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Macroprudential policies to mitigate housing market risks

Country case study: New Zealand

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Macroprudential policies to mitigate housing market risks Case Study – New Zealand

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In New Zealand, a key tool to address housing-related risks to the financial system has been loan-to-value (LTV) restrictions on mortgage lending.[2] We first introduced LTV 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 LTV restrictions have successfully added to household and lender resilience. We have also recently developed a framework for a debt-to-income (DTI) tool. We are yet to implement this tool, but we expect it will be a useful complement to LTV restrictions in the future.

This chapter covers the importance of housing-related risk for the New Zealand financial system; the objectives of macroprudential policy, including addressing these risks; practical aspects of implementing and calibrating LTV restrictions; measures of success; and how we have mitigated some of the unintended consequences.

1. Housing as a source of risk

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

Furthermore, this debt is concentrated in just 39 per cent of households that have a mortgage.[3] The majority of households own their own home (around 60 per cent), with the remaining houses largely owned by small-scale investors ie households with an additional one or two homes that they rent to others.

Highly indebted mortgage borrowers are particularly vulnerable to house price and economic cycles. Prior to the implementation of LTV restrictions in 2013, higher-risk lending had been building up on banks' balance sheets. At that time, around 20 per cent of banks' mortgage lending had an LTV ratio at origination above 80 per cent, and this was rising. This meant the banking sector was becoming increasingly vulnerable to housing risks, including house price fluctuations.

House price fluctuations

The median house price is currently around nine 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.

1 A special thanks to Bruce Lu, Shaun Markham, Graeme Cokayne, Duncan Mills and Charles Lilly for their contributions and suggestions for the paper.

2 In New Zealand, the LTV ratio is known as the LVR (loan-to-value ratio).

3 Based on 2018 census data.

While house prices have generally increased over recent decades, there have been periods when house prices have climbed to unsustainable levels based on a range of metrics (Graph 3).[4] Unrealistic expectations of capital gains and a fear of missing out on the part of buyers entering the market have contributed to these episodes.

House price fluctuations have 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 from property ownership.[5]

Interest rate risk

Fluctuations in mortgage servicing costs present another risk to mortgage borrowers. The majority of mortgage lending is at fixed interest rates for one to two 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 that 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, which contributed to strong housing demand. In addition, the stressed interest rates that banks use to assess loan affordability had gradually declined. This eased lending conditions and allowed borrowers to take on more debt (Graph 4).

Since 2021, interest rates have risen, causing mortgage servicing costs to increase significantly for households. This has created challenges for some borrowers, as their fixed rate mortgages reprice at substantially higher rates.[6]

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 for several decades (Graph 5). Research also suggests that house price impacts on consumption may be largest in downturns.[7] Housing cycles also affect residential construction activity and employment.

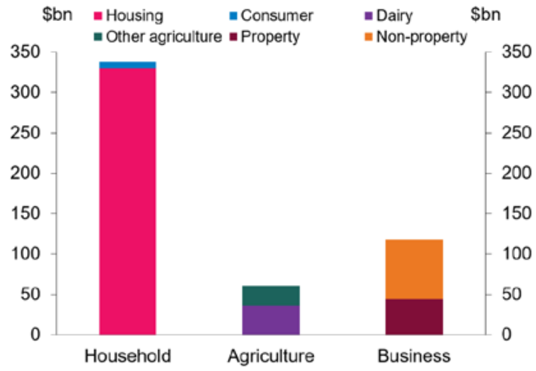
4 See M. Brunton "Measures for assessing the sustainability of house prices in New Zealand", 2021, https://www.rbnz.govt.nz/hub/publications/analytical-note/2021/an2021-08.

5 Most houses in New Zealand are standalone dwellings, although we have seen an increase in multi-unit dwellings in recent years.

