SAS® Stress Testing

Evaluate the impact of stress-test scenarios on your overall portfolio for regulatory requirements and strategic decision making

Many firms have adopted a formal framework to inform their capital planning through an analysis of their vulnerabilities and capital adequacy under a range of potential adverse scenarios. They have also taken steps to enhance the integrity of their risk measures, analysis and the decision making around their capital levels and distributions. Despite these advances, there is continuing need for improvement in the firms' capital planning processes.

– Federal Reserve Board Governor Daniel K. Tarullo at the Federal ReserveThird Annual Stress Test Modeling Symposium, Boston, June 25, 2014

Overview

For many larger banks, stress testing is not new. Global and regional financial institutions in the US and in Europe have invested in some level of stress testing or scenario analysis for many years now. What is new, however, are the number and minimum size of institutions needing to conduct more comprehensive stress tests, the level of complexity of the tests, and the amount of disclosure associated with them.

Nowadays, stress tests and capital management requirements blend risk and financial information. That's why this new level of rigor and expanding reporting requirements increasingly require you to evaluate not only the technology investments you're making, but also how you're organized. With requirements for more efficient data and modeling platforms, in hand with additional governance activities, it's not hard to see the tough challenges to meet both quantitative and qualitative aspects of regulatory compliance.

Our Approach

We approach stress testing with an integrated solution suite that enables you to run revenue and loss models on a single platform. It provides the ability to define and execute any bank-specific scenarios to support what-if model sensitivity and capital planning analyses.

Providing orchestration and transparency of the entire stress testing process, SAS supports independent reviews and validation of global regulators' capital planning exercises (e.g., CCAR, EBA) or improvement of internal business decision making.

The SAS Stress Testing solution suite is designed around three comprehensive and complimentary offerings:

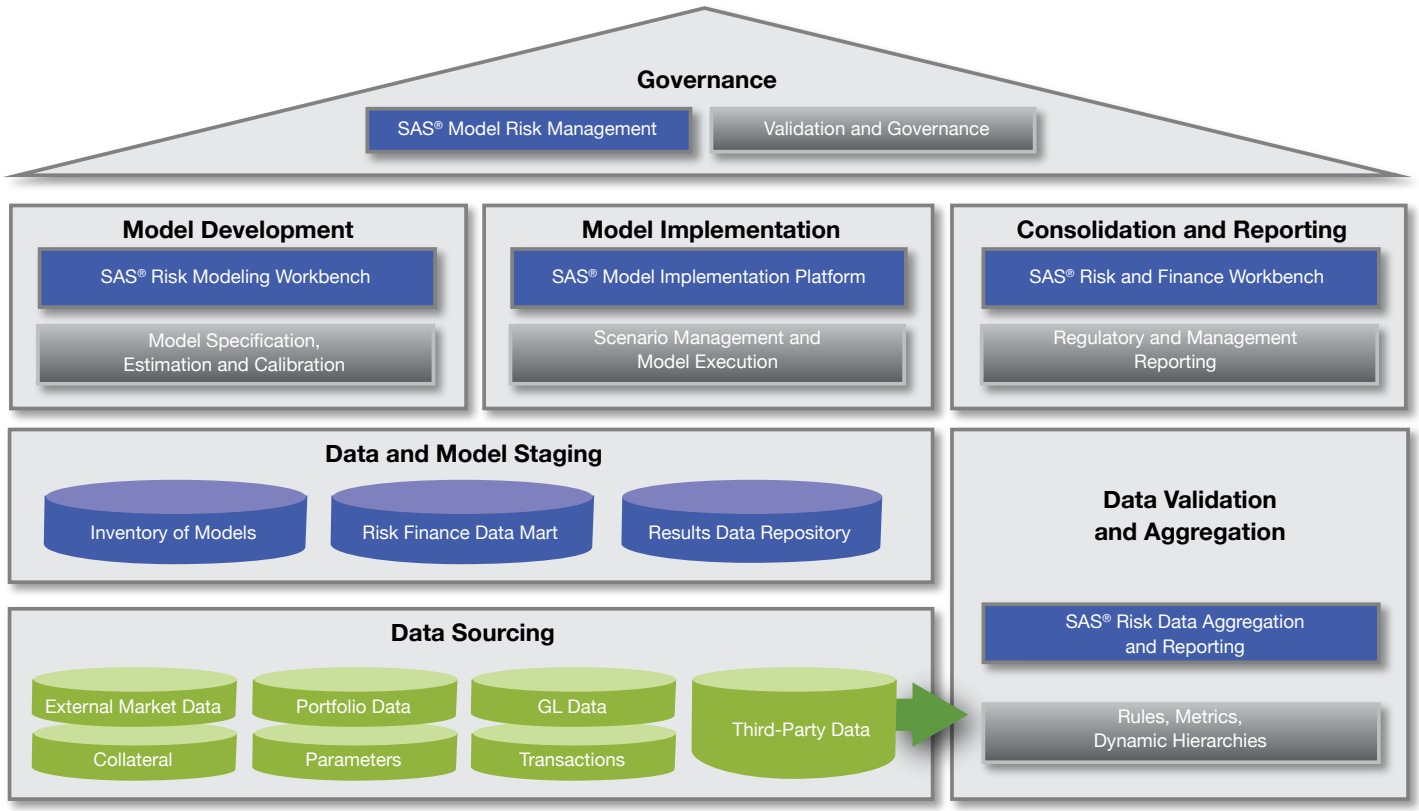
- SAS Risk and Finance Workbench.
- SAS Risk Modeling Workbench.
- SAS Model Implementation Platform.

