in their affordability assessments. New borrowers were able to borrow more relative to their income than in the past. The share of new lending with high debt-to-income ratios increased as a result.

LVR restrictions were reinstated in early 2021 at the same level as prior to the pandemic and tightened for investors soon after. By mid-2021, house prices reached an unsustainably high level, increasing the probability of a sharp correction in house prices. This, along with continued flows of new high-risk lending, led to a further tightening in LVR restrictions for owner occupiers in November 2021.

Lessons

This period highlighted the value of having a tool available to contain debt servicing risks in the macroprudential toolkit. Anchoring debt levels to income could have added to borrowers' resilience to servicing difficulties from higher interest rates, which LVR restrictions were largely unable to do because they target a different type of risk. DTI restrictions or a floor on the banks test rates (used in their affordability assessments) are examples of tools that could be used in this regard. These tools have since been added to the macroprudential toolkit. We have also recently published a framework for DTI restrictions and banks are preparing their systems so that they could be activated from April 2024. The pandemic highlighted the importance of being operationally ready given the significant time it takes to develop new tools.[18]

In terms of our initial actions, we found that LVR settings were able to be loosened quickly in a little over a week but reinstating them required much longer. It takes time to consult publicly when tightening and banks also need time to adjust their pipeline of preapproved loans. Given this, in uncertain situations there may be value in waiting before removing restrictions. Alternatively, more measured adjustments could be taken such as easing LVR restrictions rather than removing them altogether. This also emphasises the value of tools that need little adjustment through the cycle, which is a useful feature of some macroprudential tools including DTI restrictions.

[18] This is a similar takeout to one of the lessons outlined in the 2022 review of monetary policy implementation and formulation, see "In Retrospect: Monetary Policy in New Zealand 2017-22" at RAFIMP for publication (rbnz.govt.nz). We also have a forthcoming article that discusses our actions to support financial market functioning during the first months of the pandemic, which is likely to be released early in 2024.

5. Effectiveness

5.1 Measuring success

Without having LVR restrictions in place for long enough to see the impacts on the frequency and severity of housing downturns over many decades, and the consequent impact on bank losses, we assess the benefits in terms of the intermediate measures of success. This section is organised into the two transmission channels outlined above: the asset quality channel and the indirect feedback channel.

Asset quality channel

The major benefit from LVR restrictions is the additional resilience they have built into the financial system, putting it in a better position to handle the potential fallout of a sharp correction in the housing market.

A key indicator of this benefit is the reduction in the share of new high-LVR mortgage commitments and subsequent reduction in the stock of high-LVR lending (figure 6). Following the implementation of LVR restrictions in 2013, the high-LVR share in the stock of mortgage lending declined for around four years until it stabilised at a lower level. This suggests it took several years to see the full impact of the policy on the quality of the overall stock of mortgage lending. While better quality lending has improved banks' resilience, this is partially offset by a reduction in the risk weight of mortgage lending, which reduces the amount of capital banks need to hold against that lending.[19]

LVR restrictions have been more or less binding throughout the entire period since they were introduced. Figure 7 shows the high-LVR share in the flow of new lending for investors and owner occupiers. Both when LVR restrictions were tightened (e.g. 2016 and 2021) and loosened (e.g. 2018 and 2020) there were impacts on the high-LVR share of new lending.[20] This figure also shows that banks tend to maintain a buffer below the speed limit to ensure they are comfortably within the rules. For example, banks tend to keep the high-LVR share of new lending to owner occupiers at around 5 or 6 percent when the speed limit is 10 percent (figure 8).

Indirect feedback channel

A reason we implemented LVR restrictions rather than a lender-based tool (such as an additional capital buffer for banks) was that they were seen to be more effective at reducing the potential for a large house price correction.

This may be achieved by leaning against overly easy credit conditions and limiting the rise of house prices above sustainable levels. For example, in 2013 banks were competing strongly for borrowers with low deposits. By tightening lending criteria, we felt that we could slow the rapid expansion of credit that was fuelling house price growth. We also thought the restrictions would be a temporary measure that could then be eased or removed as the housing market cooled. Through our experience with adjusting LVR restrictions through the cycle, we have found that

[19] See Lu (2019) Review of the Reserve Bank's loan-to-value ratio policy at www.rbnz.govt.nz/hub/publications/bulletin/2019/rbb2019-82-06

[20] When tightening LVR settings, banks are given longer (e.g. around 3 months) to adjust their flow of preapprovals in line with the tighter settings. Despite this extra time, the impact of tightening is often seen before the policy formally takes effect.

tightening LVR restrictions has only a limited and temporary impact on house price inflation.[21] As such, during upswings they have not been able to materially reduce house prices towards more sustainable levels.

