



Joint Standing Committee on the Office of the Valuer General

Statistical Analysis of Land Valuation Data

February 2013

Background

- Land is assessed on a site value criterion – value of the land without buildings but is ready for construction.
- The Joint Standing Committee on the Office of the Valuer General intends to report on land valuations performed by the Valuer General for the period of 2000-2012.
- The Committee's report will address key aspects of the valuation system, including:
 - Predictability of the land valuation
 - Equity of the system
 - Transparency of the system
 - Efficiency
- The Committee intends to consider the outcome from testing of the two key hypotheses as part of the information gathering process.

Hypothesis 1.

That individual property holders experience material volatility in land values.

Hypothesis 2.

That land values on the register have grown materially more than the market.

Approach

	Project Initiation	Validation	Analysis and Hypothesis Testing	Final Report
Objectives	<ul style="list-style-type: none"> Obtain data in a format ready for analysis Refine scope 	<ul style="list-style-type: none"> Clearly define requirements and definitions of hypotheses 	<ul style="list-style-type: none"> Prove or disprove hypotheses Test analysis results 	<ul style="list-style-type: none"> Report and present findings from analysis
Key activities	<ul style="list-style-type: none"> Meet with the Committee Confirm and agree objectives and plans Extract data from RP Data, Department of Housing or Residex Create database in MS SQL Server with CaseWare IDEA and Tableau Ensure integrity of information through validation checks and calculations 	<ul style="list-style-type: none"> Clarify definitions and requirements of hypotheses and outcomes to be generated based on initial data review Receive instruction of measurement and use of proxies in calculations where relevant 	<ul style="list-style-type: none"> Create queries and models to analyse data Where applicable, create subsets of information for more efficient analysis Run statistical analysis on valuation data to determine volatility of land values (Hypothesis 1) Use data from external sources as comparison to land values from the Committee (Hypothesis 2) Identify exceptions to results and where possible, note potential causes for exceptions 	<ul style="list-style-type: none"> Prepare final report of findings from analysis Present the findings and report to stakeholders through final meetings
Outcomes	<ul style="list-style-type: none"> Data obtained Scope agreed Data issues identified 	<ul style="list-style-type: none"> Defined scope of hypotheses testing Approach to analysis agreed 	<ul style="list-style-type: none"> Analysis of data complete Hypotheses tested Exceptions identified 	<ul style="list-style-type: none"> Final report delivered
Timeframes	← 2 days →	← 2 days →	← 2 days →	← 2 days →

Snapshot of the data provided

LGA	PROPERTY ID	VALUER	ADDRESS	TYPE	BASE DATE	LANDVALUE
ALBURY	2844345	QUOTABLE VALUE AUST. P/L	511 PRUNE ST, LAVINGTON NSW 2641	NORMAL	01-July-2001	25000
ALBURY	2844346	CROWN VALUATION SERVICE	506 DOUGLAS RD, LAVINGTON NSW 2641	UNDERSP	01-July-2006	26000
ALBURY	2844358	CROWN VALUATION SERVICE	680 CENTAUR RD, HAMILTON VALLEY NSW 2641	NORMAL	01-July-2007	62500
ALBURY	2844359	CROWN VALUATION SERVICE	676 CENTAUR RD, LAVINGTON NSW 2641	UNDERSP	01-July-2001	55000
ALBURY	2856859	CROWN VALUATION SERVICE	RIVERINA HWY, SPLITTERS CREEK NSW 2640	UNDERSP	01-July-2011	900
ALBURY	2818533	CROWN VALUATION SERVICE	43 BARTHOLOMEW ST, GLENROY NSW 2640	NORMAL	01-July-2009	50000
ALBURY	2818535	QUOTABLE VALUE AUST. P/L	26 CASPER LANE, GLENROY NSW 2640	NORMAL	01-July-2001	40000
ALBURY	2834957	QUOTABLE VALUE AUST. P/L	595 KIEWA ST, ALBURY NSW 2640	NORMAL	01-July-2010	200000
ALBURY	2834958	QUOTABLE VALUE AUST. P/L	597 KIEWA ST, ALBURY NSW 2640	NORMAL	01-July-2001	330000
ALBURY	2860238	QUOTABLE VALUE AUST. P/L	1 ALGONA RD, SPRINGDALE HEIGHTS NSW 2641	NORMAL	01-July-2001	55000