Capabilities

As shown in the figure below, SAS offers additional solutions to augment your capabilities around model governance, data management and visualization.

We provide software and services that provide the ability to:

- **Manage data for decisive action**. Data management is an integral component of every initiative and strategic decision. Your success depends on your ability to quickly and easily access and integrate the data you need, while having confidence that the data is correct, current and complete. SAS provides comprehensive data management capabilities to include data quality, data lineage and metadata documentation in a transparent and readily searchable form through the entire stress testing life cycle.
- **Monitor model risk and performance**. Using SAS Risk Modeling Workbench together with SAS Model Risk Management, we offer both generalized and specific capabilities to support model development as well as model governance. In addition, SAS solutions offer independent review and validation of models used in internal capital planning. Through a web-based front end, you have a complete inventory of models and model validation process plus a champion/challenger assessment process. The model risk management capabilities that SAS offers are consistent with existing supervisory guidance on model risk management.
- **Implement and execute models with cost-effective automation and repeatability** using the SAS Model Implementation Platform. SAS has stress-testing capability that's designed to speed the modeling implementation process of stress testing, while also being able to fulfill the regulatory requirements in one simplified platform. As a result, firms can pull from existing portfolio exposure calculation engines and aggregate to a firmwide view. SAS has a unique method based on our proprietary high-performance, in-memory architecture that can execute models on large amounts of granular-level data and aggregate them to any desired level for analysis and reporting. We provide a comprehensive and efficient computational platform including process management capabilities that ensure all appropriate steps are completed, monitored and repeatable.
- **Orchestrate the stress testing process, provide integration and reconciliation** between risk and finance with the SAS Risk and Finance Workbench web-based environment. Analysts can specify scenarios and consolidate modeling results into balance sheets, financial statements and capital plans. In short, the SAS Risk and Finance Workbench serves as a central hub from which banks can orchestrate the various aspects of the stress testing process and consolidate results from the various systems. The workbench is linked to other components of the stress testing system through a centralized inventory of models and stress testing data repository.



The SAS® Stress Testing suite is integrated in a modular approach to enable end-to-end governance and transparency of the entire process from model development to reporting.

