

ARGYLE CONVERSATIONS



Take the Stress Out of Stress Testing! Stress Testing and Its Importance for Banks

with **Troy Haines**

NOVEMBER 10, 2014



Troy Haines, SVP and Head of Risk Research and Quantitative Solutions at SAS, discussed the requirements for regulatory stress testing in the U.S. and how the main components of stress testing must be jointly developed and applied by risk and finance teams for greater efficiency and better decision-making.

SCOTT ROBBIN: Stress testing and capital management have been around for quite some time. Why do you think there is an added emphasis on stress testing today?

TROY HAINES: There are three reasons. First, many financial institutions had not prepared for the capital drains that occurred during the economic crisis of 2007-2009. Had they worked through different economic scenarios prior to the crisis, they may have been in a better capital position to weather the storm. Second, regulators are now requiring both quantitative and qualitative methodologies for robust, forward-looking capital-planning processes that account for each bank's unique risks. And third, though stress testing and capital management have been around for a long time in banks, they have existed in silos for specific risks. CCAR, DFAST and the like create a need for a firm-wide stress testing process.

What is a firm-wide stress testing process?

Firm-wide risk models like ICAAP have been in place for some time. However, those models focus mainly on the risk capacity and the firm-wide risk exposure of the bank rather than putting limits on capital ratios under stress. Plus, many bank's ICAAP processes were manual, ad-hoc and not part of a formal risk-based planning process that included both risk and finance.

Today's firm-wide stress testing approaches require collaboration between two groups: the bank's risk experts — those responsible for generating earnings and loss impact under stress, and the bank's financial balance sheet and capital management experts — those responsible for analyzing the banks' available capital and planning future capital needs.

How has stress testing evolved over the past four to five years?

Initially, regulators emphasized credit losses and revenue by stressing a few macroeconomic risk factors — as was the focus of SCAP in the U.S. in 2009-10. Today, regulators around the world are not only interested in stress scenario effects on credit performance and

revenue, but also the stressed results on a broader array of measures such as liquidity and full balance sheet projections. In other words, stress testing must now be an integral part of the bank's capital plan, requiring a firm-wide approach, which has proved quite challenging. Stress testing has become a systematic way to examine and identify an institution's financial vulnerability, and regulators have turned it into a process that needs to be transparent, auditable and clearly documented.

Are only the largest banks required to do stress testing?

Traditionally, that has been the case. The 2009 SCAP exercise, and its successor, CCAR, have become a major focus for the top 25 banks in the U.S. Although most regulations require formalized stress testing for banks with total consolidated assets of \$50 billion or more, smaller banks are also concerned with stress testing. The DFAST regulations, for example, require U.S. banking organizations with consolidated assets of \$10 billion or more to conduct stress tests.

Banks need a firm-wide scenario management process that includes the technology to generate scenarios and make them repeatable.

The regulators prescribe the scenarios, but not the stress testing process. Does this mean that the banks are on their own?

Not at all. We see, through stated CCAR principles, that the structured stress testing process has at least

six components with a clear need for technology to perform each.

First, banks need a firm-wide scenario management process that includes the technology to generate scenarios and make them repeatable from cycle to cycle.

Second, the need for model and model risk management is rather clear. Managing a multitude of models and the risks inherent in them is an enormous task. Banks need a model management platform that can manage all models from scenario models to calculations models.

Third, stress test calculations, because they entail so many differing elements across different scenarios along sometimes disparate systems that are nearly impossible to make on a manual basis, particularly for the diversified bank, and require speedy, accurate and automated results.

Fourth, the sheer number of forecasting parameters for financial statement projections makes technology not just a convenience for process governance personnel; it is an imperative.

Fifth, results of each scenario must be aggregated to get a clear picture of what the bank's financial statements will do under stress.

Finally, banks need to be confident in calculating their capital and leverage ratios. In other words, they need a process to compute required capital, compare it to available capital, then determine if any action is required.

With all of the different regulations requiring stress testing like CCAR, DFAST, FSA, ECB and others, are there any common themes across the different regimes?

Yes. The common themes across regulations include the similarity in the stress testing process, the adherence to sound data management principles, the need to integrate both risk and financial measures into stress scenarios when creating the capital plan and the shift to stressing the full balance sheet and income statement rather than just single portfolios. Regulators prescribe macroeconomic scenarios, and banks must have a structured stress testing process in place to simulate them. Regulators also require banks to comply with balance sheet ratios under stress that are complementary to the existing risk-based capital charges.

