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Australian House Price Indices: Review and Impact on RMBS Loss Severity

Australia

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MOODY'S USE OF HOUSE PRICES

The first part of this report "Moody's Use Of House Prices" illustrated to investors how Moody's utilises house price data in its analysis of in Australian Residential Mortgage Backed Securities (RMBS) transactions and (via a worked example) its impact on loss severity.

The second part of the report "Variations in Reporting House Prices" examines the different methods used in producing house prices by different house price data providers in the Australian market and why differences exist between the different providers.

In this first part of the report, we see house price movements are utilised by Moody's for the purpose of adjusting each loan's benchmark credit enhancement requirement – House Price Adjustment – in its RMBS model[1]. The Housing Price Adjustment only takes into account house appreciation / depreciation from when the loan was originated to the cut-off date of the securitisation transaction. A loan – which has experienced house price appreciation – would experience reduced loss severity upon default due to higher recovery, a result in turn of positive house price movements. Consequently, the benchmark credit enhancement will be reduced by the House Price Adjustment. Conversely, house price depreciation would increase the loss severity upon default and the benchmark credit enhancement would be increased by the House Price Adjustment.

For example, assume a current loan balance of $100,000 and an original house price of $135,000. The probability of default under Aaa-stressed scenario? (driven by the loan to value ratio of 74%) would be say 4.7%. The loss severity (driven by market value decline of 40%) would be say 53.86%[2]. This results in a benchmark credit enhancement requirement of 2.5% (probability of default x loss severity, 4.7% x 53.86%).

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[1] AU-Milan – The Scoring Formula Revisited - Moody's Individual Loan Analysis for Australian RMBS, August 2003
[2] See Calculating Loss Severity below for working calculations

However, if we assume that the current value of the house has appreciated by 10% (since it was originally purchased), the loan will experience a reduced loss severity of 46.25%, resulting in turn in an adjusted required credit enhancement of 2.17% (4.7% x 46.25%). Hence, the loan would benefit from a House Price Adjustment of 0.33% (2.50% - 2.17%).

Moody's utilises prices published by the Real Estate Institute of Australia (REIA) for the purposes of assessing house price movements. When Moody's developed its RMBS methodology the REIA held Australia's longest running series of median property prices. Moody's is investigating the merits of using other data sources.

Calculating Loss Severity

Loss severity is the loss suffered by a defaulted loan. The three main drivers of loss severity are:

– Foreclosure Cost
  • Moody's assumes foreclosure cost (sale, legal and administrative costs) of 6% of the Property Value.
– Accrued Interest
  • During the enforcement period (Time to Foreclose), assumed to be 24 months, the principal Loan Amount outstanding on the defaulted loan will accrue interest – at a Stressed Interest Rate - which adds to the severity of loss.
  • Accrued Interest is calculated as Loan Amount x Time To Foreclose x Stressed Interest Rate.
– Market Value Decline
  • Moody's assumes a Market Value Decline (MVD) on the property of between 30% and 40% (depending on which state it is located in).

Following enforcement Net Sale Proceeds are calculated as: (Property Value - Foreclosure Costs) x MVD.

The Loss is calculated as: Net Sale Proceeds - (Loan Amount + Accrued Interest).

Loss Severity is then simply calculated as: Loss Severity = Loss / Loan Amount.

Table 1:

Original loss severity			**Loss severity if 10% property price appreciation**	
Loan Amount	$100,000		Loan Amount	$100,000
Property Value	$135,000		Property Value	$148,500
Time to Foreclosure (months)	24		Time to Foreclosure (months)	24
Stressed Interest Rate	15%		Stressed Interest Rate	15%
Accrued Interest + Loan Amount	$130,000		Accrued Interest + Loan Amount	$130,000
Foreclosure Cost (%)	6%		Foreclosure Cost (%)	6%
Foreclosure Cost	$8,100		Foreclosure Cost	$8,910
House Value – Foreclosure Cost	$126,900		House Value – Foreclosure Cost	$139,590
Market Value Decline	40%		Market Value Decline	40%
Net Sale Proceeds	$76,140		Net Sale Proceeds	$83,754
Loss	$53,860		Loss	$46,246
Loss Severity	**53.86%**		**Loss Severity**	**46.25%**

VARIATIONS IN REPORTING HOUSE PRICES

This second part of the report is in response to questions raised by European, US and Asian investors in Australian RMBS as to why Australian house prices – as reported in the media for a particular period – and annual growth rates can vary significantly between data providers, leaving investors unclear over the state of the property market.

