

MEMORANDUM FOR Macro Financial Committee

FROM Macro Financial Policy / Daniel Wills

DATE 13.06.2016

SUBJECT **LVR effectiveness and housing market developments**

FOR YOUR Discussion

Introduction

This paper presents key housing market developments since the April effectiveness monitoring report. Major changes since the April report are highlighted. This paper also introduces preliminary findings on the counterfactual impact of revised LVR restrictions and considers Ex-Auckland developments in the context of GFC-era experience in the US. Empirical findings in this paper help form a background context for papers considering potential changes to the LVR framework, as well as broader macro financial policy options to mitigate elevated housing market risks.

Key points

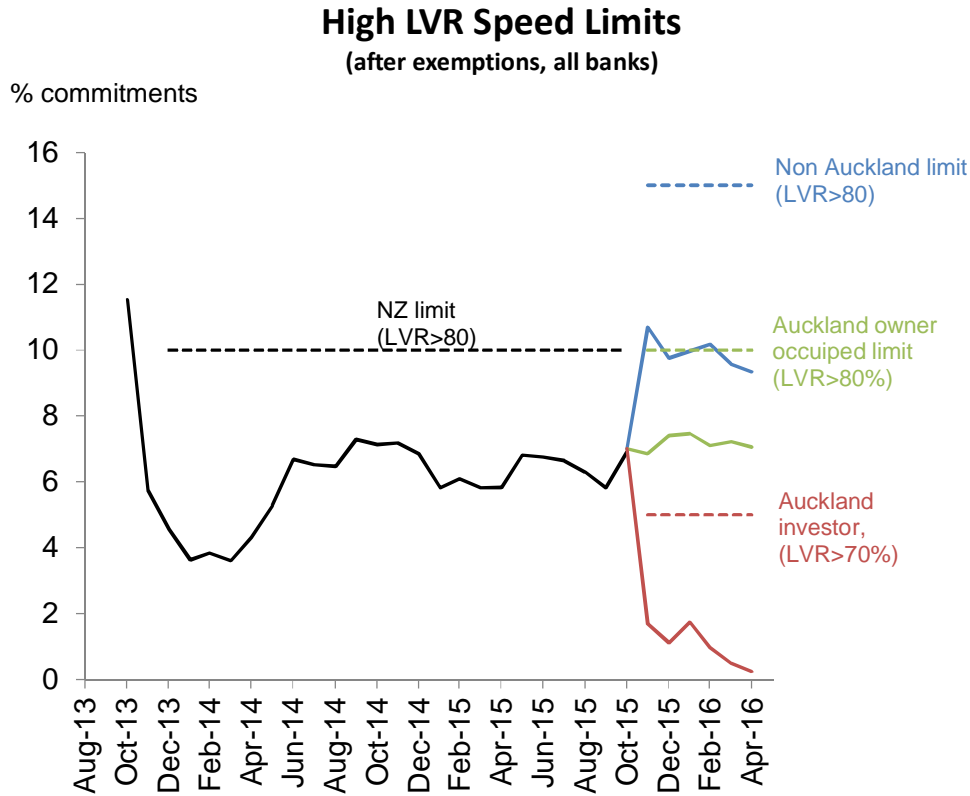
- All banks met high-LVR limits for the first compliance period ended April 2016. One bank is fairly close to their Auckland owner occupied high LVR lending limit.
- House price inflation pressures are broadening. Auckland housing market demand continues to re-accelerate after its late 2015 hiatus while pressures build elsewhere. The availability of houses for sale is at its lowest since before the GFC in both Auckland and Ex-Auckland.
- Auckland investor LVR tightening is estimated to have reduced Auckland house price inflation modestly (around 1-3 ppt), close to RBNZ expectations. Non-LVR policy changes are estimated to have had a larger impact, and more than offset the impact of LVR loosening in the rest of New Zealand.
- Investor influence is increasing, with sales shares approaching 50% in Auckland and 40% elsewhere. Investor borrowing has retained most of its momentum despite tighter LVR restrictions. The key effect of tighter investor restrictions has been to reduce investor LVRs.
- Relatively high supply elasticity is one factor behind lower house price to income ratios in the Rest of NZ vs. Auckland. International evidence suggests that high supply elasticity can generally assist in dampening house price cycles, except in cases where large scale speculative supply growth develops.

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Compliance

1. All banks met high LVR limits for the first compliance period, but one is fairly near its Auckland owner occupied speed limit.
2. Overall, banks are maintaining around 2-5% headroom for high LVR lending across all lending types, similar to that under initial restrictions (figure 1).
3. One of the major banks remains just one percentage point below their Auckland owner occupied high LVR speed limit. This bank reports an intention to reduce high-LVR lending in this loan category in coming months.
4. Exemption activity continues to be driven by the combined collateral exemption. Combined collateral accounted for almost 40% of the value of total exemptions over the past 6 months.
5. The combined collateral exemption is utilised extensively by Auckland investors. Combined collateral exemptions by these borrowers were equivalent to almost 20% of new commitments in this loan category over the past six months. However, these exemptions only allow investors to reach the LVRs they would have alternatively achieved via split-banking.

