

**WHITE PAPER**



# **Applying AVM Technology in Whole Loan and REO Portfolios**

**The Use of AVM Technology in Residential  
Real Estate Investment Platforms**

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While collateral valuation is acknowledged as essential for real estate and mortgage investors, how to value the collateral raises significant and potentially expensive issues. A typical method of portfolio valuation is the use of a broad index, which typically includes high population areas, within which are mortgages commonly held in most portfolios. Unfortunately, these methods frequently fail investors by overstating collateral value, potentially exposing investors to substantial credit risk, or understating collateral value. This can result in unnecessary and expensive actions, including increasing loan-loss reserves.

This paper will focus on the benefits of using automated valuation models (AVMs) to determine the value of residential real estate collateral, including performing properties and REOs. It is divided into three sub-topics:

- Using granular, zip-code level analysis versus broad indices for more accurate portfolio valuations.
- Using specialized AVMs to value REO properties, including modeling worst-case scenarios for risk management purposes.
- Using AVM and other data sources to identify potential high-risk portfolio assets and estimate worst-case values.

This is the second of a series of papers focusing on property valuation technologies in the secondary markets. The first paper, *The Use of AVM Technology in Residential Real Estate Investment Platforms*, demonstrated how AVMs could help lenders and investors with identifying both risks and opportunities at the zip-code level across the U.S. This level of granular forecast benefits differentiated property type, price tier, and performing/REO properties, etc. Hence the identification of risks and opportunities were customizable.

A third paper will focus on the use of AVMs in RMBS analysis and broader capital markets applications.

### **Background: The U.S. Housing Market's Performance, Losses and Valuations**

As of May 2011, U.S. banks held approximately \$3.1 trillion of assets backed by one to four family properties on their balance sheets.<sup>1</sup> If measured against GDP, U.S. mortgage-debt financing would be the fifth largest economic system in the world (ahead of France, United Kingdom and Brazil) and larger than the trailing 93 percent of countries *combined*.<sup>2</sup> Given the enormity of the financing involved, it is somewhat surprising that many participants base their judgments on broad and notoriously imprecise indices.

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<sup>1</sup> Federal Reserve Board, 2011: As of May 18: \$1.1 trillion RMBS, \$1.5 Trillion residential mortgage loans; \$0.5 Trillion home equity loans.

<sup>2</sup> International Monetary Fund: Principal Global Indicators, International Financial Statistics for Annual 2010

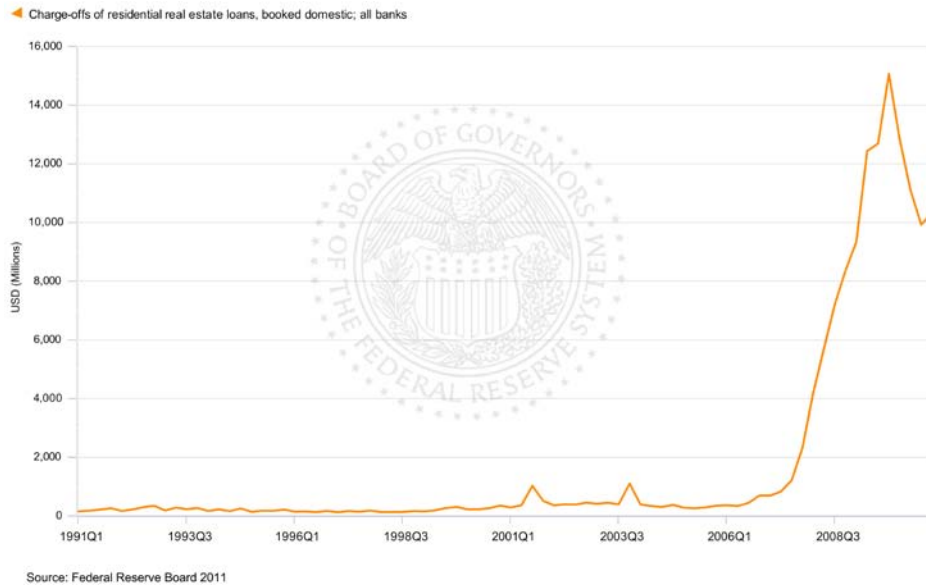


Figure 1

As shown in Figure 1, to measure the consequence of imprecise collateral valuation, the annualized charge-off rate U.S. banks as of 1Q 2011 (i.e., the amounts recognized as unrecoverable / average real estate loans outstanding) equated to 1.65 percent, more than 20 times higher than merely five years ago.<sup>3</sup> In 1Q 2011 alone, lenders charged-off over \$8Bn of unrecoverable mortgage loans that were formerly fully collateralized by real estate assets.

