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Asia Pacific/New Zealand
Equity Research
Investment Strategy

NZ House Prices

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STRATEGY UPDATE

House prices close to peaking? – Heightened risk of a sharp correction

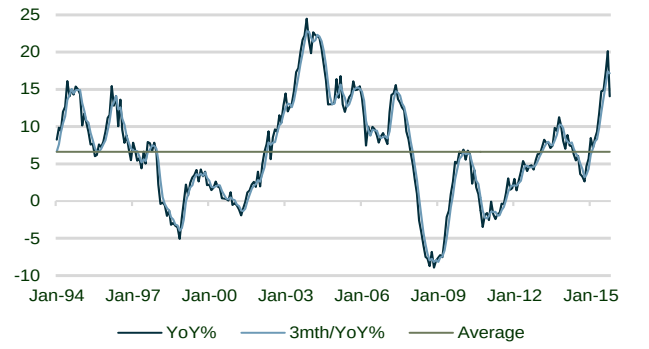
- **On the basis of our five fundamental house price valuation metrics, the average and median estimates of these measures suggests the NZ housing market to be significantly overvalued by around 30-40%.** While we readily acknowledge that there are fundamental economic factors which have underpinned recent house price growth, **our analysis suggests that the recent acceleration in growth rates has moved house prices – particularly in the Auckland region – to levels in which there is an increased risk of potentially a sharp correction.**
- Looking at the duration of real house price cycles since 1970, the latest upturn thus far to the September 2015 quarter is around both the average and median length of 17 and 19 quarters respectively**.** In terms of the magnitude of the current upturn, **the rise in real house prices to date of 38.9% is also around both the average and median increases recorded over the previous six cycles of 41.3% and 37.9% respectively.**
- On the basis that Auckland house prices are assessed relative to other major NZ asset classes simply on the basis of their recent performance relative to historical averages, then with current prices around 1.5 standard deviations – and recently up to 2.5 standard deviations - from their means would certainly suggest a cautionary allocation would be prudent at present.
- Reflecting the high levels of debt required to sustain elevated levels of house prices, debt servicing costs are now back to average levels, even though interest rate settings are around historic lows. This dynamic **suggests a more limited ability for the RBNZ to raise interest rates as a result of the substantially higher servicing burden that would flow from the current debt levels**.
- We assess that given the recent rapid acceleration in NZ house price growth, the elevated starting point for NZ house prices, together with the broad range of metrics suggesting reasonably substantial (30-40%) overvaluation, then **the housing market risk assessment is skewed towards the downside**. Under our medium house price scenario, we have looked at past cycles and have assumed a downturn duration of 10 quarters from peak to trough. Similarly, in terms of the magnitude of the potential decline, we have used as a point of reference the average and median real price movements in previous downturns, which have been in the range of 8-13%. Using this as a broad guide, we have used as our real medium house price scenario a decline of 11% from peak-to-trough**.**

NZ House Prices

Following a trough in October 2010 with an annual decline of 3.5% YoY, annual nominal house price inflation has moved sharply higher, with the latest REINZ (stratified) outturn showing a robust increase of 14.1% YoY in October 2015 – although the rate of growth has pulled back from the 20.1% YoY increase recorded in the previous month (figure 1). Underpinning the rise in national house prices continues to be strong gains made primarily in the Auckland region (figure 2). In particular, the latest REINZ for the month of October 2015 shows annual increases in the Auckland region of 21.0% YoY, with all other regions recording annual growth rates below the national average increase of 14.1% YoY.

Figure 1: Annual nominal house prices growth eased back in October, but remains a robust 14.1% YoY

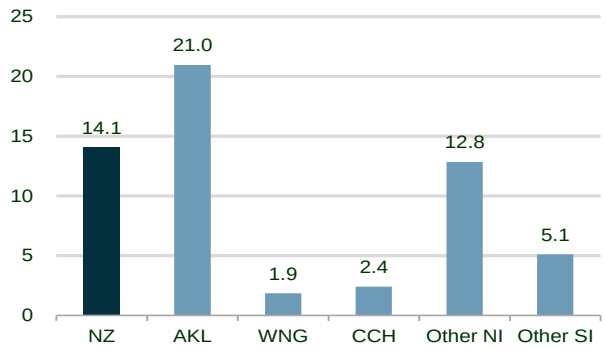
YoY %



Source: REINZ, First NZ Capital

Figure 2: Nominal house price inflation continues to be dominated by the rise in the Auckland region

YoY %



Source: REINZ, First NZ Capital

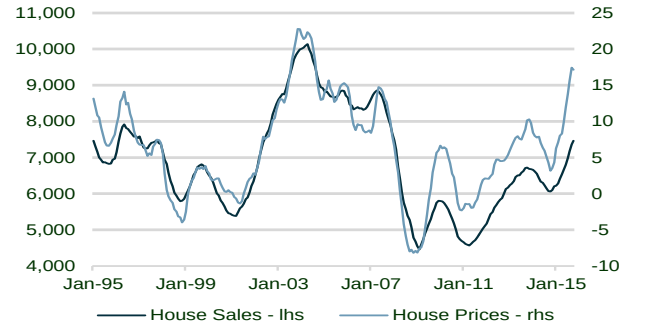
Fundamental factors supporting house prices

A number of factors have been supportive of house prices gains over recent years, particularly the outsized gains made by house prices in the Auckland region. Underpinning these national gains has been a combination of factors including;

- Strong net migration,
- Demand pressures coming from the destruction of the Canterbury housing stock,
- Low interest rate settings,
- Increased investor activity, and
- A backdrop of an Auckland region under-build.

Figure 3: Strengthening house sales have been a supportive factor in recent house price gains

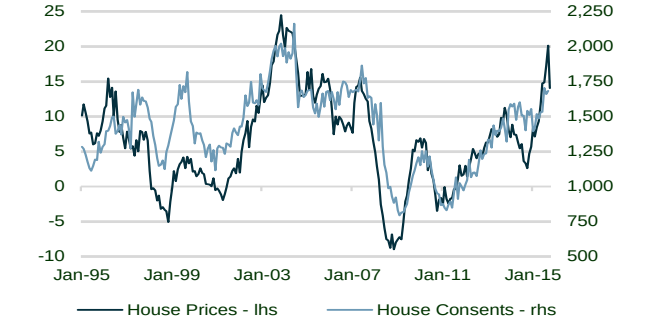
Number 12M moving average (lhs), 3M/3M YoY % (rhs)



Source: REINZ, First NZ Capital

Figure 4: An upturn in housing consents has also provided a positive backdrop for house price gains

YoY % (lhs, Numbers s.a (rhs)

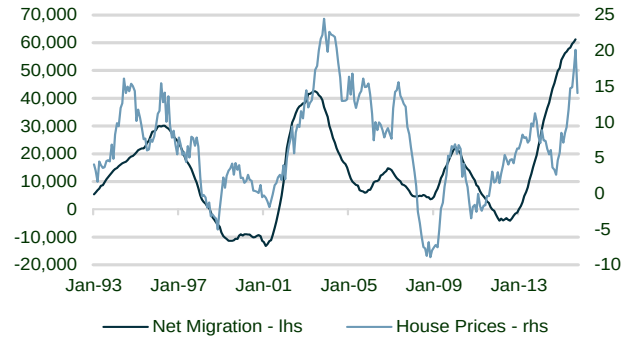


Source: Statistics NZ, REINZ, First NZ Capital

In addition to these fundamental demand factors, there has been a reasonably sluggish response to an increase in housing demand, with government estimates suggesting that it takes around eight years[1] for the housing market to respond to a shock to demand.

Figure 5: Historic high levels of net migration have helped propel house prices higher

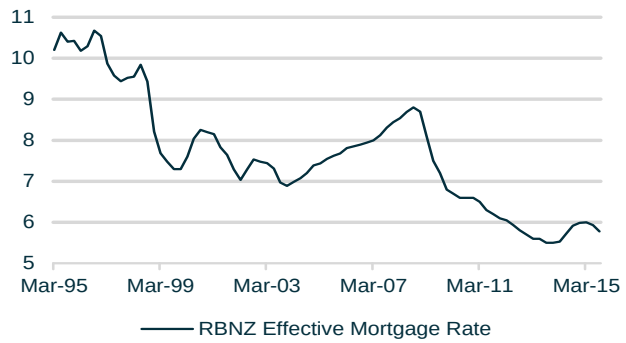
Annual net migration numbers (lhs), YoY (rhs)



Source:, Statistics NZ, REINZ, First NZ Capital

Figure 6: Low interest rates settings have helped housing affordability, despite the sharp rise in prices

% yield



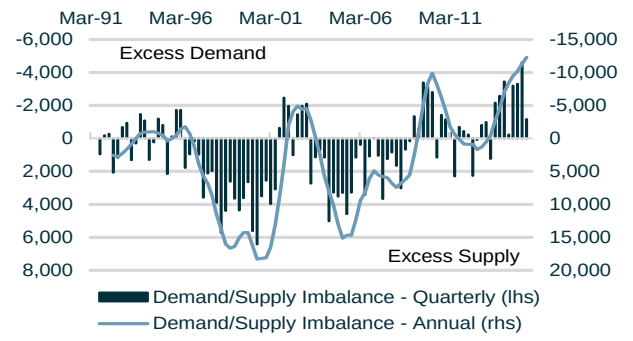
Source: RBNZ, First NZ Capital

Housing demand and supply model - An estimated undersupply of 12,000 houses

In an attempt to determine the current fundamental demand and supply for NZ housing, we have constructed a simple model of the key drivers. In terms of housing demand we calculate the natural population increase by looking at the rate of births less deaths. We then add into this natural population growth the change in net migration and then divide this figure by the number of persons in each household – estimated by Statistics NZ - to calculate the total demand for housing. To calculate the supply of housing we use the estimated quarterly change in the total number of private dwellings calculated by Statistics NZ. The difference between these two figures is a rough estimate regarding the imbalance between supply and demand for houses. Using this approach, we estimate a current excess of demand for housing in the June 2015 quarter of around 12,000 houses (figure 7). This compares with other estimates suggesting a larger shortage of around 15-20,000 dwellings in the Auckland region alone. Reflecting the magnitude of the current housing under-supply, then this can be expected to continue to provide a fundamental support for the current elevated level of house prices (figure 8). Moreover, given that migration flows remain strong, it is likely to take some time for increased construction to make inroads into the supply shortages.