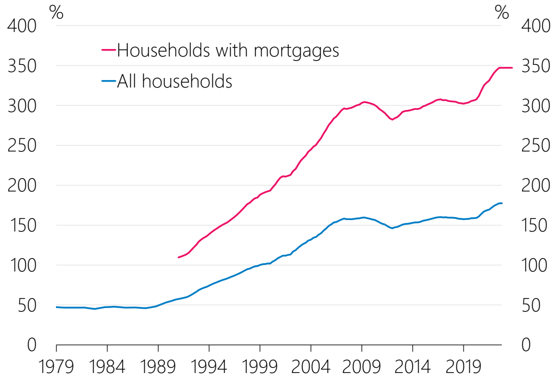
6 Loans with interest-only repayments make up a relatively small share of lending. They account for around a quarter of investor lending and an insignificant share of owner-occupier lending.

7 See M de Roiste, A Fasianos, R Kirkby and F Yao, "Household Leverage and Asymmetric Housing Wealth Effects – Evidence from New Zealand", 1 April 2019, http://www.rbnz.govt.nz/hub/publications/discussion-paper/2019/dp2019-01.

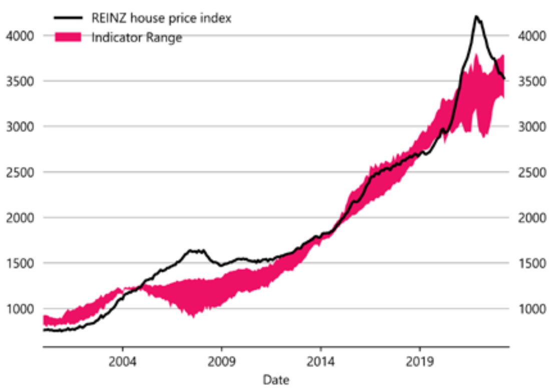
Graph 1: Banking system assets



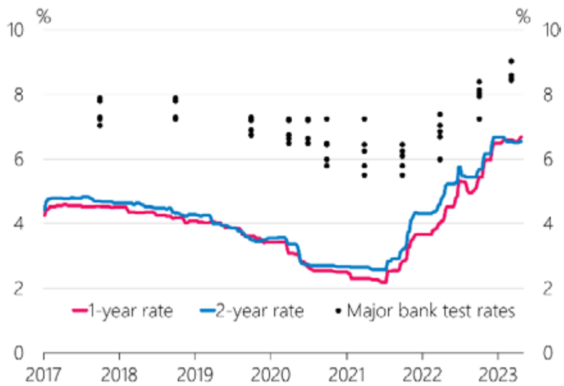
Graph 2: Household debt relative to income



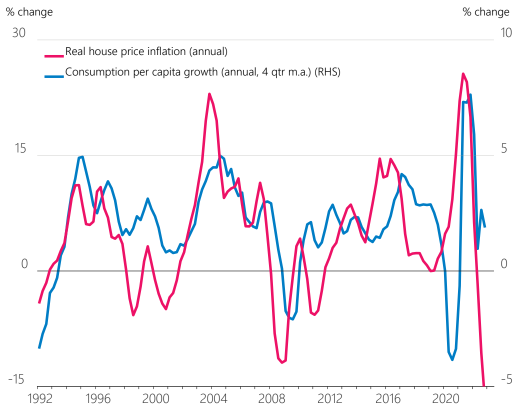
Graph 3: House prices relative to indicators of sustainable levels



Graph 4: Loan affordability test rates compared with advertised mortgage rates



Graph 5: Consumption per capita and house price growth



2. Governance and objectives

Governance

The Reserve Bank is empowered through legislation 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.[8]

Given the systemic nature of housing-related risks in New Zealand, macroprudential policy aims to build sufficient resilience in the financial system to cope, should these risks crystallise. Therefore, macroprudential policy complements microprudential policy in maintaining financial stability.

