



House Price Measurement in New Zealand

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1 Introduction

House Price Measurement in New Zealand is a stocktake of the different house price measures available in New Zealand. We summarise them on a number of dimensions – quality adjustment, timing of data, weighting scheme, coverage – and look at how the measures compare over the short and long term.

The good news is that, despite challenges and limitations on how we can measure house prices, the long-run trends of house prices tend to be very similar. This observation was also the case in a recent study of the seven available UK measures (Wood, 2005), and implies that there are no systematic biases creeping into our measurements. It is the shorter-term measurements (which of course are the ones that are the most influential on a day to day, media basis) that can vary across different methods.

Around the world, there is increased focus on the measurement of house prices, and Eurostat is currently starting to compile a best practices manual for this.

2 The challenges of house price measurement

The measurement of house prices is challenging for these reasons: quality adjustment, timing, and weighting.

2.1 Quality adjustment

The characteristics and selling price of dwellings vary significantly across the entire dwelling population. We observe these only for the small proportion of houses that sell each month (or quarter). The composition of that sample is not necessarily representative of the entire stock of housing and also, changes in the composition of the sample can affect the estimate of price change.

There are many quality adjustment techniques used in the measurement of house prices, to try to remove the effect of the changing composition on the price measurement, and therefore to extract out the underlying price change that we are interested in. The most common are the hedonic regression, mix-adjustment (or stratification), and repeat-sales methods. New Zealand also uses a sale price appraisal ratio method.

However, even the most sophisticated method can only adjust for compositional change in terms of the variables observed and captured in the data. If the sample of houses sold changes in terms of characteristics that are not observed, and not strongly correlated with the observed variables, there is the risk that our measurement of the price change is being contaminated by the effect of the changing sample composition. Many of the house price measures incorporate only information on region. If, for example, more lower-quality houses are being sold this quarter than last quarter even after controlling for region, then the measured price change will be biased downwards.

The repeat-sales method (used for the well-known Case-Shiller index in the US) answers this issue by using pairs of sales for the same house, therefore ensuring that price changes are based on houses that are the same. This repeat-sales method raises a different set of issues – what if the dwelling had been renovated between sales (in which case the price change measured is due partly to the underlying price change for houses, and partly to the improvements made). Conversely, the house might not have been maintained, and therefore the price difference from one sale to the next would include the effect of a drop in quality. Also, how representative of the entire housing stock are those houses that sell more frequently? There are various ways to try to address these issues.

2.2 Timing

A house sale can be recorded at different points in time – when the sale is agreed, when mortgage finance is approved, when contracts are exchanged, or at the time of settlement.

For the purposes of measuring price changes for houses, it is desirable to select the earliest date at which the final purchase price is set. The point in time at which the price is first determined is when verbal agreement is reached. However, this information may be difficult to obtain and it is possible for the originally agreed sale price to be

renegotiated. Approval of mortgage finance data is limited to those sales that involve mortgages. Exchange of contracts data is timely, but may not always be readily available and could include some transactions that do not proceed. Data obtained from settlements is more accurate, but less timely.

2.3 Weighting

Price indexes can employ a variety of weighting practices: these are usually determined by the purpose and scope of the index and also by factors such as availability of weighting information, and what sort of information needs to be weighted.

With respect to the purpose and scope of the index, the Australian Bureau of Statistics' (ABS's) project homes index, for example, was designed as a component of the consumer price index (CPI), therefore it concerns the expenditure of consumers on new dwellings, and the weighting has been calculated to reflect this. The ABS's established house price index was designed to measure changes in the price of the stock of houses. The weights are calculated as the value of housing stock and the observed prices collected every quarter are taken to represent the prices of the whole set of houses.

Even if the approach is to measure the change in price of some 'representative' house, a decision needs to be made on how changes in these price observations are to be weighted together (providing that there is more than one price observation).

In general, the estimates of house prices tend to be taken as an indication of the change in the entire housing stock, whether or not this has been explicitly built into the measurement methodology.

In practice, however, some indexes might use equal or implicit weights, for example if a geometric mean of price relatives is used.

3 A summary of the situation in New Zealand

New Zealand does not have an official house price index, although the price of newly constructed houses (not including sections) is measured for the New Zealand CPI.

However, there are two organisations that currently produce house price measures in New Zealand. The Quotable Value house price index (QVHPI) is considered to be the most reliable measure, but has a three-month time lag. The QVHPI is now produced by PropertyIQ Ltd, a joint venture partly owned by QV.

The Real Estate Institute of New Zealand (REINZ) produces a more timely monthly measure (10 days after reference period), but until recently this has been simply a national median price and as such, can be heavily affected by compositional change. Recently, however, REINZ has implemented a stratified median price index which closely tracks the QV measure.

