The increasing use of Automated Valuation Models in the Australian Mortgage Market

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Introduction

Automated Valuation Models or AVMs have recently received an increased profile in the Australian mortgage marketplace even though they have been used in the USA for over twenty years with limited success (O'Rourke, 1999). Due to advances in technology and increased pressure to meet shrinking deadlines, AVMs have been promoted as an alternative to a normal valuation. However, some concerns have been raised as to the reliability of an AVM. Whilst a conventional short valuation report is commonly undertaken in a quick turnaround period as short as 24 hours, these are always supported by proven valuation methodology and supporting evidence (Whipple, 1995). On the other hand, an AVM can produce a valuation amount in a shorter time period but may sacrifice the level of accuracy and reliability. When considering that the most common purpose of a valuation is to identify the correct market value of a property, reliability of a valuation must remain a high priority as opposed to cost of valuation and the turnaround period.

Whilst there are clear benefits associated with using an AVM, such as a condensed turnaround period since an internal inspection is not undertaken, some would argue pitfalls associated with this approach far outweigh the advantages. This paper examines the role of AVMs with reference to the unique Australian mortgage market, drawing upon the US experience. It examines the positive and negative aspects of the valuation method, explains exactly what an AVM is, how the background mechanics operate and considers the limitations associated with its use.

What is an AVM?

Simply explained, an AVM is a mathematically generated statistical model that undertakes a pre-set calculation depending on the type of data input.
the surrounding area. For example, a common version of AVM is referred to in the industry as a 'desktop valuation', which is undertaken without an inspection with relatively little data available and can be completed without leaving the office. A desktop AVM is positioned in-between a full valuation undertaken by a certified practicing valuer and a basic AVM. Complications associated with a 'desktop valuation' have been recently highlighted by the API, especially with reference to the absence of an internal inspection and this drawback is also an aspect associated with the use of an AVM.

An AVM will give a definitive computer generated valuation via a program such as Microsoft 'Excel' where multipliers are used depending on different weightings. Thus, the valuation amount is often rigid and inflexible – it is a direct function of certain criterion where other influencing factors that may influence the final valuation amount are ignored. Most importantly, it does not require an internal inspection and is based on numerous assumptions and calculated estimations. The AVM ignores the heterogeneous nature of property and assumes that there are strong similarities between certain types of real estate, although this statement is unfounded as no two properties are identical. Often an AVM assumes that many properties are generic and can be grouped accordingly.

In a similar manner as a conventional valuation, the underlying purpose of an AVM is to provide an instant and cost effective estimate of the market value of a specific property to a lender of funds. AVMs are best suited to areas that have similar types of properties and a high turnover of stock. It should be noted that AVMs are not suited for valuing multi-million dollar properties or rural properties, as there is usually an insufficient volume of sales for accurate data to be collated. In such instances a full valuation with an inspection is required. In Australia some valuers have been using a relatively crude form of an AVM to perform rating valuations since the 1970s, which in turn has evolved into a computerised form of mass appraisal. However, the focus of an AVM is normally placed on an individual property rather than multiple valuations at one point in time.

In Australia it appears there is increasing pressure from banks and financiers to integrate AVMs into the mortgage assessment process, especially for residential real estate. This is partly due to increased pressure to produce cheaper and faster valuations than currently supplied by a conventional valuer. Where an AVM is considered inadequate to provide an accurate valuation due to a lack of sales data availability, a kerbside or full valuation must be undertaken.

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The application of Automated Valuation Models to the Australian Mortgage Market

The demand for a real time valuation generation tool, such as AVMs, emerged on a larger scale because mortgage lenders were frustrated at the time taken and costs charged by a valuer for a full property valuation required for security on a first mortgage (Kirchmeyer, 2004). Over the past few years the mortgage industry in Australia has changed dramatically, such as the increased availability of product alternatives, securitization of property, approaches to marketing home loans and the widespread acceptance of mortgage brokers. In contrast to the 1970s and 1980s when the four largest Australian banks (ANZ, Commonwealth Bank of Australia, National Bank of Australia, Westpac) controlled practically all of the home lending business, in today's marketplace mortgage brokers account for over 25% of the mortgage market (RBA, 2004). In turn this has created increased competition between the banks and mortgage brokers for market dominance, with much of the attention focused on interest rates.