To support the operational independence of macroprudential policy, a Memorandum of Understanding (MoU) was agreed between the Minister of Finance and the Governor of the Reserve Bank. This MoU defines the specific objectives of macroprudential policy and the instruments considered useful for the objectives. The MoU also outlines the operating guidelines for the use of macroprudential policy, including in regard to consultation and reporting.[9]

The Reserve Bank shifted from a single decision-maker for prudential policy, with the Governor ultimately responsible, to a governance board in July 2022.[10] The governance board was set up to protect 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 as including building borrower resilience to reduce defaults and credit losses in a downturn, which would impact lenders.

However, the objectives continue to highlight the need to dampen housing credit and price cycles by varying policy settings with the cycle. The MoU states that macroprudential policies can be used to provide additional buffers that vary with the macrocredit 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 macroeconomy.

8 See the Reserve Bank Act 1989 (now the Banking (Prudential Supervision) Act 1989). A new Deposit Taker Act with a purpose of "protecting and promoting the stability of New Zealand's financial system" will come into effect from around 2024. Given that this case study looks backwards at our experience and actions over the past decade, the existing Reserve Bank Act and frameworks that come from that legislation are outlined here.

9 See Reserve Bank of New Zealand, Macroprudential policy and operating guidelines, 2 August 2021, https://www.rbnz.govt.nz/regulation-and-supervision/cross-sector-oversight/our-relationship-with-other-financial-regulators/our-memoranda-of-understanding/macroprudential-policy-and-operating-guidelines-august-2021.

10 See Reserve Bank of New Zealand, "Our Board members", 1 July 2022, https://www.rbnz.govt.nz/about-us/our-people/our-board-members.

This cyclical role was highlighted again in early 2021 when the Minister of Finance issued a direction requiring the Reserve Bank to take account of the Government's policy objective when exercising its financial stability powers, including in relation to macroprudential policy. The policy objective is:

> "to support more sustainable house prices, including by dampening investor demand for existing housing stock, which would improve affordability for first-time buyers."[11]

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. A 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. In part this also reflects the fact that unsustainable house price developments (and a related excessive growth in credit) can adversely impact financial system efficiency through credit misallocation.

3. Macroprudential instruments in practice

The MoU includes a list of instruments that are considered "useful" for addressing systemic financial stability risks. The list of instruments comprises:

- 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 (LTV) restrictions and debt servicing restrictions (including debt service-to-income (DSTI) and debt-to-income (DTI) restrictions, and stressed interest rate floors), which were added to the MoU in August 2021.

LTV restrictions are the only instrument that have been used to date to mitigate housing risks. We have 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.[12]

Although the MoU does not legally prevent us from using macroprudential tools other than those listed, in practice we seek agreement from the Minister of Finance before making use of new tools.

In 2017, we held a public consultation on debt servicing restrictions for residential mortgage lending and recommended that these be added to our macroprudential toolkit. The Government decided not to add them at that time. However, they were added to the MoU in 2021, following the direction by the Government to heed the objective of supporting more sustainable house prices. Our analysis indicated that debt servicing restrictions, and specifically DTI restrictions, would be most effective in supporting financial stability and sustainable house prices, while having a smaller impact on first-time buyers than on investors. As DTI restrictions link credit availability to income, they were seen to be more effective in constraining debt levels throughout the cycle compared with other macroprudential tools.

[11] See Reserve Bank of New Zealand, *The Minister of Finance's Section 68B direction and accompanying correspondence*, 11 March 2021, https://www.rbnz.govt.nz/hub/publications/information-release/2021/ir-2021-01. 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.

[12] While we have had liquidity requirements in place 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-LTV lending and property investment lending (for both IRB and standardised banks), but again this was seen as part of our microprudential regulation.

We have since developed a regulatory framework for DTI restrictions on residential mortgage lending, and banks are preparing their systems to be ready to implement DTI restrictions from early 2024, if required.

Operationalising LTV restrictions

We have defined LTV 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 per cent. This means that no more than 20 per cent of banks' new lending to owner-occupiers can have an LTV ratio greater than 80 per cent after certain policy exemptions. For investors, the threshold has been adjusted to between 60 and 80 per cent, 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 LTV restrictions, which are outlined in the section below.