4 New Zealand's house price measures

4.1 Quotable Value's house price index

Quotable Value Ltd (QV) is a state-owned enterprise and is New Zealand's largest property valuation and information company. QV maintains a comprehensive property database on all property classes in New Zealand. The property database contains historic and current valuation data. QV also acquires sales records for all property sales from territorial authorities (TAs). These sales records include private sales and sales by developers, in addition to sales via real estate agents.

QV uses a sales price appraisal ratio (SPAR) method. Sales data from each quarterly period for each of 74 TAs are used to adjust the full property valuation database. The total net sale price (after editing) of all property sales of the listed residential categories is divided by the total capital value (CV) of the same properties sold in a quarter, producing a ratio for current value against CV at the time of regular assessment. The ratio arrived at is applied to the entire stock of CV values for each TA. Results for each TA are then aggregated to give the national index. Indexes at the TA level are also available for distribution.

Until December 2004, the QVHPI was produced for detached houses only. From that date, a new QVHPI was added which included flats and apartments. This is the 'all residential' HPI. This broader index has been backdated by QV on the new methodology to December 1989.

The data are reported as at sales date and there is a delay between sale date, sale registration with the local authority, and the data being available in QV's database. Therefore a three-month delay for QVHPI calculation, and consequently derivation of dwelling values, is introduced. More than 90 percent of sales from the previous quarter are available by this time. The quarterly QVHPI derived from these sales is not revised.

4.2 Real Estate Institute of New Zealand's median sale price and housing price index

The Real Estate Institute of New Zealand (REINZ) produces a monthly national median sale price, based on the sales made by its members. This measure represents slightly more than 80 percent of all residential sales that are settled. The data (which covers both detached houses and apartments) is captured when sales that have become unconditional are reported by REINZ members. The measure is very timely (within two weeks of the reference month) but can be affected by compositional change in the sample of houses sold.

In August 2009, REINZ began publishing a stratified housing price index, which is based on the same data, but uses mix-adjustment to adjust for compositional change. The index is calculated back to January 1992, the first month for which electronic information is available.

The approach used to calculate REINZ's housing price index is very similar to that outlined in the Reserve Bank of New Zealand's discussion paper *Developing Stratified*

Housing Price Measures for New Zealand (McDonald & Smith, 2009). However, as further improvement, the REINZ housing price index is now calculated using sales for all transactions (rather than the median price for each suburb) within the stratum.

How the stratification works:

- Dwelling sales from approximately 1,800 New Zealand suburbs are ranked according to the median sales price of the suburbs over the relevant comparison period (currently January 2005–June 2009).
- The suburbs are allocated into 10 different groups (or strata). Suburbs accounting for 10 percent of the lowest sales by price are grouped into stratum 1; suburbs with 10 percent of the most expensive sales price are in stratum 10. The allocation of suburbs to each stratum is fixed over the comparison period.
- Using sales data for the individual transactions within the stratum, a median sales price is derived.
- The median sales price for each stratum is averaged to produce a housing price measure from which the housing price index is derived.

The REINZ housing price index is available for New Zealand; and also for Auckland, Wellington, other North Island, Christchurch, and other South Island.

4.3 New Zealand's consumers price index

New Zealand's consumers price index uses a net acquisitions conceptual approach, and so the expenditure weight allocated to purchase of housing represents the value of the net increase in the stock of owner-occupied housing during the weight reference period. Expenditure on newly constructed dwellings by owner-occupiers is included, as are any net shifts between owner-occupied dwellings and rental properties, and alterations and additions to established owner-occupied dwellings. Home ownership contributed 5.51 percent to the all-groups CPI expenditure weight as at the June 2008 quarter.

The price movement of new housing is estimated from a survey of builders that construct standard-plan houses. Respondents are asked to provide a quote for one or two house plans that they build fairly regularly.

So, the index for 'home ownership' gives the price movement for newly constructed houses, not including the sections they are built on.