Figure 1: High LVR limits – residential mortgage new commitments



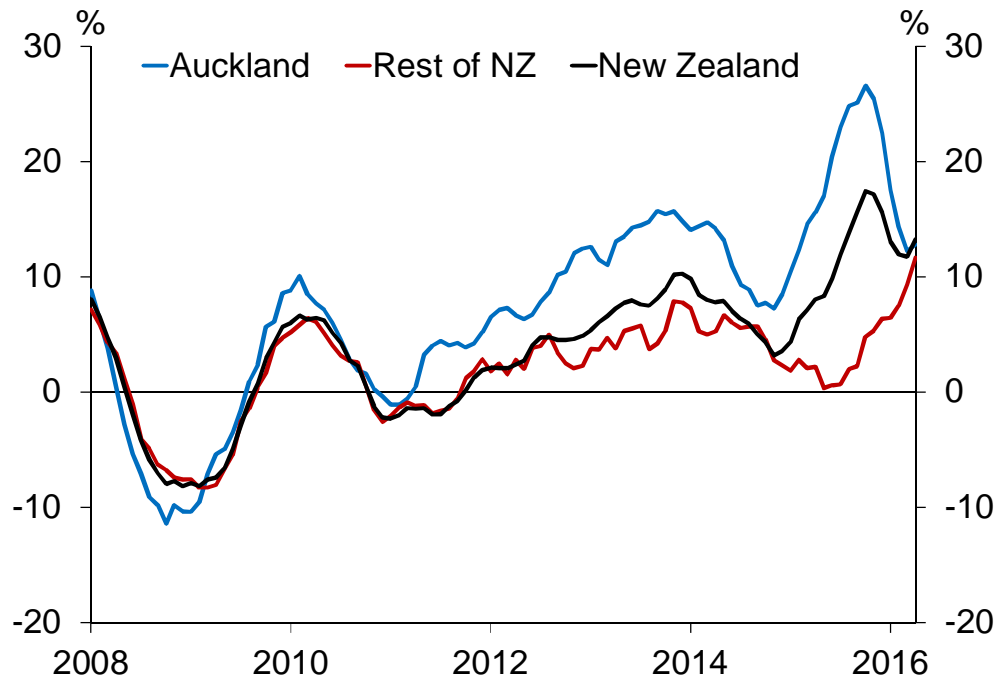
Source: RBNZ

Housing market developments¹

6. New Zealand house price inflation began to re-accelerate from about February, with early signs of a re-emergence of upward price pressure in Auckland (figure 2).
7. Other regions are also increasingly adding to national price pressure with house price inflation in many regions gaining momentum since mid-2015.
8. Upper North regions adjacent to Auckland have accounted for much of the price growth outside of Auckland in 2015. But price pressure has broadened further in 2016 with most major centres now experiencing annual house price inflation in excess of 8 percent.

¹ excerpt from draft housing speech for Deputy Governor Grant Spencer.

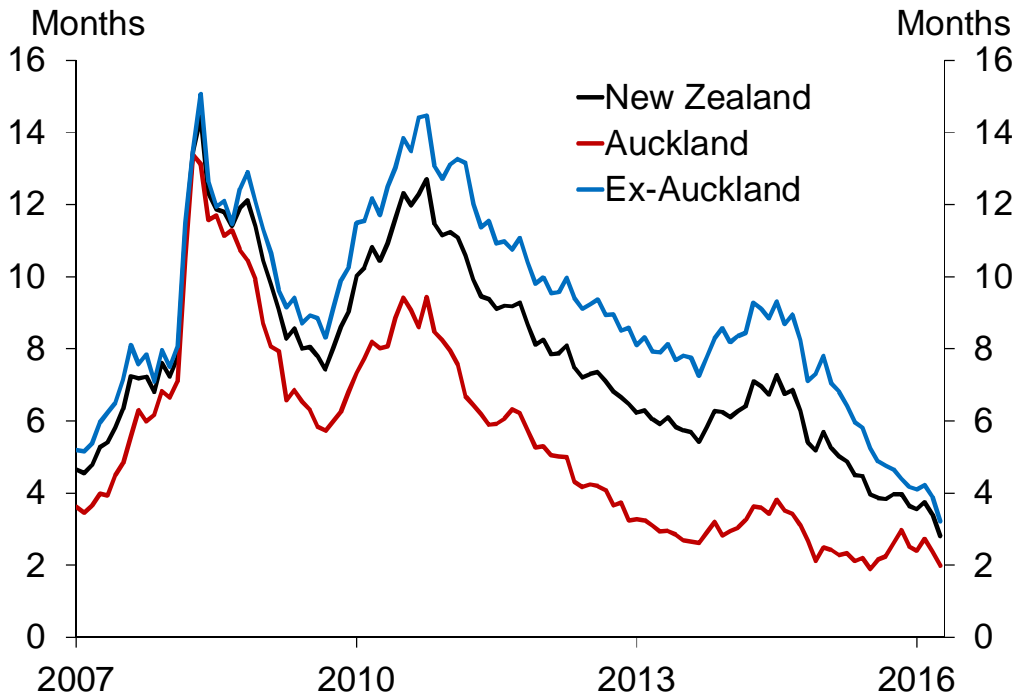
Figure 2: Annual house price inflation (s.a., 3 month moving average)



Source: REINZ

9. House sales mirror this strengthening picture. Sales activity has increased across most regions in the country since 2015, including a sharp rebound in Auckland sales over recent months.
10. Buyer choice is also exceptionally low. The inventory of houses available to sell, relative to the rate of sales, is around 40% below the lows seen at the height of the pre-GFC boom in 2007 (figure 3). This exceptional degree of market tightness emerged in Auckland around 2013 and in Ex-Auckland regions in late 2015 as the rate of house sales has increasingly outpaced the supply of new listings.

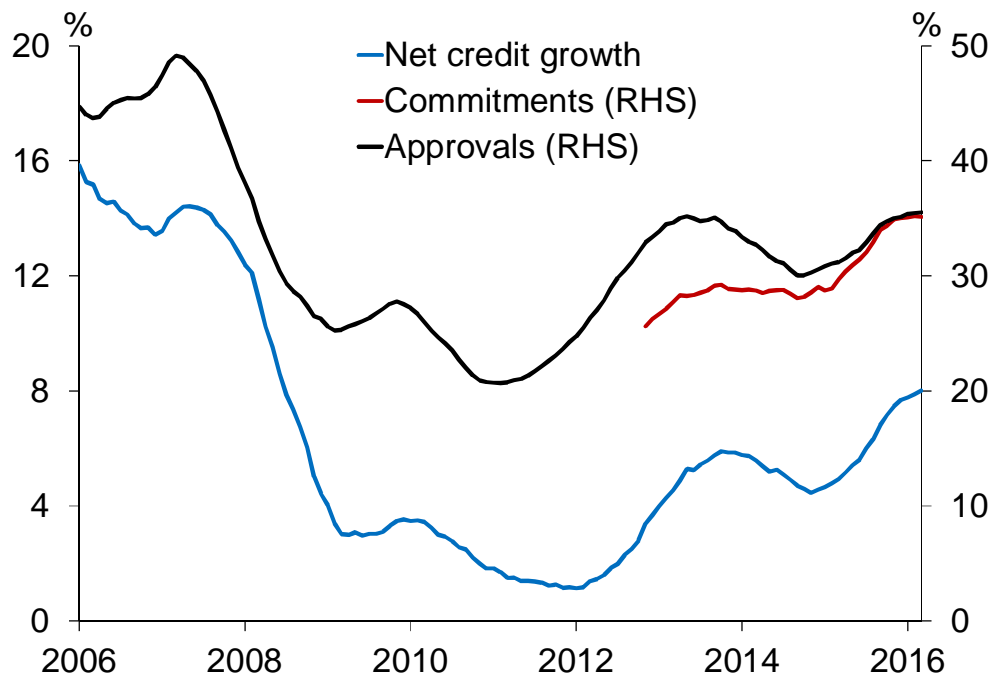
Figure 3: Inventory of existing homes available for sale (s.a., months of sales)