LTV restrictions apply to all residential mortgage loans made by registered banks.[13] The regulatory framework for LTV restrictions is set out in section BS19 of the Banking Supervision Handbook. The requirement to comply with the LTV restrictions and the specific settings for LTV restrictions (speed limit and threshold) are set out in banks' Conditions of Registration. This means that prior to making changes to LTV 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 LTV restrictions can mitigate housing risks:

- Asset quality channel – LTV restrictions reduce the share of new high-LTV mortgage lending and consequently reduce the stock of high-LTV 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 LTV ratios also carry lower risk weights for capital adequacy, which offsets the improvement in asset quality.
- Indirect feedback effect channel – The LTV policy can mitigate the potential magnitude of a house price correction in a scenario in which borrowers are under stress. First, by curtailing borrowing capacity, the LTV policy lowers the likelihood of borrowers experiencing servicing problems and can thus reduce the prevalence of distressed house sales. Second, the LTV policy can dampen (at the margin) house price overvaluation, nudging prices towards economic fundamentals. This helps to make house prices less volatile. All else being equal, lowering the amplitude of house price cycles helps to maintain the value of housing collateral and therefore reduce mortgage losses.

Calibration of LTV restrictions

The calibration of the LTV 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 judgment.

We have reviewed settings regularly (approximately every 6–12 months) and have endeavoured to tighten LTV restrictions when financial stability risks have been elevated and to ease them when risks have diminished. We assess the level of risks by looking at four criteria:

[13] 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.

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 assess these risks. In addition, calibration has been supported at times by modelling of high-LTV lending flows and of how the stock would change for different calibrations of the policy.

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

Explanation of policy adjustments

– October 2013: LTV 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 per cent at the time. In addition, a significant and rising proportion of the stock of mortgage lending was at high LTV ratios (see Graph 6). As such, banks were becoming more vulnerable 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 per cent – 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 LTV restrictions in Auckland than in the rest of the country and we introduced a more stringent LTV limit for investment property.[14] A higher share of investor lending (especially at high LTV ratios) was seen as increasing the risk of fire sales if house prices were to correct, owing to defaults (as rental incomes deteriorate) and investors exiting the housing market.

– October 2016: Despite LTV restrictions remaining in place, growth in house prices and credit was still elevated. Annual house price inflation was 15 per cent 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 LTV restrictions in Auckland were leading to a spillover effect, with high LTV lending moving to areas outside of Auckland. Consequently, the Auckland/non-Auckland differentiation was removed, and LTV restrictions were tightened further nationally.

– 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 LTV restrictions from October 2016, which led to a decline in new high-LTV lending, especially to investors. In response to the slowdown, LTV restrictions were loosened somewhat.

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

– April 2020: At the beginning of the Covid-19 pandemic, a severe economic downturn was widely anticipated, and house prices were expected to fall by around 5–10 per cent. LTV restrictions were

[14] There were some data gaps at the beginning of LTV policy implementation in 2013. Before late 2015, we did not have reliable data on property investor lending, which hindered the potential implementation of investor-specific calibration. This was eventually addressed, allowing investor-specific calibration to be used.

removed to support lending conditions. The stated intention was to suspend them for one year. A rise in risky lending was not anticipated due to the economic conditions at the time.

Table 1: LTV 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: Reserve Bank of New Zealand, Timeline for loan-to-value ratio restrictions, 1 June 2023, 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.

– 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 per cent 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-LTV lending to investors and a smaller increase in lending to owner-occupiers. While the share of high-LTV loans on banks' mortgage books was at historical lows due to past LTV restrictions, there were concerns that a flow of new high-LTV lending would lead to a deterioration in banks' lending portfolios. Therefore, LTV restrictions were reinstated in March 2021 and tightened for investors in May 2021.