Figure 7: The current demand supply imbalance suggests a shortage of around 12,000 houses

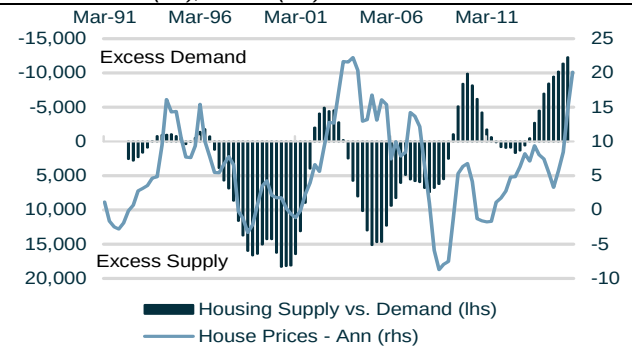
Quarterly number (lhs), Annual number (rhs)



Source: Statistics NZ, First NZ Capital

Figure 8: The current undersupply of houses provides a fundamental support for house price gains

Annual number (lhs), YoY % (rhs)



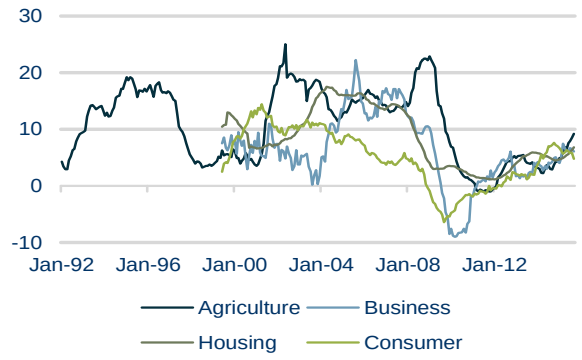
Source: Statistics NZ, REINZ, First NZ Capital

[1] Speech on Housing Affordability by the Minister of Finance Bill English (29 September 2015)

Housing sector credit growth has picked-up, but remains below average levels

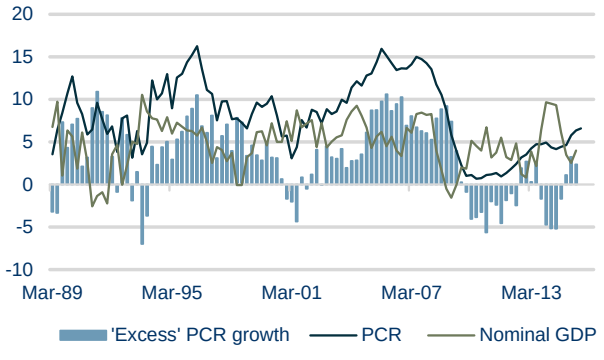
A potential indicator of stress in the NZ housing market is to review recent trends in growth in private sector credit. As can be seen in in figure 9, while private sector credit growth in the house sector has recently picked-up to an annual rate of growth of 6.8% YoY, this increase is in-line with the broad rise in other components of credit growth and is below the long-term annual average housing credit growth rate of 8.5% YoY. Moreover, in aggregate the growth in total private sector credit has only recently begun to modestly outpace growth in nominal GDP. This compares with the significant stronger profile of credit growth relative to GDP which occurred over the 2005 to 2008 years (figure 10).

Figure 9: Housing credit growth has recently picked-up, but remains broadly in line with other sectors
YoY %



Source: RBNZ, First NZ Capital

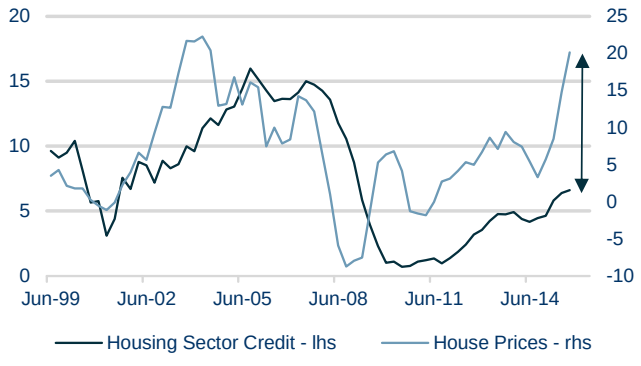
Figure 10: Total private sector credit growth has recently begun to slightly outpace nominal GDP growth
YoY %



Source: RBNZ, First NZ Capital

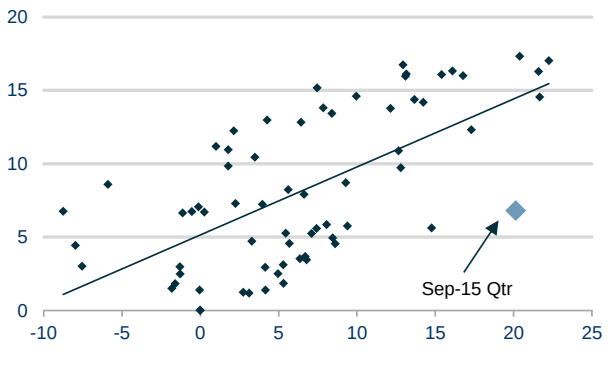
Nevertheless, despite the backdrop of continued credit creation, the rate of house price growth is significantly outpacing the rise in housing sector credit (figure 11 and 12). This widening divergence between these two series could be interpreted as indicating the prospect of a near-term acceleration in credit growth. However, to us - particularly given the recent subdued pace of nominal GDP growth - suggests an additional reason to be cautious regarding the sustainability of the current rapid acceleration in the house price growth.

Figure 11: The divergence between house price inflation & housing sector credit has widened sharply
YoY % (lhs), Yo% % (rhs)



Source: RBNZ, First NZ Capital

Figure 12: House price inflation significantly outpaces the recent creation of housing sector credit
House prices YoY % (x-axis), Housing credit YoY % (y-axis)



Source: RBNZ, First NZ Capital

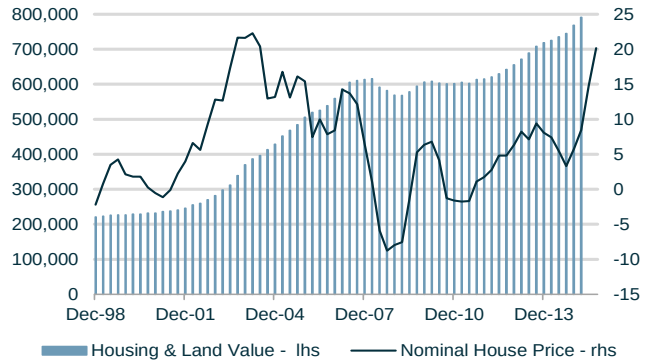
Housing value and housing stock at historic highs

The recent sharp rise in house prices have contributed to NZ's housing and land value moving to a historic high of NZ$791bn (figure 13). While the value of housing and land as a percentage of total wealth is down on its March 2008 quarter high of 59.1%, the latest

available reading for the March 2015 quarter has edged up to 55.8% and remains above its long-term average of 54.3% (figure 14).

Figure 13: The acceleration in house prices contributes to the historic high housing value

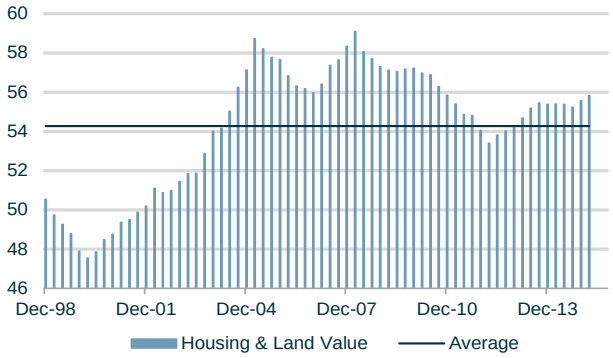
NZ$ mn (lhs), YoY% % (rhs)



Source: RBNZ, REINZ , First NZ Capital

Figure 14: The percentage of housing to total wealth has recently moved up above its average level

Percentage of Housing & Land Value to Total Net Wealth

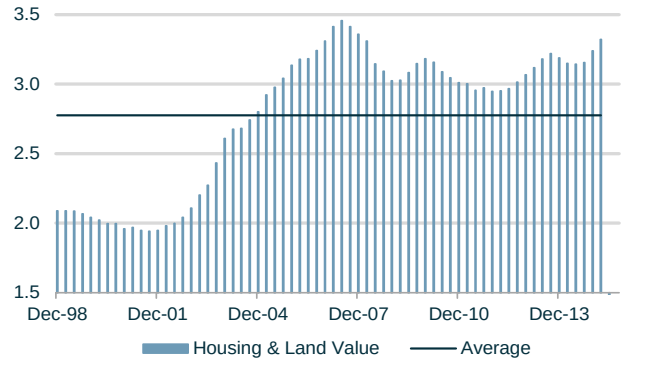


Source: RBNZ, First NZ Capital

Similarly, when looking at the ratio of housing and land value to NZ's total net worth, the recent rise in house prices has pushed the ratio to 3.3 times and further above its long-term average level of 2.8 times (figure 15). Moreover, this ratio is now getting back to around its historical high of 3.5 times recorded back in the June 2007 quarter. The current elevated level of the NZ housing market is also evident in RBNZ's estimates of the total value of the housing stock, which for the June 2015 quarter is valued at a historic high of NZ$821bn (figure 16). Moreover, in terms of the ratio of the value of the housing stock to nominal GDP, with a current estimate of 3.4 times also at an all-time high, further underlines the heightened exposure to the NZ economy to any sharp decline in the housing values and the associated potential negative effects on perceptions of their household wealth.

Figure 15: Ratio of housing & land value to total net wealth moves up to around 3.3 times

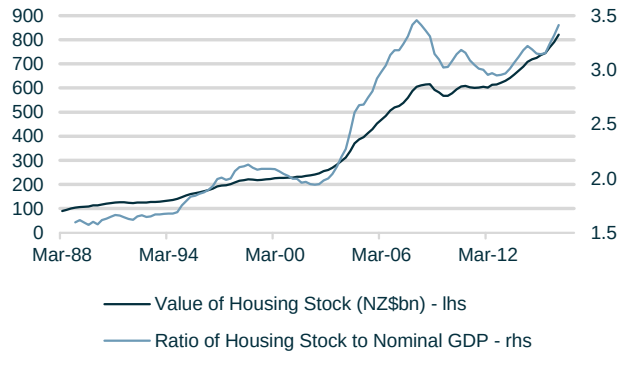
Ratio of Housing & Land Value to Total Net Wealth



Source: RBNZ , First NZ Capital

Figure 16: The value of the housing stock at a historic highs and the ratio to nominal GDP moves higher

NZ$ bn (lhs), Ratio of Housing Stock to Nominal GDP (rhs)

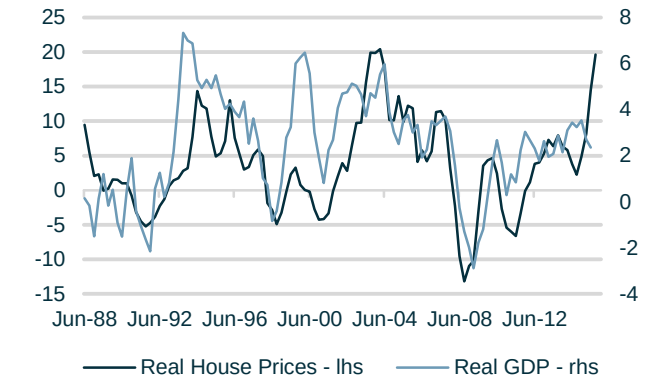


Source: Statistics NZ, RBNZ, First NZ Capital

House prices and NZ macroeconomic cycles

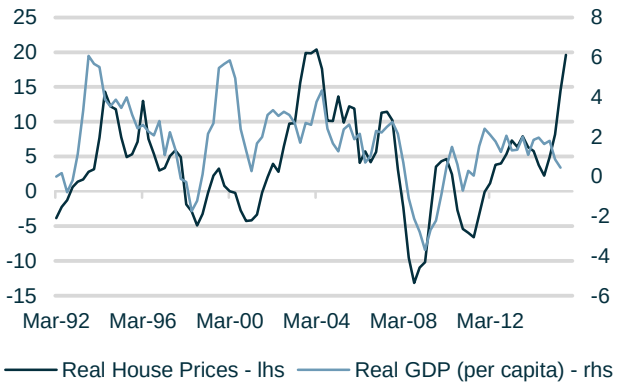
From a macroeconomic perspective, cycles in house prices have historically been associated with movements in the broader economy. In particular, broad cycles in both GDP and GDP per capita growth have had a reasonable historic relationship with movements in real house prices – although it is notable that housing market cycles are of a considerably larger amplitude than GDP growth cycles. However, somewhat worryingly the recent sharp acceleration in quarterly house prices has not been accompanied by a rapid pick-up in GDP growth rates. In fact, recent trends in both GDP and GDP per capita growth have shown a general softening in growth rates (figure 17 & 18).

