

Treasury Report: Macroeconomic Effects of Housing Market

Date:	12 February 2015	Report No:	T2015/226
		File Number:	MC-1

Action Sought

	Action Sought	Deadline
Minister of Finance (Hon Bill English)	Note information on drivers of house prices and their transmission through the economy	None

Contact for Telephone Discussion (if required)

Name	Position	Telephone	1st Contact
Dhritidyuti Bose	Senior Analyst	04 890 7289 (wk)	[Withheld under section 9(2)(a)]
Tim Ng	Director, Macroeconomic Policy & Fiscal Policy	04 917 6124 (wk)	

Actions for the Minister's Office Staff (if required)

Return the signed report to Treasury.

Enclosure: No

Treasury Report: Macroeconomic Effects of Housing Market

Executive Summary

You requested a report on the macroeconomic effects of housing. This report draws together material to inform you about the different drivers influencing house prices and the transmission mechanism of house prices through the economy with a particular focus on interest rates and the exchange rate.

House price drivers

There are a range of both structural and cyclical factors that have been driving house prices over the past 25 years. The key structural demand factors include household income growth, a reduction in mortgage interest rates and financial deregulation. On the supply side, the growth in land prices, increases in construction costs and declining productivity in the construction sector have contributed to house price growth. The combination of these factors suggests that house prices have experienced a permanent shift up.

Among the cyclical drivers, strong net permanent and long-term (PLT) international arrivals (both New Zealanders and non-New Zealanders), ample global liquidity and easy credit conditions drove up housing demand and house prices beyond the levels justified by pure structural drivers during 2000-2007.

The interaction between the factors, particularly the slow adjustment of housing supply to positive housing demand shocks amplified the house price cycles. A study estimated that it took about eight years for housing supply to catch up with the higher housing demand from migration inflows during 2000-2006. Further, the shortage in housing supply fuelled expectations of higher house prices in future. It is likely these expectations played a role in sustaining the house price boom during 2004-2007 even when mortgage interest rates increased markedly in New Zealand.

Transmission of house prices through to the economy

The structural and cyclical factors discussed above would have had a direct positive effect on overall economic activity. In addition, they are likely to have had an indirect effect via house prices through two possible channels:

- the wealth effect increasing consumption, and
- additional residential investment.

Previous work suggested that the wealth effect was an important channel but more recent work casts some doubt on the strength of that link. The residential investment channel is strong and has been supporting economic activity in New Zealand in recent years. This raises a potential tension: a more responsive housing supply reduces pressures on house prices but simultaneously can build aggregate demand pressures through higher residential investment.

Overall, the indirect effect of high house prices on economic activity is smaller than the direct effects of the fundamental house price drivers. However, the indirect effects will add to economic impulse and therefore will be a factor in decisions around monetary policy settings.

A more responsive housing supply, particularly if achieved through an increase in construction sector productivity, would ease pressure on aggregate demand. Smaller peak of net PLT arrivals would also reduce pressure on consumption and residential investment. Neither of these conditions, however, are completely determined by policy settings.

Effect of house price falls

The impact of a house price fall is dependent to some extent on what causes the change. In general, we would expect demand pressures to fall through the same channels in the event of a house price correction. For example, initial internal modelling work suggests that a fall of 50,000 net PLT arrivals would lead to a fall of up to 30 basis points in the policy interest rate via weaker inflationary pressures.

Financial stability

There are also links between house prices, household debt and net external liabilities. Household borrowing has increased as buyers tend to need larger mortgages to buy houses when house prices rise. House price growth also increases the borrowing capacity of existing homeowners. High household debt has kept New Zealand's external liabilities elevated as banks have financed household borrowing through raising offshore debt. Elevated household debt and external debt levels pose risks to macroeconomic and financial stability particularly from sharp corrections in house prices.

Recommended Action

We recommend that you:

- a **note** that both structural and cyclical factors have been driving house prices over the past 25 years
- b **note** that the importance of the structural factors means we would expect some of the house price increase observed to be a permanent change. But cyclical factors, the interaction with supply responsiveness and the role of expectations have led to house prices that are currently higher than structural factors would predict
- c **note** that these house price drivers will have direct effects on aggregate demand and economic activity more generally as well as indirect effects (via the wealth effect on consumption and via residential investment)
- d **note** that it was previously thought the wealth effect was most important but more recent work suggests that the residential investment effect may be stronger than previously thought
- e **note** that the indirect effect of the residential investment channel involves opposing forces on aggregate demand as higher investment may reduce house price pressure but will contribute directly to aggregate demand, and
- f **note** that initial internal modelling work suggests that weaker inflationary pressure associated with a fall in house prices, based on a scenario using a 50,000 drop in net PLT arrivals, would lead to a fall of up to 30 basis points in the policy interest rate.

Tim Ng
Director, Macroeconomic and Fiscal Policy

Hon Bill English
Minister of Finance

Treasury Report: Macroeconomic Effects of Housing Market

Purpose of Report

1. You recently requested a report on the macroeconomic effects of housing. This report draws together material to inform you about the different drivers influencing house prices and the transmission mechanism of house prices through the economy with a particular focus on interest rates and the exchange rate.

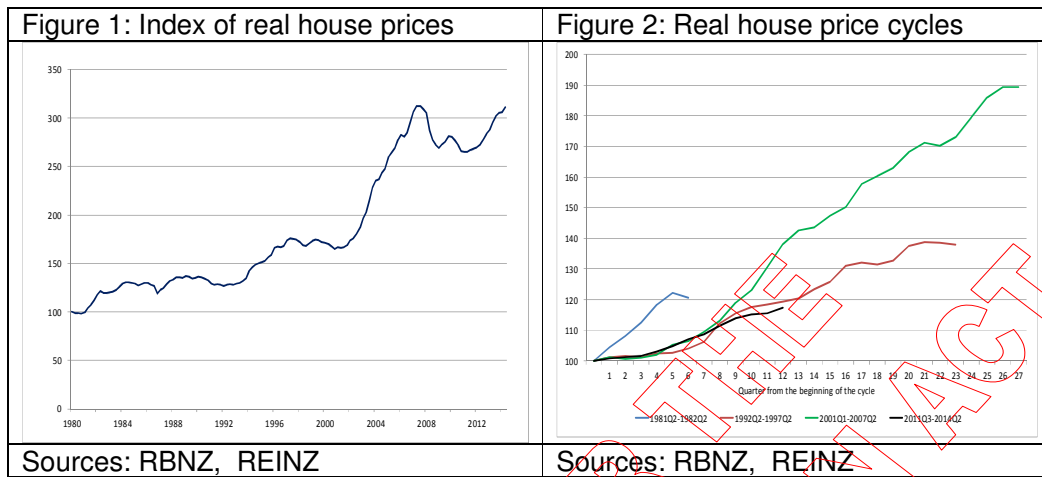
Analysis

2. The housing market can have three inter-related effects on the macroeconomy. House price cycles can materially influence economic cycles, interest rates and the exchange rate through its impact on consumption and investment decisions. Large house price cycles can also incentivise banks and households to over-leverage towards the housing market, increasing risks to financial and macroeconomic stability when house prices do adjust abruptly. Finally, large house price cycles can have welfare effects by redistributing housing wealth across cohorts. Our report focuses primarily on the first two of these concerns.
3. House prices have almost persistently risen since the early 2000s. In this context, we examine the drivers behind the increase in house prices and the channels through which house prices impact overall demand in the economy. We also examine macroeconomic effects of a fall in house prices under two alternative scenarios: a fall in net arrivals of permanent long-term migrants and a fall in global house prices as a proxy for tightening global liquidity conditions. The links between house prices, household debt and net external liabilities are also discussed.