– November 2021: House prices continued to increase throughout mid-2021 to what appeared to be unsustainably high levels, with national annual house price inflation reaching around 30 per cent in the second half of 2021.[15] This was driven predominantly by very low mortgage rates. Despite the reinstatement of LTV restrictions earlier in 2021, high-LTV lending to owner-occupiers remained elevated. Left unchecked, borrower and bank resilience would have deteriorated. Consequently, LTV restrictions were tightened further for owner-occupiers.

– June 2023: In the context of higher interest rates, risks to new borrowers sank during 2022 and 2023 to a level at which the previously tight LTV restrictions were no longer necessary. The drop in risks to new borrowers was due to house prices being considered more sustainable after falling around 15 per cent from their peak in 2021, while banks' servicing assessments tightened as stressed interest rates increased. As a result, LTV restrictions were eased.

4. Effectiveness

4.1 Measuring success.

We have not had LTV restrictions in place for long enough to see their impact on the frequency and severity of housing downturns over many decades, and the consequent impact on bank losses. Hence, we assess the benefits of the restrictions in terms of intermediate measurements of success. This section has been divided up based on the two transmission channels outlined above: the asset quality channel and the indirect feedback channel.

Asset quality channel

The major benefit from LTV 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-LTV mortgage commitments and the subsequent decrease in the stock of high-LTV loans (Graph 6). Following the implementation of LTV restrictions in 2013, the high-LTV share in the stock of mortgage loans 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 loans.

LTV restrictions have been more or less binding ever since they were introduced. Graph 7 shows the high-LTV share in the flow of new lending for investors and owner-occupiers. When LTV restrictions were tightened (eg 2016 and 2021) and loosened (eg 2018 and 2020) there were impacts on the high-LTV

[15] Reserve Bank of New Zealand, *Monetary Policy Statement,* August 2021, https://www.rbnz.govt.nz/-/media/project/sites/rbnz/files/publications/monetary-policy-statements/2021/mpsaug21.pdf.

share of new lending.[16] This graph 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-LTV share of new lending to owner-occupiers at around 5 or 6 per cent when the speed limit is 10 per cent (Graph 8).

Indirect feedback channel

One reason we applied LTV 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.

The risk of substantial house price corrections can be lowered by leaning against overly easy credit conditions and limiting the rise of house prices above sustainable levels. For example, banks were fiercely competing for borrowers with low deposits in 2013. 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. Based on our experience with adjusting LTV restrictions during the entire cycle, we have found that tightening LTV restrictions has only a limited and temporary impact on house price inflation.[17] 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, LTV restrictions can reduce distress as borrowers with higher equity have more options when they face servicing challenges. For example, they could 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-LTV) declined materially when we tightened LTV restrictions in 2021 (Graph 9).

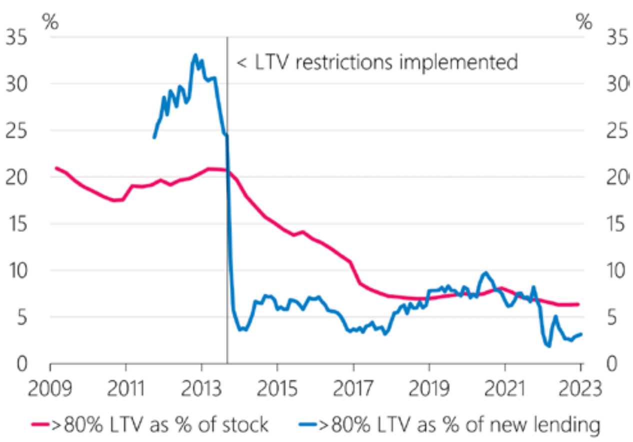
The period after 2021 demonstrates that LTV restrictions have helped boost the resilience of borrowers. A rapid increase in interest rates from late 2021 contributed to house prices falling by more than 15 per cent. Despite this decline, signs of distress have been limited, with few forced sales and the share of non-performing loans remaining low, at least until mid-2023. While LTV restrictions may have helped during this period, the strength of the labour market probably played a part as well.

