

Using Baseline Automated Valuation Models Statistics to Mitigate Risk in Evaluating Non-Performing, Seasoned Loan Pools

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Executive Summary

Automated valuation models (AVM) testing statistics have been used primarily to select AVMs or to create cascades, but “baseline” AVM statistics can also be used by traders to quickly detect systemic bias in pool valuations and improve bidding strategies.

To understand how, remember the old joke: How do you identify a statistician? She has her feet in the fire and head in the freezer, but, on average, she’s comfortable. Just as poor statistical methods applied to limited data can obscure the truth, fortunately, the inverse is also true: Proper analysis on a sufficiently large sample of relevant data can reveal the truth. This mini-paper discusses using summary statistics to evaluate seasoned loan pools. A follow-up article will apply this technique to counterparty risk.

Evaluating Seasoned Loan Pools

Suppose you’re a trader getting ready to bid on two seasoned, non-performing MBS loan pools with 1,000 loans in each pool. In each instance, the seller is providing Broker Price Opinions (BPOs) on each property, and characterizing the BPOs as independent valuations. Even if the BPOs were provided by neutral and competent third parties, the sellers’ ordering and review policies can result in valuation bias¹. Having accurate, unbiased property values is critical to a successful bid, especially on a pool of non-performing loans. But how can you be sure? Although you may ultimately choose to order your own BPOs on all properties, it would expedite your decision process to first estimate the overall valuation risk before spending time and money on a pool you may ultimately reject.

AVMs are an option, but by themselves they will only show you price discrepancies and won’t answer the question of valuation bias. However, there is a promising new approach that relies on AVMs and AVM summary data to quickly and relatively inexpensively detect valuation bias.

Here’s how it would work: As a starting point, you request AVMs for each property. Because these are non-performing loans, you use a default AVM, which is calibrated to distressed properties².

This is what the results looked like in our two pools:

	NPL POOL A	NPL POOL B
Default AVM Hit Rate	70%	62%
Mean discrepancy between AVM and BPO	-8%	3%

But what have you learned? Perhaps you can negotiate a better price for Pool A because the seller is underestimating property values (evidenced by the -8% mean discrepancy between the AVM and the BPO). Perhaps the values in Pool B are more likely to be reliable because the mean discrepancy is closer to zero. Or are the differences between the pools simply a reflection of the volatility one would expect when using automated valuations on distressed properties?

At this stage, although you have more information, you’re still bidding blindly. If on the other hand, you establish a baseline using a large enough sample that you know is unbiased, then the advantage shifts to you.

1 For more on this, please see Appendix A – Valuation Bias.

2 For more information, go to corelogic.com/Products/ValuePoint4-Default.aspx#container-Overview.

Creating a Baseline

Start with a sample of known, unbiased property values across the country. You could use distressed properties that your firm has had valued in an unbiased manner, or public record data on known REO purchase transactions. Run your favorite AVM on that sample. Record the AVM statistics as your baseline. For an even more robust analysis, you might also obtain a collateral risk score such as CoreLogic’s LoanSafe® Collateral Manager to access the property risk within the context of each property’s neighborhood³. For this paper, we will assume that our baseline AVM sample results in the following summary statistics:

	BASELINE
Default AVM Hit Rate	71%
Mean discrepancy between AVM and BPO	-7%
Mean absolute discrepancy between AVM and BPO	15%
% properties where AVM and BPO differ by 20% or more	17%
Average LoanSafe Collateral Manager score	4.2
% of properties labeled “high risk” by LoanSafe Collateral Manager	19%

Remember, the purpose here isn’t to assess the accuracy of either the AVM⁴ or the BPO. We already presume that the BPOs in the baseline are accurate and unbiased because we specifically selected a sample of unbiased transactions. Rather, we want to know what pool-level AVM statistics look like when distressed properties are valued in an unbiased manner. Now let’s look at the pools we are evaluating compared against the baseline, with the addition of LoanSafe Collateral Manager scores.