House Price Cycles

4. The last house price cycle was exceptional in scale and length in New Zealand. Real house prices (adjusted for CPI inflation) increased rapidly (90 percent) between 2000 and 2007, and the appreciation lasted for six and a half years – more than in any of the previous cycles. After a temporary dip due to the Global Financial Crisis (GFC), the current house price cycle that began at the end of 2011 is still ongoing. The introduction of macro-prudential, monetary and housing supply measures from the last quarter of 2013 have moderated the high growth in real house prices and contained the appreciation in the current cycle below the intensity of the upturns in the 1990s and in the early 2000s (Figures 1 and 2). Nonetheless, house prices continue to remain high relative to the historical average since 1980.¹

¹ Notably, house price increases in some regions (Auckland during 2000-2007 and in both Auckland and Christchurch after 2010) were far more pronounced compared to in the other regions mainly due to shocks (net migration in Auckland and earthquakes in Christchurch).



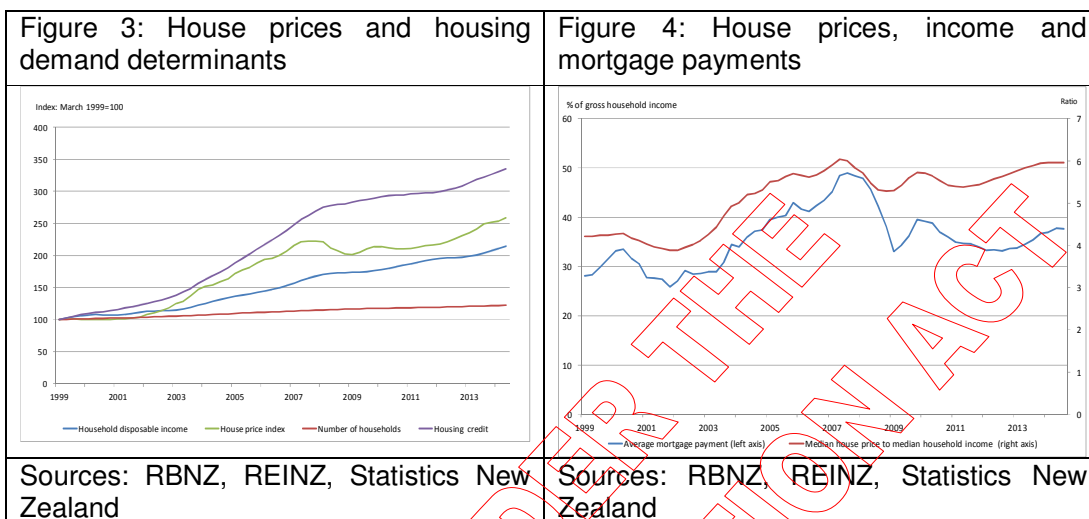
House price drivers

Structural Drivers

Rising incomes and increasing borrowing capacity of households have been pushing up housing demand since the late 1980s

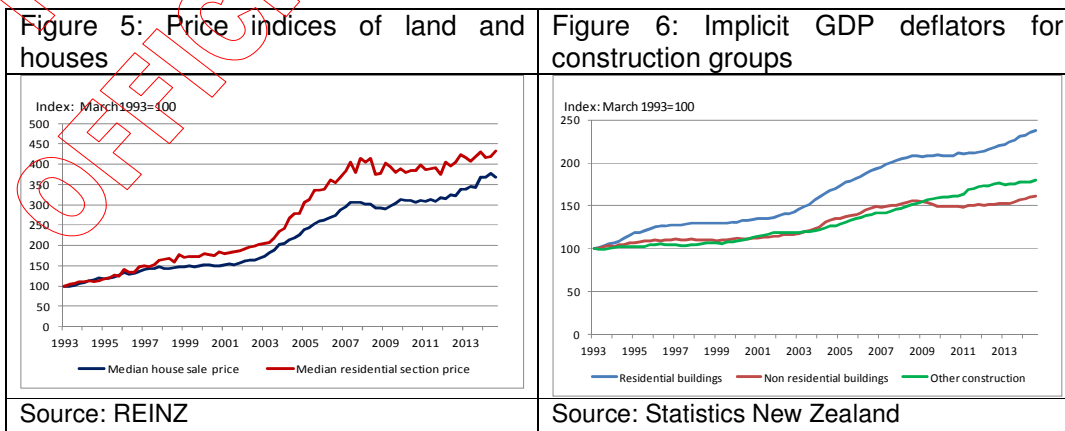
5. During 2002, the average level of house prices was equal to the long-term average between 1980 and 2014. The average level of house prices over 2014 was more than twice the long-term average level. Both structural and cyclical factors have been pushing up house prices over the last 25 years. Household income growth, falling interest rates and financial deregulation have been found to be among the key structural drivers of housing demand and the trend level of house prices since the late 1980s in the various studies.
6. Housing demand has been growing strongly alongside a steady rise in household disposable incomes (averaging 5 percent per year) since 1994. Growing incomes tend to improve housing affordability. However, an empirical study based on an affordability model found the trend house prices to be growing faster than household incomes (Briggs and Ng, 2009). Over and above the income factor, the study found that the fall in mortgage rates since the late 1980s increased the 'borrowing capacity' of households and helped them to finance housing purchases at prices that exceeded the growth in their incomes. A decline in CPI inflation since the late 1980s reinforced the increase in borrowing capacity as effective mortgage rates reached a low by 2004. The results of the study suggested that the increase in household income accounted for around half of the increase in the trend house price to household income ratio between 1987 and 2008. The other half was accounted for by the fall in mortgage interest rates.
7. Other structural factors that also seemed to be secularly pushing up housing demand since the late 1980s include increased households' access to credit following financial deregulation, a higher propensity to borrow on the part of households and a steady population growth (averaging one percent per year since 1991). Banks increased the standard term for a table mortgage from 25 to 30 years and also offered interest only mortgage loans. These developments helped in expanding the borrowing capacity of households. Furthermore, the long-term trend of a falling persons-per-household ratio also led to a rise in house price-to-income ratio because the average household income has fallen with fewer income earners per household. Accordingly, housing credit increased, and the share of mortgage payments in household income reached its peak by 2007. Increased incomes, and the greater availability and cheaper cost of

credit have acted as structural drivers pushing up housing demand and trend house prices (Figures 3 and 4).