Couldn't one argue that the current focus of regulators on firm-wide stress testing is a trend towards replacing risk-based model charges with stress scenarios, and, ultimately, a sign of distrust in models?

That's a fair argument. However, one can also view the firm-wide stress testing as complementary to risk-based models. In practice, the stress testing exercise has developed into a regulatory test of risk models. There is increased regulatory scrutiny on the entire model life cycle — from model development to validation to implementation. Common across most regulatory stress testing regimes, this forces banks to quantitatively project assets, liabilities, income,

losses and capital across a range of macroeconomic scenarios. Model complexity and portfolio size produce significant computational challenges, particularly during implementation. Consequently, many banks have to recode models during implementation, which poses significant model risk and deployment delays. Thus, a proper model governance process is critical to reduce model risk.

Is stress testing just about stressing financial statement elements and capital?

No. Most of the regulations also require banks to provide qualitative information on methodologies used to develop internal projections of capital across scenarios. In addition to providing stress test results, banks need to fully document how the results were derived. As many

banks still have manual processes to reconcile and aggregate results from different systems, auditability and documentation can be daunting tasks — especially when integrating risk and financial data for financial statement projections. If we had to speculate, use tests may be next — where standard practices such as capital allocation and pricing would be reviewed under stress scenarios.

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Why do you think there is so much emphasis on the qualitative aspects of the stress testing process?

Consider Basel II implementations where credit scoring, lending and RWA capital computations became audited processes. With firm-wide stress testing, the increased level of scrutiny placed on the governance aspects of the process may prevent banks from passing the stress test even if the binding constraints like Capital Ratios and Leverage Ratios are met. Over the past few CCAR cycles, the qualitative expectations have increased exponentially. Banks are not only expected to comply but constantly refine and improve their processes. Even though the quantitative measures are the ones that are binding, the qualitative aspects under each regime have become just as important to the regulators. This reinforces the need for a well-defined and governed process and workflow.

What are the major hurdles banks face in developing capital plans?

In short, the major challenges involve integrating risk, finance and economics from both a systems and organizational perspective. These functions have typically operated in independent silos, but to incorporate stress testing into capital planning, significant cross-functional collaboration is required. Today, the risk staff understands very little about the process of projecting the balance sheet (outside of pure portfolio stress testing), and the finance staff understands little of the quantitative mechanics used to project losses. Yet, both teams must work in concert to develop these plans.

Collaboration also is required to provide management with the details behind stress testing results, enabling them to successfully defend test outcomes to regulators. Understanding balance sheet and capital ratio sensitivities is ultimately the biggest hurdle banks face in capital plan development. Banks need formal structures to integrate forecasting from financial planning and capital management into their risk management processes in a timely and accurate fashion.

Are there any other challenges banks are experiencing?

Banks need models to project the regulatory-prescribed macroeconomic scenarios into actual risk factors that banks have in their books of business, and their currently-in-use models may not be adequate for firm-wide stress testing. It is difficult to separate earnings projections to ALM systems and loss projections to credit systems, for example, because of the associated interdependencies. Consequently, many banks not only have to revisit the model management of their existing CCAR and DFAST models but also have to build new models for firm-wide stress testing purposes — and that process needs to be managed and reconciled with the existing bank models.

Besides the collaborative nature of risk and finance, are there other specific challenges for bank personnel?

Because model insight and expertise are limited, huge burdens are placed on key people. Banks are aggressively recruiting experienced staff, causing some to go as far as having agreements with each other not to poach resources. Plus, burnout from the CCAR cycle occurs frequently, so much so that the Federal Reserve has provided a relief clause to banks, shifting CCAR reporting to 2015 to give banks some relief for their staffs over the upcoming holiday period.

Troy Haines



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Prior to joining SAS, Haines was Senior Vice President and Head of Mortgage Banking Risk Modeling at JPMorgan Chase. He also previously served as Senior Vice President of Modeling and Analytics at Washington Mutual Bank (WaMu) and Director of Econometric Modeling and Analysis at GMAC (now Ally Bank).

Haines studied economics at both New York University and the New School for Social Research, where he holds a PhD.