Figure 17: Real house price growth has historically cycled with the broad movements in GDP growth . . .
YoY % (lhs), YoY %(rhs)



Source: Statistics NZ, REINZ, QV, First NZ Capital

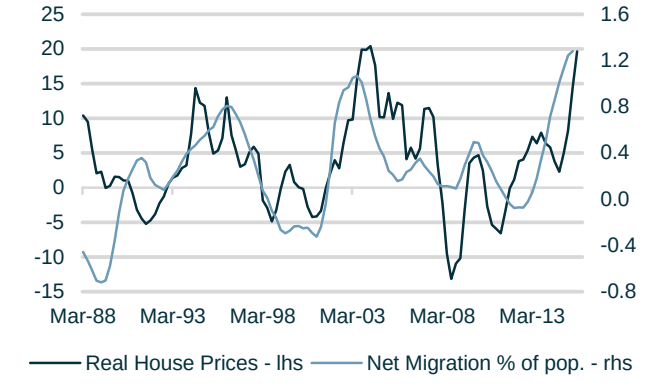
Figure 18: . . . although a sharp divergence has emerged between both GDP & GDP per capita growth
YoY % (lhs), YoY % (rhs)



Source: Statistics NZ, REINZ, QV, First NZ Capital

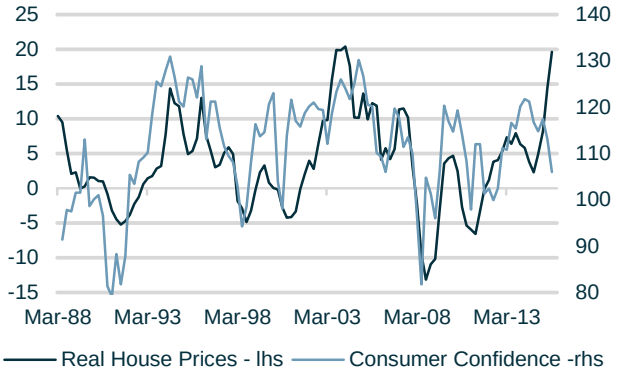
Despite the recent emergence of a sharp divergence between real house price increases and GDP growth rates, the substantial rise in net migration to historically high levels has clearly been a factor underpinning house price gains (figure 19). However, it is notable that the recent softening in quarterly consumer sentiment also suggests that the recent gains in house prices is somewhat out of step with historical patterns of activity and sentiment in the broader economy (figure 20).

Figure 19: Real house price growth supported by the sharp rise in net migration
YoY % (lhs), % of population (rhs)



Source: REINZ, QV, Statistics NZ, First NZ Capital

Figure 20: Real house price growth has outpaced softening consumer sentiment
YoY % (lhs), Net balance (rhs)



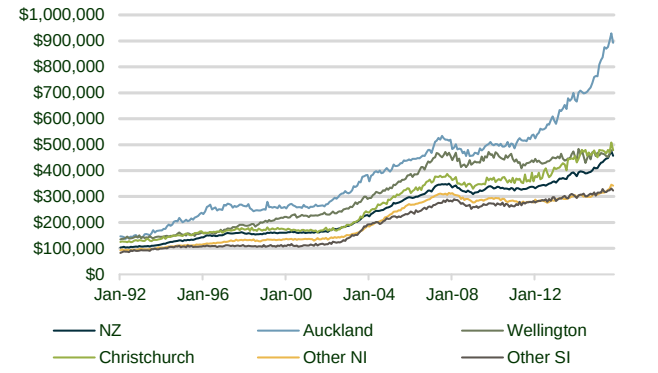
Source: REINZ,, Statistics NZ, Westpac McDermott Miller, FNZC

Wide divergence between growth in Auckland and national house prices

Another notable feature of the recent NZ house price cycle has been a widening divergence between the rate of growth in Auckland house prices and the rest of NZ (figures 21 & 22). In particular, a significant dollar value wedge has developed since around the end of 2010 (figure 21). In addition, Auckland (stratified) house prices in nominal terms are currently trading around 67% above their previous July 2007 peak (figure 22).

Figure 21: Auckland house prices (stratified median) edged back from a new record high

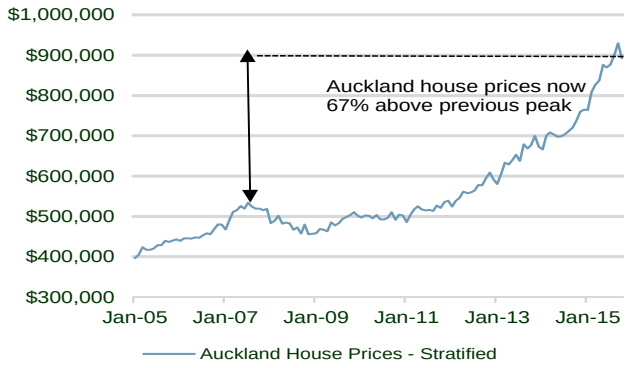
NZ$ - Estimated stratified house prices



Source: REINZ, First NZ Capital

Figure 22: Auckland house prices are currently 67% above their previous July 2007 peak

NZ$ - Estimated stratified house prices

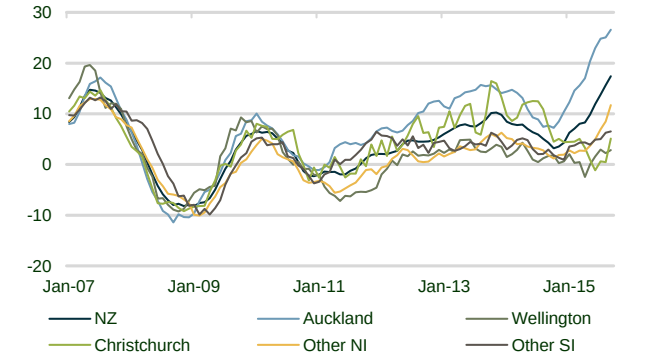


Source: REINZ, First NZ Capital

The recent rapid pick-up in Auckland house price growth relative to other regions can also be observed in the three-month-on-three-month annual rate of growth in house prices, together with the widening dispersion in house price growth rates in the Auckland region (figure 23). The assessed relatively "stretched" nature of Auckland house prices can also be seen in the metric of the ratio of Auckland house prices to national prices, which currently remains around its historic high of just under two times (figure 24).

Figure 23: Rapid acceleration in Auckland house price growth rates, together with a widening dispersion

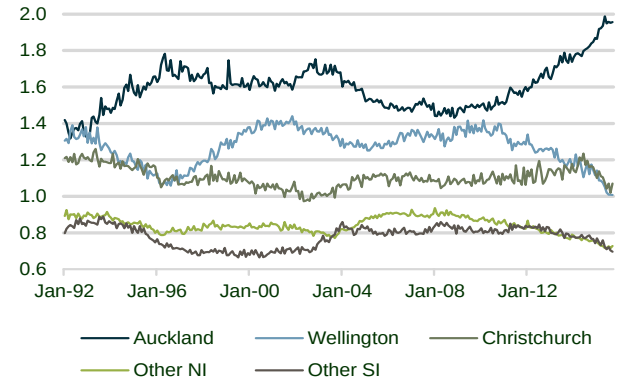
3M YoY %



Source: REINZ, First NZ Capital

Figure 24: The ratio of Auckland to national house prices remains around 2 times – near a historic high

Ratio of house prices to national average



Source: REINZ, First NZ Capital

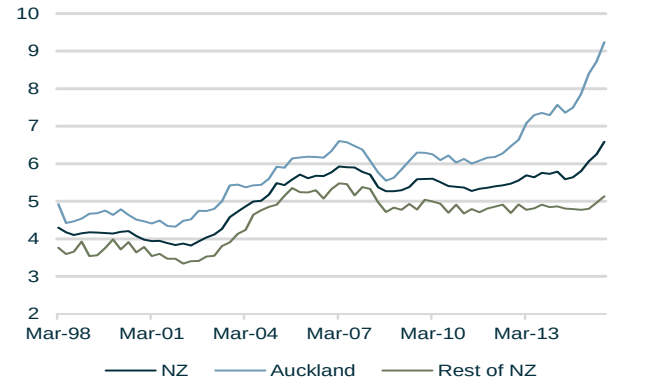
House price to income ratios increasingly "stretched"

House prices are also becoming increasing stretched relative to household incomes. In particular, in their latest *Financial Stability Report (FSR)* the RBNZ estimates that for the September 2015 quarter, the price-to-income multiple for Auckland has now moved out to a historic high of 9.2 (figure 25). This is significantly above the 6 reading recorded in 2011 and is also considered elevated relative to international standards. In contrast, house

price-to-income multiples are considerably lower in the rest of NZ, although there have been some recent signs of house price inflation accelerating in other regions. In part reflecting the stretched nature of current house price-to-income multiple in Auckland, the RBNZ has suggested that "*there is increasing potential for a sharp price correction in Auckland*". In terms of trying to quantify the magnitude of this overvaluation in house prices, one metric that can use is to calculate the percentage divergence between the current and the long-term average house price-to-income multiple. Using this metric, national house prices are tracking around 30% overvalued, while in the Auckland region this divergence stretches out to around 57% above its long-term average (figure 26).

Figure 25: Auckland house price-to-income ratios moved out to a historic high of 9.2

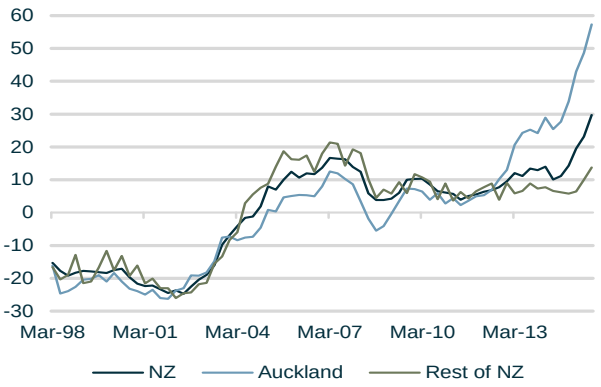
Ratio of house prices-to-incomes



Source: RBNZ, Statistics NZ, CoreLogic, REINZ, FNZC

Figure 26: National & Auckland house price-to-income ratios relative to their long-term averages has risen

% divergence between current & avg. house price-to-income ratios



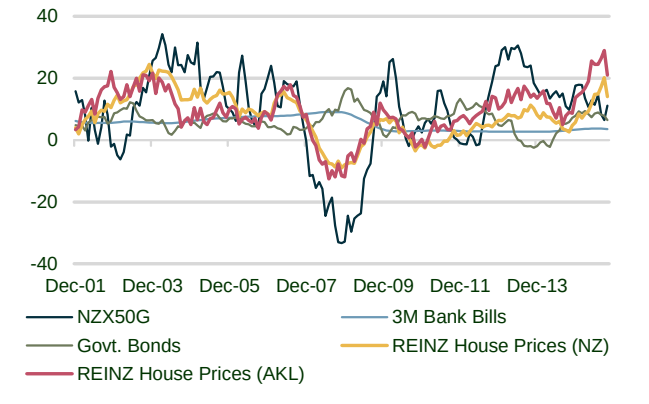
Source: RBNZ, Statistics NZ, CoreLogic, REINZ, FNZC

Auckland house price growth rates have become more unsustainable

Reviewing the recent rise in national and Auckland house prices and comparing these annual movements with other financial assets further reinforces the likely unsustainability of the recent rate of annual growth in house prices. In particular, even with the recent decline, the annual rate of growth in both house price metrics significantly outpaced other assets (figure 27). Moreover, both the annual national and Auckland house price growth rates for October remains significantly above their long-run averages (figure 28).

