

Stress Testing for Effective Risk Management

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In the event of any economic change – sudden or significant to be sure, every financial institution should have a robust risk management plan and adequate capital in place. Stress testing provides a framework for effective risk management, capital adequacy and strategic planning and it will do so while ensuring that risk positions fall within acceptable institutional parameters.

What should be subject to stress testing?

Establishing a discipline related to stress testing in regard to frequency, measuring results and using tools to support testing is paramount. Ultimately, the goal of stress testing is to determine the scenarios that will result in a financial institution's business model being no longer viable in order to develop management plans to mitigate the risks related to those scenarios. Stress tests can help to quantify the risk appetite of a financial institution, resulting in the creation of various risk management policies and limits. Stress testing can be performed on specific risk areas – such as interest rate risk, credit risk and liquidity risk – as well as across an entire institution.

Understanding triggers, risk factors and vulnerabilities identified through comprehensive stress testing and scenario planning facilitates proactive contingency planning (the active resolution of potential problems before they occur). This cycle of testing, diagnosis and contingency planning is at the heart of enterprise risk management, and should be performed for risks across the full probability spectrum.

The results and analysis of the stress tests can cover a variety of triggers that may cause a financial institution to fail. Earnings, liquidity and capital are analyzed in a comprehensive stress test to determine the inherent weaknesses and strengths of the balance sheet and income streams. Analysis of interest rates, credit, liquidity and other factors should be routinely assessed by a financial institution's executive management team.

Stress testing is an ever-evolving process

To be effective, stress testing requires an institution to continually adjust stress test models – or input variables – to quantify results and reprocess the forecast through various iterations. Stress testing should be treated as a continual back-and-forth movement of data and information from various sources that is continually refined in order to gauge the effects of various changes upon different key results, such as earnings, economic value, return on assets (ROA), return on earnings (ROE), capital ratios and liquidity ratios, among other risk and performance metrics.

Stress tests typically begin with a review of current position defined as a financial institution's assets, liabilities and equity at the start of the stress test through the balance sheet and other key indicators prioritized according to that financial institution's asset and liability committee and own risk philosophy and policies. After understanding the current position, an institution needs a sound foundational forecast upon which to perform various scenarios. The annual budget is a common forecast scenario among institutions. After a balance sheet and non-interest income/expense forecast is in place, the focus can shift to altering the various assumptions that drive key metrics and stress test results necessary to evaluate the implications of stress events.

Stress testing variables

Stress testing encompasses many different risk variables. Some of the most commonly used include interest rate, liquidity and credit.

Interest rate variables

Interest rate risk is inherent in the banking business. Substantial movements in interest rates, especially over a short period of time, can severely impact the earnings, value and capital of an organization. The need to determine the effects of various rate scenarios on the performance of the bank was introduced in the 1980s. Rate movements up and down, basis risk and rate twists are all tools an institution can use to analyze and review its performance under various stress scenarios.

Liquidity variables

Liquidity stress testing requires an institution to capture and model various areas where liabilities can decrease and assets can increase. For liabilities, institutions should forecast runoff of deposits, wholesale funding runoff and loss of available lines of credit. For assets, institutions should forecast a large increase in loan volumes, extension of asset lives through decreased prepayments, draws by customers on unfunded lines of credit and loss of liquidity in the external market for various assets, such as investment securities, that might be sold.

Institutions should not only look at reduction in cash outflows causing a potential liquidity crisis but also look at sharp increases in cash inflows. Increases in cash inflows or excess liquidity can put downward pressure on earnings, resulting in capital shortfalls.

Credit variables

Credit risk stress events can have significantly negative effects on financial institutions of all sizes. Identifying and stressing credit variables is the starting point in credit risk stress testing. Credit variables revolve around the movement of assets from an interest-earning status to a nonperforming status. They include both the loss of revenue stream and loss which must be absorbed by the allowance for loan loss of the balance sheet. Banks inherently target and maintain an allowance for loan loss to account for potential future losses and add to it through the provision expense in the income statement. Actual loan charge-offs result in a decrease in the allowance – which must be replenished through the provision expense – and a movement of the asset to nonperformance (or immediately disposed).

