REDUCE THE STRESS OF PORTFOLIO STRESS TESTING
by Mark Milner

OVER THE PAST FEW YEARS, managing portfolios of residential mortgages and home-equity loans and lines of credit has become more complex and stressful for those involved. The lessons learned from the recent mortgage crisis, increased regulatory requirements and sound risk-management practices are all requiring enhanced analytic intelligence.

In particular, stress testing—looking at the projected behavior of borrowers and loans under various economic scenarios—has moved from the realm of good practice to a legal requirement under the Dodd-Frank Wall Street Reform and Consumer Protection Act.

This requirement is driving a need for banks with mortgage portfolios to reassess their analytic and modeling capabilities. They need to do so in order to make sure they pass regulatory scrutiny, avoid the reputation risk associated with poor compliance or stress-testing results and accurately assess the capital required to cover the loans in their portfolio.

The savings-and-loan (S&L) crisis of the early 1990s led to regulations that focused on stress testing interest rates to better anticipate and manage the prepayment behavior of borrowers. The mortgage crisis of the last decade has led to a greater awareness of the impact of home prices on borrower and loan behavior. Like interest rates, fluctuating home prices change the incentives a borrower faces and impact the size of a loss if a borrower defaults.

Comprehensive stress testing is now being phased in as part of the regulatory requirements under the Dodd-Frank Act for banks. The past two Novembers, the Federal Reserve has produced a series of three economic scenarios—baseline, adverse and severely adverse—that banks must use to stress test the performance of their owned loans.

These scenarios include a broad series

| **Figure 1** PROJECTED LOSS RESERVES AND TIMING FOR A SAMPLE PORTFOLIO UNDER STRESS SCENAROS |
| YEAR 1 | YEAR 2 | REMAINING |
| PD | 3.5% | 11.6% | 20.1% |
| LGD | 29.4% | 34.8% | 38.7% |

**NOTE:** Sample portfolio: 13,300 loans at $5 billion original balance. PD = probability of default; LGD = loss given default

**SOURCE:** LPS Applied Analytics
of variables, including interest rates and home prices, that are to be used by models to calculate the probability of prepayment, probability of default (PD) and loss given default (LGD) for mortgages and home-equity lines and loans.

For mortgage and home-equity portfolios, these models should combine the economic scenarios defined by interest rates and home prices with loan-level information about the mortgage loan, the borrower and the property. This is what’s needed to generate the probability that a specific loan will transition from whatever its payment status is at a point in time to any another particular status—and when.

This data can then be used to calculate PDs, LGDs, expected losses, reserve estimates and capital requirements. A strong mortgage analytics model can be indispensable for providing insight into a portfolio and developing actionable data for managing it.

The best analytical models are built using a large pool of historic loan data covering a diverse set of loan products, and take into account economic principles of how borrowers behave as their financial situation changes.

The models should accept interest-rate scenarios across multiple rate indexes and home-price index scenarios at the most granular level possible (optimally ZIP code). While the underlying algorithms may be complex, they need to be flexible enough to be adjusted to portfolio idiosyncrasies, transparent in how they work and user-friendly. Input data needs to be scrubbed and corrected where needed. Outputs need to be calculated at the loan level and be easily aggregated across metrics, time horizons and loan groupings.

Figure 1 shows how reserve estimates for a sample portfolio vary by time and amount across the most recent Fed-mandated scenarios. The results are grouped by scenario, with the bars showing the amount of estimated reserves in each of the next two years and the remaining amount over the following eight years. The average PD and LGD for each scenario are also shown.

Many institutions head down the path of building their own models, but often run into roadblocks. Lack of sufficient historical data, limited analytic resources and/or short timelines for implementation are the most common obstacles. These can be overcome by working with an outside vendor that can provide data or a ready-built model. The vendor should have expert consultants on staff with significant mortgage experience, who can partner with the institution to solve issues that may arise. These issues can include the bank’s limitations with regard to data and the analytic capabilities of the bank to recommend best-fit solutions.

Managing mortgage and home-equity loan and line-of-credit portfolio risks can be stressful for those tasked with doing it, but it is vital to hitting performance targets, maintaining capital adequacy and managing reputation risk. Stress testing must be a part of the process and can help ensure the long-term health of the institution and meet regulatory requirements. Stress testing does not have to be stressful, though! By implementing a mortgage analytics model built on a deep reservoir of historic mortgage loan data and a granular ZIP code-based home-price index, banks will be well positioned to meet these challenges.

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