Figure 27: National and particularly Auckland house prices have recently shown outsized annual increases

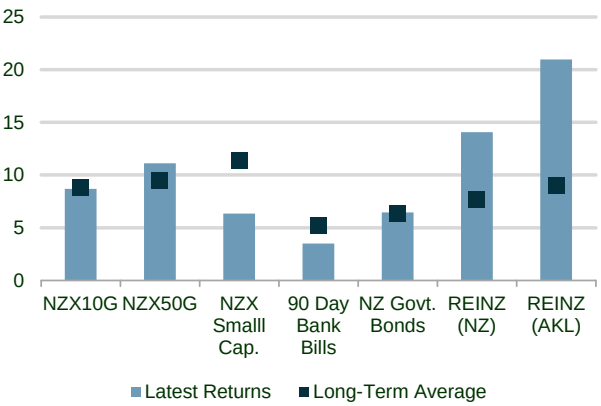
YoY %



Source: IRESS, REINZ, First NZ Capital

Figure 28: Significant divergence between current house price growth rates and their long-run average

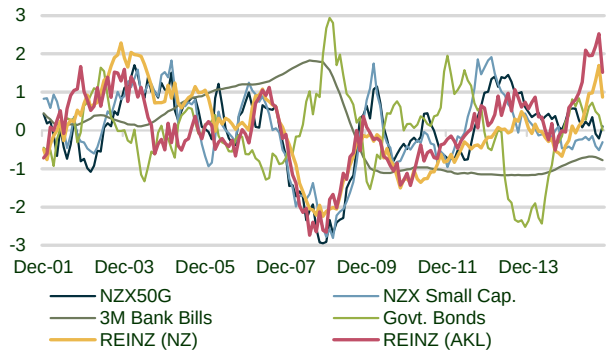
YoY % - Since December 2001



Source: IRESS, REINZ, First NZ Capital

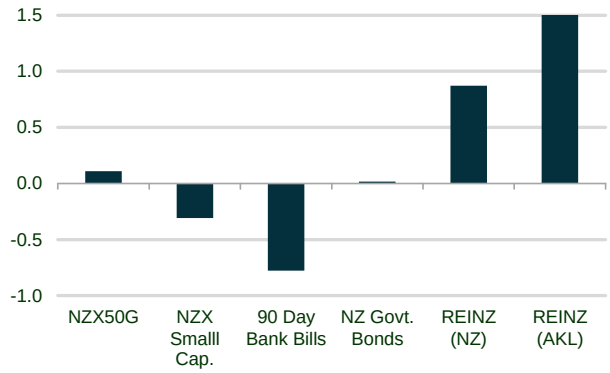
The current "stretched" nature of NZ house price growth – particularly in the Auckland region – can also be observed in reviewing the standard deviation of current house price increases from their long-term averages and comparing these with other asset classes. Specifically, Auckland house prices currently trade around 1.5 standard deviations away from their long-run averages (figure 30).

Figure 29: Auckland house prices have moved rapidly to unsustainable growth rates
Standard deviations from long-run averages



Source: IRESS, REINZ, First NZ Capital

Figure 30: Auckland house price growth "stretched" at 1.5 std. deviations away from their long-run averages
Standard deviations from long-run averages – Since Dec 2001



Source: IRESS, REINZ, First NZ Capital

RBNZ and Government housing policy measure to dampen house price increases

Responding to these perceived increased risks of a sharp correction in prices – particularly in the Auckland region - the RBNZ has introduced changes - as of 1 November - to their loan-to-value (LVR) policy. These policy changes included:

- Requiring residential property investors in the Auckland region to have a deposit of at least 30%,
- Retain the existing 10 percent speed limit for loans to owner-occupiers in Auckland at the LVR's of greater than 80 percent, and
- Increase the speed limit for high LVR borrowing outside the Auckland region from 10 to 15 percent, to reflect the more subdued housing market conditions outside of Auckland.

Additional housing policy initiatives announced by the Government in their 2015 Budget and which came into effect on 1 October to further dampening house price inflation included:

- A new "bright-line" test to tax capital gains on residential property sold within two year of acquisition that is not the owner's main home, and
- New measures to track non-resident foreign buyers making them provide an IRD number, tax identification number from their own country and current identification.

While it appears too early to fully assess the impact of these measures on housing market activity and prices, anecdotal reports of auction clearance and attendance rates, together with a recent easing in sentiment in the ASB Bank's October Housing Confidence Survey, suggest some softening in activity levels and house price expectations.

NZ real house price cycles - The duration and magnitude of previous upturns

In an attempt to place the current upturn in real house prices into a historical context, we have examined the cycles in quarterly real house prices in both terms of duration and magnitude going back to March 1970 (figure 31). Looking at the duration of real house price cycles since 1970, the current upturn – with a length of 17 consecutive quarters - is around both the average and median length of 17 and 19 quarters respectively recorded over the previous six upturns (figure 32). Significantly, despite the popular perception that the NZ house prices continuously increase, figure 31 also shows that there have been six episodes of declining real annual house prices since the March 1970 quarter.

Figure 31: NZ real house price cycles

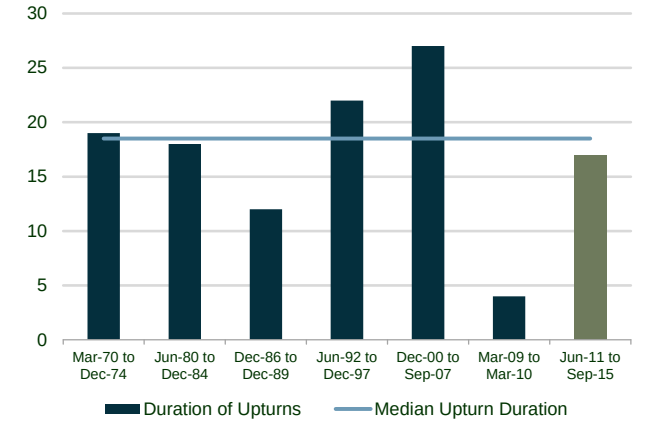
Cycle	Period	No. of qtrs	Real price movement (%)
Upturn	Mar-70 to Dec-74	20	64.3
Downturn	Dec-74 to Jun-80	22	-39.2
Upturn	Jun-80 to Dec-84	18	36.5
Downturn	Dec-84 to Dec-86	8	-3.9
Upturn	Dec-86 to Dec-89	12	18.9
Downturn	Dec-89- to Jun-92	10	-8.8
Upturn	Jun-92 to Dec-97	22	39.2
Downturn	Dec-97 to Dec-00	12	-6.6
Upturn	Dec-00 to Sep-07	27	84.4
Downturn	Sep-07 to Mar-09	6	-13.3
Upturn	Mar-09 to Mar-10	4	4.7
Downturn	Mar-10 to Jun-11	5	-7.9
Current Upturn	**Jun-11 to Sep-15 (so far)**	**17**	**38.9**
Average Upturn		**17**	**41.3**
Median Upturn		**19**	**37.9**

Source: Statistics NZ, REINZ, Statistics NZ, First NZ Capital

In terms of the magnitude of the current upturn, the rise in real house prices thus far of 38.9% - from the June 2011 quarter till the September 2015 quarter - is also around both the average and median increases recorded over the previous six cycles of 41.3% and 37.9% respectively (figure 33).

Figure 32: Real house price upturn cycles – The duration of the current upturn is just under its median length

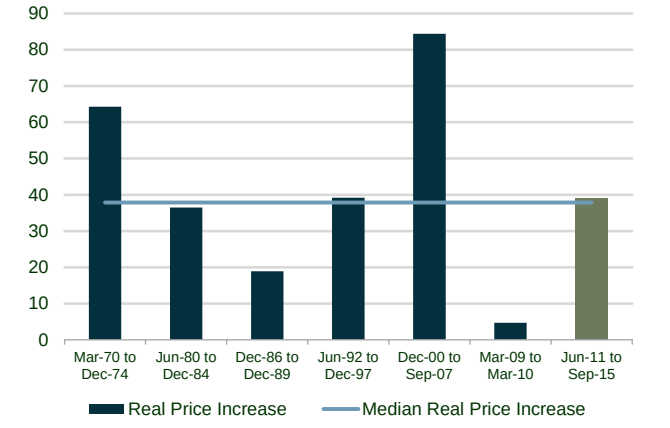
Duration of upturn in quarters



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 33: Real house price inflation thus far has moved up to the median rise experienced over past upturns

Real house price increase during upturns (%)

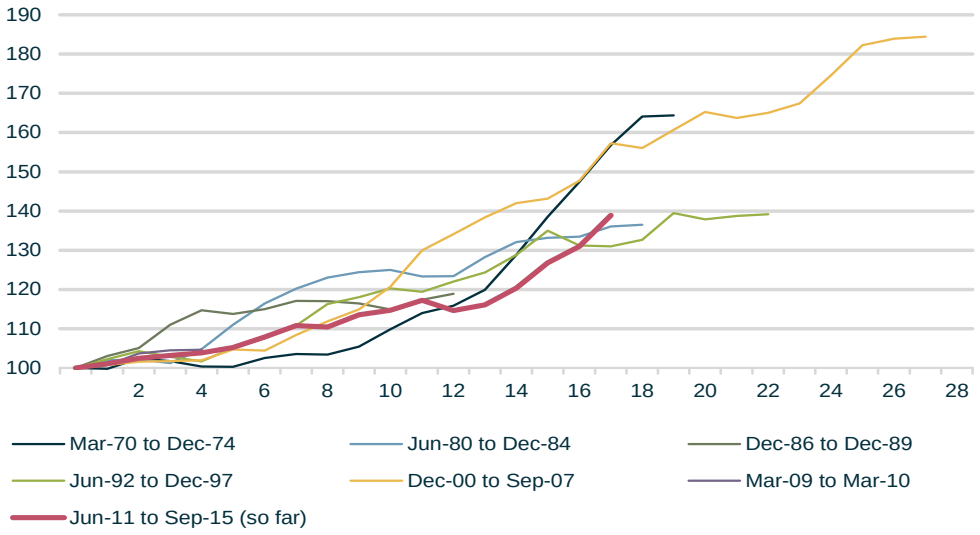


Source: Statistics NZ, REINZ, QV, First NZ Capital

A graphical representation comparing previous real house price upturn cycles is shown in figure 34. In this graph, the six previous house price recovery cycles have been rebased back to an index reading of 100. As can be seen, the current real house price cycle is not particularly unusually, although as we have noted earlier, the rapid acceleration in prices this cycle has been concentrated in the Auckland region.

Figure 34: NZ real house prices - Upturn cycles

Real house prices (Index=100 at beginning of the upturn)

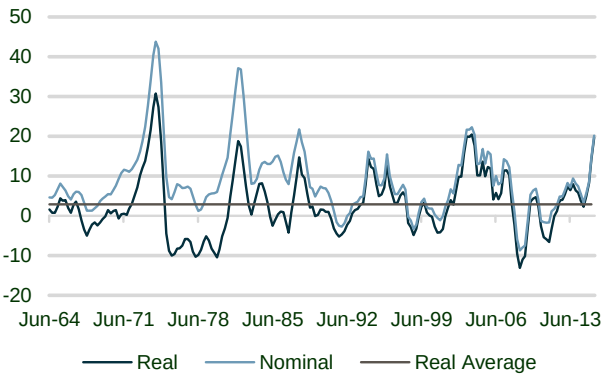


Source: Statistics NZ, REINZ, QV, First NZ Capital

Nevertheless, despite these reasonably "normal" metrics of the current real house price upturn cycle - in terms of both magnitude and duration relative to previous upturns - real annual house price growth is currently estimated at 19.6% YoY for the September 2015 quarter and remains significantly above its long-run real average growth rate of 2.9% (figures 35 and 36).