For example in July 16, 2008, BIS Shrapnel released a report forecasting growth in prices, but just two weeks later on July 31, Australian Property Monitors saw a completely contradictory scenario when it predicted they would drop 10%.

Below is a summary of the four main factors behind the differences, while a more detailed explanation will follow further on in this report:

- **Heterogeneous Assets**

    Differences arise because of an inherent difficulty in attempting to calculate homogeneous averages – or indicative prices – for assets which are by nature highly heterogeneous, such as houses.

- **Methodologies**

    In trying to address the issue of measuring heterogeneous assets, different data providers use different methodologies to measure house prices, and even when they use the same methodology, it can be implemented differently.

- **Data Sources**

    Different data providers compensate by various means for the fact that price data from the different state land titles offices is not available in a timely manner and lags current market prices.

- **Properties Measured**

    Differences exist between some data provider as to what defines a house.

"Housing is the biggest asset in the country. Certainly for the household sector it is about 60-70% of their total wealth.

It is an extremely important asset class for most people, yet the information we have on prices is hopeless compared with the information we have on share prices, bond prices, and foreign exchange rates, and even the information we have on commodity prices, export prices, import prices and consumer prices.

It really is probably the weakest link in all the price data in the country so I think it is something that I would like to see resources put into."

(Ian Macfarlane, Governor of the Reserve Bank of Australia, 4 June 2004).

Comparing Prices

Essentially, all housing price providers are trying to describe the central tendency or typical house price representative of most cases.

Although all providers aim for the same thing, Table 2[3] highlights the fact that many interested parties may be left confused as to the state of the market due to the wide discrepancies between providers.

Even when we look at the differences in growth rates – rather than absolute median prices – there is a vast difference in results reported. For example, in the March Quarter 2004, reported growth rates for Sydney prices varied between 3.5% and -2.9%.

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[3]   Measuring Housing Prices, Reserve Bank Of Australia Bulletin, July 2004, Page 5

Table 2:
March Quarter 2004, House Prices Percentage Change

	ABS	APM	CBA	REIA	Residex
Sydney	3.5	-1.0	-2.9	4.0	0.0
Melbourne	-1.3	-9.5	-5.0	-0.8	0.1
Brisbane	6.2	0.7	-2.0	-1.4	-0.3
Adelaide	3.0	3.1	-1.8	1.3	-
Perth	1.2	2.0	-0.5	2.8	-
Canberra	4.2	1.8	-10.7	11.7	-
Australia	**2.5**	**-2.4**	**-3.2**	**2.0**	-

Measuring House Prices, Reserve Bank of Australia Bulletin, July 2004

Discrepancies between data providers are not due to erroneous data or miscalculations, but – as we have indicated – rather to different methodologies, geographic boundaries, property definitions and pricing employed in calculating prices.

Additionally, the prices reported by data providers should not be viewed in isolation when trying to ascertain the state of the market. Other factors must be taken into account, such as sales volumes, number of properties on the market, auction levels and clearance rates, time taken to sell a property, new dwelling commencements, immigration levels, interest rates, mortgage arrears rates, and consumer confidence, etc

PROBLEMS MEASURING HOUSE PRICES

Decentralised and Untimely Data

Many financial and commodity markets typically trade in homogeneous fungible assets and have a centralised system for trading and settlement of transactions, and where pricing data is instantaneously available. Examples are the stock or foreign exchange markets.

However, the housing market is a heterogeneous decentralised market.

Although each property transaction in Australia must be registered at the relevant state land titles office – for the purposes of recording ownership – the time to settlement and recording of the sales price varies for each office, and can take several months after the exchange of contracts.

And the type of information recorded varies; for instance, South Australia and the Northern Territory do not record the date of the exchange of contracts.

The timings of events when selling property are as follows:

– Agreement on a sales price between vendor and buyer
– Approval of mortgage financing from lending institution
– Exchange of contract
– Settlement of the property sale

As settlement usually occurs between one and two months after contracts are exchanged (for Melbourne the average period is 90 days) and given processing times at the various land titles offices, pricing information is not available to third parties for another couple of weeks.

Hence, pricing data from land titles offices (the most comprehensive data on house sales as all property transactions in Australia must be registered with the relevant state land titles office to maintain a register of property ownership) is not available until several months after a price has been agreed upon and will lag current prices.