Rising land prices and residential construction prices have been pushing up costs of housing supply particularly since early 2000s

- Land prices have been growing over time in New Zealand, reflecting a sustained shortage of residential sections, particularly in places where the population wants to live. Residential section prices and construction prices have been growing strongly since 2003 (Briggs and Ng, *op cit*) (Figure 5). This is evidenced by the rise in the implicit residential investment GDP deflator which has been higher than the other construction deflators (Figure 6). This could be because buyers are offering a premium on houses that are built to suit their preferences (bespoke/tailored houses) (NZIER, 2014). Studies show that productivity in the construction sector has been weak since the 1990s due to a combination of factors – a low supply of large scale new land, training and skill levels in the industry, and consumer preferences for individualised construction (DPMC, 2008). Releasing constraints on land availability and increasing productivity in the construction sector can help in limiting escalations in the costs of supply of housing over time (Glaeser, Gyourko and Saiz, 2008).



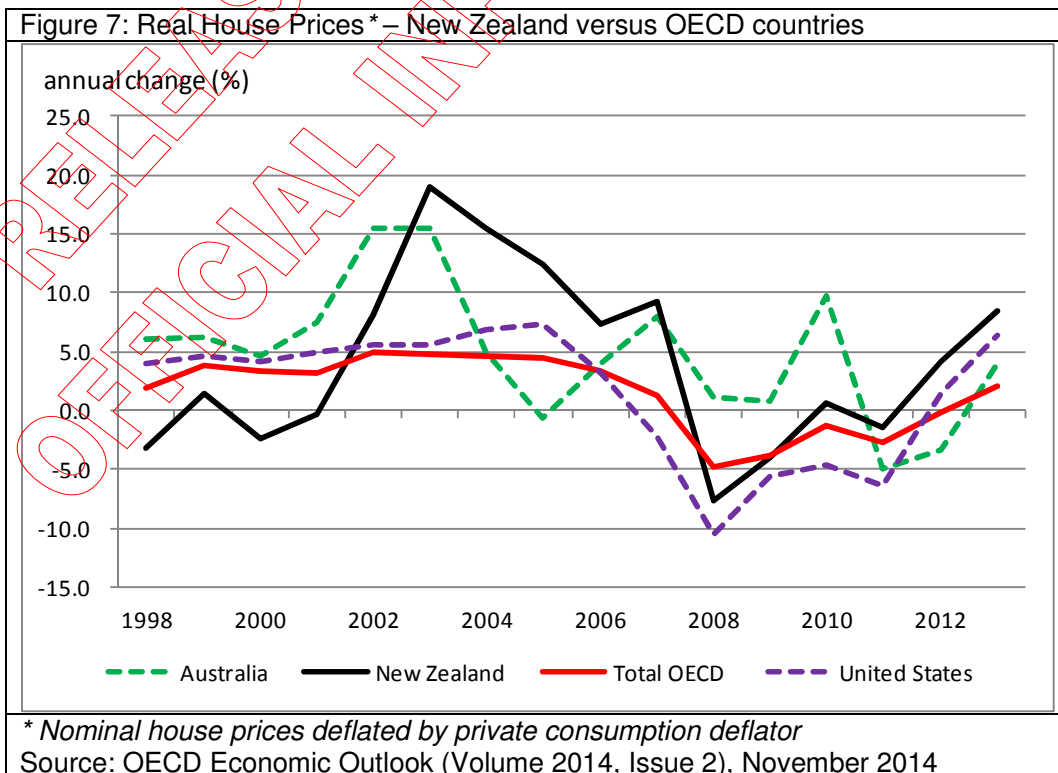
Cyclical Drivers

- The affordability model-based study discussed above (see paragraph 6) found the actual value of house prices to be around 20 percent higher than the estimated trend level in 2008. The estimated short-run equation in the study indicated that the gap

between the actual house price level and the trend value was slow to close, thereby suggesting that house price cycles – once they get underway – tend to be large and long lasting. A large proportion of house price inflation in one quarter was found to carry forward into the next suggesting that past house price inflation played a significant role in shaping household expectations of future house price inflation. Other factors accounting for the cyclical variation in house prices as per the study included changes in population due to migration, housing credit cycles and the responsiveness of housing supply.

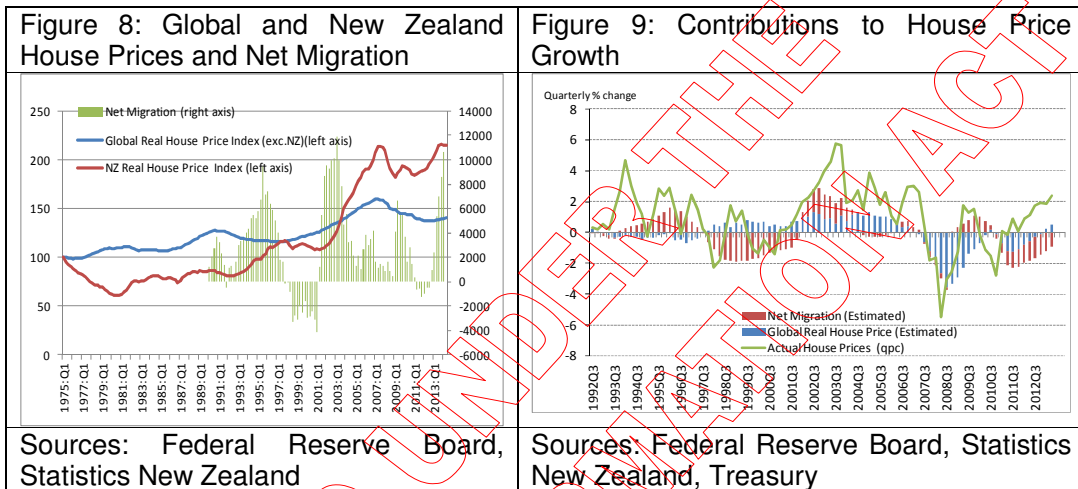
Access to ample global liquidity contributed to housing credit and house price cycles in New Zealand

10. New Zealand's house price cycles during the last decade synchronised with similar house price cycles experienced in other advanced economies. The OECD countries experienced unprecedented house price cycles in terms of magnitude and duration. More than half of a sample of 18 OECD countries experienced house price increases of more than 100 percent between 1995 and 2007 (André, 2010). After a modest correction during the GFC, house prices have stabilised/started increasing in many of these countries. While growing household incomes drove house prices, strong credit growth played a key role in amplifying housing demand and house prices to unprecedented levels in all these economies (financial accelerator channel).
11. The global factors contributing to high housing credit growth included a 'glut' of savings supplied to world credit markets by Asian and oil exporting nations, the US-led low world interest rates, rapid growth in financial innovation and progressive relaxation of credit standards by banks in the Northern Hemisphere (Briggs and Ng, *op cit*). While banks in New Zealand remained sound, growth in real house prices remained more pronounced than the OECD average during the house price cycle prior to the GFC (Figure 7).