The challenge for a financial institution is twofold:

- A financial institution must determine a target allowance number that must be maintained
- A financial institution must forecast its estimated losses that will go against the allowance and thereby determine an expected provision expense needed to maintain the allowance

The two components are interrelated. To stress test credit performance, an institution needs to have an estimate of the future provision expense and then create scenarios that increase the potential expense.

Additional variables to consider

Other variables can be included in stress tests across a wide variety of scenarios, including spread variables, balance sheet impairments, natural disasters, government taxes, new legislation, facilities events and theft. The effects of these can be captured through adjustments in the other variables, but they may be worthy of creating specific scenarios with one-time large losses captured in the income statement. For example, natural disasters can lead to unexpected and significant credit losses or theft can result in reputational risk, leading to constrained cash inflows and liquidity risk.

Driving and understanding stress testing results

The analysis produced from the stress testing models must be reviewed and interpreted with the proper tools.

Liquidity

Liquidity results can be measured in various ways to quantify balance sheet risks. The simplest yet most effective measure is to review gap results, which indicate the funding excesses and shortfalls within the balance sheet. An institution can also project the forecasted balance sheet that might arise from various scenarios to determine if excess funding needs can be met by existing sources and when those needs may require extraordinary responses.

Regulators also have a set of liquidity ratios that are useful to determine an institution's liquidity position. The Uniform Bank Performance Report (UBPR) ratios are standard ratios, created by U.S. regulators, that quantify key liquidity metrics for financial institutions. The Basel III ratios are another set of requirements the regulators use and will require to capture both the short-term strength and long-term strength of an institution's balance sheet. Analysis of liquidity risk ratios are critical and need to be included in the reviews of the liquidity stress events and to help develop internal policy for monetary risk levels.

Income

Income simulation is the heart of almost all forecasts and stress tests. Earnings drive the performance of financial institutions, and the implications of changes to earnings directly affect the other variables being reviewed. Potential impacts of various scenarios on earnings can be projected for short-term periods of a month up to longer durations of three years or longer. Capturing and comparing the earnings effects that result from various stressors can help financial institutions quantify and plan to mitigate potential risks.

Valuation of the balance sheet is the concept of discounting the future cash flows of the assets and liabilities under different stress scenarios. Understanding potential changes in the present value of assets and liabilities under various stress scenarios provides financial institutions with a theoretical, long-term view of the current position of the balance sheet. Financial institutions may find that small changes to some input variables may result in large valuation adjustments.

Capital

When discussing capital, institutions and regulators refer to regulatory capital and economic capital. Regulatory capital is based on specific ratios that must be calculated and reported. The ratios are spelled out by the regulators and the banks must calculate and report them quarterly in call reports. The ratios are Common Equity Tier 1 ratio, Tier 1 ratio, total capital ratio and leverage ratio. Regulators have specific minimums and institutions should forecast these ratios using the results of various stress scenarios.

Economic capital is an attempt to quantify how much capital should be allocated to balance sheet items to cover "extreme" events. Much can be written on exactly what and how institutions determine the necessary capital for balance sheet items, but it is a quantification of the risk (primarily credit) given the riskiness of a portfolio, product or instrument. Economic capital is the foundation of risk-adjusted return analysis to allow institutions to compare the profitability and riskiness of specific items on the balance sheet.

Regulatory capital analysis allows the user to review the various stress scenarios to determine if they will fall below required regulatory minimum capital. Analysis of economic capital is more theoretical and tries to assess the buffer needed by the bank to survive stress scenarios. This information is typically used for internal reporting and analysis purposes.

Stress testing: an obligation, not an option

Stress testing is a necessity for financial institutions not only to satisfy regulators, but to protect institutions and their customers. Stress testing should be an ongoing, integral part of every financial institution's risk management self-assessment to ensure institutions have a robust plan and adequate capital in the case of an economic downturn.



Connect with us

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