Another way to reduce the likelihood of large house price corrections is by reducing the likelihood of distressed house sales. While this channel is better addressed using income-based tools such as debt-to-income restrictions, LVR restrictions can reduce distress as borrowers with higher equity have more options when they face serviceability challenges, for example enabling them to make interest-only payments for a period. Reflecting this point, the share of new lending that is most at risk (both high-DTI and high-LVR) declined materially when we tightened LVR restrictions in 2021 (figure 9).

The period after 2021 supports the view that LVR restrictions have contributed to the resilience of borrowers. A rapid increase in interest rates from late 2021 contributed to house prices falling more than 15 percent. Despite this decline, signs of distress have been limited with few forced sales and the share of non-performing loans remaining low, at least until mid-2023. While LVR restrictions may have helped through this period, the strength of the labour market is likely to have contributed as well.

While it is difficult to measure, stricter LVR settings for investors since 2015 may have dampened the severity of recent housing cycles too, by reducing highly leveraged investor activity. LVR restrictions likely discouraged some investors from buying houses as prices rose over many years and their equity increased. This may have also prevented investors from selling recently as house prices fell and interest rates increased.

[21] See Price (2014) "How has the LVR restriction affecting the housing market" at www.rbnz.govt.nz/-/media/project/sites/rbnz/files/publications/analytical-notes/2014/an2014-03.pdf, Yao and Lu (2020) "The effectiveness of loan-to-value ratio policy and its interaction with monetary policy in New Zealand: an empirical analysis using supervisory bank-level data" at www.bis.org/publ/bppdf/bispap110e.pdf, and Bloor and McDonald (2013) Estimating the impacts of restrictions on high LVR lending at www.rbnz.govt.nz/hub/publications/analytical-note/2013/an2013-05

Figure 6: Stock and flow of high-LVR mortgage lending

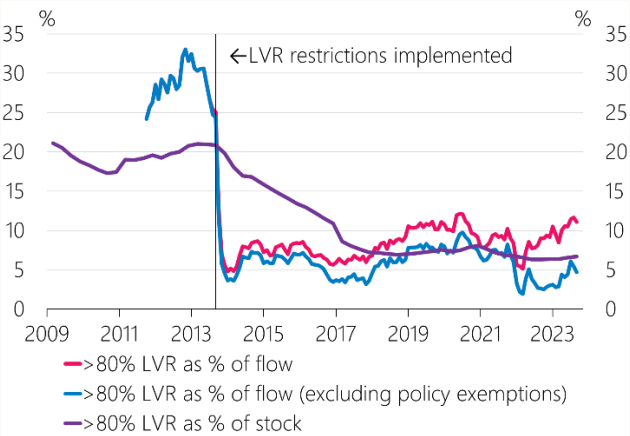


Figure 7: High-LVR share of new lending by borrower type (after exemptions)

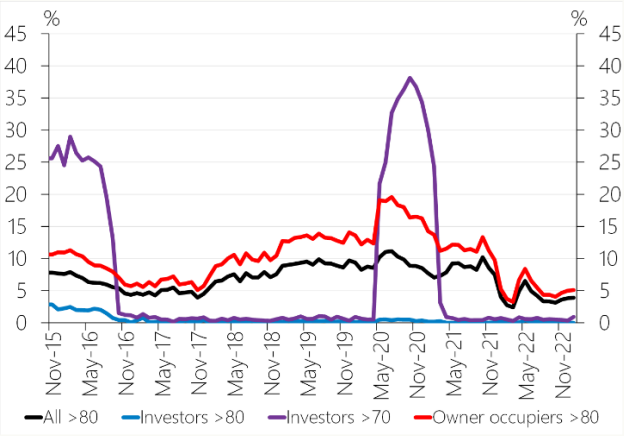


Figure 8: Share of new lending to owner occupiers with high LVRs and speed limits

