

Housing Prices Relative to Consumer Prices: An Analysis

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About this report

This report is part of an ongoing series on urgent contemporary policy issues in Aotearoa New Zealand. This series has an objective of bringing academic research to bear on the economic, social and environmental challenges facing us today.

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Foreword

Housing affordability has occupied news headlines in New Zealand for several years now. A range of measures – such as falling home ownership rates, the decreasing number of first home buyers, the prevalence of speculators purchasing housing, and median price to median income ratios – suggest that buying a home has become harder for those not already on the property ladder, especially in Auckland and Queenstown.

In this short report, economist Brian Easton explores some additional measures to establish whether housing is, indeed, less affordable than previously. Using Reserve Bank of New Zealand data from 1962 until 2016, he compares house price changes to changes in the Consumer Price Index, a measure of general inflation that does not include house sales. While we would expect house prices to rise over time as a function of general inflation, and for wage rises to (somewhat) compensate, this report reveals the extent to which housing inflation is out of step with general inflation, including some surprising periods of rapid change. Brian Easton also considers the prospect of house price deflation or stagnation, using historic trends as a guide. The report finishes with an exploration of other measures of housing affordability.

Housing Prices Relative To Consumer Prices

Brian Easton¹

Abstract

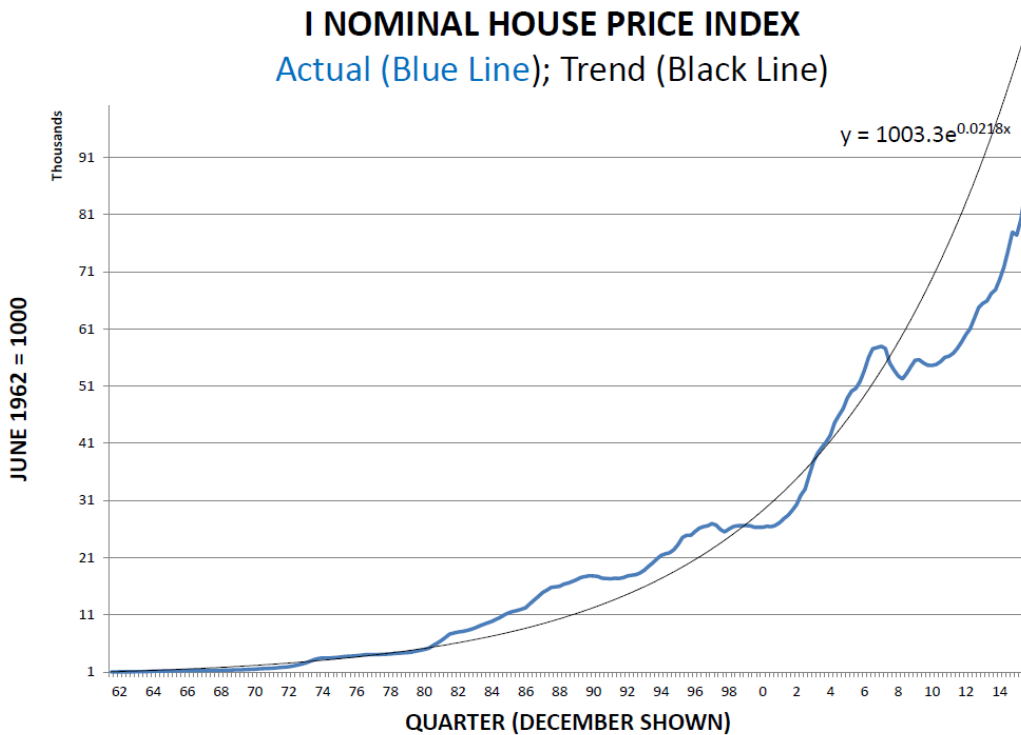
This is an update of [a note I wrote in April 2007](#). It uses a longer housing price series that starts in 1962 (instead of 1980) and finishes in 2016 (instead of 2007). It shows that while historically housing prices have risen a little faster than consumer prices, the increase has been sharper since 2001 (except for the period when the Global Financial Crisis impacted). It goes on to use the historical record to speculate on possible patterns of future prices. The focus is on house prices for the whole of New Zealand. There can be considerable divergences between regions.²

¹ I am grateful to Tama Easton, Julienne Molineaux, Bill Rosenberg and an anonymous economist for comments on an earlier draft.

² For a paper which pays particular attention to Auckland house prices, see Elizabeth Kendall (January 2016). 'New Zealand House Prices: a Historical Perspective' *Reserve Bank Bulletin* Vol. 79(1). It has less on the future course of prices.