Appendix 1 Comparison of New Zealand's house price measures

Table 1

House Price Indexes	
Quotable Value – detached only	<p>Frequency: quarterly</p> <p>Timeliness: 3.5 months</p> <p>Measure: price index</p> <p>Scope of output: freehold open market sales – detached houses only</p> <p>Geographical scope: all of New Zealand</p> <p>Sources of price data: sales data from territorial authorities and valuation data</p> <p>Method: sales price appraisal ratio (SPAR) method</p> <p>Weighting: valuation data weights to entire New Zealand housing stock</p> <p>Timing of transaction: settlement date</p> <p>Revised: no</p>
Quotable Value - all residential	<p>Frequency: quarterly</p> <p>Timeliness: 3.5 months</p> <p>Measure: price index</p> <p>Scope of output: freehold open market sales – all residential housing</p> <p>Geographical scope: all of New Zealand</p> <p>Sources of price data: sales data from territorial authorities and valuation data</p> <p>Method: sales price appraisal ratio (SPAR) method</p> <p>Weighting: valuation data weights to entire New Zealand housing stock</p> <p>Timing of transaction: settlement date</p> <p>Revised: no</p>

Table 1 (*continued*)

House Price Indexes	
REINZ median	<p>Frequency: monthly</p> <p>Timeliness: approximately two weeks</p> <p>Measure: median price</p> <p>Scope of output: freehold open market sales of detached houses and apartments by REINZ members</p> <p>Geographical scope: all of New Zealand</p> <p>Sources of price data: sales by REINZ members</p> <p>Method: national median price</p> <p>Weighting: none (so, implicitly weighted to represent sales rather than stocks)</p> <p>Timing of transaction: when the sale is reported by a REINZ member (ie when the price is agreed and the contract/agreement has become unconditional)</p> <p>Revised: no</p>
REINZ stratified	<p>Frequency: monthly</p> <p>Timeliness: approximately two weeks</p> <p>Measure: price index and median price</p> <p>Scope of output: freehold open market sales of detached houses and apartments by REINZ members</p> <p>Geographical scope: all of New Zealand</p> <p>Sources of price data: sales by REINZ members</p> <p>Method: stratified medians, based on historical sales price of suburbs</p> <p>Weighting: none (so, implicitly weighted to represent sales rather than stocks)</p> <p>Timing of transaction: when the sale is reported by a REINZ member (ie when the price is agreed and the contract/agreement has become unconditional)</p> <p>Revised: no</p>
New Zealand CPI – home ownership	<p>Frequency: quarterly</p> <p>Timeliness: 10 working days after reference quarter</p> <p>Measure: price index</p>

Table 1 (continued)

House Price Indexes	
New Zealand CPI – home ownership	<p>Scope of output: new standard-plan houses (excluding land)</p> <p>Geographical scope: all of New Zealand</p> <p>Sources of price data: survey of builders</p> <p>Method: pricing constant-quality house specification</p> <p>Weighting: consents for selected builders in sample weighted to reflect all building consents, within the five broad CPI regions</p> <p>Timing of transaction: 15th of middle month of each quarter</p> <p>Revised: no</p>

Figure 1
New Zealand house price measures, 1992 to 2009
Base: January 1992 month (=1000)