Other aspects of mortgage lending have also become increasingly competitive and have affected the speed of reply for approval of a mortgage. In some instances the most time consuming process of a loan application can be the valuation component, even though it is essential that the actual purchase price reflects true market value. For example, a homebuyer can obtain approval for a million dollar loan within minutes of lodging their application, although subject to a certified valuation providing a satisfactory level of security to the lender. Partly due to the recent short supply of property values in Australia, the time delay between requesting a valuation and receiving the final valuation report may be extended. On the other hand, an AVM may be seen as an alternative approach that can meet these timelines and increased demands in the mortgage industry in Australia.

In the USA one of the catalysts for the successful introduction of AVMs was the decision by the Federal Reserve Board in 1994 to increase the threshold to US$250,000, above which a certified valuation was then required (Kirchmeyer, 2004). This change led to an instant increase in the use of short form valuations, kerbsides and AVMs. In addition, other factors that have resulted in higher use of AVMs in the USA include improvements in technology, increased data collection, the expansion of the internet and the cost of certified valuations. Consumers and mortgage brokers collectively demanded faster and cheaper service for the supply of valuation reports although there remains the potential for a higher margin of error due to the limited information input. For example, a valuation is considered to be a 'hypothetical sale' although realistically an AVM only considers some of a buyer's considerations, where these missing elements may result in a below-market or above-market valuation.

Types of AVMs

Generally two main types of AVMs are common in the marketplace, namely (a) indexed and (b) hedonic models with both requiring further explanation.

Indexed models: as the name suggests, examines a property that sold in a particular year and then is subsequently resold at a
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later date. The analysis focuses primarily on
the time elapsed between sale dates and the
change in absolute value. For example, a prop-
erty may be sold in year 2001 for $300,000
and is then sold again in the year 2005 for
$360,000. This model assumes that over four
years the property increased 20%, thus 5% per
year and this increase is extrapolated over
a suburb with each sale adjusting the data.
An obvious problem with an indexed model
is the inability to account for any improve-
ments to the property, in particular renova-
tions or extensions, between sale dates. In
Australia it is commonplace to undertake
renovations due to the effect of gentriifica-
tion and the Australian culture, and the
popularity of do-it-yourself hardware stores
and 'renovation type' television shows support
this argument. For example, if $60,000 was
spent on renovations on the same property
between 2001 and 2005 then the property
has shown no capital appreciation at all.
Another shortcoming of the index model is
its reliance upon sales data only as it ignores
the influence of specific property character-
istics. There is no requirement to provide any
justification of valuation or show any com-
parable sales, as the complete reliance is
placed upon a prior sale price and date to
predict a current valuation amount.

Hedonic models: assume a holistic approach
and calculate the value of a property as a
function of certain characteristics. For example,
traditional valuation components such as area,
number of rooms, bathrooms, pool and garage
are taken into account when calculating the
total value, and each has a different weighting
depending on their level of importance. Hedonic
models show comparable sales in an area
and generally are more statistically based than
index models. Thus, there are underlying
assumptions accompanying a hedonic model,
such as the importance the marketplace places
on a particular characteristic for all properties
in the area. For example, it is assumed that an
inside allotment may or may not be preferred
over a corner allotment, or a pool may be
highly desired in an area.
The more successful AVMs in the USA use a
hybrid of both models. This approach is designed
to ensure the data is weighted according to
the geographic area of the subject property,
as some areas are typified by similar land and
house characteristics in adjoining suburbs. A
simple index model is best suited to a suburb
where all the land and housing is generic,
especially when it is located in an housing
estate that was developed within the last 25
years. Alternatively, a hedonic or hybrid model
will be required in older established areas
where the type of house can vary substantially.
A very basic type of AVM is commonly referred
to as a desktop valuation, where the valuer
does not inspect the premises but relies upon
variables databases, public records and com-
parable sales to calculate the house value
(Alien, 2001). The main benefit to the mortgage
lender is a quicker turnaround and lower cost
than a traditional valuation, as well as being
reviewed by a qualified valuer. Some mort-
gage lenders view this cheaper type of valuation
as a viable alternative to a full valuation
report, regardless of an absence of critical infor-
mation omitted from the report. The Common-
wealth Bank of Australia are currently trialling
this type of report in the Sydney and Melbourne
residential markets (Cummings, 2004).