Nominal Housing Price Trends

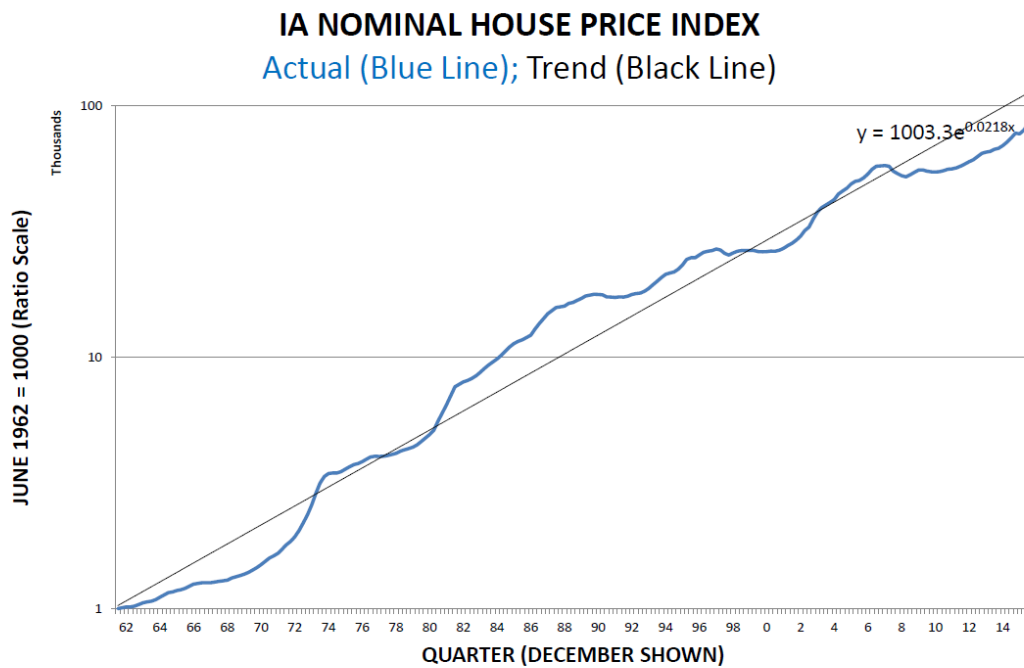
Graph I shows the Reserve Bank of New Zealand nominal housing price index (that is, prices not adjusted for inflation) for the 209 quarters from 1964Q2 to 2016Q2. Over the 52 years, the prices rose to over 80 times their initial level, an annual average increase of 8.6 percent per annum; this was faster than inflation.



Graph I: The blue line is an index of actual house prices. The black line is the exponential trend line between 1964 and 2001. The growth rate for (nominal) houses prices averaged 9 percent a year.

The linear vertical axis of Graph I does not show growth *rates* of prices. Graph IA does, so that the same slope reflects the same inflationary growth rate. Although there have been concerns about sharp rises in recent years, the big inflationary periods - where the graph line is steepest - are in the early 1970s and the early 1980s. Even the recent house price increases have not been as sharp as they were in 2002 to 2008.

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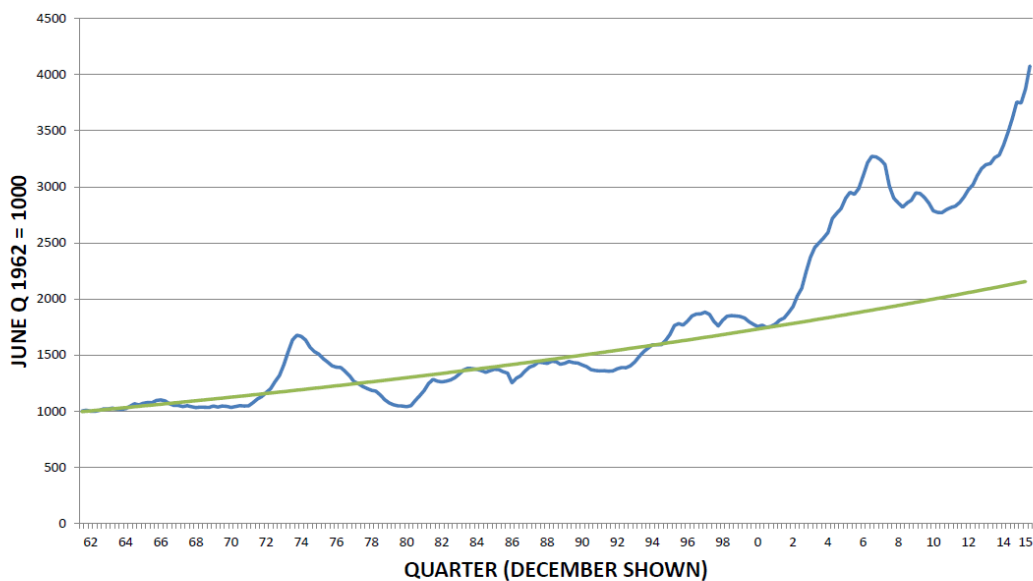
Graph IA: This graph is the same as Graph I except the vertical axis is a log-linear (or ratio) scale. Now the black trend line is straight - that is, it has a constant growth rate. Where the blue line of actual house prices rise faster than the black trend line, prices are rising faster.