While it is difficult to measure, stricter LTV settings for investors since 2015 may have dampened the severity of housing cycles too by reducing highly leveraged investor activity. LTV restrictions may discourage some investors from buying houses as prices rise and their equity increases. Such restrictions may also prevent investors from selling when house prices fall.

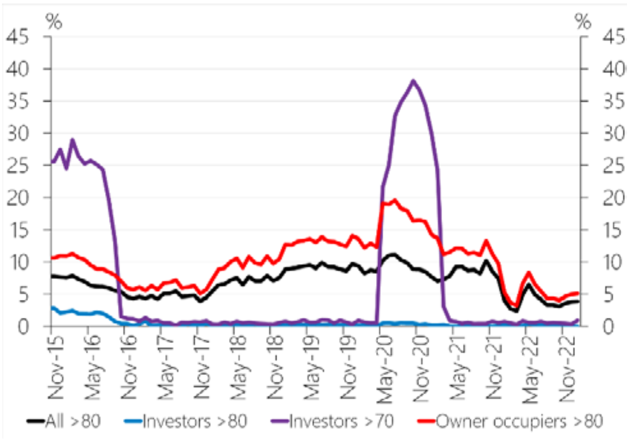
16 When tightening LTV settings, banks are given longer (eg around three months) to adjust their flow of pre-approvals in line with the tighter settings. Despite this extra time, the impact of tightening is often seen before the policy formally takes effect.

17 See Price (2014), Yao and Lu (2020), and Bloor and McDonald (2013).

Graph 6: Stock and flow of high-LTV mortgage lending (after exemptions)

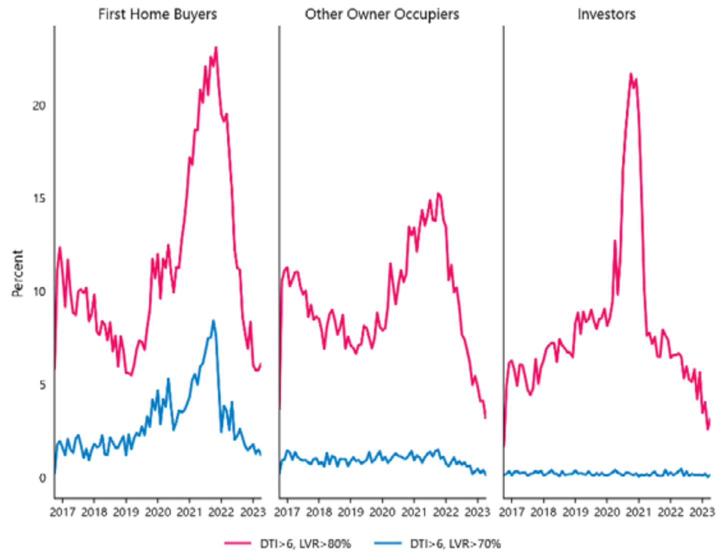


Graph 7: High-LTV share of new lending by borrower type (after exemptions)



Graph 8: Share of new lending to owner-occupiers with high LTV ratios and speed limits

Graph 9: High-LTV and high-DTI share of new lending



4.2 Factors influencing success.

Our use of LTV restrictions has had both structural and cyclical features. We have reviewed settings regularly and endeavoured to tighten LTV restrictions when risks are elevated and to ease them when risks fall. By adjusting settings cyclically, we aim to ensure that lender resilience is maintained (or increased) when risks grow. 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 LTV policy takes longer and requires more internal resources than easing. The reason is that banks need time to adjust their flow of pre-approvals and to carry out public consultation when tightening. One implication of this is that when an opportunity to ease LTV restrictions arises, it could be prudent to wait longer before doing so, as tightening LTV restrictions again if the decision turns out to be wrong can take time. Our experience during 2020 and 2021 highlights this challenge. After we removed LTV restrictions at the onset of the pandemic, high-risk mortgage lending increased, and by late 2020 we had started the process of re-establishing LTV settings. However, the process took time, and settings were not restored to their pre-pandemic level until March 2021.

