

Precision Is Crucial For AVM Selection

**Default costs increase rapidly
as AVM standard deviations rise.**

BY DOUGLAS GORDON AND BUD SOTTILI

When you're choosing automated valuation model (AVM) technology for your company, there are a number of criteria that are important, but precision is far and away the most crucial.

Certainly, you need a model that provides the best coverage, comes from a reputable vendor and is compatible with your current technology, but those benefits will be more than overwhelmed by the costs of using a less precise model. Seemingly slight differences in precision can quickly translate into lost customers and revenue, dramatically higher default costs and less liquid assets.

In this article, we'll explain how precision is measured, how the costs of imprecision can quickly mount and how to arm yourself with the facts you need to make the right choice.

There is no valuation method, either human or automated, which will be perfect 100% of the time. The goal, therefore, is to produce estimates of value that are as close as possible to actual value as often as possible.

In housing markets, actual value is commonly defined as the price agreed upon by a buyer and seller, in an arms-length transaction in a well-functioning market. We've described the mechanics of high-quality testing in a previous article (See "How to Test Auto-

ated Valuation Models" in the August 2001 *SME*).

You measure the precision of valuation methods by comparing a sufficiently large number of predicted values against actual values and aggregating the statistics.



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There are various aggregation methods, but the simplest to develop and use is the standard deviation of the estimates.

Closer to actual values

Simply put, AVMs with a lower standard deviation will produce estimates that are closer to actual value more frequently than AVMs with a higher standard deviation.

As a point of reference, a study of relocation appraisals, "Quantifying Estimation Bias in Residential Appraisal" by Mark G. Dotzour in *The Journal of Real Estate Research*, where the appraiser does not know the purchase price in advance, showed a standard deviation of 10% when the appraisal was compared to

the subsequent selling price.

The cost differences between a more precise model and a less precise model are dramatic, occur across your enterprise and show up in both short-term and long-term results.

Imprecision shows up in one of two ways, with different impacts. The less precise model will undervalue the house more frequently than the more precise model and will overvalue the house more frequently than the more precise model.

Undervaluation can hurt your organization in a number of ways, depending upon how you've implemented AVM technology. At the most basic, if you are declining loans based upon undervaluations, you are losing business and market share. You are declining loans you should be making.

More typically, lenders do not decline loans based upon AVM results,

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but will perform a secondary method of valuation, such as a drive-by inspection, a broker price opinion (BPO) or even a full appraisal.

These methods can cost anywhere from five to 10 times as much as an AVM valuation, or more. Equally important, these methods can take anywhere from three days to a week to complete. In this scenario, you are spending money unnecessarily and giving the borrower time to continue shopping for a different loan, possibly with a lender who uses a more precise model and can give an approval on the spot.

Finally, for lenders employing risk-based pricing, an undervaluation will create an LTV ratio that's too high, possibly moving that borrower into a higher interest rate offer. This can result in higher fallout.

Overvaluation troubles

As bad as undervaluation can be, it's overvaluation that can really drive your costs up. Overvaluations will produce higher-than-expected default costs. You thought you were making an 80% LTV loan, but you were actually making a 90% LTV loan.

A less precise model will produce this situation far more frequently. Since the less precise model also produces undervaluations in the same quantity, it's tempting to think that the undervaluations will "cancel out" the effect of the overvaluations.

But default costs rise more rapidly as LTV increases. Increases in default costs from overvaluations will overwhelm the default cost savings from undervaluations.

Even if you are pricing based upon risk, an overvaluation will probably cause you to offer an interest rate that does not fairly compensate you for the actual risk of the loan. Using the data from the published studies, the table on the previous page shows the magnitude of the increase in default costs on a per loan basis in a typical first mortgage scenario.

In this example, a model with the 15% standard deviation will generate \$48 more in average default costs than the more precise model (11% standard deviation) at 80% LTV.

Rising Default Costs

The size of average default costs increases significantly with standard deviation and LTV.

| Standard Deviation | 70% LTV | 80% LTV | 90% LTV |
|--------------------|---------|---------|---------|
| 10% | \$186 | \$370 | \$780 |
| 11% | \$190 | \$382 | \$792 |
| 12% | \$195 | \$393 | \$804 |
| 13% | \$201 | \$405 | \$819 |
| 14% | \$208 | \$418 | \$836 |
| 15% | \$214 | \$430 | \$853 |
| 16% | \$221 | \$442 | \$871 |
| 17% | \$227 | \$454 | \$890 |
| 18% | \$234 | \$466 | \$909 |
| 19% | \$240 | \$476 | \$927 |
| 20% | \$246 | \$486 | \$945 |

SOURCE: Freddie Mac

This is \$48 more on every loan made, not just those that go into default. At 90% LTV, it's a whopping \$61 dollars greater.

This type of analysis applied in a typical home equity lending scenario (which assumes a \$30,000 equity loan, a property valued at \$200,000 and an existing first mortgage balance of \$150,000) results in the less precise model producing default costs that are \$28 higher than the more precise model.

We have used default cost estimate and curves taken from published research, but you should use your own default experience to see what it means to your organization.

Finally, using a less precise model will drive down the value of your asset. Many, if not all, organizations want to retain the option of moving these assets off their balance sheet, either through whole loan sales or securitization.

All of the major investors and the ratings agencies have tested the leading models and factor precision into their analysis, either explicitly or as part of their "black box."

Less precision may result in higher credit enhancement requirements. If a higher reserve is required to compensate for imprecision, you will incur the cost of setting that capital

aside, even if that reserve requirement is eventually removed.

Rack 'em and stack 'em

Clearly, precision is crucial to your success with an AVM, but how do you get the information you need to "rack and stack" the competing models? The best way is to conduct a test with your own loans. The next best way is to network with others who have experience testing or have used the models you are considering.

Finally, ask the vendor. Just as vendors will usually quote "hit rate," the vendors should be able to give you the standard deviation of their estimates and a description of how it was derived. With this information in hand, you can cut through the marketing hype and be confident that you're making the right choice.

Deciding to use a less precise automated valuation model because it is a few dollars cheaper will result in increased "all-in" costs due to three reasons: higher default costs, the costs associated with unnecessary valuation upgrades and potential lost business, and the costs of decreased liquidity of the asset.

Under any reasonable scenario, these increased costs will swamp the perceived savings from using the cheaper, less precise model.