House Prices Relative to Consumer Prices

Graph II shows the ratio of house prices to consumer prices, which presents a different picture of relative housing inflation. Historically there has been a tendency for house prices to rise faster than overall consumer prices. (The appendix discusses alternative deflators.)

II HOUSE PRICE RELATIVE TO CONSUMER PRICES

Actual (Blue Line); Trend to 2001 (Green Line)



GRAPH II: *The blue line shows house prices relative to consumer prices. Where it rises house price inflation is rising faster than consumer prices. The green line is the trend growth line from 1964 to 2001. It shows that while nominal house prices may not have been rising faster in the 21st century than they had earlier, they were rising faster than consumer prices because the later period was one of much lower consumer inflation.*

Up to 2002 the average house price rise was 1.4% p.a. above the rate of inflation. By later standards this rise was small. Aside from measurement error, it might be the consequence of the supply of housing increasing more slowly than the underlying demand. We can speculate why, but any effect was not great.

After 2002 the average annual rise increases markedly to a rate of 8.2% p.a. The slow relative shifts in supply and demand described in the previous paragraph are surely insufficient to explain the quintupling of the relative rate of housing inflation. Moreover, as identified in the 2007 note, the change in the trend housing inflation rate is very abrupt.

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Note that there was a five-year period between 2007 and 2012 when house price rises were checked by the Global Financial Crisis. Take this period out and the average increase across the country from 2002 was 12.4% p.a. – almost ten times as high as before 2002.

The price increases will vary by region. Auckland's are among the highest. The increases reported here may seem less than the housing price rises headlined in the media. But those figures are often for sales only or for selected regions. The Reserve Bank of New Zealand index derived from Quotable Value applies to all housing. It is in the interest of those doing a beat-up during a speculative boom to give the impression that asset prices are rising faster than they actually are.

The acceleration in the relative premium after 2001 coincides with President George W. Bush increasing the United States' fiscal deficit which flooded the world with financial liquidity. That made it easier for New Zealand banks to borrow offshore using the cash to fund housing purchases. While the housing price rise was not confined to New Zealand, *The Economist* reported in 2017 that New Zealand's house price relative to inflation is the highest in the rich world.⁴

Another source of funds from the international liquidity was investments by migrants or off-shore based investors. Some would have purchased the houses they would live in. But anecdote suggests that some purchasing was for speculation. Probably the source of the funds was capital flight especially from China; instructively Sydney, Melbourne and Vancouver have experienced similar price rises.

The funding inflow generated a speculative bubble, especially as the stock of housing cannot be easily increased. A speculative bubble is typically driven by expectations of strong asset price rises coupled with leveraged borrowing, giving a high return as long as the prices rise.⁵ But the price increases cannot sustain the spectators' expectations forever and eventually the bubble pops or deflates with over-leveraged speculators stranded. Usually there are knock-on impacts which damage those who are innocently (that is, non-speculatively) involved. The lack of an effective capital gains tax in New Zealand has probably compounded the strength of any speculative bubble, especially when speculators could cover part of their purchase price by borrowing at fixed interest below the nominal house price increase.

The boom staggered around the time of the Global Financial Crisis, when international liquidity dried up. It returned when the central banks of the world began quantitative easing, which again injected liquidity into world financial markets. Confidence, expectations and the state of the labour market may also have contributed to this outcome, but may well have been a part of the transmission mechanism from the contraction in international liquidity to the housing market.