Figure 35: Real annual house price growth of 19.6% moves sharply above its long-run average of 2.9%

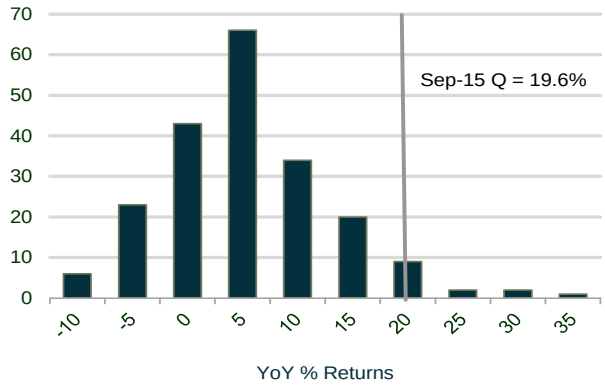
YoY %



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 36: Real house price inflation now at the upper end of the frequency distribution

Quarterly frequency (lhs) – Since June 1964

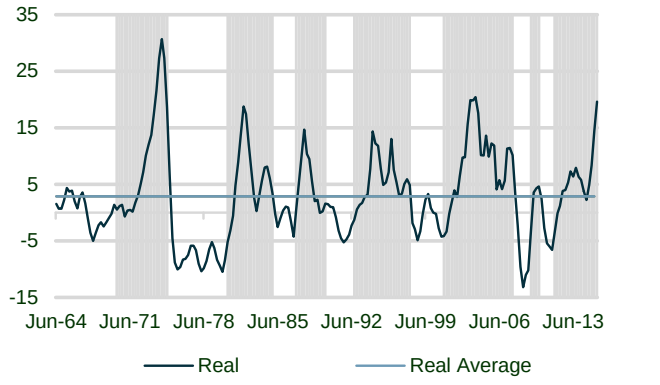


Source: Statistics NZ, REINZ, QV, First NZ Capital

Moreover, in addition to the annual rate of house price growth being significantly above its long-term average, the real dollar value of NZ national house price is now estimated to be around 16% above its previous peak level recorded back in the September 2007 quarter (figure 38).

Figure 37: While the current housing cycle in terms of magnitude and duration is around "normal" . . .

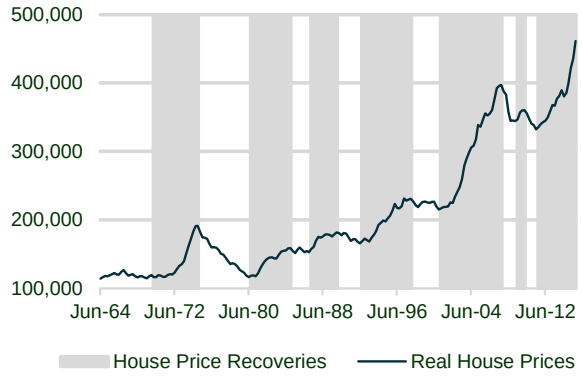
YoY % - Shaded areas are housing upturns



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 38: . . . the current level of real house prices has moved to being 16% above its previous peak

Real house price (NZ$) – Rebased in terms of Dec-2012 prices

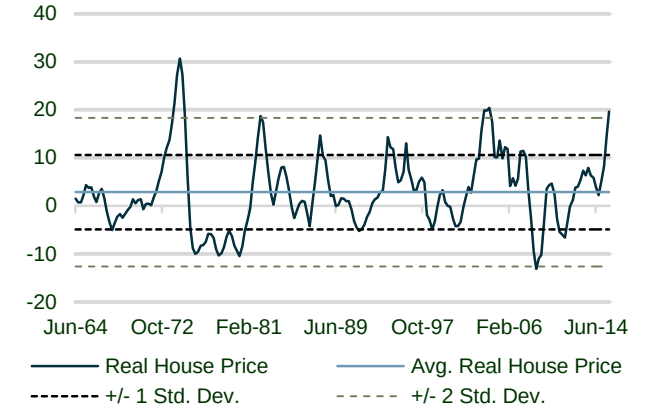


Source: Statistics NZ, REINZ, QV, First NZ Capital

Another way of attempting to assess recent house price developments is to examine them relative to long-term cycles. In particular, figure 39 below shows recent changes in real NZ house price growth relative to their long-term average and one and two standard deviations estimates. In figure 40 the number of standard deviations that real house prices have traded from their long-term average is also presented. Both of these charts suggest that on the basis of these metrics, real house price inflation is currently tracking significantly above its long-term average – currently around 2.2 standard deviations above from its long-term quarterly average.

Figure 39: Real house price growth of 19.6% for the Sep-15 qtr. significantly above its long-run average of 2.9%

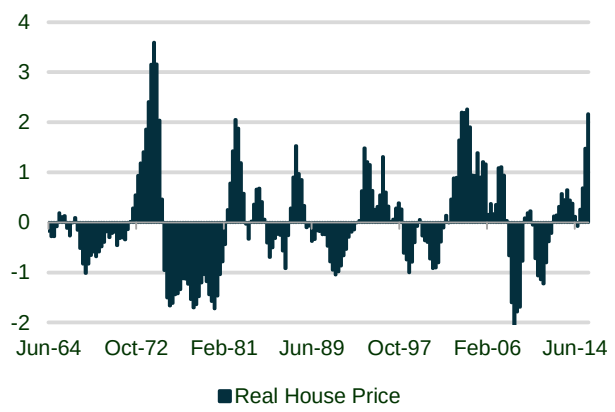
YoY %



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 40: Real house prices estimated to be currently around 2.2 standard deviations above its long-run avg.

Standard deviations from real long-term average

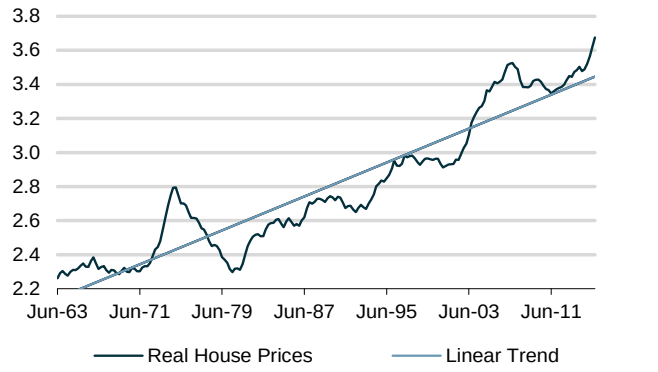


Source: Statistics NZ, REINZ, QV, First NZ Capital

In addition, using the long-term trend estimate of real house price growth, we assess that real house prices continue to remain above trend, although quantifying the size of this overvaluation remains a subjective estimate - reflecting the various methods of estimating the trend (figure 41). On the basis of the log linear trend since 1963, real house prices which were around 33% overvalued at their peak in September quarter 2007, are now estimated to be around 26% overvalued (figure 42).

Figure 41: Real house prices – current prices estimated to be around 26% overvalued relative to long-run trend

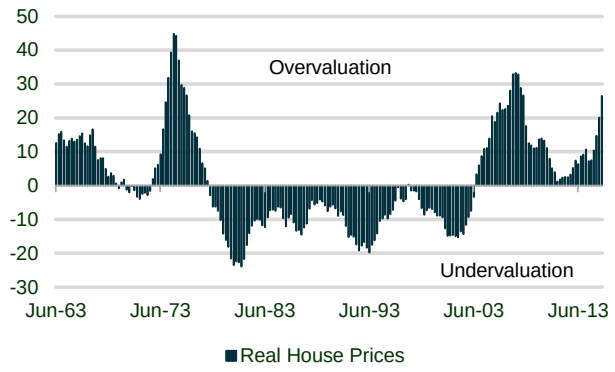
Real house price log index



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 42: Deviation from long-run trend has rapidly moved to significantly overvalued levels

%

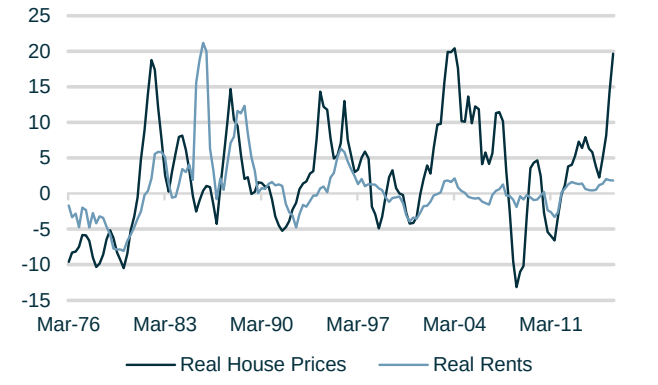


Source: Statistics NZ, REINZ, QV, First NZ Capital

One of the anomalies of the recent house price cycle is that rents have remained relatively less volatile, largely ignoring both the rapid rise in house prices over most of 2000's, and more recent decline over the 2008-09 period, together with the rapid acceleration in house prices experienced over the past year (figure 43). In particular, the house price-to-rents ratio has continued to increase and is currently estimated to be around 82% above its average level (figure 44). However, we suspect that this housing valuation metric is distorted by the significant government intervention in the NZ housing market. In particular, estimates[2] suggest that around 60% of all rentals in the NZ are subsidised by the Government, one house in every 16 in Auckland is a Housing NZ property and around NZ$2bn is spent on accommodation subsidies. This intervention is likely to dampen rents and therefore result in some unquantified degree of additional overvaluation in the house price-to-rent ratio metric.

Figure 43: Real house price growth moves significantly above the rate of rental growth

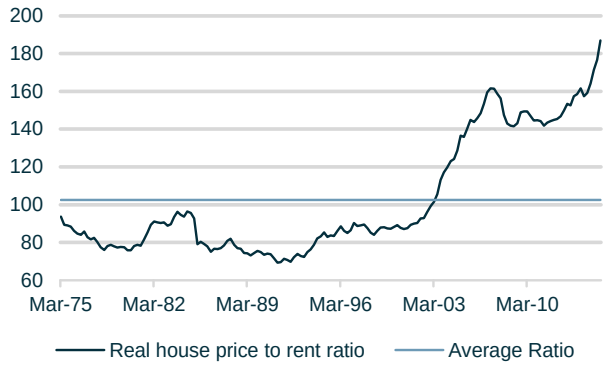
YoY %



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 44: Real house price growth continues to significantly outpaced real rental growth

Index



Source: Statistics NZ, REINZ, QV, First NZ Capital

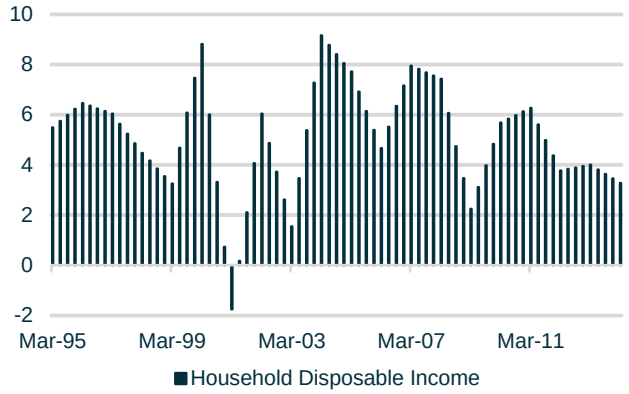
Housing affordability has deteriorated

Looking at household affordability measures, the ratio of house prices to household disposable income has also moved up from its recent trough in the June 2011 quarter, and it has moved to now being around 53% above its average since 1975 (figure 46).