12. Surplus global liquidity spilled over into New Zealand, which eased credit conditions and acted as a major driver of sharp house price increases during 2000-2007. Figures 8 and 9 proxy surplus global liquidity through global house prices and show how New

Zealand house prices caught up and exceeded the global house price boom during the 2000s after the economy recovered from the impacts of drought and the Asian Financial Crisis during the late 1990s. The availability of foreign savings helped to fund housing credit and drove house price booms beyond the levels that could be justified from financial deregulation, lower interest rates and income growth. The borrowing capacity of households increased significantly which encouraged some to 'trade up' their dwelling by buying a better quality and larger house. This added to housing demand and lifted house prices (DPMC, 2008).



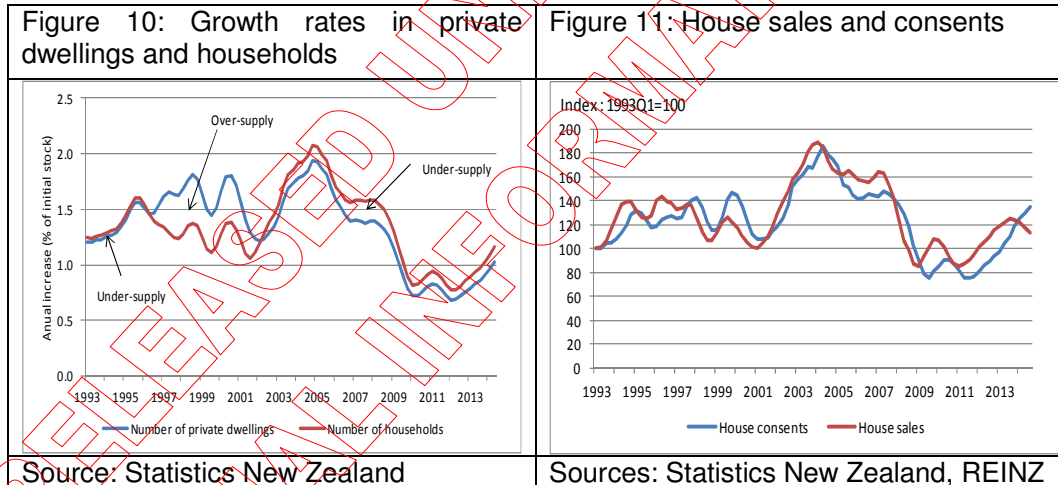
Migrant inflows has contributed to cyclical pressures on housing demand

13. Increases in real house prices across OECD countries have been positively correlated with population growth during the last two decades (André, *op.cit*). In New Zealand, while housing demand has grown alongside the steady growth rate in the population, house price cycles have also been closely associated with permanent migrant inflows and outflows. Real house prices declined during the late 1990s when there were permanent migrant outflows and increased sharply during early 2000s alongside strong migrant inflows.
14. The results from a study on housing markets over 1962-2006 in New Zealand found positive net permanent migration shocks to be associated with large increases in house prices in the short-term (Coleman and Langdon-Lane, 2007). The study cautioned that the estimated impact on house prices turned out to be larger than can be explained by purely from increases in population, and suggested that this could have been due to the role played by other drivers. For instance, migrant inflows have occurred at times when local residents were also increasing their housing demand owing to positive expectations of future income growth. Further, strong migrant inflows may also be destabilising agents' expectations about the fundamental value of houses. Also, the positive contribution of migration was particularly evident during the 1990-1997 and 2000-2008 episodes with the latter also being exacerbated by the surge in global liquidity. These factors seemed to be magnifying the standard impact of migrant inflows on house prices.
15. During the last couple of years, however, the impact of net migrant inflows on house prices has been relatively muted. One possible explanation is that the net migrant inflow position has increased more on account of fewer New Zealanders departing overseas rather than arrivals of non-New Zealanders. Studies have found migrant arrivals to have had bigger housing demand effects than departures (RBNZ, 2013). At the same time, net migrant inflows have largely been concentrated amongst younger age groups (less than 35 years) who tend to be less 'capital rich'. Overall, this has

likely to have resulted in a weaker impact on housing demand than has been observed historically.

Slow housing supply response to rising housing demand has led to large house price cycles

16. Housing supply typically responds to unexpected changes in housing demand with a lag because it takes time for land to be rezoned under district plans, housing consents to be approved, and the right mix of land, materials and labour to be assembled for construction. While the average growth in dwelling stock per year (1.3 percent) matched the average growth in population (1.1 percent) and the average growth in the number of households (1.3 percent) over 1994-2014, housing supply has responded to changes in housing demand with a lag which resulted in phases of under-shooting (under-supply) and over-shooting (over-supply) of growth in the dwelling stock relative to the projected growth in the number of households in the short term (Figure 10). The growth in dwelling stock has been lower than the projected growth in the number of households based on population estimates since 2003 which has led to large increases in house prices. Also, higher sales of existing houses compared to housing consents particularly during mid-2000s could have acted as an added impetus on house prices (Figure 11).