- NSW data from 2000 to 2011
- Average 2.4 million properties per year
- 648 postcodes
 - 3,700 properties / postcode
- 152 LGA's
 - 15,800 properties / LGA
- No land size attributes
- No determination of property types
(residential, commercial, industrial or zoning)

Validation Results

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total number of properties ('000s)	2,306	2,352	2,384	2,402	2,417	2,431	2,446	2,460	2,473	2,478	2,481	2,483
Duplicate Property IDs	0	1	1	0	0	1	1	0	0	0	0	0
No Property IDs	0	0	0	0	0	0	0	0	0	0	0	0
Invalid Postcodes	< .1%	< .1%	< .1%	< .1%	< .1%	< .1%	< .1%	< .1%	< .1%	< .1%	< .1%	< .1%
Duplicate Addresses * issue?	2.6%	3.2%	3.2%	3.3%	3.3%	3.3%	3.3%	3.3%	3.2%	3.1%	3.1%	3.1%
Properties not existing in 2000 ('000s)	-	73 (3.1%)	115 (4.8%)	148 (6.1%)	180 (7.4%)	209 (8.6%)	238 (9.7%)	265 (11%)	290 (12%)	307 (12%)	322 (13%)	335 (14%)
Properties not existing in 2011 ('000s)	159 (6.9%)	157 (6.7%)	144 (6.1%)	131 (5.5%)	115 (4.8%)	101 (4.2%)	88 (3.6%)	73 (3.0%)	57 (2.3%)	40 (1.6%)	21 (0.8%)	-
Average land value (\$'000s)	186	200	232	285	336	349	354	369	380	381	399	403
Standard Deviation (\$'000s)	569	578	633	721	827	853	914	1,060	1,050	1,101	1,135	1,109

Hypothesis 1

That individual property holders experience material volatility in land values.

A statistical analysis of volatility in land values to identify:

1. *The level of volatility in land values across the sample; and,*
2. *The extent to which materially high levels of land value fluctuations are widespread.*

This analysis should identify any types of property that have had noteworthy levels of volatility, such as specific LGAs or commercial land.

If any information is obtained as a result of the analysis which may suggest a cause of volatility it should be included in the final report (however the scope of the consultancy does not include in depth causal analysis).

- Seeking definitions of:
 - Material.
 - Fluctuations are widespread.
 - Any types of property.
- Foreseeable Issues
 - Lack of land size information prevents volatility comparisons across LGA's.
 - No segregation of property types.
 - Approximately 14% of properties do not exist throughout the 12 year period.

Hypothesis 2

That land values on the register have grown materially more than the market.

A comparison of land values to market values. This analysis should be performed:

- *For the State;*
- *For major population centres (Sydney, Newcastle, Wollongong, etc); and,*
- *For local areas (postcode or LGA).*

Where a statistically significant sample size is available, the analysis should also be segmented by property type:

- *Residential;*
- *Commercial; and,*
- *Industrial.*

An appropriate reference point should be used for market value, such as RP Data, the Department of Housing, or other well regarded source.

- Seeking definitions of:
 - Materially more than market.
 - Major population centres – use Census Statistical Divisions?
- Foreseeable Issues
 - No segregation of property types.
 - Market sales includes a percentage (1-2%) that occur under \$100k.
 - Bondi: 1.87%
 - Strathfield: 1.05%
 - Hornsby: 1.08%
 - Sample sizes for comparison may not be available.
 - Market values include land and building values.
 - Land sales may not produce large enough sample sizes for reliable comparison.
 - Land exchanges may not be relevant.

Next Steps

- Document the agreed analysis and testing to be conducted.
- Begin testing of hypotheses to the agreed analysis definitions.
- Document the final report. The report will contain:
 - Executive Summary
 - Documented Approach
 - Assumptions
 - Findings from Hypotheses Testing
 - Other Considerations

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