	NPL POOL A	NPL POOL B	BASELINE
Default AVM Hit Rate	70%	62%	71%
Mean discrepancy between AVM and BPO	-8%	3%	-7%
Mean absolute discrepancy between AVM and BPO	16%	20%	15%
% properties where AVM and BPO differ by 20% or more	20%	25%	17%
Average LoanSafe Collateral Manager score	4.0	9.3	4.2
% of properties labeled “high risk” by LoanSafe Collateral Manager	21%	40%	19%

What a difference a baseline makes! Pool A looks similar to the baseline. So you can infer from the data that the valuation approach used by the seller of Pool A is likely to be unbiased. We can also see from the collateral risk score that the neighborhoods in which Pool A properties are located are no more or less risky than the baseline population. Without digging into seller A’s property valuation methodology or investigating any individual property valuations, you have an independent view that indicates a balanced valuation approach and average collateral risk, given the neighborhoods in which the Pool A properties reside.

Pool B is a different story. Although the AVM values are 3% higher than BPOs, we now know that the AVMs should be lower by an average of 7%. This means that the method of requesting and reviewing BPOs by seller B potentially overvalues the properties by 10%. Comparing against the baseline doesn’t tell you why the Pool B valuation approach may lead to higher values, but a 10% variance is meaningful. The lower AVM hit rate in Pool B is also informative. AVMs require sufficient transaction volume in order to produce results. So a lower hit rate means that more properties are in areas with limited transactions. The higher LoanSafe Collateral Manager scores indicate that more properties in Pool B are in neighborhoods with higher property valuation risk (such as higher foreclosure rates) than in the baseline case. If you are still interested in Pool B, additional digging into the seller’s valuation methodology and the geographic concentration of the properties would be appropriate.

This case demonstrated the application of a fairly simplistic baseline. The concept can be expanded to include more granular geographic data and the incorporation of additional data such as forecasts, shadow inventory, etc. Using these baselines can create competitive advantage by establishing proprietary views that can be used to immediately evaluate the quality of loan pools.

For more information on using AVM summary statistics or creating a baseline for trading, please speak to your CoreLogic representative or e-mail Susan Allen at suallen@facorelogic.com.

³ For more information on the LoanSafe Collateral Manager, go to corelogic.com/Products/LoanSafe-Risk-Manager-Suite.aspx.

⁴ The hit rate and accuracy against this short-sale BPO sample are not typical for an AVM test against retail purchase transactions. There are many excellent articles on AVM testing, so please contact me if you would like additional information on AVM testing best practices.

Appendix A – Valuation Bias

Most lenders and investors purchase their valuations – appraisals, BPOs and AVMs – from third parties. Because my company is a provider of these services, isn't it heresy to suggest that bias can be introduced into the process? Not really. Properties are not like exchange-traded stocks. Because stocks are homogeneous and liquid, nobody has to come up with a “methodology” for estimating the value of one share of Microsoft. Properties are heterogeneous and illiquid and therefore a range of values can be supported. Even with a neutral third party engaging competent valuers and/or models, the process of ordering, reviewing and storing values can cause values to be on the low- or high-side of that range. Here are just a few ways that systemic bias can occur:

- ▶ **Ordering Process** – BPOs, appraisals and AVMs can each be customized. With BPOs and appraisals, the client can request a “quick sale” value or a “90-day” value. Relative to a standard valuation method, these will produce lower valuation opinions. Alternatively, “as repaired” values are higher than “as is” values. Sometimes the instructions included in the valuation order are not retained, so the user only sees the raw property value. With AVMs, the model used and flavor (distressed vs. retail) will impact the accuracy and bias. Also, index models require the user to input an original value and a date. The model then brings the value forward based on the appropriate index multiplier. Any bias in the original value methodology will carry over into the index value.
- ▶ **Reconciliation Policies** – Multiple valuations are obtained as a loan transitions from performing to delinquency to default to foreclosure. The reconciliation process for these valuations can introduce bias. Hypothetically, if the policy is to review values anytime there is a drop of 10% or more from a prior value, we would expect more low values to be reviewed and potentially “reconciled” upward, introducing upward bias. Conversely, if multiple valuations are reconciled through a policy to always use the lower value, we would expect a downward valuation bias.
- ▶ **Aged Values** – In rapidly changing markets, values that are older will carry bias depending on the movement in the market.
- ▶ **Missing Information** – Information not known to the valuer (such as condition for AVMs or interior condition for drive-by manual valuations) must be assumed and can therefore introduce valuation bias.
- ▶ **Adverse Selection** – Properties with the most damage are the least likely to sell through short sale or preforeclosure sale. The valuation opinions rendered at the time of delinquency may be accurate on average, but the properties that ultimately move to REO may be those with the most discrepancy between the value rendered at the time of delinquency (usually exterior only) and the REO sale price which reflects the interior condition.

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