Source: REINZ, RBNZ

11. Housing credit growth has similarly continued to rise, increasing 8 percent in the year to March (figure 4). This credit growth is the highest since 2008 and comes despite strong principal repayment by existing borrowers. Although the rate of acceleration declined slightly around the time of revised LVR restrictions, the trajectory of credit growth remains firmly upward.
12. New housing commitments are also elevated, running at the equivalent of around 35 percent of outstanding housing debt. This suggests that the characteristics of new commitments will be reflected relatively quickly in banks' overall portfolios.
13. As such, the recent loosening seen in other higher-risk dimensions of lending standards, such as interest-only lending and high total debt to total income lending, could rapidly feed into the quality of banks' mortgage lending stock. This loosening could provide a partial offset to the rising balance sheet resilience generated by LVR restrictions. Investors' share of interest-only and high TDTI lending has increased the most over recent years, and sits at much higher levels relative to owner occupiers.

Figure 4: Housing lending (annual, % of housing debt)



Source: RBNZ *Housing Approval Survey*, RBNZ *Standard Statistical Return (SSR)*, RBNZ *New Residential Mortgage Commitments Survey*.

Counterfactual impact of revised LVRs

14. Estimates for the counterfactual impact of the late 2015 policy changes were generated using the same VAR modelling methodology as used for initial restrictions in Price (2014). The key variation is that separate VAR models were estimated for Auckland and Ex-Auckland regions, using regional-level variables where available.

Auckland

15. This modelling suggests that the counterfactual impact of revised LVRs in Auckland was similar to that anticipated by the RBNZ prior to the implementation in November 2015 (table 2). The Auckland market impacts of the revised LVRs are also of a similar scale to that estimated for the nationwide impact of initial LVRs.

16. The overall counterfactual impact in Auckland is larger than can be explained by LVRs alone, reflecting the wide range of housing-related shocks hitting the market in late 2015.

17. In terms of the overall combined impact of housing-related policy changes on Auckland house price inflation, it looks as though tax changes and other factors did a majority (around two-thirds) of the work.

18. The Auckland impact of revised restrictions seems to have been more short and sharp than initial restrictions, already waning rapidly by the end of the March quarter. The 'front-loaded' impact on sales likely reflects the combination of a range of housing-related policy changes that hit the market in late 2015. These included tax changes in New Zealand and tightening of Chinese investor capital outflows.
19. We find evidence of a significant LVR policy announcement effect on Auckland house price inflation, suggesting 'rush-to-buy' activity before announced LVR policy changes came into effect. Counterfactual impacts on Auckland house prices are more than twice as large when estimated from the policy implementation (November 2015) vs. the policy announcement (May 2015). The figures in table 2 and 3 refer to the impact from policy implementation.

Ex-Auckland

20. Loosening in revised LVRs Ex-Auckland appears to have had a limited impact on the housing market in these regions. LVR impacts appear to have been more than offset by national-level policy changes/shocks, with activity and prices down despite LVR loosening (table 3).
21. The Ex-Auckland counterfactual projection for sales and prices is more bullish than Auckland (figures 5, 6). This pattern is consistent with the sustained uptrend in Ex-Auckland house price inflation, and sharp decline in the inventory of existing homes for sale, since 2015 (figures 2, 3).
22. Counterfactual modelling suggests that the impact of revised LVRs on national housing credit has been relatively modest. This result is consistent with earlier findings from initial LVR restrictions and reflects long lags in housing credit growth.
23. We will finalise the estimates of the counterfactual impact after 6 months of data is available next month. We will also conduct further sensitivity analysis of results surrounding the adjusted model specification, presenting results in the next LVR monitoring report.

**Table 2: Estimated counterfactual impacts of housing policy changes:
Auckland (31 October 2015 – 31 March 2016)**

	Expected (revised LVRs)	Actual- counterfactual	Breakdown of policy impact*	
			LVRs	Other factors (esp. tax)
House sales (change in level (s.a., 3 mth m.a.))	-8%	-30% to -35%	-10% to -12%	-20% to -23%
House price inflation (change in ann.%, 3 mth m.a.)	-2ppt to -4ppt	-3ppt to -8ppt	-1ppt to -3ppt	-2ppt to -5ppt
NZ Household credit** (\$ mn, s.a.)	-1ppt	+1ppt	-	-

**Table 3: Estimated counterfactual impacts of housing policy changes: Ex-
Auckland (31 October 2015 – 31 March 2016)**

	Expected (LVRs)	Actual- counterfactual	Breakdown of policy impact*	
			LVRs	Other factors (esp. tax)
House sales (change in level (s.a., 3 mth m.a.))	+4%	-5% to -10%	+2% to +3%	-7% to -13%
House price inflation (change in ann.%, 3 mth m.a.)	+1ppt	0ppt to -2ppt	+0ppt to +1ppt	+0ppt to -3ppt
NZ Household credit** (\$mn, s.a.)	-1ppt	+0ppt	-	-

Notes to table 2 and 3

* We constructed this split using the assumption that LVR policy was tightened in Auckland about 4 times as much as it was eased in the rest of NZ, and that the other policy changes (tax etc) impacted Auckland about twice as much as rest of NZ. These assumptions allow us to solve for the relative impact of LVRs vs other policies. The view on the relative impact of tax changes is consistent with evidence that roughly twice as many properties in Auckland were being sold within 2 years, and also that Auckland's foreign buyer share in the LINZ data is about double the rest of NZs.

** Housing credit growth approximated by household credit growth. Note that pre-revised LVR regional housing credit breakdowns are not available.