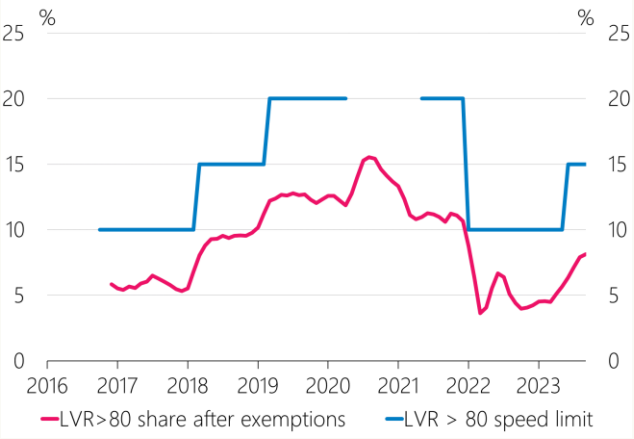
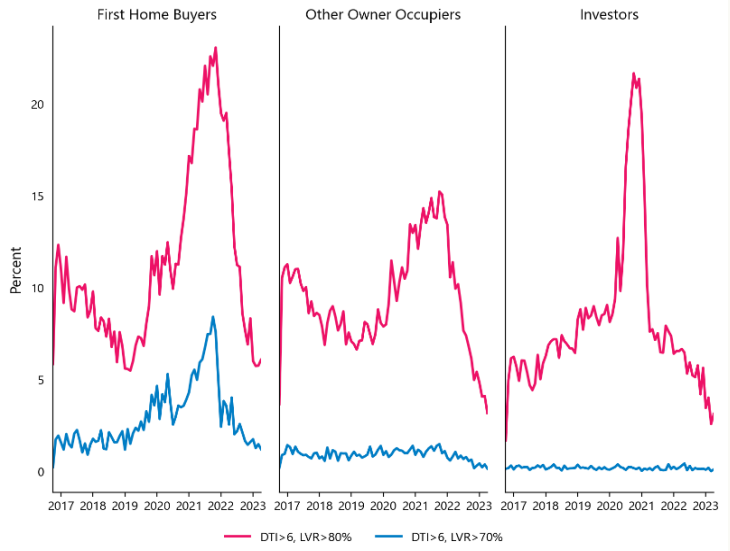


Figure 9: High-LVR and high-DTI share of new lending



5.2 Factors influencing success

Our use of LVR restrictions has had both structural and cyclical features. We have reviewed settings regularly and looked to tighten LVR restrictions when risks are elevated and ease when risks reduce. By adjusting settings cyclically, we aim to ensure that lender resilience is maintained (or increased) when risks increase. For example, when house prices rise relative to what is sustainable, the risk of a large correction increases and therefore risks to new borrowers are larger.

One of the challenges we have found is that tightening LVR settings takes longer. This reflects that when tightening banks need time to adjust their flow of pre-approvals and public consultation takes us time to work through. One implication of this is that when an opportunity to ease LVR restrictions arises, it could be prudent to wait longer before doing so, given the requirements of tightening LVR restrictions again if the decision turned out to be wrong in hindsight. Our experience during 2020 and 2021 highlights this challenge. After we removed LVR restrictions at the onset of the pandemic, high-risk mortgage lending increased and by late 2020 we had started

the process of re-establishing LVR settings. However, the process took time and settings were only restored to their pre-pandemic level in March 2021.

Interactions between monetary policy and macroprudential policy

Being able to mitigate housing-related risks that come about as a result of monetary policy has been a success of LVR restrictions to date. In general, our experience suggests macroprudential policy tools have little impact on the inflation and employment objectives of monetary policy. However, interest rates can have material impacts on housing-related risks which LVR settings have been able to respond to.

At times LVR settings have been adjusted in the opposite direction of monetary policy. An example of this was when LVR restrictions were re-established and tightened in 2021 when monetary policy was very loose. Tighter LVR settings allowed monetary policy setting to be focused on achieving its primary objectives of inflation and employment, and not be held back by rising housing-related risks which could impact financial stability. This was because LVR restrictions helped to ensure there was sufficient resilience in the financial system.

Operational independence

We see operational independence in setting macroprudential policy as important for enabling restrictions to be deployed in a timely and effective manner in response to changes in housing-related risks. Having the Reserve Bank as the independent macroprudential authority with defined objectives (as outlined in the MoU) has helped to guard against competing priorities and inaction bias. Inaction bias refers to the preference to wait for more data and analysis before taking action given the benefits of macroprudential policy are unobserved in the short term while the costs are immediately visible.

Transparency and accountability are important for maintaining this independence. Distributional considerations, such as the impacts of restrictions on first home buyers' access to credit and the efficiency of the financial system, are embedded in the MoU. The section below on the costs and benefits of LVR restrictions outlines how these distributional considerations have been accounted for over the past decade.