Compositional Change

Only a small fraction of the total housing stock is transacted in any particular period. It has been estimated that in Australia only around 1.5% of the country's stock is transacted each quarter[4]. The quality and composition of the small proportion of houses

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[4] Reserve Bank of Australia, Reserve Bank Bulletin – June 2006

affected may be quite different to the much larger stock of houses that are not transacted, and for which prices are not observed.

Given the heterogeneous nature of housing, changes in median prices of recorded transactions – in a given quarter – will reflect the type of properties transacted (rather than the whole housing stock) as well as "pure" price changes.

There may also be quarters when activity for more expensive/cheaper houses is proportionally higher (more active), thereby skewing the observed median price higher/lower.

To put it another way, if the properties sold in a particular time frame tend towards the more expensive and those sold later tend towards the cheaper, then any comparison of these sales prices is more reflective of the types of properties sold rather than any real movements in the market.

An analysis of suburb-level transactions in Sydney and Melbourne indicates that around 60% of the quarterly variations in median price changes can be attributed solely to changes in the mix of sales between higher and lower priced suburbs, rather than to price changes reflecting demand and supply.[5]

Quality Improvements

The quality of the national housing stock has improved over time. The typical house has evolved from having three bedrooms, one bathroom and separate living areas into a more open plan, including a fourth bedroom and ensuite. Popular extras, such as rumpus rooms, studies, walk-in wardrobes, walk-in pantries, double garages, swimming pools and the like have added to the overall sizes and prices of modern homes.

Between 1984 and 2003, the national average floor area for new houses increased 40% from $162.2m^2$ to $227.6m^2$, ranging from $177.6m^2$ in Tasmania to $244.9m^2$ in New South Wales. The national average floor area for other residential dwellings – such as apartments, semi-detached housing and town houses – has also risen from $99.2m^2$ to $134m^2$ [6].

Even existing housing stock is undergoing continual improvements via renovations and extensions that typically result in higher prices. Such rises are the result of quality changes rather than "pure" price increases.

Although the improvement in housing stock would boost median prices over the longer term, it likely to be an insignificant factor when comparing price movements between consecutive quarters.

HOUSE PRICE DATA PROVIDERS AND METHODS

The main providers of house price data in Australia are:

– Commonwealth Bank of Australia (CBA)

– Real Estate Institute of Australia (REIA)

– Australian Property Monitors (APM)

– Australian Bureau of Statistics (ABS)

– Residex

– RP Data – Rismark (RP Data)

CBA

Median Price Method

CBA – one of Australia's major banks - provides monthly medium house and apartment prices for all capitals, including at post-code level, in its Commonwealth Bank Property Value Guide since 2004. The guide's information is free via its website www.commbank.com.au/propertyvalueguide/. It also provides quarterly prices to smooth out monthly variations. The three monthly medians are used to smooth out monthly variations.

Property prices are sourced form the mortgage lender's own loan book and based on the

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[5] Reserve Bank of Australia, Reserve Bank Bulletin, June 2006
[6] Australian Bureau of Statistics: Building Activity Survey

most up-to-date information obtained during the loan process. Prices are obtained from all loan purposes, such as purchase, renovation, equity and refinancing loans.

A loan applicant's own estimate (obtained on their application – which could be prone to overestimates) is initially used for calculating median prices. This estimate maybe replaced further down the loan process if the bank obtains its own valuation.

If the applicant's estimate and bank's valuation are obtained within the same reporting period, then only the latter is used in calculating median prices. But if the bank's valuation is obtained in a later reporting period, then the applicant's estimate is used for the first reporting period and that of the bank in the subsequent period.

This means one particular property may appear in two reporting periods with different prices. The reported prices for each reporting period are not revised.

The advantage of CBA median prices is that sales prices are acquired at the time of loan approval rather than at settlement, meaning the prices are available closer to the time they have been agreed upon.   Also the data can be compiled and released soon after the end of the month – typically after 17 to 22 days - and not subject to revision.

The main disadvantage with CBA median house prices is that it fails to account for compositional change. Additionally, although CBA is Australia's largest lender – approximately 19% market share – its loans may not be representative of all housing transactions for the reported period, and sourcing data from loan approvals does not take into account the small proportion of transactions that do not use borrowed funds or transactions which do not reach settlement.

What is a house?

