MountainSeed Analytics

Market Insights

How Portfolio Analytics Can Help Community Banks Prepare For Stress Testing

Leveraging data from appraisals
to assess risk levels

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Introduction

Community banks can validate and measure their stress-test results against their risk tolerance thresholds, as well as their capital. If the stress-test outcomes reflect a level of risk more than the bank's risk appetite or institutional tolerance for the capital levels, the bank can develop a plan to mitigate those risks. This plan may include appropriate adjustments to the strategic, business, and capital plans, as well as changes to the risk appetite or risk tolerance threshold and limits in loan growth by adjusting underwriting standards.

For example, a small community bank may make all its loans in one or two states, while a larger community bank may lend throughout a region or even nationally. The lending concentration that the smaller community bank experiences may suggest one course of action for stress testing while the broader risk exposure that the larger community bank faces may suggest a different approach.

Background

There are two types of stress tests that banks can use to assess potential concentrations in commercial real estate (CRE) lending: sensitivity and scenario analyses.

Sensitivity tests are the simpler of the two and reflect the effect that a change in one or more economic variables – such as a rise in interest rates or unemployment – might have on a loan portfolio. Scenario tests are much more complex and reflect the impact of significant economic events, such as the subprime mortgage crisis of 2007-2009. Choosing whether to assess its CRE loan portfolio by conducting sensitivity tests or scenario tests depends upon a variety of factors including the bank's organizational structure, business strategy, risk profile, and capital planning processes.

Depending on the unique requirements of their business models and available data, community banks may conduct either "top-down" or "bottom-up" stress tests. Top-down stress tests employ external data to help banks identify vulnerabilities, assess, and focus on major risks in their loan portfolios; therefore, enabling them to make more informed business decisions.

Banks can also use external data that they believe is appropriate, such as local unemployment rates or data from one or more of the three supervisory scenarios that the Federal Reserve ("the Fed") published in 2015. These are the same supervisory scenarios that the Fed uses with large bank holding companies and that mid-sized bank holding companies or state member banks use when conducting their annual company-run stress tests.

The 3 supervisory scenarios include:

1. **Baseline scenario** – assumes sustained, moderate expansion in economic activity with real gross domestic product (GDP) growth of just less than 3% per year.
2. **Adverse scenario** – includes economic variables associated with a mild recession, characterized by declining growth in real GDP and rising unemployment.
3. **Severely adverse scenario** – employs economic factors consistent with a deep and prolonged recession, such as a substantial weakening in global economic activity and large reductions in asset prices.

In contrast to the top-down approach, bottom-up stress tests use certain variables in loan-level data, such as probabilities of default (PD), loss given default (LGD), exposure at default (EAD), and other factors.

Opportunity

Potential Real Estate Stress Testing Factors

The following table lists characteristics and variables common to specific property types that may be considered when evaluating the impact of a stress period on the property type. These characteristics may be part of a sub-schedule of stress testing a portfolio of CRE loans.

TABLE 1

	Land Acquisition & Development	Residential Construction	Commercial Construction	Multi-Family Residential	Residential & Commercial Condominium Construction	Leased Commercial Office Space	Leased Industrial & Warehouse Distribution	Retail Boxes & Strip Malls
Decreases In								
Rents				●	●	●	●	●
Sales Prices	●	●						
Absorption / Sell-Out Rates	●	●	●		●			
Collateral Values	●	●	●	●	●	●	●	●
Increases In								
Vacancy Rates				●		●	●	●
Marketing Costs	●	●		●	●	●	●	●
Utility and/or Energy Costs	●	●	●	●	●	●	●	●
Maintenance Costs	●			●	●	●	●	●
Material Costs	●	●	●					
Labor Costs	●	●	●		●			
Tenant Concessions				●		●	●	●
Interest Rates	●	●	●	●	●	●	●	●
Capitalization Rates	●	●	●	●	●	●	●	●
Changes In								
Property Use					●			

Why is verified property and market level data essential to an accurate stress test?

Regardless of the method used, a community bank's approach to stress testing should fit its loan portfolio strategy, size, loan types, and composition. Risk management practices for community banks do not have to be complex but should, at a minimum, assess portfolio risk and capital vulnerability as they relate to potential adverse outcomes and future loan losses. If a stress test indicates that capital ratios may fall below levels that are acceptable to support the community bank's overall risk profile, management should take steps to prevent this from occurring. To do this, loan and risk officers can review risk exposure and, in some cases, limit growth, adjust the portfolio mix, or adjust underwriting standards.

Risk assessments are generally based on assumptions about potential adverse external events. If a community bank is heavily concentrated in office, they may want to focus on specific variables such as changes in real estate capitalization rates, interest rate risk, debt service coverage, occupancy rates, loan to value (LTV) ratios, property net operating income (NOI), collateral values at the local and regional levels, sector performance based on type of building, contractual terms, and lease rates.