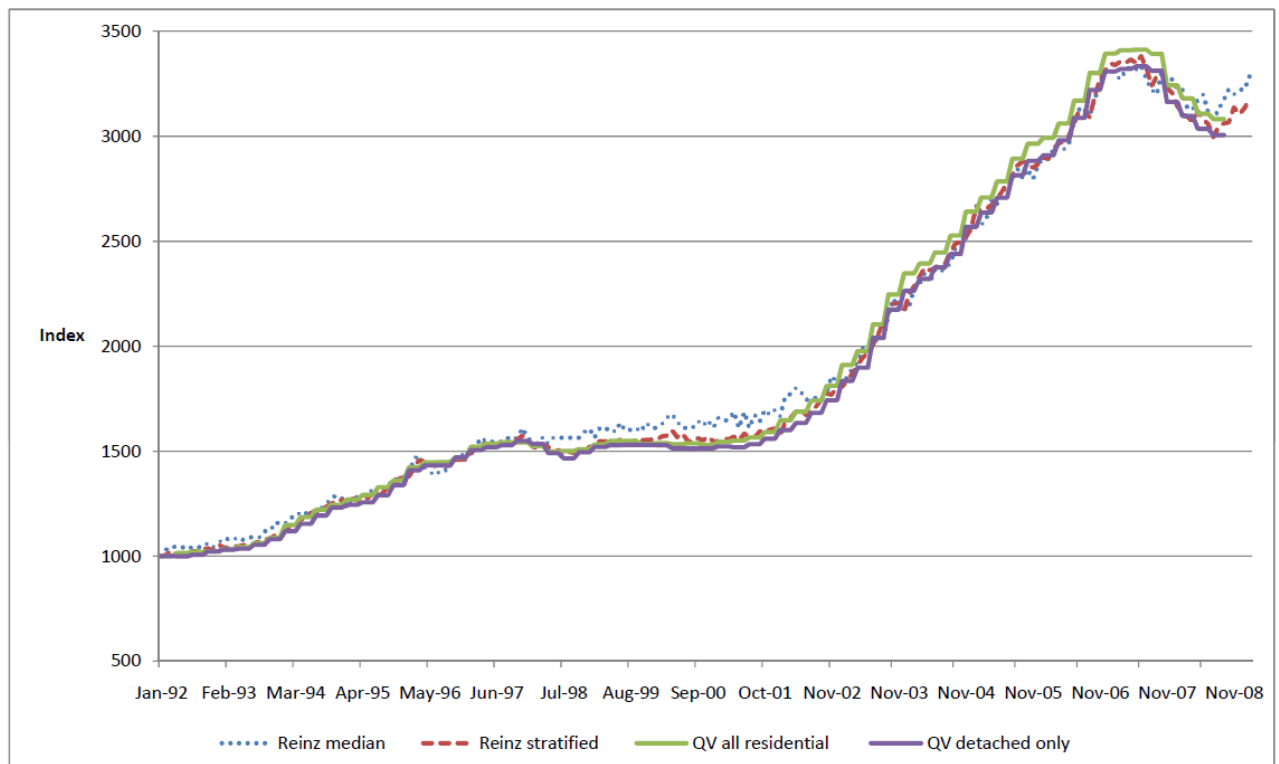
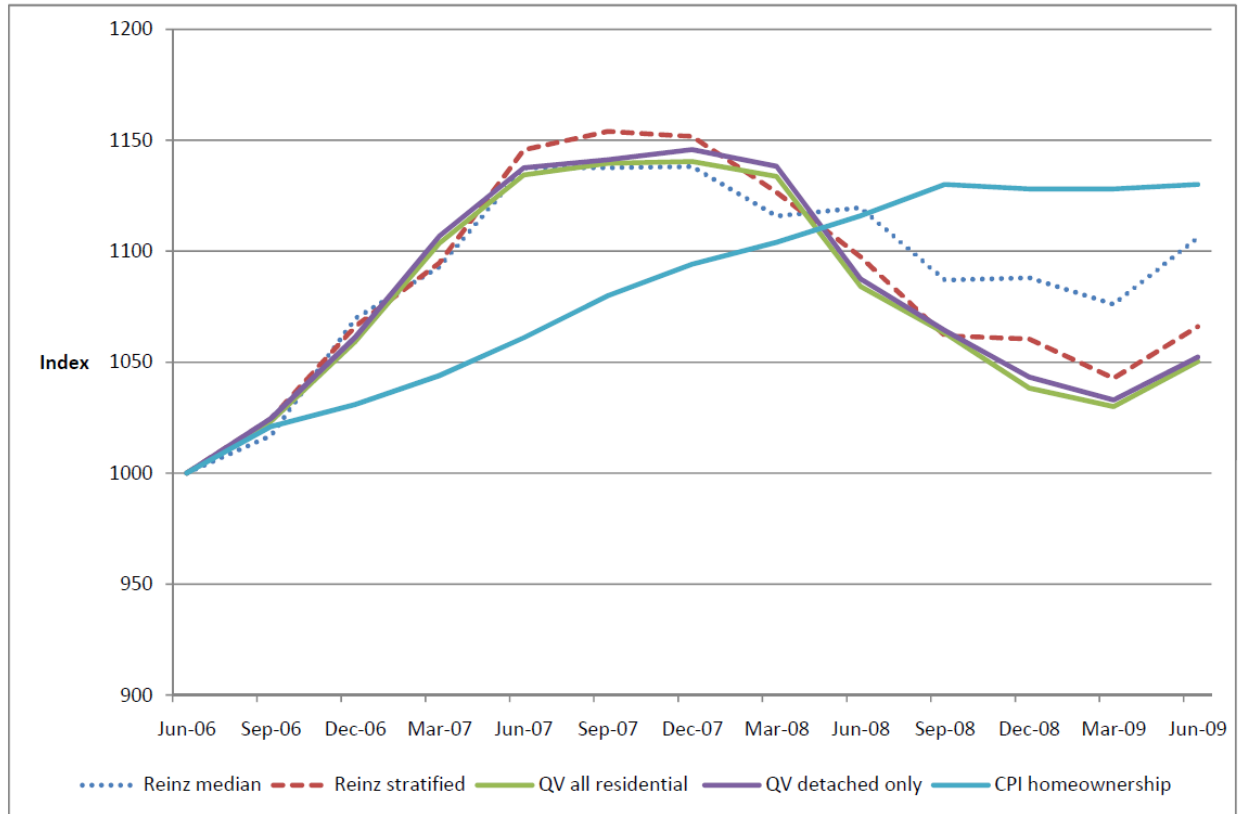


Figure 2
New Zealand house price measures, 2006–09
Base: June 2006 quarter (=1000)



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Further reading

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