House sample compositions between the CBA and other data providers will vary use to definitional differences. For example, the ABS measures price movements for detached houses, which it defines as a dwelling "which stands alone in its own grounds separated from other dwellings by at least half a metre.

By contrast, the CBA measures prices for houses which it defines as dwellings which do not share a street number, i.e. a dwelling with the address "2/44 Smith Street" would not be defined as a house as the street number "44" would be shared with another dwelling, i.e. 1/44 Smith Street.

REIA

Median Price Method

REIA – the national professional association of the real estate industry in Australia - has provided the longest running series of median property prices. It began publishing data in 1980. Prices are released in its Real Estate Market Facts report which is released quarterly between 8 to 10 weeks after the close of the quarter.

Prior to the September quarter of 2005, data for the state of New South Wales was based on contract exchange date data provided by real estate agents. After this quarter, data was sourced from APM to account for compositional changes.

Data for Australian Capital Territory, South Australia, Western Australia, Northern Territory and Queensland is sourced from the state titles office only and revised once, except for Northern Territory and Queensland which are not revised.

Victorian data is sourced from the state titles office and supplemented with data from real estate agents and revised twice. Tasmanian data is sourced from members (which it claims represent 88% of all sales) of the real estate institute of Tasmania and not revised.

All states use the contract exchange date as the price reference date except for the Northern Territory which uses the settlement date.

Except for New South Wales since Q3 2005, REIA data measures the median price of transactions without any adjustment for compositional change or quality improvements.

APM

Both APM and ABS use the stratification technique to account for compositional change, for a simple worked out example please refer to Example on page 8.

APM – a private sector research company – has been providing quarterly medium house and apartment prices for New South Wales since 1993 and nationally since 2003, and is available for free via its website at www.homepriceguide.com.au.

House pricing data is sourced from land title offices of each state, using the exchange of

contracts date rather than the settlement date, as the price time reference point, so that it measures prices closer to the time they were agreed upon rather than when the sale was settled. Because pricing data of homes sales from the land titles offices is not available on a timely basis it is supplemented with more timely data with auction results supplied by real estate agents.

As information from the land titles offices becomes available, it is used to progressively replace the data supplied by real estate agents. As a result, the most recent quarter is subject to revision

APM's data is released approximately 10 weeks after the end of a quarter.

Stratification Method

The method used to group similar houses together was to firstly obtain the median observed sales prices in each suburb between 2000 and 2004[7] and simply rank them from least expensive to most expensive and the group them into deciles (i.e. ten groups / clusters of equal number of suburbs)[8].

For example, of the 446 suburbs in Melbourne, the first cluster consists of the 44 suburbs with the lowest median prices (according to sales prices observed between 2000 and 2004) while the 10th cluster consists of the 45 suburbs with the highest median prices.

Once the suburbs are grouped into deciles (or quintiles) a median house price is calculated for each cluster for each quarter and a city-wide median is produced by taking the geometric mean (average) of all the cluster medians.

ABS

Using the stratification method the ABS is limited to publishing a housing price index (HPI) – rather than median prices – for only detached houses in each of the capitals. The data is available for free on their website at www.abs.gov.au. However the ABS does median house prices that have not been stratified on its website.

ABS sources data from state land titles offices and mortgage lenders. It uses contract exchange date for the price reference point by accessing the land titles office for each state. But because the data is not available on a timely basis (typically contracts exchanged in the March quarter will not be available until September)[9], house price information is supplemented with more timely mortgage lenders data from major banks for the two most recent quarters.

As information from the land titles offices becomes available, it is used to progressively replace the mortgage lenders' data in the two most recent quarters (e.g. June and September in the above example). As a result, the two most recent quarters are taken as estimates and subject to revision.

Stratification Method

To control compositional influence, the ABS uses a stratification method. Location (suburb) is used to maximize the homogeneity of houses within the group - as geographical location is one of the key determinates of pricing.

Ideally, each suburb would form its own cluster. But because there may be insufficient price observations within a quarter at the suburb level, suburbs are grouped together with other similar suburbs to form clusters.

Census information is utilized to this end as it provides details on various factors considered to impact house prices within a suburb, such as distance to CBD, percentage of three bedroom houses, percentage of four bedroom houses, percentage of detached houses, percentage of townhouses, percentage of owner-occupied houses, distance to hospitals, shops and socio-economic indicators.