⁴The Economist. (2017, March 9). Daily chart: Global house prices. <http://www.economist.com/blogs/graphicdetail/2017/03/daily-chart-6?fsrc=scn/tw/te/bl/ed/>

⁵Ryan Greenaway-McGrevy. (2015, July 26). 'Bubble trouble'. *Briefing Papers*. Auckland: The Policy Observatory. <http://briefingpapers.co.nz/bubble-trouble/>

The way overseas borrowing works is not straightforward. Suppose I take out a mortgage of \$1 million to purchase your house. You deposit the \$1 million in the bank so the net position of the bank is unchanged and it can pay off the overseas loan it has used to fund my house purchase. The net position after the transaction appears to be zero.

If this was the entire story, any international borrowing only lubricates the sale and purchase transaction. But in the course of the sale there are transaction costs: real estate agents, banks, lawyers, valuers, surveyors, movers, and so on, while house buyers often go on to commission builders to alter the house and to purchase durables and furnishings. The total costs may be a considerable amount – in one modest case I know of they were in excess of \$30,000 including the costs of selling the previous house (a downsizing too). In total this amounts to a considerable expenditure each year (100,000 houses at \$30,000 per sales transaction is \$3 billion) which is, in effect, borrowed offshore. Observe that it can hardly be argued that this offshore borrowing is funding ‘investment’ – although some is so classified in the official statistics.

If the long-run relativity that existed between 1962 and 2002 had persisted through the following 14 years, house prices today would be half the level they actually are. It could be argued that this is a measure of the degree by which housing is overpriced. We use this doubling up (or rather halving down) to illustrate the general proposition of the adjustment which follows a speculative boom.

Falling Nominal Housing Prices

There seems little doubt that in some sense today house prices are unusually high as the consequence of a speculative bubble. What will happen when the bubble pops or deflates? Usually this involves a fall in asset prices, in this case house prices, but how and by how much and with what consequences?

We cannot be sure. In particular, overseas experience may not always be relevant because of different circumstances. It is certainly true that the United States’ house prices collapsed in many parts of the country after the Global Financial Crisis – indeed their boom and bust was one of the causes of the crisis. But the obligations of mortgagors (typically banks) and mortgagees differ between the two countries. It is easier for mortgagees to walk away from a house in the United States than in New Zealand, leaving the banks holding the title and the expenses which go with it; that encourages fire sales.

Nor need history be a good guide. I hunted around for evidence of what happened in the 1930s but there is no data. In any case, mortgage arrangements differed because banks were not as heavily involved. There were mortgage and tenant relief measures but arguably they occurred because of general deflation and falling nominal interest rates.

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The speculative housing boom in the early 1970s - evident in the graphs above - does not seem relevant because it was followed by a period of high consumer inflation during which house prices stagnated, returning to the relativity track between housing and consumer prices. There is no expectation of high consumer inflation in the immediate future.

Graph I shows that over the 52 years falls in nominal housing prices have been small and rare and, usually, for only a quarter or so; they are but market stutters. The one exception was the period from 2007Q4 (which precedes the usual date for the beginning of the Global Financial Crisis of August 2008) to 2009Q1. The fall across the five quarters was around 10 percent - 2 percent a quarter.

So New Zealand's post-war experience is that significant falls in nominal house prices are unusual across all regions although sometime special factors affect a particular region. (This conclusion may not apply elsewhere - such as in the United States.) This probably arises from a 'nominal house price rigidity', paralleling the nominal wage rigidity which Keynes wrote about.

Suppose the speculation stops. There will be a steadying of house prices. Most home owners who traded up their houses during a boom - not unaware of the speculative gains - will now sit tight rather than sell their house below the peak price. There will be some distressed selling from those who cannot service their mortgages and some necessary selling from estates of the deceased, from those who have to move, or those who have had a dramatic change in their family size or circumstances such as ageing.

The bubble activity from speculation and trading-up will cease. It is understandable that speculators withdraw from a market when there is little expectation of price increases, when home owners stay tight and do not look for improved accommodation - forgetting that the house they would be buying will have fallen in price too. It can be compounded by the individual's assessment that the quality of a house is partly a function of the perceived price, which is not an assumption in economists' standard theory of demand.

Whatever the case, the indications are that - aside from traumatic economic and financial events such as a massive rise in unemployment - the nominal house price will be sticky downward because most homeowners will not want to move if prices fall. They will hang onto their home valuing it at its current (peak) price. (In behavioural economics this is related to the endowment effect, the theory that people place more value on the things that they own.) The price of housing is not going to fall by much in the short term.