Main advantages and
disadvantages associated
with an AVM

There are a number of perceived advantages
and disadvantages with using an AVM, although
they vary according to factors such as the
type of property, availability of information
and the requirements of the requesting party.

Advantages
1. Speed. A full valuation and even a kerb-
side valuation may take up to three days,
although often supplied within a 24 hour
turnaround period. In comparison, the
answer from an AVM can usually be pro-
vided within minutes.
2. Non-biased. While the quality of the
result is only as good as the data input,
historic sales data is not swayed by posi-
tive or negative media sentiment and
therefore has less bias. In addition, the
valuation cannot be swayed by pressure
from lenders or borrowers. An AVM pro-
duces an objective valuation and is not
affected by any subjective perceptions or
outside influences.
3. Inexpensive. In contrast to the cost of a
full valuation, an AVM can be produced at
a fraction of the cost. Clearly this is due
to the fewer resources required, with
substantial cost savings in terms of
employee hours, running a vehicle and
office expenses.

Disadvantages
1. Existence of the property. With the lack
of an inspection in the valuation process,
the structure may have been radically
modified or even have the structure
removed. An inspection could have been
undertaken in a relatively short period of
time as only a full inspection can confirm
the quality of the improvements. Other
complications arise if the structure has
defects that would not be identified
without a full inspection. This aspects are
critical when it is remembered that in
many cases the structure contains most
of the value in the overall property.
2. Strong reliance on assumptions with limited
supporting evidence. An AVM relies heavily
upon the use of a statistical 'average', such
as average condition of a house. As no
internal inspection is undertaken, the
valuation will be subject to the condition
of the properties that surround it and this
approach ignores the influence of statisti-
cal outliers that occur in most forms of
data analysis. For example, if surrounding
properties have all been renovated and
sold recently then the value will be over-
stated. Alternatively, if the subject prop-
erty has been recently renovated then
there will no record of these works for
the AVM to consider – in this example the
value will be undervalued. With record
levels of house renovations being under-
taken, this is an enormous problem in
Australia that may not be so prevalent in
other countries.
3. A result is not always possible. Since an
AVM is a calculation based on input data
only, there will be no results produced
when there is insufficient data available
(Kirchmeyer, 2004). If there is a lack of
sales in an area it will be practically impos-
sible for an AVM to produce a result, let
alone a reliable one.
4. Lack of flexibility. Any imperfections in the process of valuing a property can not be smoothed out by an AVM, where certified valuations often include some flexibility in their valuation range where the valuation amount is not an exact dollar figure. In other words, an AVM produces a definitive valuation computer generated that cannot be changed.

Data Considerations

It is widely accepted in statistical processes that the model is limited by the data input. In order for a model to reach its required accuracy levels, the data must be continually updated and relatively voluminous. In reference to an AVM, the initial data may be sourced from a government body such as the Valuer General (VG) and this would be added to current sales from other data collection agencies. An issue with the data from the Valuer General’s data, whilst more accurate than most other databases, is that the information takes may take up to three months to be updated. In other words, during a three month period the property market can easily change and the AVM may be unreliable and out of date before it commences. There has been much debate in recent times about the time lag between the actual sale date and availability of data, as well as the optimal source of sales data. However, this issue exists regardless of type of valuation methodology adopted.