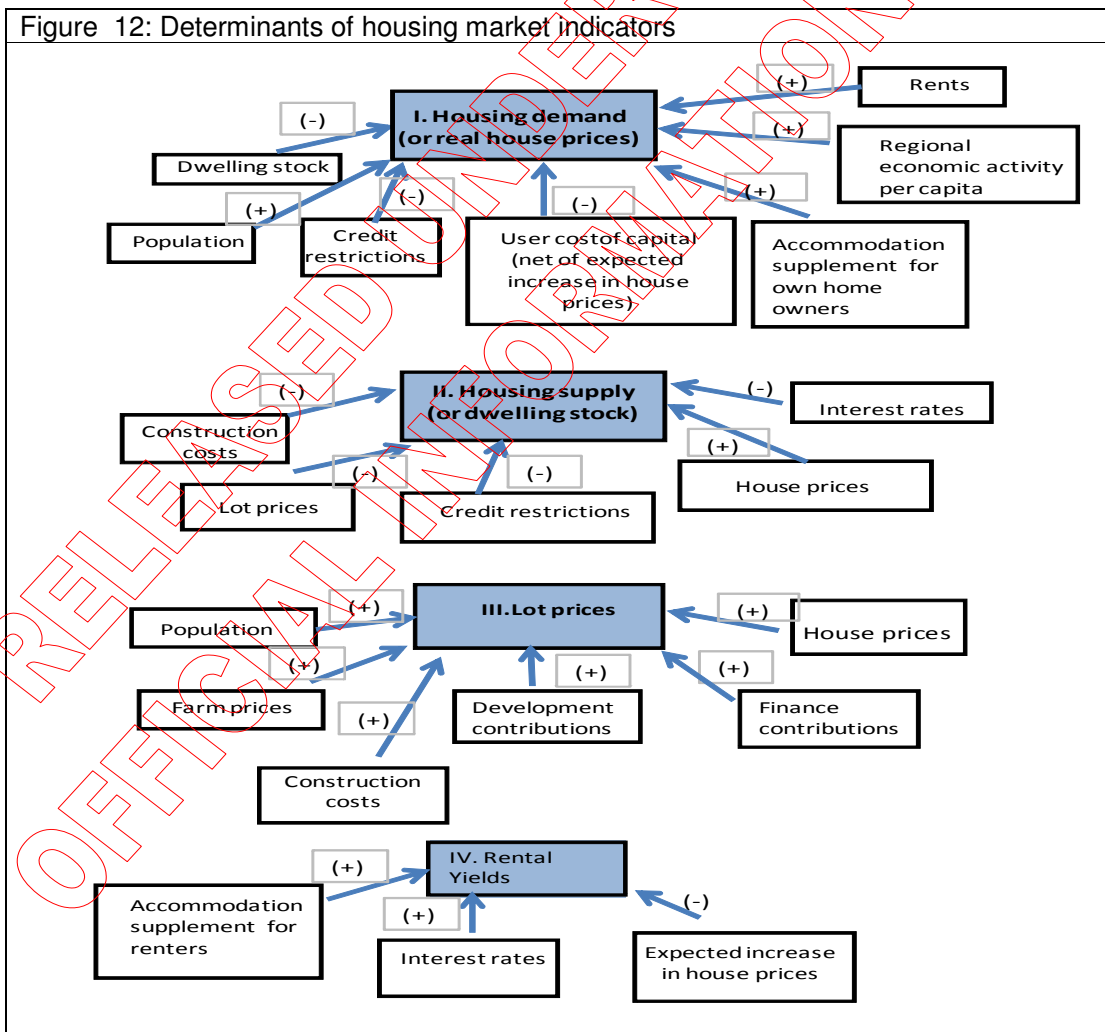


Expected growth in house prices pushed up housing demand

17. Expected growth in house prices could have been pushing up housing demand in the OECD countries (André *op cit*). Home buyers in these countries have been primarily influenced by motives of owning a house, saving on rental payments and avoiding being priced out of the market rather than the prospects of capital gains. In New Zealand, the landlords have been investing in property eyeing benefits of capital gain, regular income stream, retirement investment/income, tax advantage and owning rental property for paying off mortgage payments from rental receipts (DPMC, *op cit*).
18. Notably, house price expectations have been found to be backward looking as suggested by an empirical study which found that expected growth in house prices has been driven by the past three-year average increase in house prices in New Zealand (Grimes and Hyland, *op cit*). This suggested that expectations of future house price growth may have played a role in sustaining housing demand and the house price boom during 2004 to 2007 when mortgage interest rates increased. Moderating the house price cycle through policy intervention during that period could have anchored the agents' expectations about future growth in house prices.

Interaction between housing supply and housing demand

19. Housing supply and housing demand dynamics have been formally captured by a New Zealand Regional Housing Model (NRHM) used by *Motu* to model the interactions between housing supply, housing demand, land prices and rents across all the local territories of New Zealand over 1990-2011(Grimes and Hyland, 2013)² (See Figure 12 for the determinants of the four housing market variables and the directions of their influences identified in the model). The model's overarching conclusion was that housing markets have been slow to adjust, such that exogenous shocks have had very long lasting effects. The model found that an increase in population owing to a migration surge during 2000-2006 led to a prolonged period of upward pressure on prices (house, land and rents), which continued until the dwelling stock had adjusted to restore dwellings per capita. The model estimates showed that it took eight years for housing supply to catch-up with demand, and till that time house prices remained higher than their control (counterfactual) level.



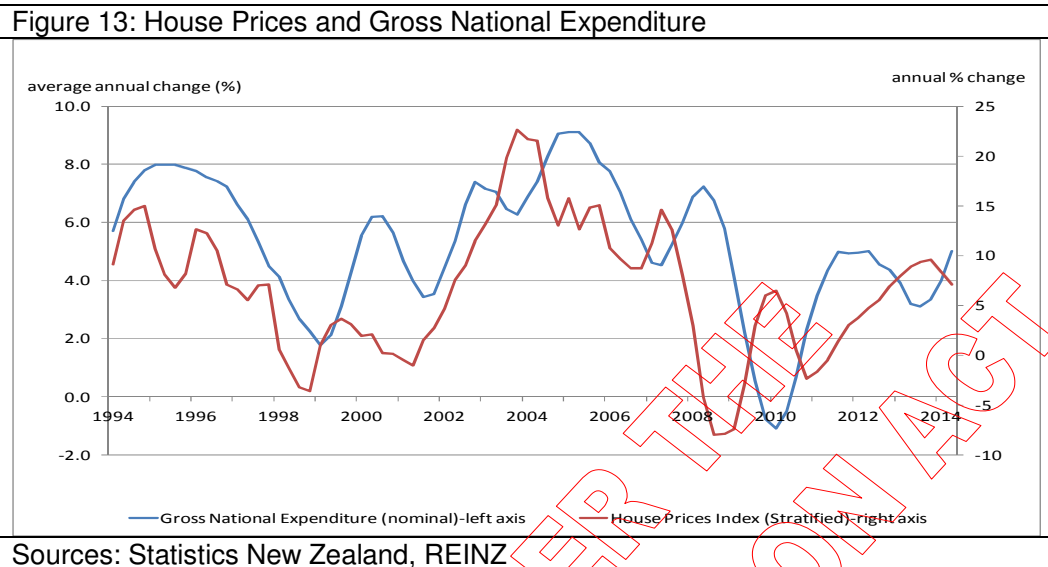
² As per the model, (i) housing demand increases when per capita dwelling stock and interest rate (adjusted for capital gains) decrease and accommodation supplement and per capita regional income increase. Based on profitability considerations, (ii) new construction supply responds positively to increasing house prices, but is negatively affected by rises in residential lot prices, (iii) residential lot prices increase with increases in farm prices, development contributions paid to local council, house prices and population pressures on land, and rents are determined such that rental yield (ratio to rents to house prices) equals financial market yield adjusted for expected capital gains on rental property.