Figure 5: Auckland house price inflation – actual vs, counterfactual

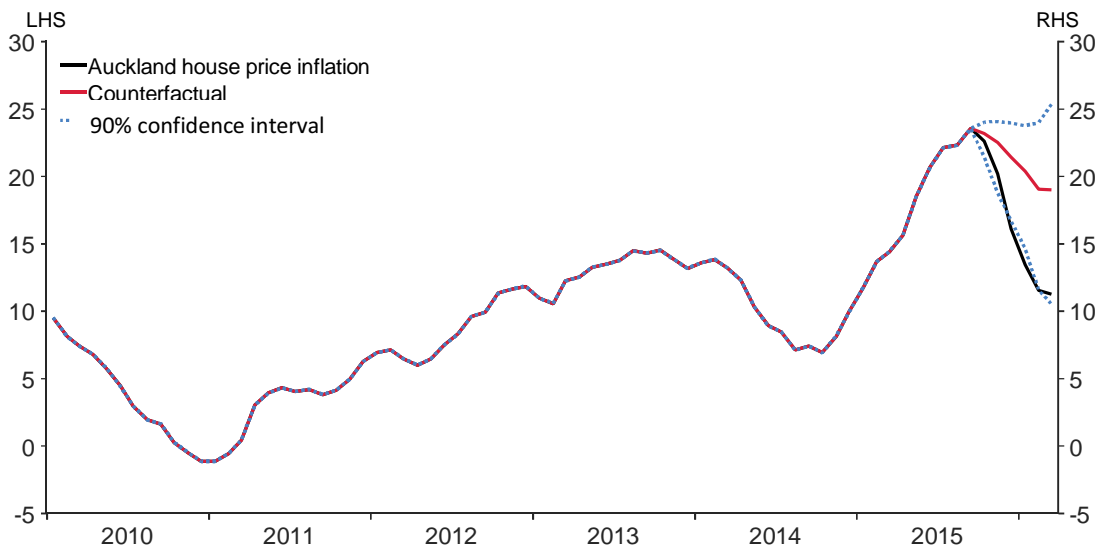


Figure 6: Ex-Auckland house price inflation – actual vs. counterfactual



Source: RBNZ

Ex-Auckland supply: implications for financial stability

US lessons from the GFC

24. In principle, house prices in 'supply-elastic' regions should rise much less during a housing boom (including one driven by a secular decline in interest rates, or an expectation of rising population). This is because market participants will recognise that new construction will eventually meet the market demand for additional property. In turn, this might be expected to reduce the decline in house prices when the cycle turns.

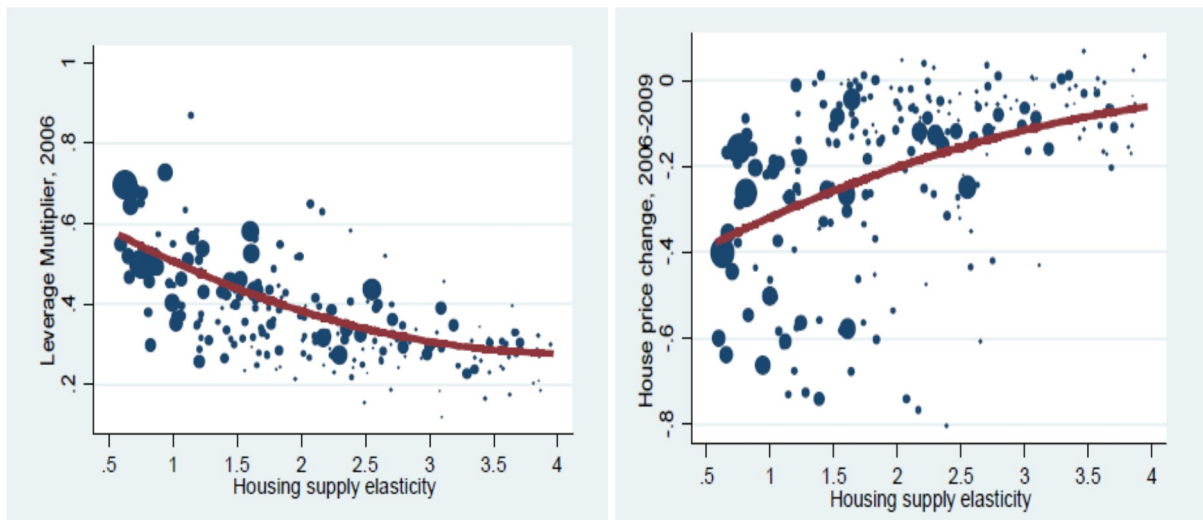
25. US regional evidence from the GFC suggests that elastic housing supply responses to rising demand can often dampen house price boom and bust cycles. Elastic supply helps to reduce the degree of price growth and credit-fuelled demand growth in a particular region, and the scale of the subsequent downturn (Mian and Sufi, 2009). Some of the cities with the largest supply elasticity, such as Dallas, saw the smallest cycles in house price inflation and house prices relative to income (figure 8, 9).
26. The reverse also generally holds true. US areas with relatively low supply elasticity tended to see the highest leverage and price growth in the run-up to the GFC, and larger downturns thereafter (Mian and Sufi, 2009, 2011, 2013 and figure 7). Some of the cities with the lowest supply elasticity, such as San Francisco, saw relatively large cycles in house price inflation and house prices relative to income (figure 8, 9).