Testing and Quality Control

The accuracy of a valuation is essential and the variance or margin for error between the actual sale value and the hypothetical sale valuation should be minimal. For an AVM to be accurate, continual testing must be conducted to ensure stability and reliability and this will also be required to satisfy clients and regulatory controls if in existence. The stakeholders must be comfortable in the knowledge that the model is being continually tested and audited. For example, most cities contain more expensive and less expensive residential areas, at times determined by stigma due to nearby industrial land or alternatively proximity to waterfront. Importantly, such differences in value must be accounted for in every valuation model. The real test for an AVM is if it factors in these market imperfections, or whether it can survive the ‘boom and busts’ in the inevitable property cycles.

Reality Check

In reality, an AVM may not produce the desired valuation amount and this may vary according to surrounding circumstances. The normal process is that the borrower initially consults with a bank or mortgage broker, and if it is a straightforward contract of sale the estimate is known. Alternatively, if the borrower is refinancing then the borrower will provide an estimated market value of the property. Then the lender will log into an AVM and key in the property address, and within minutes a report with an estimated market value is available. However, the degree of variance between the valuation and the required amount determines how far the process goes. For example, if the AVM produces an amount of $500,000 and the client only wants to borrow $300,000, then the loan to valuation ratio at 60% will fit easily into the guidelines of the lender. On the other hand if the client requests borrowings of $430,000, the client’s estimated valuation is $550,000 and the client wants to avoid mortgage insurance, then the client will have to bump up the logic. In this reference ‘bump logic’ refers to bumping up the process to the next level (Kirchmeyer, 2004) as shown in Figure 1. If the AVM does not meet the required valuation, then a desktop valuation may be performed. Continuing on, this may progress to a kerbside or a full inspection with some reality from the marketplace brought back into the valuation process.

At times it is not uncommon for a borrower to over-estimate when borrowing, and also a lender may over-estimate over and above the borrower’s figure. There have been occasions when lenders have over-estimated since they want the finance to be approved and believed the valuer may under-estimate the valuation amount. However, this has more importance in an environment where low documentation or ‘low-doc’ loans are required and the main obstacle is often the valuation. Hence, an AVM as an initial check process may restrict over-estimating.

An important aspect of the bump logic process is that each of the valuations along the process in Figure 1 may be correct and they are arranged in sequential order. The point along the process that one continues depends on the level of risk the borrower and lender will
Figure 1. Relationship between Valuation Bump Logic

VALUATION BUMP LOGIC

(ASSESSED) $\rightarrow$ (AVM) $\rightarrow$ (AVM/DESKTOP/REPOS) $\rightarrow$ (KERBSIDE) $\rightarrow$ (FULL INTERIOR)

(Source: Kirchmeyer, 2004)

accept, and if a specific valuation approach is not suitable then it can be 'bumped up' to the next method. For the borrower, they require a valuation that will allow them to borrow to meet their requirements. Most borrowers would prefer to remain under the 80% loan to valuation ratio (LVR) otherwise a premium for mortgage insurance must be paid. If an AVM does not provide the correct LVR, then the borrower will have to make a decision to bump it up. The borrower must acknowledge that as the process is bumped up to the next level, then the time to approval increases and so does the associated cost. Alternatively, the lender may require the valuation to fit into their criteria and if an AVM does not produce the desired fit, then the process would have to be bumped again.

Insuring an AVM

A recent development in the USA mortgage market has been the option of insuring an AVM, which in some instances has helped accelerate the acceptance of AVMs as an alternative to a certified valuation (McWilliams, 2004). However, the cost of insuring an AVM is relatively high in comparison to the actual cost of the AVM. It appears that if time is not an issue it is worth spending the extra amount to ensure a complete valuation is undertaken. This price difference is because when entering a new market, the insurance industry bases their prices on an estimate and tends to over-price to be conservative and is too expensive for companies to use, or under-price and can not make enough to pay the premiums (McWilliams, 2004). If competition increases and insurance companies become more comfortable with the product, there is a strong likelihood that the cost of premiums will decrease.

Alternative Uses of AVMs

In addition to a lender or mortgage broker, there are a number of potential users of an AVM as listed below.

Real Estate Agents: Often agents are called up to give an appraisal value and may be unfamiliar with the actual property, although an AVM could provide an approximate range of values as a starting point. In addition, they could potentially be used for setting auction reserves.