There are several important points associated with these figures:

1. They represent *losses on defaults*, not the defaults themselves; defaults are naturally much higher.
2. Losses represent that amount of exposure not repaid upon proceeds from the liquidation of collateral, which calls into question the veracity and timeliness of the valuation of the collateral in the first place.
3. These losses do not represent those loans still outstanding that might have been foreclosed upon for other extraneous circumstances.<sup>4</sup>

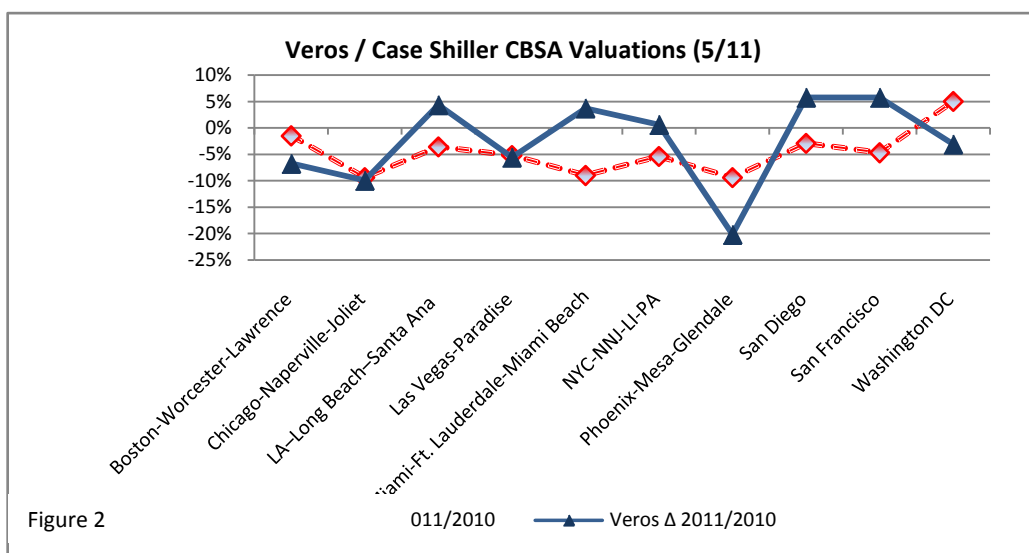
A common but notoriously imprecise method of estimating collateral value is the application of broad indices on the portfolio. Broad indices “average-away” the variances among property types, price tiers and local markets and cannot estimate local changes in value. Unfortunately, this can result in over-estimates of collateral values, causing a significant credit risk exposure. Likewise, under-estimates can result in unnecessary increases in loan-loss reserves.

<sup>3</sup>Federal Reserve Board, 2011

<sup>4</sup>Accurate figures for Real Estate Owned (REOs), properties foreclosed upon by banks and held pending liquidation, remain questionable due to the underlying valuation methods used by lenders.

Methods of real estate collateral valuation are at the heart of national and international regulations measuring capital adequacy of lending institutions, particularly recent regulations enacted by the Bank for International Settlements and passed under the Dodd-Frank Act.<sup>5,6</sup> Moreover, these regulations have gone beyond previous issuances. Not only are credit risks factored into the determination of regulatory capital, but the methods of determining credit risks themselves are factored into the evaluation of a firm's capital adequacy.<sup>7</sup>

Given the increased scrutiny on risk measurement, lenders and investors need a consistent and accurate method of quantifying the value of the collateral backing their mortgage exposures. AVMs can provide these valuations, and much more.



### Portfolio Valuations: Zip Code Analysis versus Traditional Index Estimates

Precision is the most important benefit of using granular analysis to measure the value of a portfolio of properties. Lenders and investors benefit from an accurate and precise quantification of the value of their real estate collateral, based on trends within various price-tiers and property types. By design, a broad index cannot provide this information, due to averaging disparate types of housing, price tiers, locations, etc.

As referenced in Figure 2, consider a portfolio valued using the most recent S&P/Case-Shiller index, which indicates broad deterioration. The declines range

5 International Convergence of Capital Measurement and Capital Standards: A Revised Framework ("Basel II"), Part 2, Section 8, Paragraph 72 (The First Pillar).

