CoreLogic Home Value Hedonic Indices FAQs

August 2017

About the new generation CoreLogic Hedonic Home Value Index 2017

Your frequently asked questions answered:

On Friday 1 September, CoreLogic will release its new generation hedonic home value index, which, in its new form delivers global best practice by providing greater precision on measuring movement in property value in Australia, as well as the adoption of new geographical boundaries. CoreLogic has spent over 12 months in rebuilding and testing the new model to pass rigorous internal and external audits, and are pleased to launch the new hedonic series.

The Indices are built upon the most comprehensive property databases in Australia, with deep coverage across the entire property lifecycle. This breadth and depth of data combined with over 30 years' experience aggregating and managing property data, allows CoreLogic to create Australia's only Hedonic Index suite.

CoreLogic is committed to ensuring a high standard of quality for all analytical processes. Commissioned audits of the new hedonic model have been undertaken internally as well as externally by KPMG and academics from the University of Sydney and Macquarie University. The audits confirm the technical methodology adheres to global best practice, that the model meets benchmarking standards and the technical methodology is implemented according to the CoreLogic methodological whitepaper. The audits also ensure that the implementation of the model is aligned to the methodology published by Eurostat (the European Union statistical agency) legislated for use by the European Commission and endorsed as best practice by the International Monetary Fund and Bank for International Settlements.

Indices whitepapers/reference documents can all be found on our website: www.corelogic.com.au/indices

Why has CoreLogic decided to make a change to its current indices reporting model?

Any statistical model should be upgraded and maintained to ensure the outputs are the most accurate as possible and the methodology conforms to international best practice. Since the last major upgrade of the hedonic model (2011) there have been significant advances in processing speeds and analytic applications. The new model takes advantage of scalable processing speeds via Amazon Web Services and aligns with methodological standards issued by the European statistical agency, EuroStat. Additionally, the model utilises updated standardised geographic boundaries that are maintained by the Australian Bureau of Statistics.

What key changes were made to the CoreLogic Hedonic Methodology?

The underlying methodology itself is not a significant departure from the original methodology published in 2011. Enhancements were made to the implementation of the methodology due to the availability of improved data and infrastructure and to ensure these adhered to standards issued by the European Statistics Agency which has been legislated for use by the European Commission and endorsed as best practice by the International Monetary Fund and Bank for International Settlements.

The new generation Indices enhancements include:

- **Improved filtering and treatment of outlier transactions.** A two-phase dynamic filtering process was adopted in order to better capture a sample of observations that best represented true market transactions. The first phase excludes extreme outliers and any non-arm's length transactions, and the second phase trims the top and bottom 2.5% of observations based on dollar value.

- **Improved treatment of transactions with long settlement periods** - sales transactions that have settlement periods of longer than 12 months have been excluded from the model. These transactions have a higher chance of being off-the-plan sales where the contract price may not be truly representative of the market value of the underlying stock given that the property did not exist at the time the agreement was entered into.
- **Upgrades to the regression methodology** - The hedonic regression window utilises sales observations over the past twelve months which has improved the accuracy of the underlying individual property valuations. Transactions are weighted on a linear basis which ensures more emphasis is placed on more recent observations
- **Better treatment of changes to the underlying database** - Changes were made to the adjustment of the portfolio population when indexing between two periods to better control for structural changes (changing attributes or new constructions) in the market. This will allow us to avoid volatility introduced by changes in CoreLogic's underlying data universe as it expands its coverage over time.
- **Alignment to new ABS standard geographies** - All new index outputs will align with the ABS 2016 Australian Statistical Geography Standard to ensure comparability between index series published by CoreLogic and those published by ABS and other data providers

How does it compare with the previous results published by CoreLogic?

There are several noticeable points of comparison to be aware of between the new series and the old series.

1. **Longer time series** – the expanded coverage of CoreLogic's underlying data has allowed CoreLogic to construct a historical view all the way back to the 1980s with exact length varying by state (not all states started capturing digital records of property transactions at the same time)
2. **Similar historical returns with reduced volatility.** The average monthly return is almost identical across the major capitals with a significant reduction in volatility across all regions.
3. **Reduction in volatility** – the methodological upgrades have resulted in a substantial reduction in index volatility without sacrificing measures of capital returns or the indices ability to pick turning points in the market.
4. **An adjustment to the calculation of stock weights** ensures a 'real time' weighting between houses and units within the combined dwellings index, rather than stock weights that were previously based on census allocations.
5. **Updated geographic boundaries** has inheranty resulted in some differences in market readings.