Geography must also be considered when assessing risk, as not all markets are created equal.

Stress Test Example

Below is an example where Bank A, a community bank, relies on data obtained from MountainSeed's Market Insights platform to identify its vulnerabilities. The table below depicts the estimated loan portfolio stress losses by examining the breakdown of real estate loans by property type.

One effective top-down method is the two-step error-correction model. The first level of this method captures the broad, long-term relationship between the predictors and the CRE loss rate and the second level captures short-term deviations from the long-term trend. Predictors may be economic measures, interest rate measures, or indices, such as the unemployment rate, the 10-year corporate bond spread, and the Dow Jones industrial average. The CRE loss rate is the CRE net charge-off (NCO) divided by CRE balance. The model is fit to the first 80% of the CRE exposures. Thus, in a stress test employing 10 years' worth of data, the model is fit initially to only the first eight years' worth of data. Often, the model that provides the most accurate fit with the fewest predictors is optimal, as it limits the possibility of an overly sensitive model and thus one that produces weak forecasts. In the second level of the model, quarterly changes in the loss rates are modeled against quarterly changes in the macroeconomic predictors to capture short-term variations, as well as the lagged residuals from the first level to capture long-term trends.

TABLE 2

Estimated Loan Portfolio Stress Losses			
Loan Portfolios from Call Report	**Quarter End As of Date**	**Two-Year Stress Period Loss Rate %**	**Two-Year Stress Period $ Losses**
1. Schedule RC-C	**$ Balances***		
Loans secured by type of real estate			
a. Construction and development	100	20%	20%
b. Farmland	50	8%	8%
c. 1-4 family housing	100	4%	4%
d. Multifamily housing	75	16%	16%
e. Nonfarm nonresidential property	100	8%	8%
Agricultural production and farmer loans	40	6%	6%
Commercial and industrial	60	14%	14%
Consumer loans	50	4%	4%
All other loans	25	4%	4%
Total	**600**		
2. Estimated Impact of Stress on Earnings			
	Previous Two Years Actual		**Pro Forma Stress Period**
Pre-provision net income	34.5		30
Less provision to cover two-year losses	12	20%	61.8
Less provision to maintain adequate ALLL	0	8%	10
Income tax expense (benefit)	5.5	4%	-14.6
Net income	16.5	16%	-27.2
3. Estimated Impact of Stress on Capital			
	Quarter End As of Date		**Pro Forma Stress Period**
Tier 1 Capital $	88		88
Net change in Tier 1 Capital from stress period (net income from Step 2)	N/A		-27.2
Adjusted Tier 1 Capital $	88		60.8
Quarterly Average Assets $	800		738
Tier 1 Leverage Ratio %	11%		8.2%

The table above, Table 2, represents a measure of Bank A's capital levels at the start and end of the stress scenario. Based on the stress test example, bank management should analyze this change in relation to the bank's concentration management, capital planning, and strategic planning processes. Management can also use this analysis to monitor risk tolerances and test the impact of business strategies to increase/decrease exposures or expand into new products. There is significant value in looking at the marginal changes in risk levels indicated by stress testing as management consistently conducts stress testing over time.

Value of Stress Testing

Community banks can utilize CRE data and insights to help them improve their existing processes as they prepare for stress testing and establish risk and governance plans for CRE lending, similar to the plans they already use for asset and liability management.

Additionally, community banks can develop stronger capital plans for their internal boards to approve and utilize with CRE risk management plans that help lending officers understand their portfolio data better.

Finally, and perhaps the most important point in stress testing is how CRE data can help organize and capture the data variables used for these tests. A lot of CRE data is obtained during the loan origination process; however, some of the information such as updated collateral values or appraisal values may remain in paper files or be entered into the loan servicing system.

Stress Efficiency

Ultimately, community banks can take these additional steps to help make stress testing more efficiency and less stressful.

About MountainSeed

MountainSeed is a trusted partner to nearly 10% of US community banks and credit unions, covering all 50 states. Through our services in commercial appraisal management, data solutions, debt brokerage, and whole loan trading, the company touches an average of $5 billion in commercial properties per month. MountainSeed was recognized on the 2021 Inc. 5000 list as one the fastest-growing private companies in the US ranking #3,303 overall and #197 in Financial Services nationwide.

Let Us Help You

MountainSeed's Market Insights platform can help community banks analyze their portfolios by various factors, such as geography, industry, and collateral type. These analyses also can help determine which type of stress test a community bank may decide to conduct. By using Market Insights, all of the CRE data can be captured in one automated central location to enhance the effectiveness of the stress tests and to provide the proper data variables for the sensitivity or stress tests.

How does Market Insights provide value?

- Showcases market data from an executive bird's eye view
- Enables users to uncover lending trends before they happen
- Benchmarks loan portfolios to the broader market
- Helps foresee potential distress in CRE loans by property type and geography
- Identifies issues within the CRE market with an early outlook

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