Suppose the price slippage is at an annual rate of 8% (similar to the 2008 fall) and that consumer prices rise at 2% p.a (the current long-run assumption). After allowing for the rising pre-2002 relative trend (of 1.4% p.a.), it would take until 2022 for housing prices to return to the trend that existed before 2002. By that time, the average house

would have lost about 40 percent of its nominal value. (My 2007 calculation was more optimistic because it assumed a higher rate of inflation while the over-valuation was not as great. It did, however, assume that house prices would stay the same, rather than drift downward.)

The previous paragraph is not a prediction, but an exploration based on a series of assumptions. It is to indicate that it is going to be difficult for housing prices to rebalance with consumer prices.

Turning to Graph II we see that the longest period of relative price stability was the six years following the wool price collapse of late 1966. The longest period of housing prices falling relative to inflation was also about six years – in the mid-1970s – but this was a period of stagnant nominal housing prices and high consumer inflation. The implication is that six years of even mildly falling nominal housing prices would be unusual.

Stagnation and Low Market Activity

What happens during periods of stagnation and low market activity?

First, the housing transactions industry is likely to contract; that will be most evident among real estate agents but others – financiers, solicitors, valuers and so on – will also experience a reduction in their activities.

Second, with the reduction in turnover it will be harder for people to find the houses they require. That they cannot move on will reduce the turnover further. In effect there will be substantial reduction in market 'liquidity'. This term is usually used for more homogeneous financial markets but it can be applied, to some extent, to the very heterogeneous housing market.

The standard theory of financial markets observes that speculators contribute to markets' liquidity by being willing to buy and sell the asset, matching market deficits or surpluses. Presumably the same thing happens in the housing market if we include speculation to cover buyers upgrading their housing, with nominal capital gains as a partial reason. The lack of this liquidity occurred to some extent in the immediate post-Global Financial Crisis housing markets and, arguably, may be occurring since late 2016, adding to the market stagnation.

The macroeconomic adjustment may be complicated but the size of the necessary discussion means that it cannot be fitted into this paper. There will be falling employment in the housing transactions industry. There may be less house building – but more house alterations since incumbents may adapt their houses rather than change to other ones. In principle a government concerned with housing a growing population (and/or replacing poor quality housing) might increase housing construction from the public

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purse; the houses will be smaller though - and presumably more of them. Insofar as there is a fall in the exchange rate because offshore borrowing falls, there may be some surge in the tradeable sector, although New Zealand supply responses tend to be slow. In any case it is not obvious how to convert real estate agents into export salesmen and saleswomen.

Conclusion

At this point the reader may ask, what is to be done? However, this paper is about what has happened, what is happening and what may happen. Before deriving quality policy conclusions it is necessary to get those questions clear as well as to decide on priorities and options.

Moreover, there will be other things happening which will complicate the policy response. What happens to mortgage interest rates during a housing market downturn will likely depend heavily on the driver of the downturn and its macroeconomic consequences. If interest rates were to rise they would compound the difficulties of those who have over-borrowed in a stagnant market.

My view is that the government should not be concerned about those who have got into difficulties because they have over-borrowed, although there will be public pressure from them. I am not a fan for the coupling of privatisation of (especially speculative) profits with the socialisation of losses. The transfer of the losses of speculation - even those of owners of single homes - onto the public balance sheet is not a fiscal priority. It is accepted that the public - and hence the government - has an interest in ensuring the stability of the financial system. Recently published Reserve Bank of New Zealand stress test results suggest that the banks are not threatened by stagnant or gently falling house prices.⁶

In my view, the priority is to ensure that the population is adequately housed - which is not the same thing as being housed in mansions bigger than they need, the extra size being a part of their speculations. While rental housing, including public rental housing, will be a part of the solution, my impression is that the stock of housing is better looked after by owner-occupiers. Enabling families (including families yet to be formed) who currently do not own houses to purchase their own houses has to be a central part of the nation's policy objectives.

Indeed, the housing market stagnation may create an opportunity for a programme of the building of modest-sized new housing and replacing dilapidated existing houses funded, in part, by offshore borrowing. This would more efficiently house the population while adding to the assets of the country rather than - unlike too much of the borrowing of recent years - disappear in transaction costs.

⁶ Reserve Bank of New Zealand. (November 2016). *Financial Stability Report*. <http://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Financial%20stability%20reports/2016/fsr-nov2016.pdf>

As recent and historical experiences show, the private market cannot be left to do this by itself. My earliest knowledge of public intervention is the workers' cottages under the Seddon Government. (About the same time, owned housing was partially exempted in the asset testing for eligibility for the Old Aged Pension.) However, the measures undertaken by the Massey Government in the early 1920s were much more successful in achieving widespread housing and framed policy for the next half century.