20. House prices fell during 2008 and 2009 driven by tight global liquidity and credit restrictions. The results from *Motu's* regional housing model study showed that credit restrictions implemented by banks after the global financial crisis in 2008 reduced housing demand and house prices, but the fall in house prices was found to be temporary as a lower availability of credit to builders reduced housing supply and raised house prices again after a period of four years.
21. House prices resumed their growth from 2012 reflecting a strong increase in housing demand particularly in Auckland on account of large migrant inflows and historically low interest rates. The shortage in housing supply in Christchurch following the earthquakes also fuelled house price growth. The imposition of a speed limit on high loan-to-value restrictions (LVR) on housing credit from banks, monetary tightening and increases in housing supply worked in slowing down house price growth over 2014 despite record increases in migrant inflows. The Reserve Bank of New Zealand (RBNZ) exempted new construction loans from the high LVR restrictions, which helped to reduce the adverse impacts of the restrictions on housing supply.
22. House price inflation (from 9.4% to 5.0%) and housing credit growth (from 5.8% to 4.7%) have eased between September 2013 and September 2014, and have now moved closer to the average growth rate in household incomes (4.0%) over the past five years. The RBNZ, however, has decided to continue with its high LVR restrictions in light of the continued strong inflows of migrants, muted increase in mortgage interest rates and continued lag in the response of housing supply to demand, particularly in Auckland (RBNZ, 2014). Given the ongoing shortfall in housing supply, house price inflation is likely to increase again particularly in Auckland. The RBNZ would continue to monitor the growth in house prices vis-a-vis the financial capacity of the households, which is related to growth in their incomes.

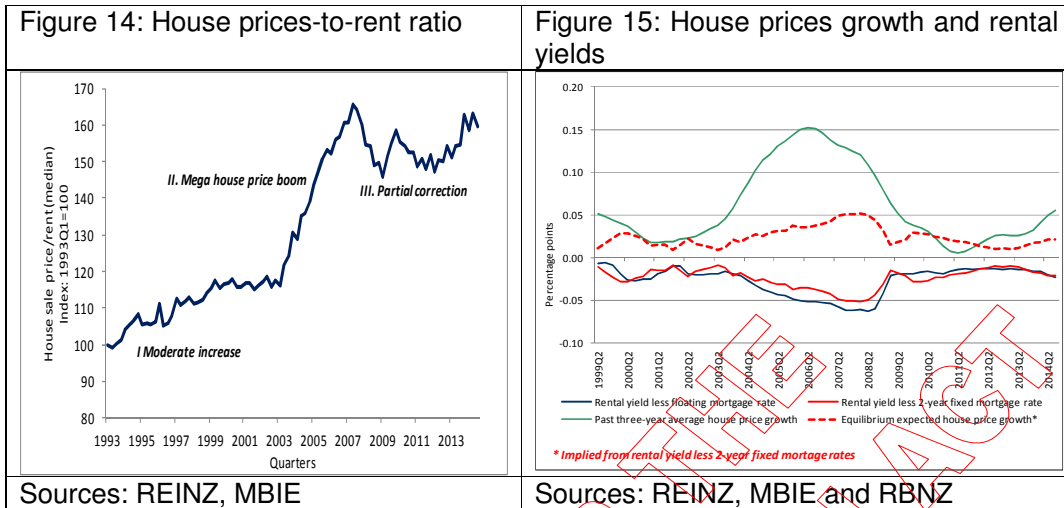
Transmission of house prices through to the economy

Rising house prices have boosted demand pressures in the economy

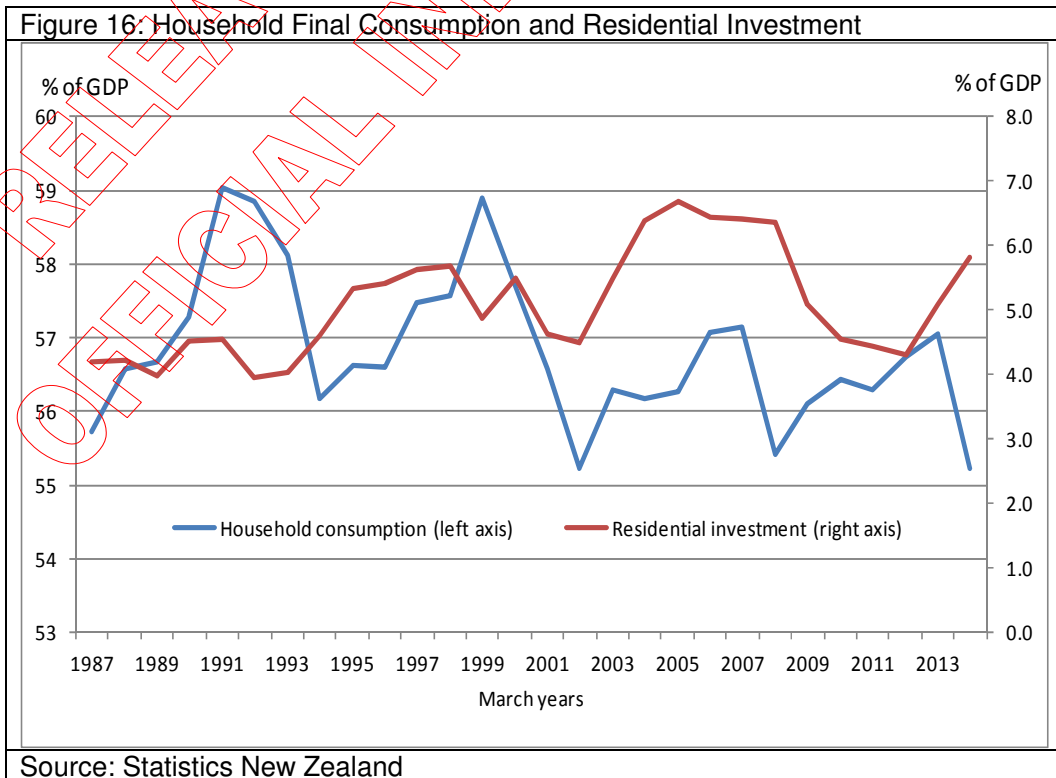
23. House price cycles have closely correlated with economic cycles in New Zealand. Growth in house prices peaked in 2003 and troughed in 2008, slightly ahead of the broader economic growth upturn and downturn in 2005 and 2010 respectively (Figure 13). The transmission of housing market disturbances to the broader economy has been subject to some debate, with empirical literature identifying three possible channels:
- *Wealth effects:* rising house prices appreciate the value of housing assets and lead home owners to increase consumption as they feel wealthier,
 - *Liquidity effects:* rising housing wealth eases liquidity constraints and enables home owners to withdraw their housing equity to consume more (or reinvest in housing), and
 - *Investment effects:* rising house prices relative to costs of building houses boost profitability prospects on construction activity and lead to higher residential investment.



24. In a study of OECD countries, rising house prices were found to have significant effects on private consumption through the wealth and liquidity channels (Girouard and Blondal, 2001). The Supplementary Stabilisation Instruments report in 2006 (prepared by the Reserve Bank of New Zealand and the Treasury) concluded that house price increases and expectations of future increases occurred alongside a rise in private consumption which suggested the importance of wealth and liquidity effects in New Zealand. The increase in house prices during the last decade seemed to have effectively eased credit constraints allowing households to withdraw housing equity to increase their consumption (Briggs, 2007). Recent thinking has been somewhat sceptical about the materiality of the wealth effects.
25. Present value models suggest that house prices are anchored to the growth of rents over the long run. By this relative metric, house prices remained significantly overvalued between 2003 and 2008 (Figures 14 and 15). IMF estimates that took into account income, demographics and interest rates suggested an overvaluation of 15-25 percent in New Zealand's house prices (Igan and Loungani, 2010). Despite significantly overvalued house prices, recent studies have found little evidence to suggest sustained effects from higher house prices on household consumption through the wealth channel at the macro level. While increase in house prices may positively impact an individual's consumption, wealth effects across households tend to cancel each other out and the net effect on aggregate wealth of household sector as a whole could be minimal (Buiter, 2008).