Figure 7: housing supply vs. leverage, house prices

US Housing Leverage vs. Supply Elasticity

US House price downturns vs. Supply elasticity
- post-GFC

- pre-GFC

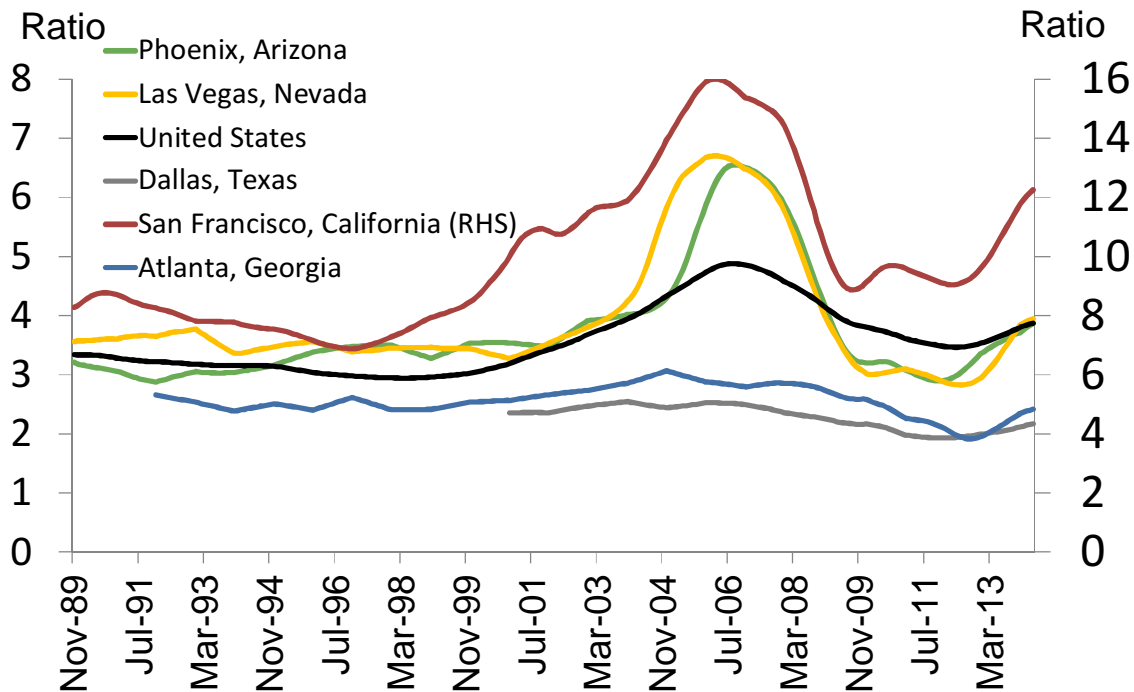


Source: Mian and Sufi (2013)

27. The US experience during the GFC confirms this view of supply elastic markets to some degree but also underlines some important caveats. These caveats relate to the risks surrounding the possibility for the growth in 'speculative supply'. This type of development can be a particular risk when committed development is on a large scale, subject to long time lags, and based on unrealistic extrapolative demand expectations. In the US:

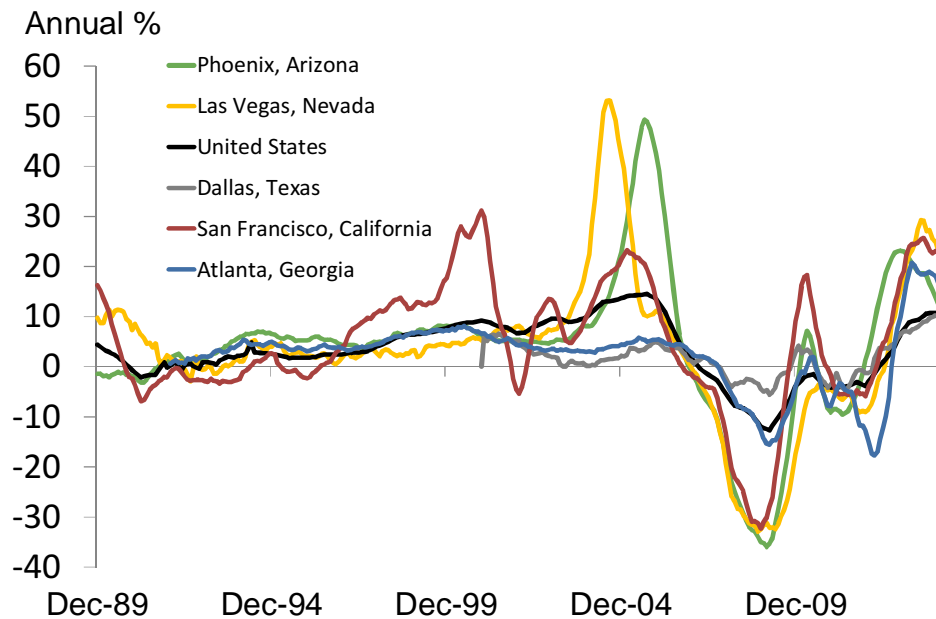
- (i) some markets (despite evident supply elasticity) still had sharp rises in prices, and price to income (figure 8, 9). Many market participants developed views that cities like Las Vegas could build additional housing but would eventually hit land supply constraints (these views ultimately proved overstated). Eventual falls were generally quite sharp.
- (ii) other markets had much more limited rises in prices and prices relative to income (figure 8, 9), but this was because of a very rapid response in construction. Some of those markets were then revealed to be heavily overbuilt (e.g. Atlanta) and suffered quite severe percentage falls in prices even though the rises during the GFC had been limited.

Figure 8: House price to income by city, selected United States cities



Source: National Association of Realtors, St Louis Fed, US Census Bureau

Figure 9: House price inflation by city, selected United States cities



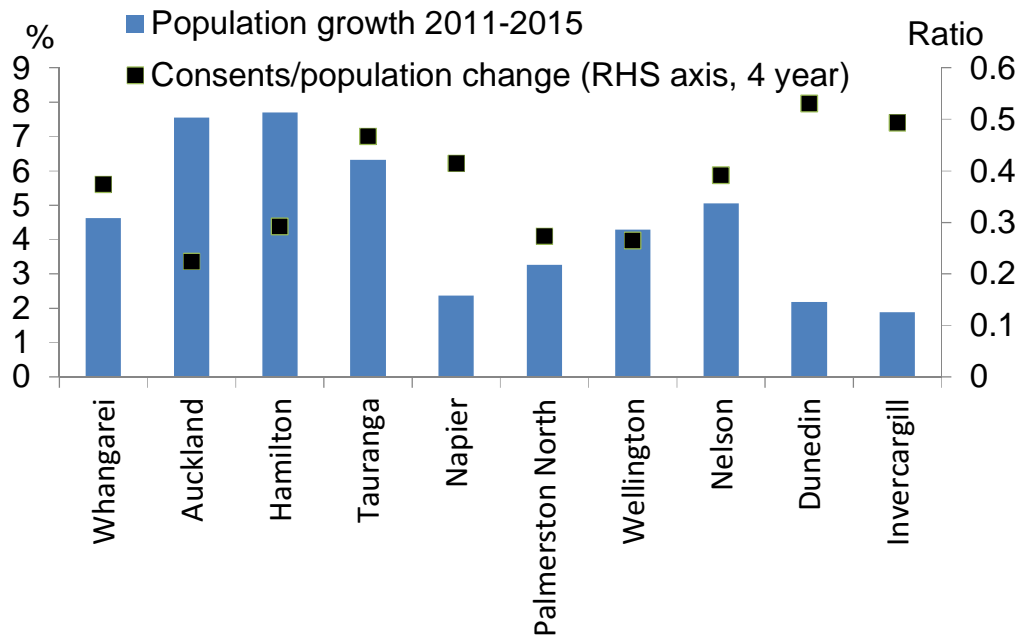
Source: National Association of Realtors, St Louis Fed

28. If we think about economic welfare, it is also important to recognise that overbuilding (building houses or subdivisions that are not occupied or only occupied because their market price falls far below construction cost) is a first order waste of resources. In contrast, a house price cycle in a supply inelastic market transfers wealth amongst households but (until severe enough to lead to bankruptcies and financial stability problems) doesn't reduce economic welfare in the same way (Glaeser, Gyourko and Saiz, 2008).