Interactions between monetary policy and macroprudential policy

One way in which LTV restrictions have proven successful is by making it possible to address housing-related risks resulting from monetary policy. In general, macroprudential policy tools have little impact on inflation and employment. However, interest rates can have a material impact on housing-related risks, which LTV settings have been able to counter.

At times, LTV settings have been adjusted in the opposite direction from monetary policy. For example, LTV restrictions were re-established and tightened in 2021 when monetary policy was very loose. Tighter LTV settings allowed monetary policy to focus on achieving its primary inflation- and employment-related objectives, and not be held back by rising housing-related risks. LTV restrictions helped to ensure there was sufficient resilience in the financial system to maintain financial stability.

Political independence

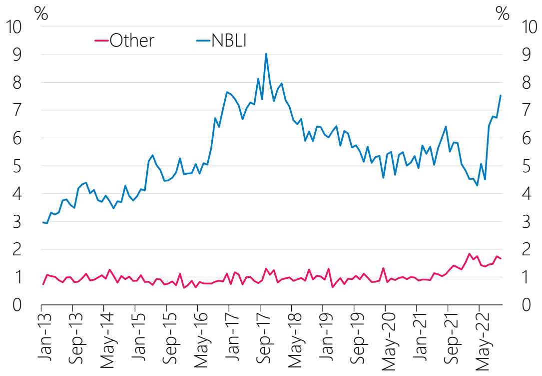
We see the operational independence of macroprudential policy as important for enabling restrictions to be deployed in a timely and effective manner in response to changes in housing-related risks. Having an independent macroprudential authority with defined objectives has helped to guard against competing priorities and inaction bias. Inaction bias refers to the preference to wait for more data and analyses before taking action, given that the benefits of macroprudential policy are not obvious in the short term, while the costs are immediately visible.

Transparency and accountability are important for maintaining this independence. Distributional considerations, such as the impact of restrictions on first-time buyers' access to credit and on the efficiency of the financial system, are embedded in the macroprudential policy mandate. They are outlined in the MoU between the Minister of Finance and the Governor of the Reserve Bank. The section below on the costs and benefits of LTV restrictions examines their interaction with policy considerations.

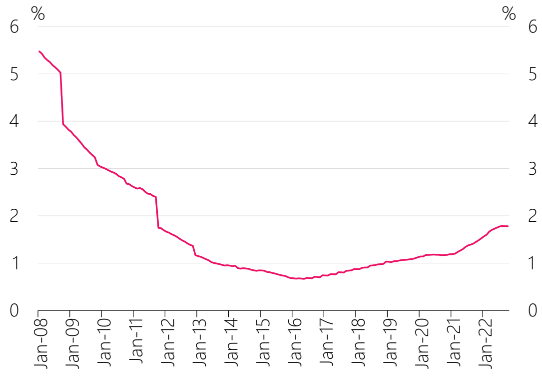
4.3 Leakages

Since the implementation of LTV restrictions, we have watched for regulatory leakage and arbitrage in the form of a shift in housing lending away from banks. There has been some evidence of an increase in the share of the number of house purchases financed by non-bank lending institutions and other sources (Graph 10), including purchases at high LTV ratios. However, the share of mortgage lending by non-banks has risen from a very low level and remains less than two per cent (Graph 11). A material part of the rise in non-bank lending (both high- and low-LTV) appears to come from construction, remediation, and bridging finance loans, which are exempt from LTV restrictions. Industry contacts have noted that most borrowers switch to banks once their loans have been sufficiently amortised.

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



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



We observed another leakage when we implemented a regional LTV policy in Auckland in November 2015, with tighter calibration there than in the remainder of the country, especially for investors. We found that the regional LTV 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.

5. Cost, benefits and unintended consequences

While LTV restrictions promote financial stability, they 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: LTV restrictions can restrict lending to creditworthy borrowers who are able to service loans but do not have sufficient equity. For example, they may impact access to credit for first-time buyers.