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[7] Although any other of many ranking periods – except for 2000-2004 – could have been chosen, in practice, there is a very high degree of stability in the relative price rankings of suburbs. Those relatively expensive in one period will tend to be relatively expensive, say 10 years later,

[8] For cities with smaller sample sizes, such as Canberra, Hobart, and Darwin, their suburbs are grouped into quintiles (i.e. five strata of equal number of suburbs).

[9] Australian Bureau of Statistics, A Guide to House Price Indexes, Australia 2006, page 9

The following table shows the number of clusters which the ABS utilizes in each capital:

Table 3:
Clusters per City

City	Number of Clusters
Sydney	55
Melbourne	39
Brisbane	51
Adelaide	27
Perth	14
Hobart	8
Darwin	5
Canberra	14

Each cluster is then weighted by the number of houses and the average price of houses in the cluster. The number of houses in each cluster is determined by the most recent Population Census[10].

The price movement in each cluster is then combined using their respective weights to determine the city index.

The index number on its own is of little value and should be used in comparison with other quarters to calculate price changes between quarters. For example the HPI for Sydney of 93.5 in the December quarter of 2005 says nothing more than Sydney prices have fallen by 6.5% from the base year 2003-04 (when the index was set to 100).

Stratification Technique – A Simple Example

To control for compositional change, the stratification approach groups similar houses (more homogenous properties) within a city together into clusters. A median price is obtained for each individual cluster. A city-wide median is then derived.

The technique for constructing a city-wide median house price is best explained using a simple average example. Imagine a city was stratified into two clusters – the first comprising expensive houses (assume all houses have a price of $1,000) and the second cheaper houses ($200).

Now assume that in one quarter, 9 expensive houses were sold and 1 cheap one. Without stratification, the average city-wide house price would be calculated as $920 ((9 X $1,000 + 1 X $200) / 10). Using stratification, the average price of the first cluster is $1,000 and the second $200. The city-wide average could then calculated as $600 (($1,000 + $200) / 2)).

Now assume that in the subsequent quarter, 1 expensive house is sold and 9 cheap ones. Without stratification, the average city-wide house price would be calculated as $280 ((1 X $1,000 + 9 X $200) / 10). Using stratification, the average price of the first cluster is $1,000 and the second $200. The city-wide average remains unchanged at $600 (($1,000 + $200) / 2)).

The above simple example illustrates how a stratification technique avoids house prices from being skewed by the activity of more expensive/cheaper housing in a quarter. Although APM and ABS use the stratification technique, they differ in their implementation in two main ways.

Firstly, each stratify each capital city by a different number of clusters and use different methods in populating the clusters. Secondly, once the median price of each cluster is obtained, the clusters are weighted differently to derive the city-wide median price.

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[10] Which is currently undertaken every 5 years, hence the HPI weights are updated every 5 years.

Residex

Residex – a property research firm – began providing medium house prices for New South Wales in 1990 and since 2006 has covered all states. Current capital city median values for both houses and apartments are available for free on it's website at www.residex.com.au.

All data is sourced from both land title offices and real estate agents, using the exchange of contracts date as the price time reference point.

The repeat sales method accounts for the compositional influence by looking at houses for which repeat sales can be observed. This technique observes price changes of the same individual property over time (via repeat sales) upon which statistical techniques such are regression analysis can be employed (at a post code level and or suburb level and on type of dwelling i.e. house, unit, vacant land) to estimate growth rates and hence overall median house values.

Residex claims to use data series dating back to 1865, 1901 and 1970 for Victoria, New South Wales and Queensland respectively.

The estimated growth rates are not determined by the prices of houses sold only in the reporting quarter, but by all houses with repeat sales (on either side of the reported quarter). This leads to this method's main disadvantage – continual revisions of price estimates.

To overcome this issue, Residex has since 2004 implemented a proprietary methodology based on the repeat sales process and claims its approach overcomes the need for price revisions and allows for smaller sample sizes. This approach uses all sales (not only repeat sales observations) and has allowed Residex to publish non-reversionary data within 15 days after the end of each month at a suburb level.

With a repeat sales approach properties with high turnover rates may become over-represented resulting in measurement bias and although the repeat sales method tries to address the issue of compositional change, it can not remove prices changes due to quality improvements, such as the addition of bedrooms, bathrooms, etc through renovations or extensions. However Residex claims its proprietary repeat sales methodology addresses the issue of the bias created by properties with high turn over rates and quality improvement.