Historically then, it was not just a matter of building public housing but also of facilitating the financing of private purchasing (some of which led to the private construction of housing). How to successfully house those with inadequate housing while getting a better relativity between house and consumer prices (that is, by avoiding further house price inflation) and without excessive fiscal exposure is a complicated policy issue. That will not stop fools rushing in where angels fear to tread, or tread only after much analysis. This note, one hopes, will be useful to some angels.

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APPENDIX: Alternative Relativities

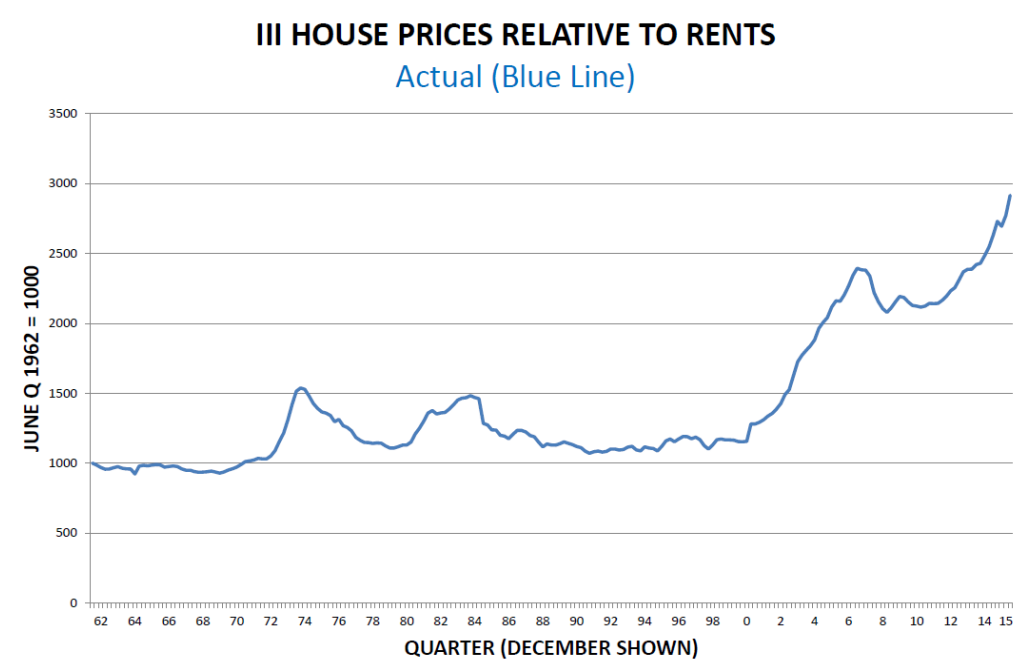
The main note deflates the housing price by the price of consumer goods. I understand the relativity concept - it is a conventional variable in the orthodox demand function.

Other deflators of house prices are sometimes used; I tried some of them out while preparing the statistical analysis. The more I worked on them the more I am puzzled as to the underlying concept.

The Ratio of House Prices to Rents

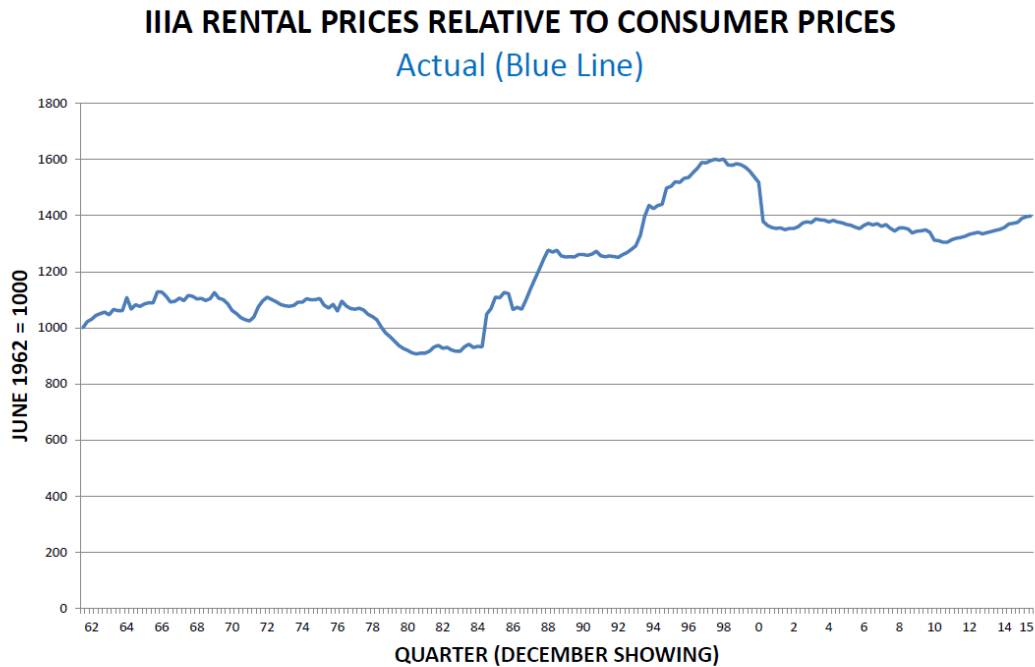
In principle the ratio of house prices to rents has some meaning although not all houses in the house price index are for rent and there are the complications of government interventions, like the switch to housing assistance in the early 1990s and the change in state rental pricing in the early 2000s.