6 Minimum Capital Requirements, Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 171 (b).

7 Study of Bank Investment Activities: Content and Risk Mitigation, Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 620, (a)(2)(C).

from 1.5 percent and 9.5 percent for all but one Core Based Statistical Area (CBSA), Washington D.C., appreciating almost five percent.<sup>8</sup>

However, a zip-code level analysis suggests significantly different valuations. Five zip-codes *appreciated* over the period, while another (Phoenix-Mesa-Glendale) declined more than twice the rate of its CBSA. Finally, while the Washington D.C. CBSA appreciated over the period, the value of the zip code in which this property lies declined nearly five percent, resulting in a nearly 10 percent variance in the value of this collateral compared to the CBSA.

What accounts for the above material differences? The primary reason is the index itself. As an average, the index naturally blends together the disparate valuations among price tiers of different neighborhoods and property types. However, there are other aspects that also make it inappropriate for collateral valuation.

As a deliberate step to enhance the consistency and accuracy of its index, S&P/Case-Shiller excludes certain real estate components from its index, including condominium sales and new construction.<sup>9</sup> While these exclusions (and others) are used to maintain the consistency of the index in measuring repeat sales of like-single family houses, they immediately make the index inappropriate as a benchmark for any other measurement, especially if the collateral is a condominium or a neighborhood of substantial new construction or renovation. Unfortunately, this constitutes a substantial number of real estate transactions.

Given the characteristics of the S&P/Case-Shiller and other broad indices, the lender referred to in the above graph benefitted from using granular valuation because of the following:

1. Most of the portfolio appreciated in value (as opposed to depreciating per S&P/Case-Shiller), and
2. The lender has a much more accurate estimate of the decline of those stressed locales.

#### **Portfolio Valuation: Scenarios using REO Valuations vs. Broader Index Estimates**

Prudent risk management requires modeling “what-if” or “worst-case” scenarios. For a mortgage portfolio, a worst-case scenario means the default of a mortgage and liquidation of a real estate owned (REO) property. Constructing this scenario is difficult for the analyst because variables that include surrounding housing inventory, local employment trends, current and estimated interest rates all come to bear on the property value. In particular, the subject property’s condition has a significant impact on the estimated value of the property. Given the complexities of these variables, specialized REO valuation models should be used to most accurately estimate the value of an REO property.

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<sup>8</sup> Source: S&P/Case-Shiller Home Price Index, May 31, 2011.

<sup>9</sup> Source: S&P/Case-Shiller Home Price Index, Methodology, November 2009.

The portfolio in Figure 3 illustrates the benefits of REO valuation analysis as a portfolio and risk management tool to determine accurate, worst-case scenarios.

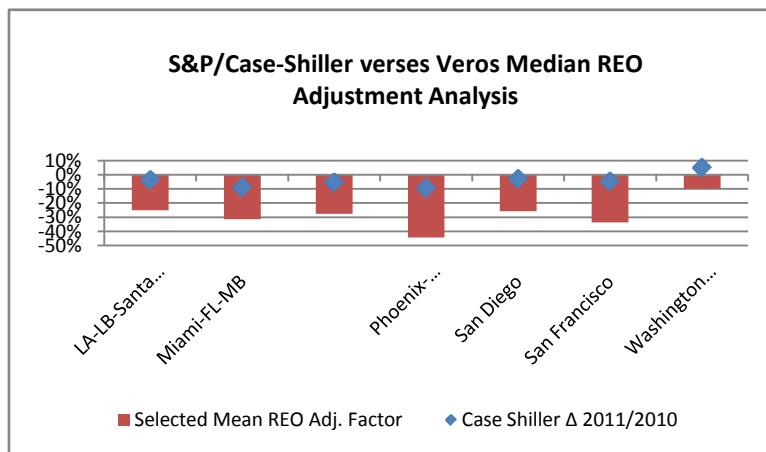


Figure 3

Per the above graph, the S&P/Case-Shiller CBSA values indicate a change in valuations for properties located within seven CBSAs. By contrast, a specialized REO valuation model provides a median price for REO sales in the actual zip-codes within each CBSA. Depending on several different variables, these discounts to normal market sales can be moderate or significant. To illustrate, the median price for REO properties in a neighborhood in the Phoenix CBSA was approximately 44 percent below the average sales price for performing properties. Indeed, nearly all the selected zip-codes in the respective CBSAs experienced median REO sales adjustment factors greater than 20 percent.<sup>10 11</sup>

Thus, using dedicated REO valuations serves a twofold use. Most obviously, REO models provide portfolio managers with a much more accurate valuation of REO portfolio properties. Moreover, they provide a “what-if” valuation for risk managers, suggesting approximate liquidation values for current performing properties.