RP Data

RP Data began providing house price information based on a Hedonic index in June 2007 for all Australian capitals.

The thinking behind a hedonic approach is that the value of a house is reflected in the sum of its attributes, such as location, land size, construction type, number of bedrooms, number of bathrooms, etc. So, for example, all else being equal, a larger property with more bedrooms and bathrooms will have a higher price than a smaller property with less.

Regression methods are used to statistically control for the price of each attribute - such as location, land size, construction type, number of bedrooms, number of bathrooms, etc - using actual house price observations in combination with attribute data, which will account for any quality improvements a property may benefit from over time, e.g. the addition of a bedroom. Once the value of each attribute has been established, the value of any particular house can be estimated. This approach allows the construction of compositional & quality-adjusted price indexes.

RP Data make available for free on its website at www.rpdata.com the percentage price changes back to May 2005 on a state level and the time properties remain on the market. Series data commencing in 1992 is available at a cost. The information is provided on the last business day of each month for the previous month.

Previously, information required for the construction of a hedonic index was not commercially available in Australia, specifically property attribute data. RP Data has undertaken to enhance each sales record throughout Australia with additional data relating to individual property attributes, in order to create Australia's first hedonic based residential real estate index in conjunction with Rismark International. Attribute data has

been obtained through a variety of proprietary data collection channels. These channels include:

– Information from local government councils;
– Information supplied by over 60% of Australian real estate agents who use RP Data's software systems;
– Information disclosed in printed media forums, that is subsequently inputted into RP Data's system;
– Other Internet based means

RP Data sources sales data from state land titles offices and uses contract exchange date for the price reference point. However, because the land titles office data is not available on a timely basis, it is supplemented with more timely sales data from the internet and print media advertised sales and real estate agents. As a result, the most recent months index value is taken as an estimate and subject to revision and fixed the following month.

As information from the land titles offices becomes available, it is used to progressively replace the data sourced from the internet and print media advertised sales and real estate agents.

Summary

The lack of homogeneity in housing stock and the lack of a centralised and instantaneous pricing system (such as the stock and foreign exchange markets) have led to different data providers employing different techniques and a combination of different data sources to measure house prices.

Repeat sales, stratification and hedonic techniques are used to account for the lack of homogeneity and although the relevant state titles offices are the preferred data source as far as coverage is concerned, it takes several months for all transactions relating to a particular quarter to be settled, recorded and made available to house price data providers, and so will lag current prices.

Because the information from state title offices is untimely, data providers supplement it by using other more timely data from a variety of sources, such as real estate agents, banks, the internet and print media advertised sales. The combination of different techniques and data sources will inevitably lead to price variations between data providers.

It should also be noted that some data is subject to revisions and should be thought of as a temporary estimate until more data is available.

When trying to asses the state of a property market, house prices (and how they have been derived) should be viewed in the context of a variety of other factors, such as sales volumes, number of properties on the market, time taken to sell a property, consumer confidence, etc.

Table 4:

Summary - Comparing House Price Data Providers

	CBA	REIA	Residex	ABS	APM	RP Data
Methodology	Median Price	Median Price	Repeat Sales	Stratification	Stratification	Hedonic
Year since data has been provided for all capitals	2004	1980	2006	2002	2003	2007
Release Frequency	Monthly & Quarterly	Quarterly	Monthly & Quarterly	Quarterly	Monthly & Quarterly	Monthly
Release Date	Up to 22 days after end of month	8 to 10 weeks after end of quarter	15 days after end of month	9 weeks after end of quarter	10 weeks after end of quarter	Last business day after end of month
Property Types	Houses & Apartments	Houses & Apartments	Houses & Apartments	Detached Houses	Houses & Apartments	Houses & Apartments
Revisions	No	Yes, depending on state	No	Yes	Yes	Yes
Data Sources	CBA loan book	Land titles offices & real estate agents depending on state	Land titles offices & real estate agents	Land titles offices & major banks	Land titles offices	Land titles offices, internet, print media advertised sales & real estate agents
Price Reference Date	Loan Approval Date	Contract Exchange except Northern Territory	Contract Exchange Date	Contract Exchange Date	Contract Exchange Date	Contract Exchange Date
Accommodates Compositional Changes	No	No (except for New South Wales)	Yes	Yes	Yes	Yes
Accommodates Quality Improvements	No	No	No	No	No	Yes

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