Graph III shows the ratio of house prices to rents for the 1964-2016 period. The ratio is constant till the early 1970s - indicating that rents were moving in line with house prices - and then settles at a slightly higher level from the mid-1970s to the early 2000s. (The jump in the early 1980s is the effects of the price freeze which was more effective on rents.) Afterwards the ratio rises so that house prices have risen about two-and-a-half times relative to the pre-2001 level in the following 16 years - a pattern similar to what we saw with the ratio of house prices to overall consumer prices.



Graph III: When the blue line is above 1000, house prices are rising at a faster rate than rents.

The similarity of the patterns in Graph III and Graph II (the ratio of house prices to consumer prices) arises because, excepting for the odd step, the two prices track one another as Graph IIIA (below) shows.



Graph IIIA: Like Graph IA the vertical axis is a log-liner or ratio scale of Graph III.

Because a house rent has to cover insurance, local body rates, maintenance and administration, together with an allowance for vacancies, it does not simply reflect a return on the capital invested in the house; first those components need to be deducted. The landlord's return is complicated by there probably being a mortgage, which involves servicing the debt and, insofar as house prices rise, a capital gain enhanced by leverage.

So the ratio of house prices to rents gives only an imperfect guide to the return on the investment. Given the degree of housing inflation there is no doubt that returns including capital gains have been high over the years, but the indications are that without the capital gains the investment returns seem to have been low and possibly even negative compared to bank deposits, even in a rising market. Until the rental property is sold, though, the return is not realised. Once the bubble pops or deflates

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it may prove difficult to realise the capital gains, while the landlord suffers from a weak cash flow after debt servicing and other costs.

On occasions, representatives of landlords have said that when house prices stagnate (and so there are no further capital gains), rents have to rise, implying that landlords are charging below market rates. Aside from inertia – especially for a good tenant – this seems unlikely.

Depending on the quantity of new building, a period of house price stagnation or slow decline could be a period of slow decline of rents (relative to consumer prices), compounding the difficulties that landlords face. If there are shortages – especially in niche markets or at particular times in the seasonal cycle – there may be a temporary sharp rise in rents in some localities.

The Ratio of House Prices to Wages

Consider the ratio of wages to house prices. There was a bankers' rule, presumably developed from experience in times of relative stability, that the value of a house one should purchase was three times the annual earnings of the man. It depended on a series of assumptions about the deposit as a proportion of the house value, the income tax rate on wages, the interest rate and the payback period of the (table) mortgage. Presumably it involved some notion of how much the household should spend on its housing. Probably it also depended on a notion of future inflation trends. If any of the parameters were to change, the three times ratio would in principle change.

In the past, to cover the deposit, the bank's mortgage was often supplemented with a short-term higher-interest second (flat) mortgage which was paid off quickly from the earnings of the wife. (I recall in the 1970s it was not unusual for the wife to become pregnant about the time the second mortgage was paid off.)

This three-times relativity was based upon the notion that there would be a single earner in the family. However in the 1970s there was a rise in the proportion of mothers earning in the labour force. This undermines any long-term affordability measure based on average wages since while many households have two earners (although it would be sensible to deduct childcare costs), others have one-and-a bit-earners and others only one.