10 NB: the REO Adjustment Factors presented correspond to REO valuations conducted by Veros Real Estate Solutions for clients. Other zip-codes within the shown MSAs may have different (higher/lower) REO adjustment factors. Source: Veros Real Estate Solutions.

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### Risk Management: Event Horizon

The benefits of accuracy and precision associated with AVMs have been illustrated for performing and distressed portfolios, as well as for worst-case scenario modeling. What remains is the ideal component of portfolio and risk modeling: a method of identifying which properties within the portfolio reflect the highest risk of default over a period of time.

Although the factors that increase the risk of mortgage default are well known, it is challenging to quantify the relative risks within a portfolio. While broad economic factors can be modeled for a large region (e.g., an CBSA or even larger), local variables potentially have significant weight when evaluating the risk of default for an individual property. For example, properties with a history of foreclosure have a statistically higher probability of foreclosure going forward. Likewise, properties located within an area of high foreclosures, or a higher rate of loan-to-value ratios (LTVs), are more susceptible to default than properties without these traits.<sup>12</sup>

Clearly, lenders and investors would materially benefit from being able identify those properties most at risk for default over a one-year time horizon. In particular, these loans would be modeled for worst-case (i.e. REO) valuations to determine the recovery rate in the event of default. Thus, the institution could best protect itself against potential loss by identifying the most at-risk loans, modeling potential losses and recoveries, and taking appropriate actions, such as the sale of the asset, additional reserves, servicer notification, etc.

The below portfolio illustrates the benefits of early-warning identification and worst-case valuations for the risk manager through the use of a “Collateral Integrity Score.”

County	State	Property Value	Collateral Integrity Score	REO Good	REO Fair	REO Poor	REO Adjustment	Comments
Worcester	MA	368,000	53	323,000	279,000	235,000	-36%	More than 83 percent of zip code sales have been foreclosures in the past 12 months.
Orange	CA	313,000	21	277,000	240,000	204,000	-35%	Subject market has high concentration of mobile homes; rapid deterioration in property values over past year; higher than average rate of foreclosures.
Rockland	NY	417,000	46	382,000	347,000	312,000	-25%	Subject property valuation is substantially lower than median.
Maui	HI	345,000	42	334,000	324,000	313,000	-9%	Nearly 40 percent of all properties are investments (non-owner occupied).
Palm Beach	FL	290,000	45	267,000	243,000	220,000	-24%	Subject property was in foreclosure within past 3 years

<sup>12</sup> Source: Veros Real Estate Solutions

The table shows five properties located across the U.S.<sup>13</sup> The highlighted Collateral Integrity Score indicates the risk of default of the subject properties. Risks are measured for both intrinsic value and include relative salability depending property type, number of rooms, square footage, etc. Additionally, market risks include neighborhood foreclosure rates, property history, regional value trends, etc.). Scores range between one and 99, with a higher score indicating better collateral quality and lower risk; and a lower score indicating poorer collateral quality and higher risk. Although all properties suggest concerns, the Orange County, Calif. property poses the highest risk of default in the portfolio. Moreover, while the property's current value is approximately \$313,000 in foreclosure, the property would most likely be liquidated at a significant discount to current market value.<sup>14</sup>

### **Conclusion**

As demonstrated, zip code and property-level valuations can provide portfolio and risk managers with precise and highly accurate estimates of the collateral backing their loans and investments. Although broader indices are valuable tools for economic trends and policy decisions, their intrinsic nature of averaging makes them inappropriate for determining loan portfolio valuations. Differences in property types, price tiers and other factors need to be quantified and included for accurate valuation, either at the zip code or address level. In addition, sophisticated AVM models provide portfolio and risk managers with the ability to identify those properties most at risk of default within the portfolio and estimate their likely value in a worst-case (i.e. foreclosure) scenario. Thus, these tools provide lenders and investors with invaluable decision-making information simply not available in any other format.

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<sup>13</sup> Source: Veros Real Estate Solutions; addresses have been hidden for client confidentiality.

<sup>14</sup> Actual valuation depends on property condition, which can be verified by either an external photograph or physical inspection.