26. A study found that a one percent increase in real house prices to be associated with an increase in real per capita consumption in the following quarter of 0.07 to 0.1 percent and a total increase of 0.2 to 0.3 percent in the long-run in New Zealand (De Veirman and Dunstan, 2008). Another study using more micro data found the impact on consumption to be larger for older households (Smith, 2010). However, at the macro level, the share of household consumption in GDP remained stable compared to the strong increase in the share of residential investment in GDP during the house price boom years from 2002 to 2008. Therefore, a more recent study suggested that house prices may not have played a large part in explaining household consumption behaviour at the macro level (De Veirman and Reddell, 2011). On the other hand, the stronger increase in the share of residential investment in GDP suggested that house prices may have been impacting aggregate demand more prominently through the investment channel (Figure 16).



27. Regardless of the relative importance of the different channels, the exaggerated increases in house prices prior to 2008 seemed to have accentuated overall demand pressures thereby keeping interest rates and the exchange rate at levels higher than they would have been otherwise (DPMC, 2008). Lower interest rates, compared with New Zealand's historical experience, particularly from 2001 to 2004 contributed to lifts in house prices. In turn, higher house prices encouraged household spending and additional construction that lifted inflationary pressures and eventually led to higher interest rates during 2004-2007. This put upward pressures on the exchange rate.

Direct impacts of housing supply and housing demand drivers on aggregate demand have been found to be stronger compared to indirect effects through house prices

28. The nature of the influence of house prices on the business cycle depends on the underlying housing supply and housing demand drivers. Also, the total impact of the underlying housing market drivers includes their direct impacts on aggregate demand alongside the indirect channel through house prices. For instance, a more responsive housing supply reduces pressures on house prices but contributes directly to aggregate demand pressures through higher levels of domestic residential investment. In a similar vein, shocks from higher migration increase aggregate demand directly through consumption alongside indirect influences (i.e., rising housing demand and house prices). Apart from demand effects, migration also contributes to higher labour supply.
29. In an internal Treasury modelling exercise conducted in 2011 we had examined the direct and indirect macroeconomic impacts in terms of two indicative scenarios, namely, (a) of a more responsive housing supply (an increase in the elasticity of housing supply by 0.5 percentage points vis-a-vis house prices) and (b) a reduction in peak migrant inflows (by 10,000 at the height of housing cycle) using the New Zealand Treasury model. The results showed that the direct impacts of these shocks on domestic demand were stronger than the indirect effects through house prices.
- Under the first scenario³, an increase in housing supply and improved productivity in the construction sector were found to reduce non-tradable inflation, lower interest rates and increase private consumption directly relative to the baseline. This positive effect on private consumption was found to be stronger than the negative effect arising from lower levels of house prices and housing wealth as housing supply increases. However, the overall impact on the demand side, namely, consumption, the interest rate and exchange rate, was found to be marginal compared to the overall impact on the supply side in terms of increases in land supply boosting construction productivity and long-run growth.
 - Under the second scenario⁴, a lower net migration peak was found to drive down domestic demand directly through lower levels of residential investment and private consumption demand on account of fewer domestic consumers and indirectly through a reduction in housing demand, housing wealth and house prices. Again the direct effects on domestic demand were found to be stronger than the indirect effects.

³ In this scenario, we modelled the immediate effects of a 3.5 percent increase in house prices by considering that in response the elasticity of supply of housing goes up by 0.5 percentage point for one percentage point increase in house prices. The increase in supply responsiveness increased housing construction by 1.75 percent relative to the baseline. The extra housing output was assumed to come from higher productivity rather than extra resources, which reduced non-tradable inflation. The policy rate was estimated to be lower by around 25 basis points, which eased pressure on the exchange rate. The increase in housing supply was estimated to reduce house prices by 1.6 percent below the baseline.

⁴ In this scenario, we assumed a reduction in peak inflows by about 10 percent of net migration at the height of the housing cycle. This assumed that overall net migration remained unchanged but with less migrants arriving at the peak of the cycle. A lower peak in net migration reduced residential investment and consumption demand due to lower population growth, with the policy rate estimated to decrease by 30 basis points.

Notably, in this scenario overall net migration was kept unchanged although the peak level was reduced. This implied no change on potential growth as labour supply remained the same as in the base case.

30. The results show that in principle migration policy settings that reduce the cyclical nature of net migration inflows could produce wider benefits on macroeconomic stability by reducing both the direct and indirect influences on aggregate demand. While flows of New Zealanders across the border are not amenable to policy influence, more material improvement could be achieved by avoiding abrupt changes in policy strategy that lead to a simultaneous increase in permanent residency, student visas and temporary workers that occurred in the early part of 2000s. Similarly, the results show that policy settings that increase housing supply (better infrastructure planning, housing intensification in Auckland, increasing longer-term land supply for development and building regulations) will be important for boosting construction sector productivity and long-term growth. Overall, policies aimed at dampening peaks of house price cycles would help in keeping interest rates and the exchange rate lower, promoting the competitiveness of the tradable sector in the economy.

Effect of house price falls

31. Continued high level of house prices in New Zealand poses risks to the economy if house prices were to fall sharply due to global or domestic shocks. The impact of a house price fall is dependent to some extent on what causes the change. In general, we would expect demand pressure to reverse through the same channels in the event of a house price correction. Some initial modelling work tests two scenarios: a fall in net arrivals of permanent and long-term migrants, and a drop in global house prices as a proxy for tightening global credit conditions. Our model results are still preliminary and subject to a large degree of uncertainty but seem to corroborate the underlying macroeconomic transmission discussed in the existing literature.

Scenario one – 50,000 fewer permanent and long-term migrants in a year

32. In this scenario, we found that a fall of 50,000 net arrivals of permanent and long-term migrants in a year (ignoring compositional effects) was associated with a decrease in domestic demand through weaker consumption and more prominently through a fall in residential investment by the end of the first year. As a result, real GDP was found to be lower in comparison to the baseline. The OCR was estimated to be about 30 basis points lower by the end of the first year in response to weaker inflationary pressures, which drove down the exchange rate. Our house price model found that the fall in migrant inflows was associated with a significantly lower house price level relative to the baseline. This could be reflective of the impact of other drivers of house prices (as suggested by Coleman and Langdon-Lane, 2007).