5.3 Leakages

Since the implementation of LVR restrictions, we have watched for regulatory leakage and arbitrage in the form a potential shift in housing lending away from banks. There has been some evidence of an increase in the share of house purchases financed by non-bank lending institutions who were not subject to LVR restrictions and other sources (figure 10). However, the share of mortgage lending by non-banks rose from a very low level and remains less than two percent (figure 11). A material part of the rise in non-bank lending (both high- and low-LVR) appears to be construction, dwelling remediation, and bridging finance, which are exempt from LVR restrictions. Industry contacts have noted that most borrowers switch to banks once their loans have been sufficiently amortised.

Another leakage that we have observed was when we implemented an Auckland regional LVR policy in November 2015, with tighter calibration there than the remainder of the country,

especially for investors. We found that the regional LVR policy was not particularly effective because some of the challenges we were seeing in Auckland (such as overvalued house prices) started spilling over to neighbouring regions, as investors sought opportunities outside of Auckland. Ultimately tighter restrictions needed to be implemented nationwide.

Figure 10: Share of housing purchase transactions financed by non-banks

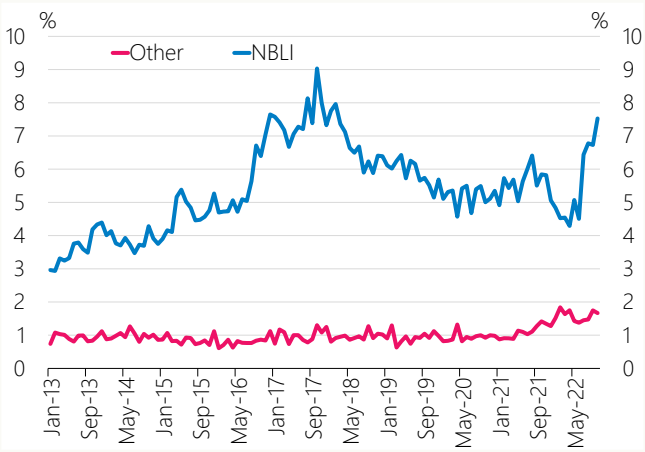
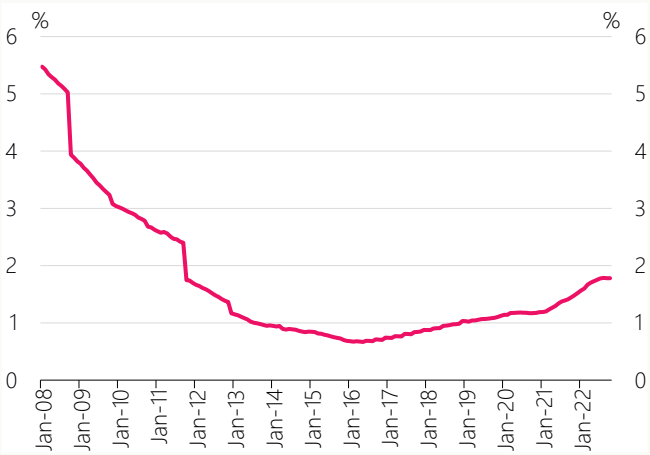


Figure 11: Share of mortgage lending held by non-banks



6. Cost, benefits, and unintended consequences

While promoting financial stability, LVR restrictions can also have unintended consequences that need to be considered and managed. The following are examples of these consequences that we have accounted for over time.

- Allocative efficiency of the financial system: LVR restrictions can restrict lending to creditworthy borrowers who are able to service the loan, but who do not have sufficient equity. An example of this is that they can impact access to credit for first home buyers.
- Housing supply: for a short period when we first implemented LVR restrictions in 2013, lending to fund construction was not exempt. Banks and industry groups raised concerns about the impact of LVR restrictions on housing supply given the important role of bank funding in the construction process. It was noted at the time that while high-LVR construction lending was only around 1 percent of total residential lending, it was financing around 12 percent of residential building activity.
- Competition between banks: LVR restrictions may impact banks' ability to compete on certain dimensions of risk. Such policy could effectively co-ordinate banks' pricing, leading to tacit (and legal) collusion.

Our assessment of these unintended impacts has tended to be qualitative in nature. It is difficult to disentangle the impact of LVR restrictions from the other factors. In general, we think LVR restrictions have had minor impacts on these outcomes, partly because of the mitigating actions that we have taken when designing and operating the LVR restrictions.

Mitigating actions

A key feature of our approach to LVR restrictions has been cyclically adjusting settings to reflect the riskiness at the time. A benefit of this approach is that we can tighten settings when the risks are elevated and ease when relatively restrictive settings are not warranted. To the degree that we can identify changes in risks and adjust settings in a timely manner, this approach can help to minimise any unnecessary costs while still achieving many of the same benefits to the soundness of the financial system.