Portfolio Managers: In certain instances an AVM could monitor broad changes in the marketplace, especially if the portfolio contains a large number of residential properties.

Accountants: They could be used in some capacity to assist annual balance sheet valuations, especially suitable for the new International Accounting Standards.

Auditors: A possible use may be to check on mortgage loan transactions to detect potential fraud.

Solicitors: An AVM may be used in a limited capacity for transferring assets between trusts and beneficiaries, as well as Family Law settlements.

Governments: Bodies such as the Australian Valuation Office may use AVMS for asset tests and 'Centrelink' data matching.

Valuers: In some capacity an AVM may be used to search for comparables and check valuations (Bradford, 2004).
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Fraud

Due to the large amounts of money involved, there is potential for property transactions to be exposed to fraud, and this usually relates to the property not actually being what it is supposed to be worth. Recent cases of home loan scams have been well documented, especially when vendors actively seek to sell a property at grossly inflated value that are substantially over and above the true market value (Manning, 2004). There is potential for an AVM to increase the exposure to this type fraud, especially as a full inspection is not conducted and in many instances the majority of a property's value is linked to the structural improvement.

The Future of AVMs in Australia

At present the Australian government has no legislative guidelines indicating when a certified valuation is required when undertaking a mortgage and each financial institution has its own policies with regards to obtaining a certified valuation. To further complicate matters, each state also has different requirements for the registration of valuers and this in turn creates confusion in the marketplace. Nevertheless, it seems that one of the main factors affecting the acceptance of AVMs in Australia is the market perception of the quality of loans securitized. It appears that Australian financial institutions would have to underwrite any losses they incur as mortgage insurers in Australia would not accept an AVM generated valuation.

One or two banks in Australia have recently introduced a primitive form of an AVM, referred to as a desktop valuation or is known as an Appraiser Assisted Valuation Model (AAVM) in the USA. Using this model the valuer contacts the client via the telephone, and asks a series of predetermined questions about a particular property. While still in a primitive format, this model appears to be a forerunner of the conventional AVM as operating in the USA. As the mortgage lenders in Australia continue to capture a larger share of the lending market, faster loan approvals will be required and institutions that can provide the best loan processing will capture a greater market share (Naylor, 2004).

Recently the mortgage industry has launched a group called the 'Lending Industry XML Initiative' (LIXI), which is a non-profit, independent industry organisation established to utilise new technologies for the removal of barriers to data exchange within the Australian lending industry (LIXI, 2004). This is designed to allow for a standard platform within the industry, so if one lender rejects the loan then it can be readily transferred to another lender to review. The benefit of this system is to save time in having to complete different forms for each lender. Therefore with substantial resources being placed into LIXI, it is not surprising mortgage brokers are seeking a quicker turnaround for valuations.

Conclusion

An AVM is a statistical tool that predicts property valuations using a mathematical equation and has increased in popularity. AVMs exist because the mortgage market, which is being driven largely by mortgage brokers, is demanding cheaper and faster valuations than a traditional valuer can supply. Although an AVM is not the ideal solution to shortening the turnaround period for a valuation, they have limited usefulness in regions that have similar property characteristics. This paper highlighted the advantages and disadvantages with using an AVM, although the circumstances surrounding the valuation of any property vary depending on criterion such as the homogeneous nature of the surrounding area, the number of sales, the loan to value ratio and the quality of the structure itself (and whether it actually exists).

Where an AVM is not adequate to provide an accurate valuation, then a kerbside or full valuation may be required. Thus, a determining factor may be the loan to valuation ratio (LVR) where a higher ratio will ensure that a full valuation must be undertaken. It appears that some lenders in Australia will adopt this technology although it only remains a matter of when. Potentially AVMs may also be used for commercial properties by the end of the decade. Extreme caution must exercised with evaluating whether to use an AVM or a conventional valuation as the two approaches differ considerably and can produce widely varying results. The core of valuation methodology is based on comparing 'apples with apples' and an AVM can too easily compare a rotten apple with apples' unless a full inspection and full market investigation is undertaken.

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