[2] Speech on Housing Affordability by the Minister of Finance Bill English (29 September 2015)

Figure 45: The rate of household disposable income growth has eased back to around 3.0-3.5% YoY

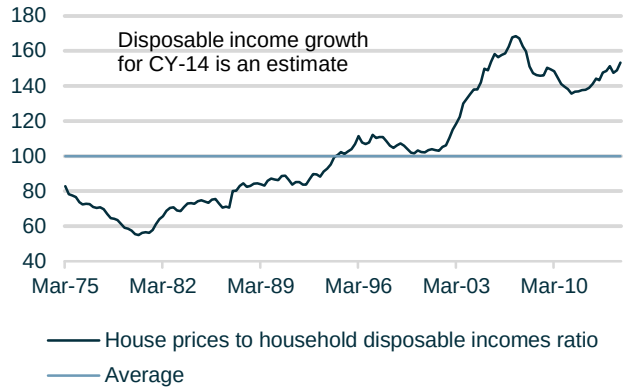
YoY %



Source: Statistics NZ, First NZ Capital

Figure 46: House prices to h'hold disposable income edges up and continues to remain elevated

% yield

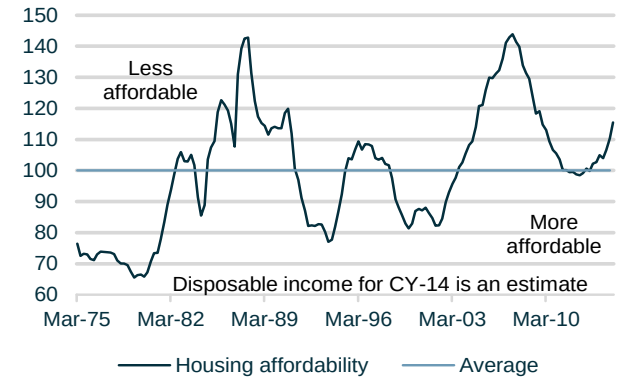


Source:, Statistics NZ, REINZ, QV First NZ Capital

Moreover, our housing affordability index - which takes into account interest rates as well as incomes – having recently troughed around the September 2012 quarter - has risen primarily on the back of the recent rapid rise in house prices to now being around 15% above its average level (figure 47). In addition, while house market affordability has improved substantially since the September 2007 quarter on the back of the significant decline in the mortgage rates, over the past year there has been relatively little change in mortgage interest rates (figure 48). As such, the recent deterioration in affordability is largely a reflection of an acceleration in house price growth.

Figure 47: Housing affordability has recently deteriorated reflecting the sharp rise in house prices

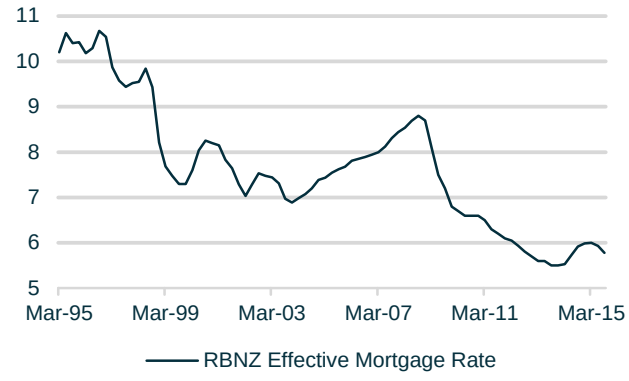
Index



Source:, Statistics NZ, REINZ, QV, First NZ Capital

Figure 48: The sharp decline in effective mortgage rates since 2007 has help support housing affordability

% yield



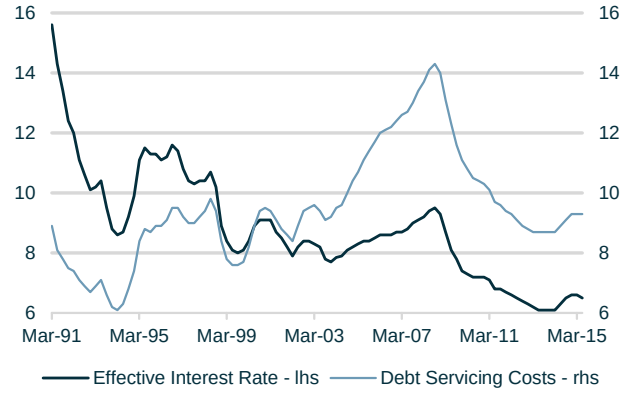
Source: RBNZ, First NZ Capital

Household debt levels have eased back from historic highs, but remain elevated

In addition to the sharp decline in the effective mortgage rates aiding housing affordability, lower rates have also contributed to a broad improvement in debt servicing costs over recent years (figure 49). However, one of the key vulnerabilities of the domestic economy is NZ's high levels of household debt, which would likely be further exposed by either a sharp decline in house prices and/or a significant rise in interest rates. In particular, while the debt to household disposable income ratio has eased back from its historic high of 161% back in the June 2009 quarter, it currently stands at an elevated level of just under 155% (figure 50).

Figure 49: The decline in mortgage interest rates has also assisted a fall in debt servicing costs

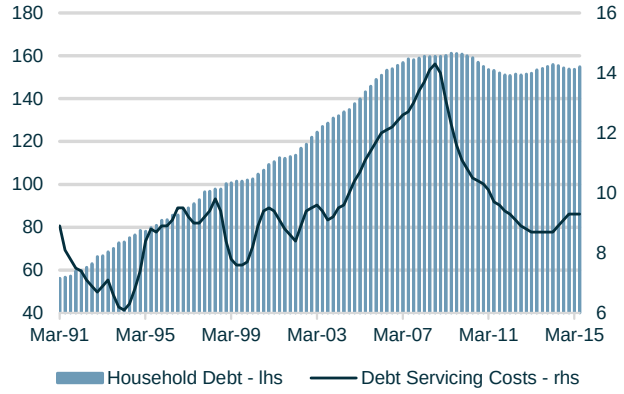
% yield, Debt servicing costs as a % of disposable income



Source: Statistics NZ, RBNZ, First NZ Capital

Figure 50: While household debt levels have eased back from their June 2009 highs, they remain elevated

Debt to income % (lhs), Debt servicing costs % of income (rhs)

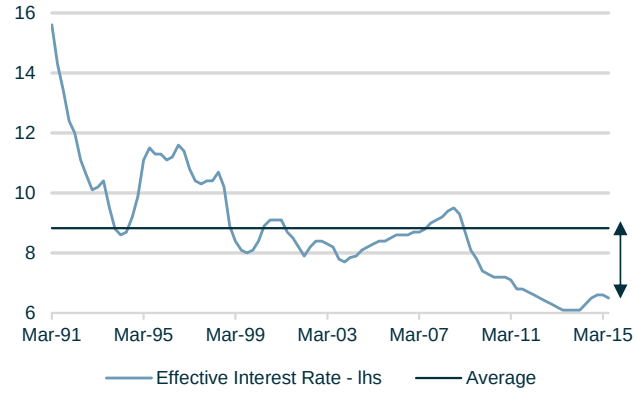


Source: Statistics NZ, RBNZ, First NZ Capital

Set against a backdrop of low nominal interest rates, together with an environment of financial liberalisation, households have been able to sharply increase their debt levels over the past twenty-five years. However, even with the broad decline in effective mortgage rates over recent years (figure 51), debt servicing costs as a percentage of disposable incomes have recently edged back to their average levels, as the amount of debt has increased (figure 52). Moreover, with debt servicing costs now back to average levels when interest rate settings are around historic lows, this suggests a limited ability for the RBNZ to raise interest rates substantially as a result of the significantly higher servicing costs that would flow from the current elevated debt levels.

Figure 51: Effective mortgage rates remain below average levels . . .

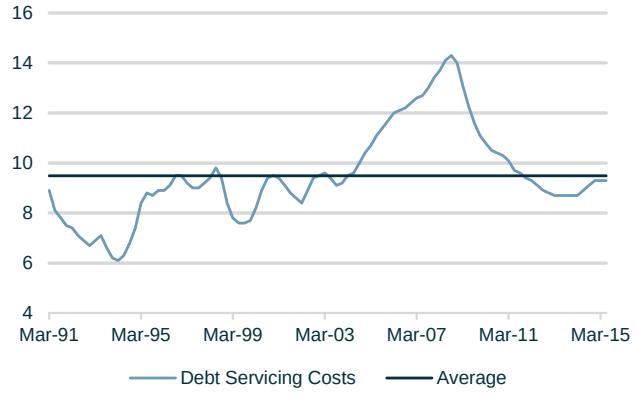
% yield



Source: Statistics NZ, RBNZ, First NZ Capital

Figure 52: . . . although debt servicing costs have recently moved back to average levels

Debt servicing costs % of disposable income (rhs)



Source: Statistics NZ, RBNZ, First NZ Capital

House Market Prospects – Housing risks remain elevated

While we readily acknowledge that there are fundamental economic factors which have underpinned recent house price growth, our analysis suggests that the recent acceleration in growth rates has moved house prices – particularly in the Auckland region – to levels in which there is an increased risk of a sharp correction. In particular, if houses are assessed relative to other major NZ asset classes simply on the basis of their recent performance relative to historical averages, then with current prices around 1.5 standard deviations – and recently up to 2.5 standard deviations - from their means would certainly suggest a cautionary allocation would be prudent at present.

Furthermore, on the basis of the five house price valuation metrics which we have estimated, then the average and median house price overvaluation for the NZ market appears to be in the region of 30-40% (figure 53). However, the problem even if we judge that recent house price growth appears stretched relative to its historical averages and house price metrics are strongly indicative of overvaluation, together with an assessed speculative element in the Auckland market, is that forecasting the profile of house prices over long-term time horizons is inherently difficult.

Figure 53: NZ house price valuation metrics

	Sep-15 Qtr	Long-term Ann. Avg.	Std. Dev. From Avg.
NZ Real House Price Growth (YoY %) – Since Jun-64	19.6%	2.9%	2.2
	Oct-15		
NZ Nominal House Price Growth (YoY %) – Since Jan-93	14.1	6.7	1.1
Auckland Nominal House Price Growth (YoY %) – Since Jan-93	21.0	8.5	1.5
House Price Valuation Metrics	**Overvaluation**		
House Price-to-Income Ratio – Relative to Average Levels	30%		
Deviation From Real Log-Linear Trend	26%		
House Price -to-Rent Ratio - Relative To Average Levels	82%		
House Prices to Disposable Incomes - Relative To Average Levels	53%		
Housing Affordability - Relative To Average Levels	16%		
NZ House Price Average Overvaluation	**41%**		
NZ House Price Median Overvaluation	**30%**		

Source: Statistics NZ, REINZ, Statistics NZ, First NZ Capital

NZ real house price cycles – The duration and magnitude of previous housing market downturns

In an attempt to gauge the magnitude of a potential NZ house price downturn, we can look at previous cycles as a rough guide. In figure 54 we observe six episodes of declining real annual house prices since the March 1970 quarter.

Figure 54: NZ real house price cycles - Downturns

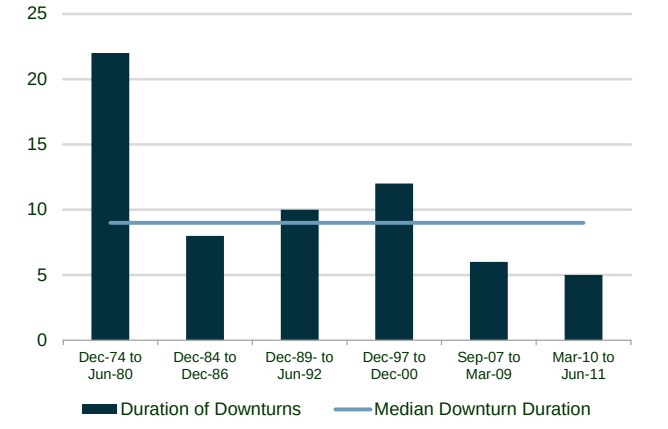
Cycle	Period	No. of qtrs	Real price movement (%)
Downturn	Dec-74 to Jun-80	22	-39.2
Downturn	Dec-84 to Dec-86	8	-3.9
Downturn	Dec-89- to Jun-92	10	-8.8
Downturn	Dec-97 to Dec-00	12	-6.6
Downturn	Sep-07 to Mar-09	6	-13.3
Downturn	Mar-10 to Jun-11	5	-7.9
Average Downturn		**11**	**-13.3**
Median Downturn		**9**	**-8.4**
Maximum Downturn		22	-39.2
Minimum Downturn		5	-3.9

Source: Statistics NZ, REINZ, QV, First NZ Capital

Relative to house price upturns, the duration of downturns is somewhat shorter, with the average and median downward cycles of 11 and 9 quarters respectively (figure 55). Moreover, the past housing market downturns have seen prices fall by an average of 13.3%, while recording a median real decline of 8.4%. However, it should be noted that together with a reasonably small sample set of downward cycles, the range of declines is relatively wide, with the smallest cycle decline being a modest 3.9%, while in contrast the largest real house price cycle has been a substantial 39.2% (figure 56).