In addition, the use of speed limits, where banks can lend a portion of their new lending above the LVR limit, has helped to reduce efficiency costs and disintermediation. These allowances have helped to ensure that policy incidence falls on the borrower segments that are riskier, which reduces (but does not eliminate) the incidence on credit-worthy borrowers. Banks manage the flow of high-LVR lending by requiring borrowers with smaller deposits to have larger income buffers after expenses and debt servicing costs. First home buyers have tended to make up a relatively large share of this high-LVR lending.

We first introduced LVR restrictions with a uniform calibration across buyer types but soon found that this disproportionately affected first home buyers, owing to the relative lack of equity for first home buyers (figure 12). From 2015, we introduced more targeted settings for investors to balance the impacts relative to first home buyers and reflecting that investor activity tends to be more pro-cyclical.

The use of exemptions has also helped to mitigate some of these efficiency costs. We have exemptions in place for the following types of loans:

- First Home Loans from Kāinga Ora (previously known as Welcome Home Loans), which are targeted at first home buyers with small deposits but are guaranteed by the government, meaning they are relatively low risk to financial institutions.
- Loans for new builds, to address concerns about the impact on supply of housing.
- Refinancing exemption, allowing high-LVR borrowers to switch banks so long as their debts do not increase to promote competition. The number of refinancing commitments has not been materially impacted since the introduction of LVR restrictions in 2013 (figure 13).

Figure 12: Share of house sales number by buyer type

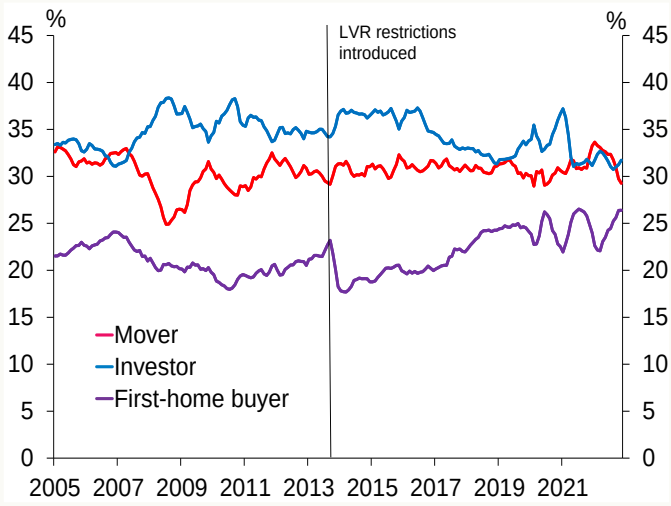
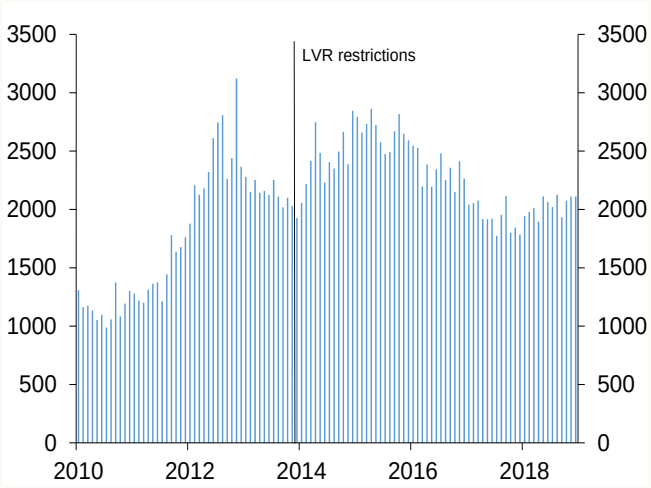


Figure 13: Number of refinancing commitments



7. Conclusion

This article was produced for a study group set up by the BIS to reflect on the lessons from the use of macroprudential policies over the past decade to mitigate housing-related risks. Our assessment for New Zealand is that LVR restrictions have successfully added to household and lender resilience, which is helping to mitigate housing-related risks. Our experience has led to changes over time, both to address unintended consequences and to better target elements of risk. To complement LVR restrictions, we have recently published a framework for a DTI tool which will provide additional options to address housing-related risks in the future. Reflections from other jurisdictions and general findings from across the study group are available here.[22]

[22] See https://www.bis.org/publ/cgfs69.htm