Implications for Ex-Auckland

29. We have noted previously that house price stretch relative to income outside Auckland is far below that in Auckland. This in part reflects relatively elastic supply responses to population growth in Ex-Auckland vs. Auckland (figure 10). Encouragingly, many of the Ex-Auckland regions experiencing the fastest population growth (the Upper North) have also seen relatively high supply elasticities.

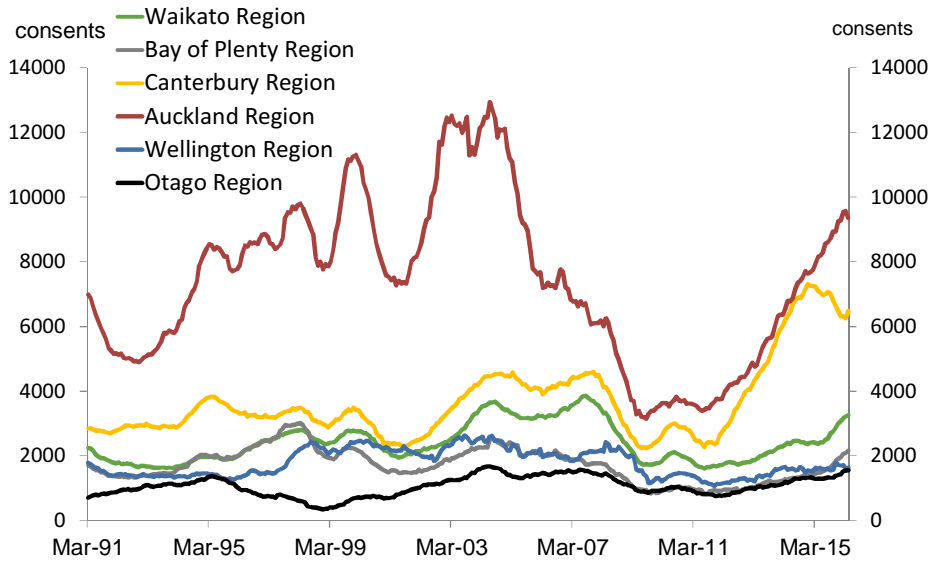
Figure 10: New Zealand housing supply elasticity by region



Source: Statistics New Zealand, RBNZ

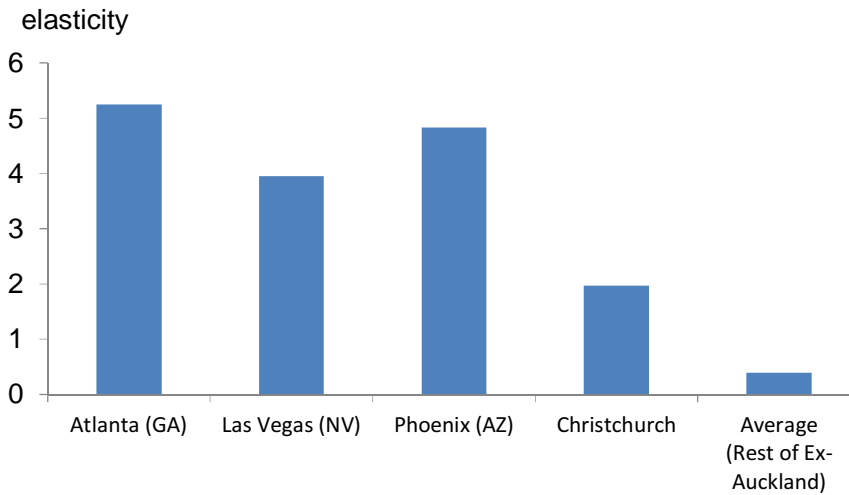
30. The relatively high level of house prices in Auckland, combined with a high sales share, also means that more than half of new commitments originate in Auckland. Both (29) and (30) remain valid reasons to be less concerned about house markets in Ex-Auckland than Auckland.
31. Nonetheless, the international evidence above suggests that the regional markets should still be looked at carefully. There may be value in leaning against risky borrowing against non-Auckland collateral, particularly if large-scale construction booms become evident.
32. Tauranga is one area that may need a watching brief. Consents have been growing rapidly over recent years in response to population growth in the region, with the city boasting one of the highest supply elasticities nationwide (figure 10). Recent rapid growth has taken the Bay of Plenty to the 4th largest residential construction market (by number of consents).
33. Another region to monitor for supply-side housing issues is Canterbury. In terms of scale, this region dominates Ex-Auckland residential construction (figure 11). This region has also seen by far the largest supply elasticity by region, reflecting the scale of the post-earthquake rebuild. Canterbury is the only region coming close to the size of the supply elasticity seen in the pre-GFC supply boom states in the US (figure 12), though this is “replacement” rather than new additional housing.

Figure 11: New Zealand building consents by region – Auckland and top 5 Ex-Auckland (monthly annual totals)



Source: Statistics New Zealand, RBNZ

Figure 12: Housing supply elasticity* – US supply boom cities (2000-2005) vs. NZ (2011-2015)