Figure 55: Real house price downturn cycles – Median cycle downturns of around 9 quarters

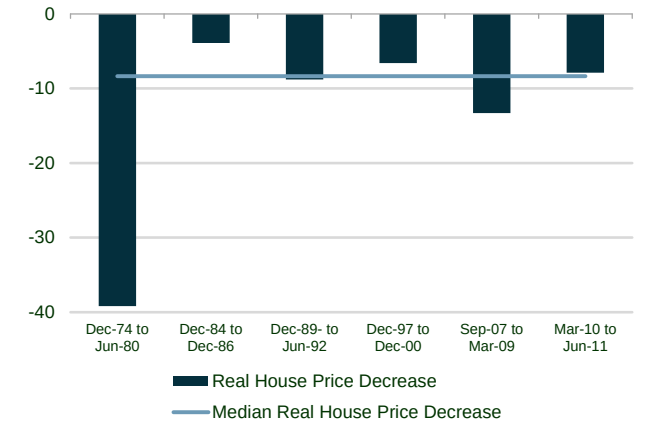
Duration of upturn in quarters



Source: REINZ, QV, Statistics NZ, First NZ Capital

Figure 56: Real house price inflation declines over a downturn show a median fall of 8.4%

Real house price increase during upturns (%)

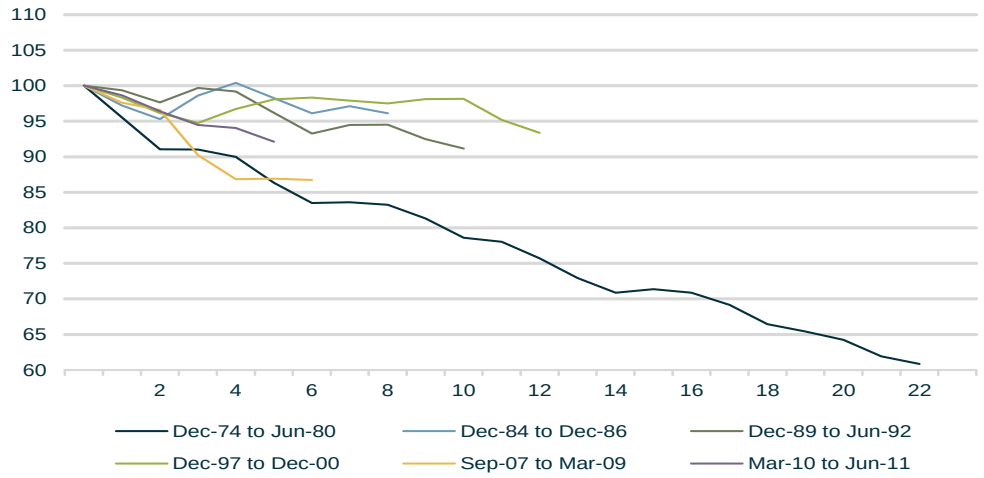


Source: REINZ, QV, Statistics NZ, First NZ Capital

Rebasing the past six real housing downturn cycles to an initial index reading of 100 is graphically shown in figure 57 below. As can be seen in this figure, there is a reasonable range of downturn cycles, both in terms of the magnitude of the declines, together with the duration of the falls.

Figure 57: NZ real house prices - Downturn cycles

Real house prices (Index=100 at beginning of the downturn)



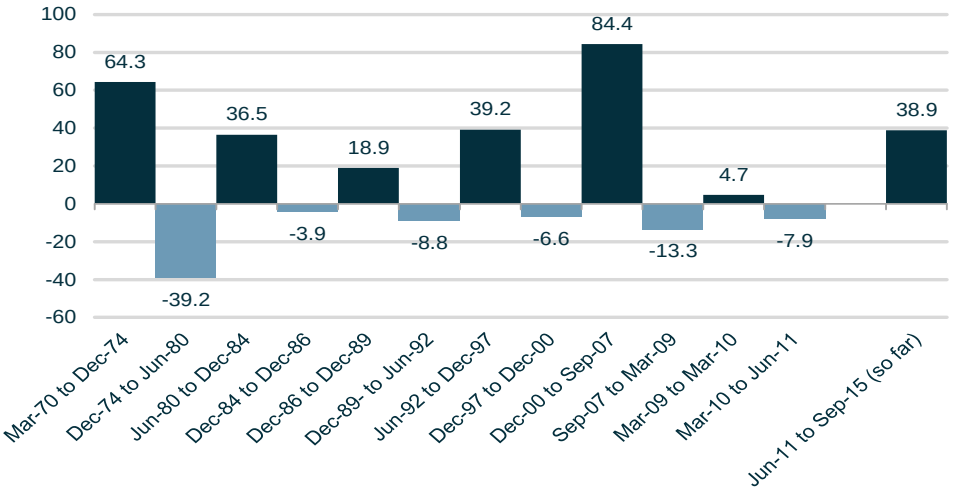
Source: Statistics NZ, REINZ, QV, First NZ Capital

While recognising that every house price cycle is likely to be different, as another means of attempting to get some sense regarding the magnitude of any potential downturn is to compare the ratio of downturns to upturns. Figure 58 below presents in bar chart showing the real upturns and downturn cycles of the NZ housing market. Assuming that there is some relationship between the size of an upturn and the magnitude of the subsequent downturn, we can use this ratio as a potential gauge of a possible downturn scenario in real house prices.

On the basis of the past six cycles, the ratio of the total size of the downturn relative to the magnitude of the preceeding upturn averages around -0.5 over the past six cycles, while the median ratio is around -0.3. On the basis of this rule-of-thumb reversion estimate, this suggests that major house price upturns tend to be followed by downturns which historically have retraced around 30-50% of the rise. Using these ratios as a simple guide and assuming that the increase in real house prices of 39% until the September 2015 quarter represents a peak in the current cycle, then this implies a potential real decline using the average and median estimates of around 12-19%.

Figure 58: NZ real house price cycle changes

Real house price upturn and downturn cycles



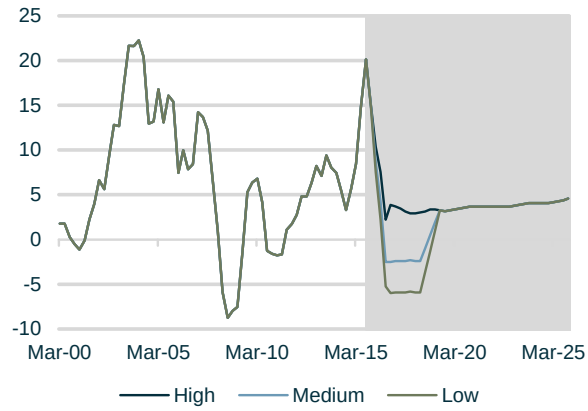
Source: Statistics NZ, REINZ, QV, First NZ Capital

House price forecast scenarios

In modelling NZ house price scenarios, we have used as a guide the historical cycles in quarterly real house prices going back to the March 1970 quarter. As a starting point, we assess that given the recent rapid acceleration in NZ house price growth, the elevated starting point for NZ house prices, together with the broad range of metrics suggesting reasonably substantial (30-40%) overvaluation, then the housing market risk assessment is skewed towards the downside. Against this backdrop, we have prepared three house price scenarios; a high, medium and low (figures 59 and 60).

Figure 59: Nominal house price growth forecast scenarios

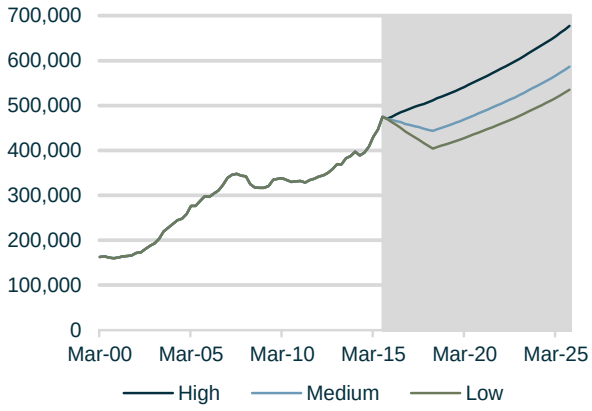
YoY %



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 60: Nominal house price NZ dollar forecast scenarios

Nominal house prices (NZ$)



Source: Statistics NZ, REINZ, QV, First NZ Capital

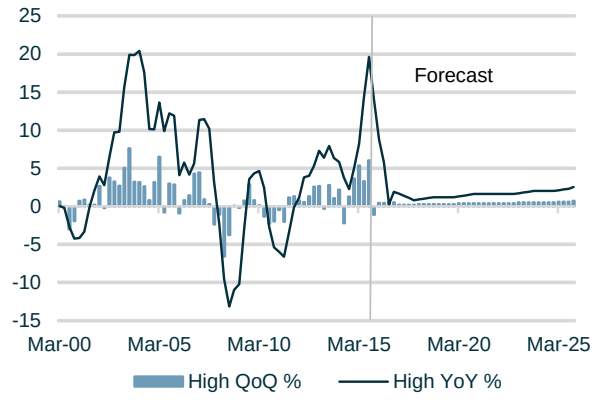
High House Price Scenario

Against a backdrop of the NZ GDP growth over the year ahead around the 2.0-2.5% level, some stabilisation in global growth, a gradual easing from historic high net migration inflows, a slight further rise in the NZ's unemployment rate, together with a further modest cut in the OCR, then our high scenario for house prices is one of a reasonably gradual easing in the annual rate of house price growth. In particular, under this high growth scenario, after peaking at an annual increase of 20.1% YoY over the September 2015 quarter, the pace of annual growth rate is expected to ease back to a trough of around 2.2% YoY in the September 2016 quarter. Thereafter the annual rate of house price growth is assumed to gradually drift higher up to our assumed long-run equilibrium growth rate of 4.5% by the end of the calendar 2025 year – the rate of inflation at this point is assumed to be 2% YoY. This projected cycle is notable for its absence of a sustained corrective downturn in house prices over the entire forecast horizon.

Moreover, in the event in which the growth rate of NZ house prices were to accelerate further from here – with other regions increasingly participating in the house price rises – then we would assess that this would potentially only end up resulting in a sharper, deeper and likely more disorderly price correction. In addition, any sharp acceleration in house prices from here would likely invoke a policy response from the RBNZ. In particular, we would expect that the Bank would look to apply additional macro-prudential tools in an attempt to reduce the perceived risks to financial market stability that could result from a significant market correction.