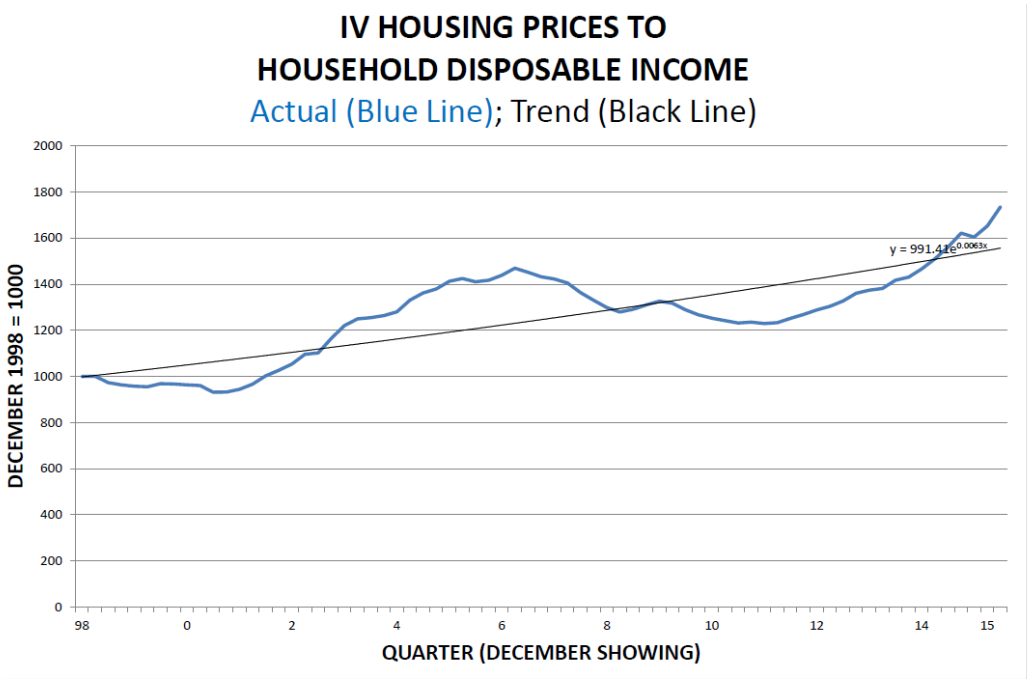
Additionally other key parameters have changed: income tax rates, the deposit as a proportion of the house value, interest rates, the payback period and future inflation.

Such considerations mean that I did not calculate the ratio of house prices to wages. Until someone comes up with a rigorous theoretical underpinning, such a ratio is, at best, misleading.

The Ratio of House Prices to Household Disposable Incomes

To avoid some of the deficiencies of the house price to wage ratio, affordability is sometimes measured as a ratio of housing prices to disposable household income. Note that to be properly meaningful the other key parameters - the deposit as a proportion of the house value, interest rates, the payback period and future inflation - have to remain constant. For instance, as may be happening at the moment, suppose housing prices stabilise (or fall modestly) while incomes rise modestly. An affordability index based on the ratio of house prices to household incomes will fall. But it is not impossible that at the same time interest rates (and hence debt servicing) rise and that, practically, housing becomes less affordable to many.

Graph IV shows the ratio of house prices to household disposable incomes (per person). Unfortunately it was only possible to get a quarterly series back to 1998 which means we do not have a sense of the trend before 2002. Not surprisingly, the ratio begins to rise rapidly from 2002 to a level about 40 percent higher in 2007. It fell by 20 percent over the next five years, and then began rising again to about 75 percent above the 2002 level in late 2016.



Graph IV: The blue line is the index of actual house prices, the black line is the trend.

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Between 1998 and 2002 the ratio falls. We do not know whether this is a long-term trend. It could be the effect of rising incomes, which raises demand for houses, is being more than offset by the rising relative prices. Note however conventional supply and demand analysis assumes that there is not a speculative bubble.

I am not sure how to interpret this result precisely because I do not know the long-term past trend - and in any case it is not adjusted for the costs of debt servicing - but the broad conclusion is almost certainly consistent with every other ratio reported here: houses are overpriced today.

About The Author

Brian Easton is one of New Zealand's leading economists with a unique profile as an economic development practitioner, consultant, journalist and commentator. A former director of the New Zealand Institute of Economic Research and a one-time member of the Prime Minister's Growth and Innovation Advisory Board, Brian has numerous awards to his credit including being a distinguished Fellow of the New Zealand Association of Economists. Dr. Easton is an adjunct Professor of the Auckland University of Technology and is currently writing a history of New Zealand from an economic perspective.

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