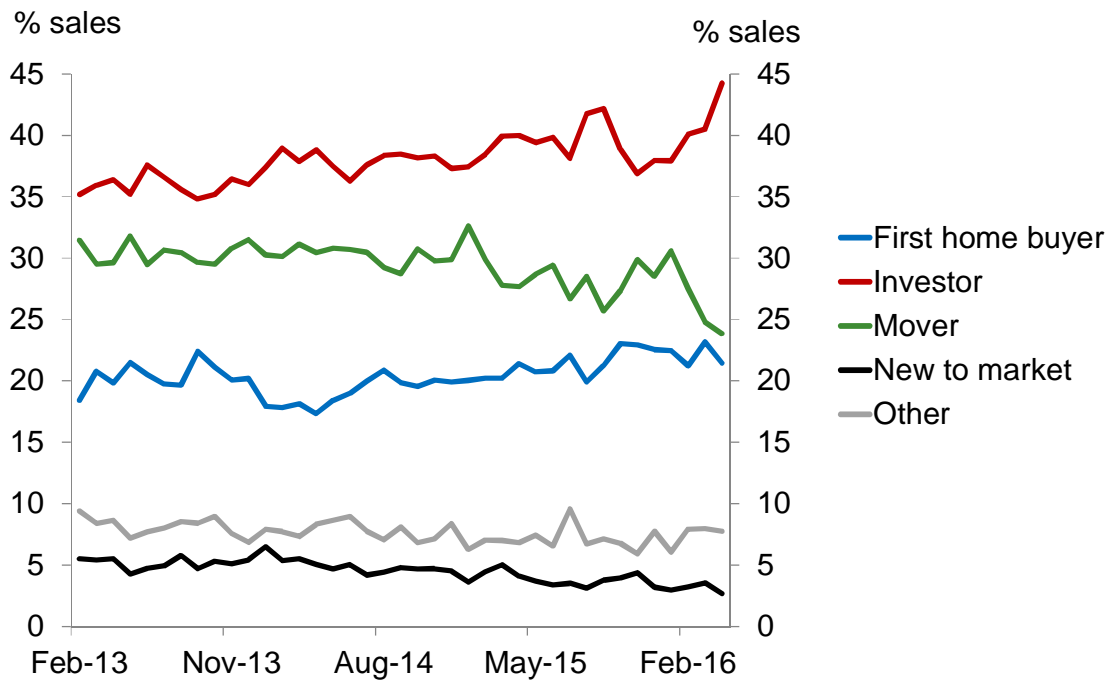
* Consents/population change

Source: Statistics New Zealand, Haughwout et al (2013)

Investors and the NZ housing market

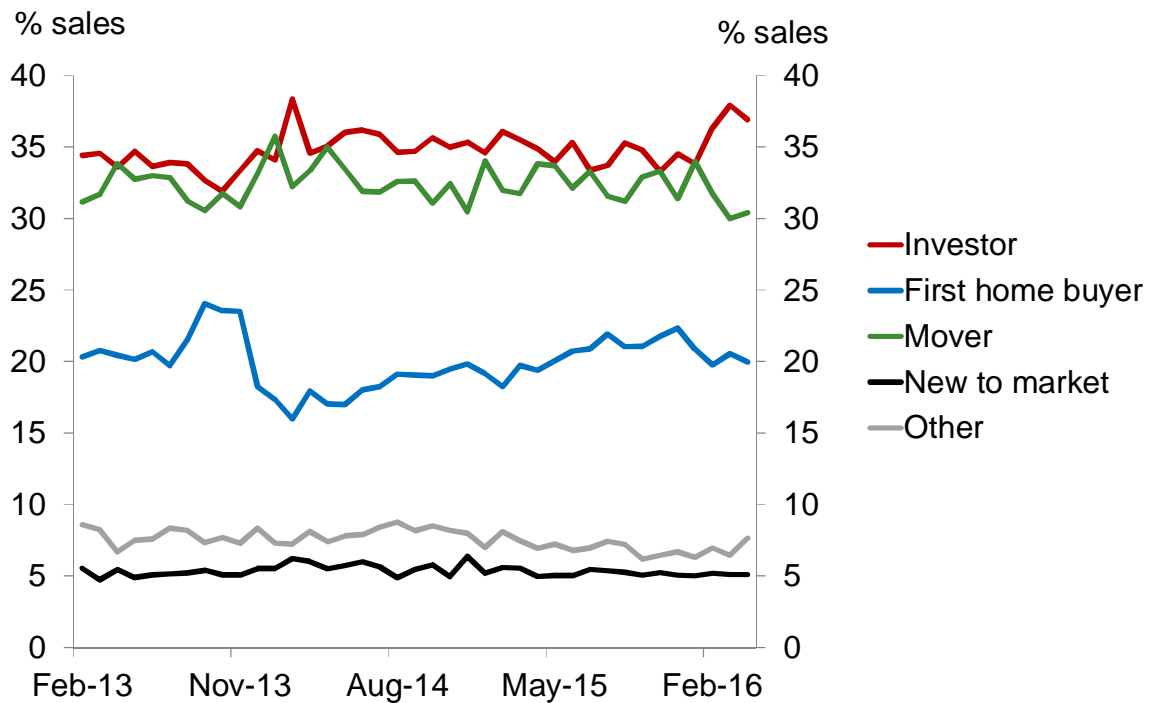
34. Recent data suggests that investors are becoming increasingly active in markets throughout New Zealand (figure 13, 14). Investors accounted for 44% of Auckland house purchases in April 2016, 10ppt higher than just prior to initial LVRs in 2013. Investor's buyer share in the Rest of New Zealand increased to 37% in April vs. 33% pre-LVRs.
35. A substantial proportion of investor lending has migrated from just below the old LVR limit to just below the new high LVR limit. The lending share in the $LVR > 70 \leq 80$ bucket has dropped around 20ppt since the new restrictions, partially offset by around 15ppt increase in the $LVR > 60 \leq 70$ bucket (figure 15). This pattern likely reflects the range of possible avoidance responses to new restrictions, such as increased leveraging of other portfolio properties. We estimate that just over one-third of restricted lending was able to continue by shifting to an LVR just below the new limit (see Potential changes to the LVR framework to mitigate elevated housing market risks, accompanying paper).
36. As noted above, Auckland investors are also making extensive use of the combined collateral rule to continue high LVR borrowing. However, this merely reflects activity that would otherwise be occurring via split banking.
37. Investors are also making up an increasing share of new lending, with the share increasing 8ppt since Q3 2014 (figure 16). Annual growth in investors' new commitments has been growing at around 2-5 times the rate of owner occupiers in 2016.
38. Preliminary data from the new commitment survey suggests that interest-only lending share of investors has likewise been trending up recently, against relatively static shares for other borrower types (figure 17).