Figure 61: Real house price forecasts – High scenario

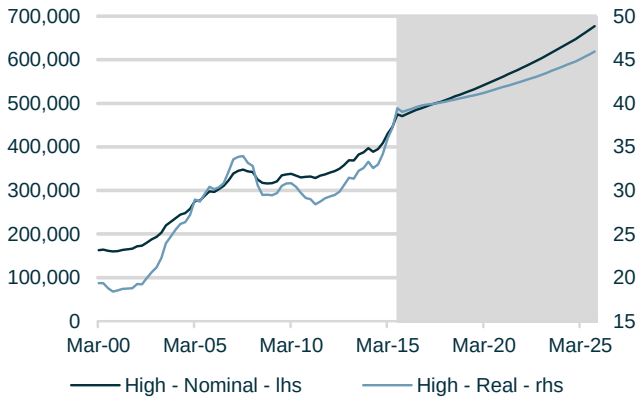
% change



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 62: Nominal and real house price forecasts – High scenario

Nominal house prices - NZ$ (lhs), Real house price index (rhs)



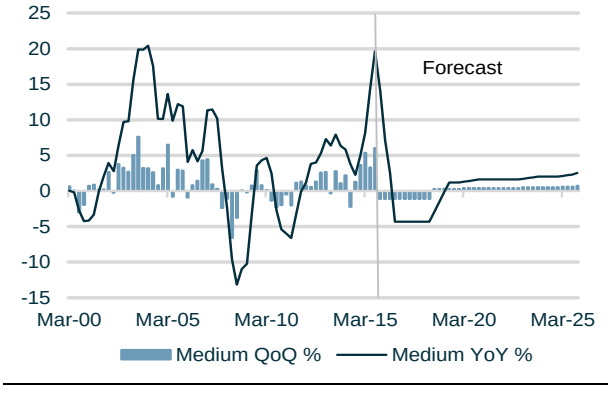
Source: Statistics NZ, REINZ, QV, First NZ Capital

Medium House Price Scenario

Under the medium term house price scenario, we attempt to take some account of the currently assessed overvalued characteristics of the NZ housing market. As a guide to the likely duration and magnitude of a potential housing market correction, we have looked at past cycles of housing market downturns. From this analysis we have observed that the average and median duration of a downturn has been in the order of 9-11 quarters in length. As such, we have assumed a downturn duration consistent with the middle of this range of 10 quarters from peak to trough. Similarly, in terms of the magnitude of the potential decline, we have used as a point of reference the average and median real price movements in previous downturns, which have been in the range of 8-13%. Using this as a broad guide, we have assumed a real medium house price decline of 11% from peak-to-trough – this decline is also very similar to the estimated magnitude of the decrease of an evenly weighted average of the three house price scenarios. From this trough in the house price cycle in the June 2018 quarter, we have then joined on the medium to long-term quarterly house price track used in the high house price scenario, ending up with the same equilibrium annual growth rate by the end of the forecast horizon of 4.5% YoY.

Figure 63: Real house price forecasts – Medium scenario

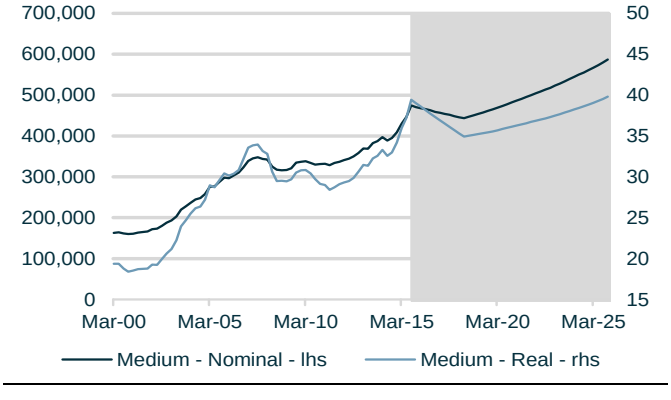
% change



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 64: Nominal and real house price forecasts – Medium scenario

Nominal house prices - NZ$ (lhs), Real house price index (rhs)



Source: Statistics NZ, REINZ, QV, First NZ Capital

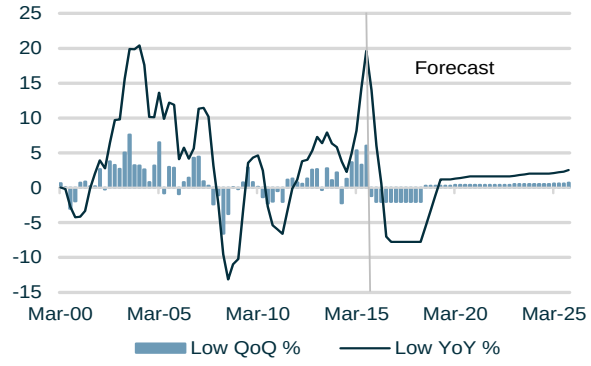
Low House Price Scenario

For the low house price scenario, we have reviewed the past relationship between the sizes of downturns relative to the magnitude of the preceeding upturns. On the basis of the past six cycles, major upturns in house prices have tended to be followed by downturns which have retraced around 30-50% of the rise. In our downside scenario, we have assumed the top-end of this range and estimated that following a real house price increase of 39% to the September 2015 quarter, we project a peak-to-trough decline in real terms of 19% over the next 10 quarters. Similar to our medium scenario, once the house prices have passed through their downturn cycle, they are assumed to revert to the same long-term quarterly house price track, ending up with the same equilibrium annual growth rate by the end of the forecast horizon of 4.5% YoY.

However, we do acknowledge that given the underlying demand pressures resulting from an assessed under-build in the Auckland region, historically high levels of net migration, low interest rate settings, together with a relatively slow housing supply response, we assess that some endogenous or exogenous economic shock would likely be required to precipitate an aggressive pull-back in house prices. Nevertheless, given the significantly larger estimated value of NZ housing (NZ$821bn) relative to the size of the NZ economy (NZ$241bn), the associated economic fall-out from a sharp correction in prices on the broader economy and particularly consumer spending and sentiment would also likely not be insignificant.

Figure 65: Real house price forecasts – Low scenario

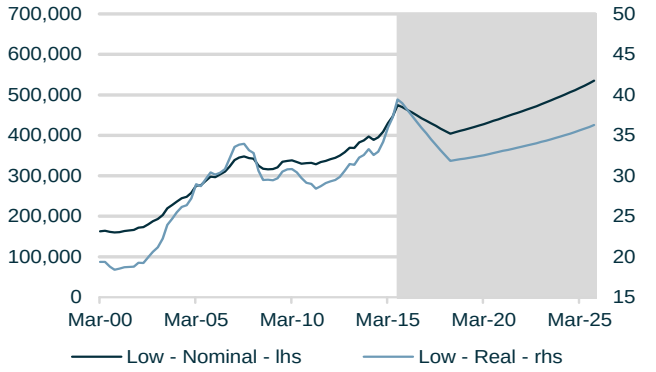
% change



Source: Statistics NZ, REINZ, QV, First NZ Capital

Figure 66: Nominal and real house price forecasts – Low scenario

Nominal house prices - NZ$ (lhs), Real house price index (rhs)



Source: Statistics NZ, REINZ, QV, First NZ Capital

House Price Forecast Scenarios

Appendix 1

Figure 67: **Nominal house price forecast scenarios**

	High			Medium			Low		
	QoQ %	YoY %	Ann. Avg. %	QoQ %	YoY %	Ann. Avg. %	QoQ %	YoY %	Ann. Avg. %
Mar-14	2.5	7.4		2.5	7.4		2.5	7.4	
Jun-14	-2.0	5.5		-2.0	5.5		-2.0	5.5	
Sep-14	1.6	3.3		1.6	3.3		1.6	3.3	
Dec-14	**3.5**	**5.7**	**5.5**	**3.5**	**5.7**	**5.5**	**3.5**	**5.7**	**5.5**
Mar-15	5.2	8.5		5.2	8.5		5.2	8.5	
Jun-15	3.7	14.8		3.7	14.8		3.7	14.8	
Sep-15	6.4	20.1		6.4	20.1		6.4	20.1	
Dec-15	**-0.9**	**15.0**	**14.6**	**-0.9**	**15.0**	**14.6**	**-1.0**	**14.9**	**14.6**
Mar-16	1.0	10.4		-0.6	8.7		-1.5	7.6	
Jun-16	1.1	7.5		-0.5	4.2		-1.4	2.3	
Sep-16	1.1	2.2		-0.5	-2.5		-1.4	-5.2	
Dec-16	**0.7**	**3.9**	**6.0**	**-0.9**	**-2.5**	**2.0**	**-1.8**	**-6.0**	**-0.3**
Mar-17	0.8	3.7		-0.5	-2.4		-1.4	-5.9	
Jun-17	0.8	3.4		-0.5	-2.4		-1.4	-5.9	
Sep-17	0.8	3.1		-0.5	-2.4		-1.4	-5.9	
Dec-17	**0.5**	**2.9**	**3.3**	**-0.8**	**-2.3**	**-2.4**	**-1.7**	**-5.8**	**-5.9**
Mar-18	0.8	2.9		-0.6	-2.4		-1.5	-5.9	
Jun-18	0.9	3.0		-0.5	-2.4		-1.4	-5.9	
Sep-18	0.9	3.1		0.9	-1.0		0.9	-3.7	
Dec-18	**0.7**	**3.3**	**3.1**	**0.7**	**0.5**	**-1.3**	**0.7**	**-1.3**	**-4.2**
Mar-19	0.8	3.3		0.8	1.9		0.8	1.0	
Jun-19	0.8	3.2		0.8	3.2		0.8	3.2	
Sep-19	0.8	3.1		0.8	3.1		0.8	3.1	
Dec-19	**0.8**	**3.2**	**3.2**	**0.8**	**3.2**	**2.9**	**0.8**	**3.2**	**2.7**
Mar-20	0.9	3.3		0.9	3.3		0.9	3.3	
Jun-20	0.9	3.5		0.9	3.5		0.9	3.5	
Sep-20	0.9	3.6		0.9	3.6		0.9	3.6	
Dec-20	**0.9**	**3.7**	**3.5**	**0.9**	**3.7**	**3.5**	**0.9**	**3.7**	**3.5**
Mar-21	0.9	3.7		0.9	3.7		0.9	3.7	
Jun-21	0.9	3.7		0.9	3.7		0.9	3.7	
Sep-21	0.9	3.7		0.9	3.7		0.9	3.7	
Dec-21	**0.9**	**3.7**	**3.7**	**0.9**	**3.7**	**3.7**	**0.9**	**3.7**	**3.7**
Mar-22	0.9	3.7		0.9	3.7		0.9	3.7	
Jun-22	0.9	3.7		0.9	3.7		0.9	3.7	
Sep-22	0.9	3.7		0.9	3.7		0.9	3.7	
Dec-22	**0.9**	**3.7**	**3.7**	**0.9**	**3.7**	**3.7**	**0.9**	**3.7**	**3.7**
Mar-23	1.0	3.8		1.0	3.8		1.0	3.8	
Jun-23	1.0	3.9		1.0	3.9		1.0	3.9	
Sep-23	1.0	4.0		1.0	4.0		1.0	4.0	
Dec-23	**1.0**	**4.1**	**3.9**	**1.0**	**4.1**	**3.9**	**1.0**	**4.1**	**3.9**
Mar-24	1.0	4.1		1.0	4.1		1.0	4.1	
Jun-24	1.0	4.1		1.0	4.1		1.0	4.1	
Sep-24	1.0	4.1		1.0	4.1		1.0	4.1	
Dec-24	**1.0**	**4.1**	**4.1**	**1.0**	**4.1**	**4.1**	**1.0**	**4.1**	**4.1**
Mar-25	1.1	4.2		1.1	4.2		1.1	4.2	
Jun-25	1.1	4.3		1.1	4.3		1.1	4.3	
Sep-25	1.1	4.4		1.1	4.4		1.1	4.4	
Dec-25	**1.2**	**4.6**	**4.4**	**1.2**	**4.6**	**4.4**	**1.2**	**4.6**	**4.4**

Source: Statistics NZ, REINZ, QV, First NZ Capital

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