– Housing supply: For a short period when we first implemented LTV restrictions in 2013, lending to fund construction was not exempt. Banks and industry groups raised concerns about the impact of LTV restrictions on housing supply, given the important role of bank funding in the construction process. It was noted at the time that while high-LTV construction lending only made up around 1 per cent of total residential lending, it was financing around 12 per cent of residential building activity.

– Competition between banks: LTV restrictions may impact banks' ability to compete with respect to certain dimensions of risk. The policy could effectively coordinate banks' pricing, leading to tacit (and legal) collusion.

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

Mitigating actions

A key feature of our approach to LTV restrictions is the **cyclical** adjustment of 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 them when relatively restrictive settings are not warranted. To the extent 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 contributing to the soundness of the financial system.

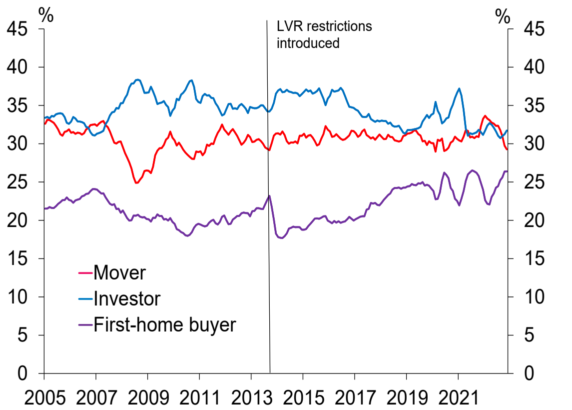
In addition, the use of **speed limits,** which allow banks to lend a portion of their new lending above the LTV limit, has played a part in reducing efficiency costs and disintermediation. These allowances have helped to ensure that the policy affects the riskier borrower segments, which reduces (but does not eliminate) the impact on creditworthy borrowers. Banks manage the flow of high-LTV lending by requiring borrowers with smaller deposits to have larger income buffers after expenses and debt servicing costs. First-time buyers have tended to make up a relatively large share of this high-LTV lending.

We first introduced LTV restrictions with a uniform calibration across buyer types but soon found that this disproportionately affected first-time buyers, owing to the relative lack of equity for first-time buyers (Graph 12). From 2015, we introduced more targeted **settings for investors** partly to balance the impacts relative to first-time buyers but also reflecting that investors tend to be more pro-cyclical.

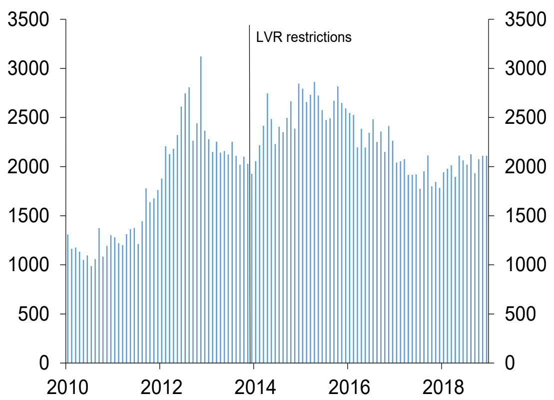
The use of **exemptions** has also helped to mitigate some of these efficiency costs. We have exemptions in place for the following types of loans:

- Welcome Home Loans, which are targeted at first-time buyers with small deposits but are guaranteed by the government, meaning they are a relatively low risk for financial institutions.
- Loans for new builds to address concerns about the impact on the supply of housing.
- Refinancing, allowing high-LTV borrowers to switch banks as long as their debts do not increase. This promotes competition. The number of refinancing commitments has not been materially impacted by LTV restrictions (Graph 13).

Graph 12: Share in number of house sales by buyer type



Graph 13: Number of refinancing commitments



6. Conclusion

Overall, our assessment is that LTV 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. We have also recently developed the framework for a debt-to-income (DTI) tool, which will provide additional options to address housing-related risk in the future.