Figure 13: Sales share by purchaser type - Auckland



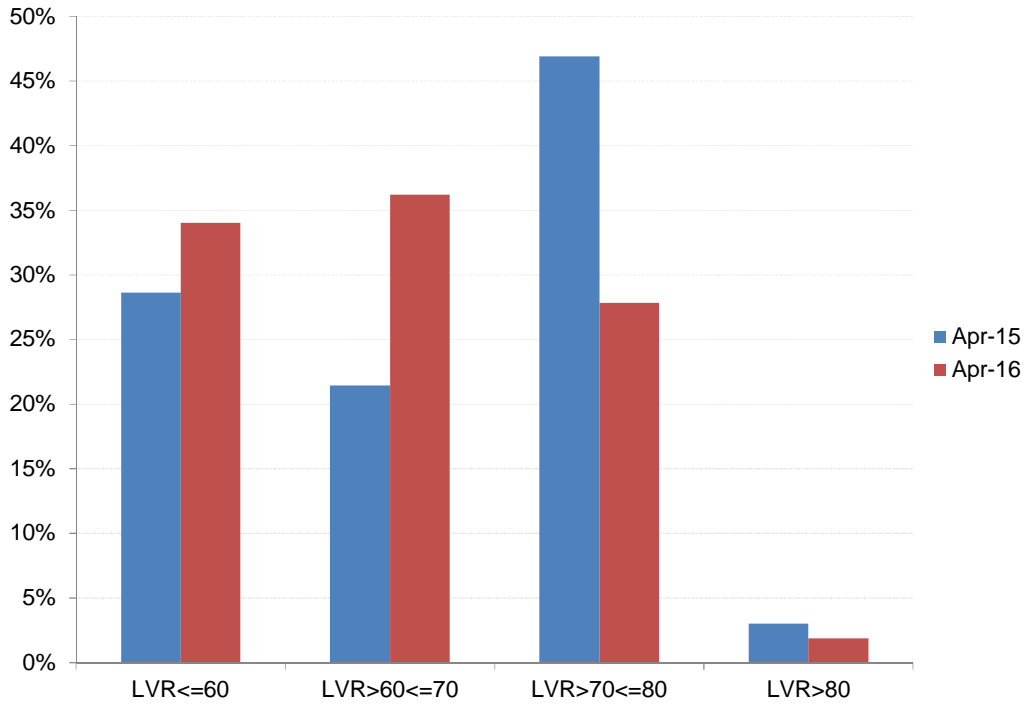
Source: CoreLogic NZ

Figure 14: Sales share by purchaser type – Rest of New Zealand



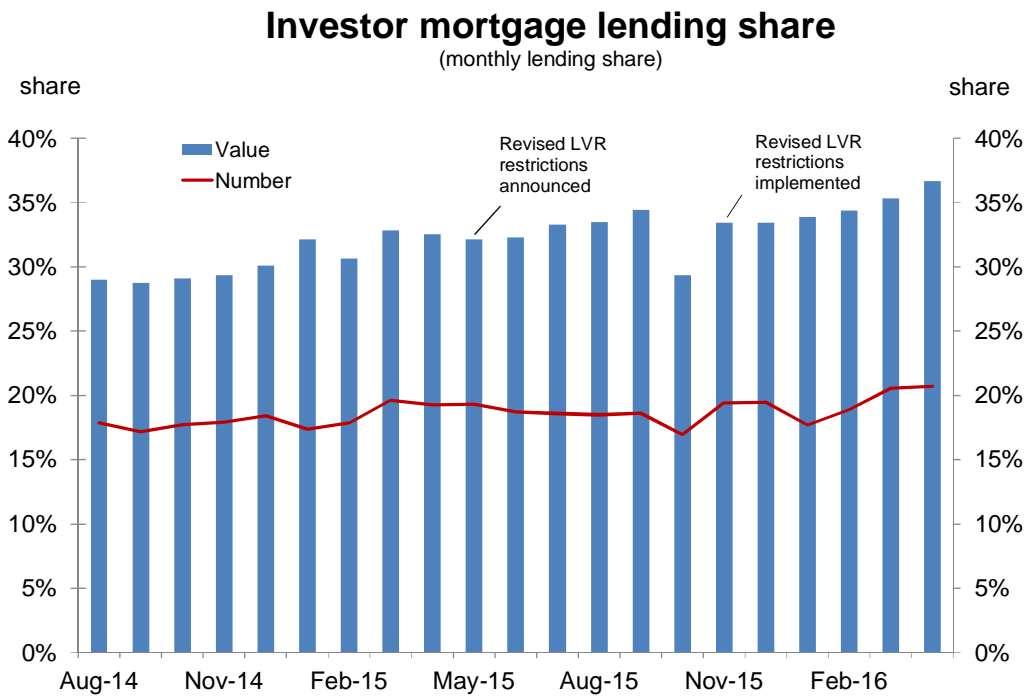
Source: CoreLogic NZ

**Figure 15: Lending by LVR bucket: investors before exemptions
(% new commitments value)**



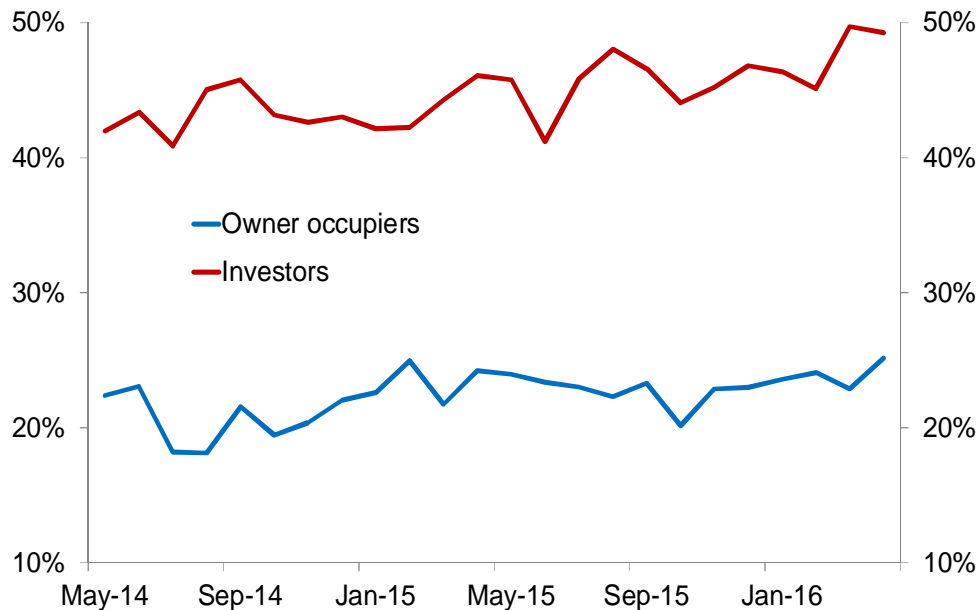
Source: RBNZ

Figure 16: Investor share of new lending



Source: RBNZ

**Figure 17: Interest-only lending share by borrower type
(share of within borrower-type lending)**



Source: RBNZ

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