What is the Hedonic Index?

- A regression methodology which estimates the underlying value of a particular quantity (e.g., prices, rents). It assumes that the quantity itself can be broken down into its constituent characteristics to obtain estimates of the contributory value of each individual characteristic. This means that the sale value or rental value of a particular property can be attributed to characteristics such as number of bedrooms, number of bathrooms, land size, floor area, location, etc.
- By understanding the contributory value of each characteristic, CoreLogic is able to infer the value of every property in the country and subsequently index the change in property values over time without requiring an actual transaction to be observed.

- Essentially, CoreLogic's hedonic home value index estimates the value of every property across each region. Based on these valuation estimates of individual properties, CoreLogic calculates the capital gain or loss across the entire housing portfolio from period to period.

Why does CoreLogic use a Hedonic methodology?

Three fundamental aspects of the property market create a number of matters that require addressing when trying to measure the growth in a given market:

- **Avoids compositional bias.** With only a small proportion of homes transacting each year, measuring the price change of only those properties that sell may not accurately reflect changes across all housing stock.
- **Quality adjusted.** The hedonic regression method inherently values a property based on its components rather than assessing price changes as if all housing was homogenous.
- **Timely.** The index is calculated daily, one day in arrears. The model utilises all available decision points to impute the value of individual properties.
- **Compensates for capital injections.** The hedonic index is designed to measure pure returns and exclude value add from capital works (renovations and new stock). To ensure capital works are removed wherever possible, the portfolio of housing stock remains consistent from period to period.
- **Overcomes sampling issues associated with transaction based methods.** Regions with low turnover or a small number of recent transactions show inherent volatility underpricing based measures. As a portfolio based measure, the hedonic index provides a contemporary measure of housing market performance despite only a small sample of observations being available. The model places higher weighting on the most recent sales
- **Internationally endorsed as best practice.** The methodology is the recommended method for measuring housing prices by EuroStat, as well as the International Monetary Fund and Bank of International Settlements.

How does the Hedonic method account for compositional bias?

- By estimating the values of all properties irrespective of whether they have transacted or not, the hedonic index creates a consistent apples-to-apples comparison when determining change, ensuring that all properties are included in the indexation process
- How does the Hedonic method account for property market illiquidity and delays in property transaction information?
- The hedonic model estimates the values of all properties irrespective of whether they have transacted or not, creating a contemporary view of the state of the entire population despite only around 5-7% of properties transacting each year. Importantly, CoreLogic collects the majority of transactional data in a timely manner, directly from industry sources which helps to overcome the inherent lag associated with many of the state and territory data provisions.

How can the industry and public trust the results being published & how do the CoreLogic Indices compare with official numbers published by the ABS?

- CoreLogic consistently achieves a 90%+ correlation with Australian Bureau of Statistics (ABS) measure of annual house price growth over the period that ABS has published statistics for and consistently achieves a 80%+ correlation with ABS' measure of quarterly house price growth over the same period. These high levels of correlation means CoreLogic's hedonic index tracks the ABS results closely over time. Unlike the ABS, which has a 2.5 month delay in publishing results, CoreLogic is able to publish results on a 1 day delay.

- Additionally, CoreLogic's suite of index products has undergone a series of internal and external audits. The flagship hedonic model has been externally audited by KPMG as well as undergoing academic audits and internal governance audits. The results of these audits are available at the CoreLogic web site.

What geographies do CoreLogic indices cover?

All of CoreLogic's indices and analytic products conform to standardised geographical boundaries published and maintained by the Australian Bureau of Statistics. The current standardised regions are based on the ASGS 2016 boundaries with CoreLogic indices being calculated across the entire hierarchy of regions from National through to SA2 regions.

Additionally, bespoke or customised indices can be built based on aggregations of properties or boundaries or based on specific property attributes.

Is the back series of CoreLogic indices available for download?

The most recent 12 months of data is available for download free of charge from the CoreLogic web site. The historical series extends back to 1980 for most regions and is available on a subscription basis.

CoreLogic®

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