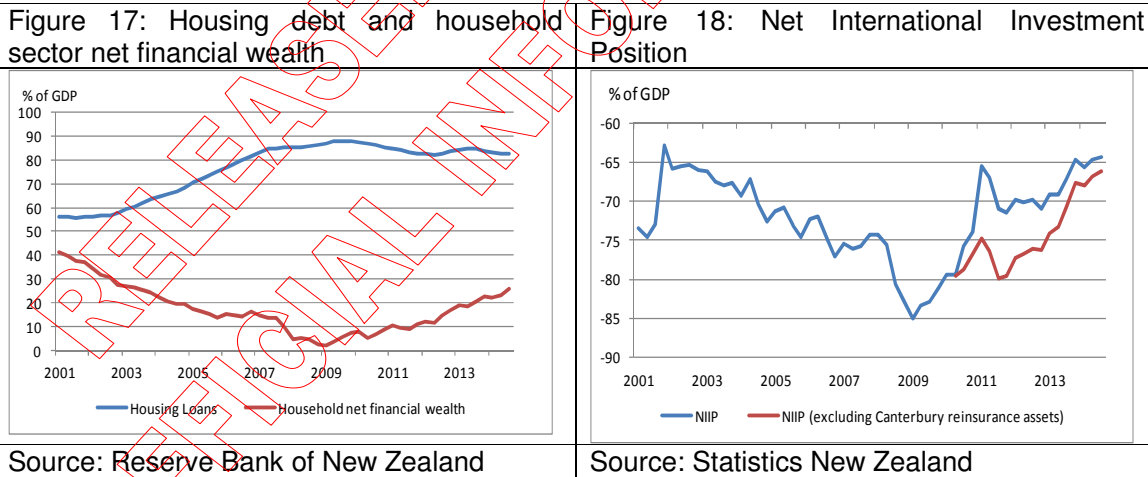
Scenario two – Tight global credit conditions

33. In this scenario, we looked at the impact of tight global credit conditions on New Zealand's house prices. Global house prices act as a close proxy of global liquidity conditions. Tighter global liquidity drives down global house prices and tend to increase capital outflows from New Zealand thereby tightening domestic liquidity, which in turn drives down domestic house prices. Accordingly, the results from our housing model showed that domestic house prices fell in response to a fall in global house prices, though the magnitude of the fall was found to be lower than the fall in global house prices.

Financial stability

House prices, household debt and a build up of net foreign liabilities

34. Household debt has increased in New Zealand with the rise in house prices since the early 2000s primarily because of two factors. First, household borrowing has increased as buyers tend to need larger mortgages to buy houses when house prices rise. Second, house price growth also increases the borrowing capacity of existing homeowners owing to the rapid accumulation of household wealth. Household net wealth more than doubled over the period from 2000 to 2007, with the share of housing therein rising from 82 percent to 97 percent. Banks eased lending standards during the housing boom years which further added to the actual borrowing capacity of the households (De Veirman and Reddell, op cit). As a result, the household sector's debt as a share of nominal disposable income rose from 113 percent to 159 percent over the period from 2002Q1 to 2007Q4. After the GFC, the share declined to 151 percent in 2012Q1 but increased thereafter to reach 156 percent by 2014Q3.
35. High household debt has kept New Zealand's external liabilities high as banks have intermediated to finance household borrowing through raising offshore debt. The ratio of housing loans in GDP increased sharply between 2000 and 2009 and led to a fall in household sector's net financial wealth, which has been one of the major drivers of New Zealand's high level of net external liabilities (Figures 17 and 18). The ratio of housing loans in GDP has come down after 2009, thereby leading to an increase in net financial wealth of the household sector. The NIIP has also improved after 2009. Nevertheless, elevated household debt and external debt levels continue to pose risks to macroeconomic and financial stability particularly from sharp corrections in house prices (André, 2011).



Concluding remarks

36. We find that high house prices in New Zealand have been driven by both structural and cyclical factors. The trend level of house prices has been growing alongside rising incomes and increasing borrowing capacity since the 1980s. This suggests that house prices may remain higher than the long-term historical average even after they revert to their trend growth. We also find that cyclical drivers such as migrant inflows, global surplus liquidity and easy domestic credit conditions, and expected future growth in house prices alongside a slow catch-up of housing supply to housing demand contributed to pronounced upturns in house prices. The housing stock has been growing at a lower rate in comparison to the number of households since 2003. This

has been increasing the shortfall of housing supply which has kept house prices at high levels, particularly in Auckland.

37. Housing market disturbances which increase house prices have been found to transmit to the broader economy more prominently through an increase in residential investment (investment channel) rather than through the wealth and liquidity channels. In this context, it could be useful to track productivity in the construction sector. An increase in productivity in the construction sector would help restrain pressures on aggregate demand while also boosting long-term economic growth.

RELEASED UNDER THE
OFFICIAL INFORMATION ACT

References:

- André C. (2010), 'A bird's eye view of housing markets', *OECD Economics Department Working Papers* No.746, OECD, Paris.
- André, J-P (2011), 'Economic Imbalances: New Zealand's Structural Change', *New Zealand Treasury Working Paper* 11/03.
- Briggs, P (2007), 'Lessons from the Economics Department's work on household balance sheets and related issues', *Reserve Bank of New Zealand Bulletin*, Vol. 70, No. 4, Wellington.
- Briggs, P. and T. Ng, (2009), 'Trends and cycles in New Zealand house prices', CHRANZ Workshop, Wellington.
- Coleman, A. and J. Landon Lane (2007), 'Housing and migration in New Zealand, 1962-2006', *RBNZ Discussion Paper* 2007/12, Reserve Bank of New Zealand, Wellington.
- De Veirman, E., and M. Reddell (2011), 'Towards understanding what and when households spent', *RBNZ Bulletin*, Vol. 74, No. 4, RBNZ, Wellington.
- Department of Prime Minister and Cabinet (DPMC) (2008), *Final report of the House Prices Unit: House price Increases and housing in New Zealand*, Wellington.
- Girouard N. and S. Blondal (2001), 'House prices and economic activity', *OECD Economics Department Working Paper* 279, Paris.
- Glaeser, E.L., J. Gyourko and A. Saiz (2008), 'Housing supply and housing bubbles', *NBER Working Paper* 14193, National Bureau of Economic Research, Cambridge.
- Grimes, A, and S. Hyland (2013), 'A New Zealand Regional Housing Model', *Motu Working Paper* 13-02, Motu Economic and Policy Research, Wellington.
- Mc Donald, C (2013), 'Migration and the housing market', *RBNZ Analytical Note*, Reserve Bank of New Zealand, Wellington.
- New Zealand Institute of Economic Research (2014), 'Bespoke residential housing demand and construction innovation', *NZIER Report to BRANZ and the Building and Construction Productivity Partnership*, NZIER, Wellington.
- Reserve Bank of New Zealand (2014), *Financial Stability Report*, Wellington.
- Smith, M., (2010) 'Evaluation household expenditure and their relationship with house prices at the microeconomic level', *RBNZ Discussion Papers Series DP* 2010/01, Wellington.