Challenges

- **Managing data**. Data-related issues can seem like the largest hurdle to comprehensive, enterprisewide stress tests. Data provisioning, data quality, data consolidation and data aggregation continue to challenge most institutions. And tracing and documenting data transformations is often time-consuming, inefficient and incomplete.
- **Developing models and maintaining model life cycles**. Your bank needs an efficient modeling environment to support model development and validation. Insufficient infrastructure and disconnected processes throughout the entire model life cycle, especially in the model implementation phase, can lead to model breakdown and erroneous results. Monitoring and maintaining the complete inventory of models with a comprehensive governance process is also critical.
- **Implementing models**. Many banks still struggle to 1) overcome limitations due to overreliance on manual processes; 2) address issues related to developing, benchmarking and executing models under different scenarios; and 3) reduce the time and effort required for individual execution cycles. The historical paradigm of throwing more people on the problem is not sustainable, as this often complicates the process and undermines the overall orchestration of an effective stress testing program.
- **Consolidating, planning and reporting**. It's critical to have a well-orchestrated process and solution that pulls all of the component pieces together in order to assimilate the entire set of required information, track important tasks, and allow for iterative analysis of the results – all while providing the necessary transparency and process documentation required by regulators. You need to thoroughly reconcile risk and financial data, run forward projections with the same scenarios in a holistic fashion, and accurately map reporting taxonomies back to source data. Often these functions aren't well integrated, resulting in inefficient iterations and inconsistent use of scenarios, loss projections and bottom-line results.

SAS Facts

- SAS risk solutions are used by more than 1,400 institutions worldwide.
- Chartis has named SAS a leader in 2015 RiskTech Quadrant for enterprise stress testing systems: "A particular differentiator is the coordinated, systematic support ranging from data management, model lifecycle management and integration, scenario management, aggregation, capital planning and reporting." - Chartis RiskTech Quadrant® for enterprise stress testing systems, July, 2015.
- SAS placed first as the top risk solutions vendor for risk management technology in the 2015 *Chartis: RiskTech100* report.
- SAS was named a leader in the *IDC MarketScape: Worldwide Credit Risk Analytics Solutions 2014 Vendor Assessment*.
- SAS ranked as a category leader in Aite's 2013 report *The Global Stress-Test Automation Market: Stress, Uncertainty and Moral Hazard*, recognizing SAS Stress Testing with a high degree of analytical insight and a wide scope of data integration.
- Gartner placed SAS in the Leaders quadrant for data integration tools: "Breadth of core functionality and extensive connectivity position SAS well to engage in competing for contemporary data integration tool demand amid larger and more established vendors in this market." (Gartner *Magic Quadrant for Data Integration Tools*, July 24, 2014).
- SAS is a category leader in Chartis Research's inaugural *Chartis RiskTech Quadrant for Model Risk Management Systems 2014*. Chartis commended SAS for its range of technology solutions spanning advanced model risk analytics, risk data aggregation, model governance, workflow and reporting applied across credit risk, market risk and operational risk.

Learn More

For more information on SAS solutions for banking risk and compliance, visit: sas.com/stresstest.

> "More than 60 percent of banks surveyed have established a framework for stress testing, but the majority say that it still has a heavy reliance on manual processes."
>
> – Longitude Research, October 2014

The SAS® Difference

Go Beyond Compliance With Confidence

SAS Stress Testing delivers a holistic solution suite that offers:

- A comprehensive, orchestrated platform providing repeatable processes and confidence in stress testing results.
- A rich modeling environment with a modularized, integrated and efficient application for model development and validation.
- Advanced risk technology that can help speed up complex computations, delivering results efficiently and quickly to meet regulatory requirements.

"There's a danger in always looking backward and choosing scenarios from historical experience. You have to be proactive, and in many cases, it's up to individual banks to do that because they have a better idea of the new exposures and risks that will make each of them vulnerable and which scenarios they will need to conceptualize."

– Argyle Conversations, Banking Best Practices: Philadelphia Fed's Paul Calem Describes How Banks Can Comply With Regulations and Become More Efficient, Nov. 18, 2014

"The Bank of Montreal is investing heavily in building stress-testing capability. This spans people, processes and systems. We view it as much more than a compliance exercise. We see stress testing as a strategic, value-adding input to assessing, anticipating and preparing for uncertainty. I like to think of stress testing, or scenario testing, as a forward-looking simulation … it is a useful tool to contemplate and rehearse – without recourse – a playbook of strategic moves. This practice should improve forward-looking thinking and timely recognition of adverse, or opportune, events as they unfold and foster more rapid adaptation to market conditions."

– Sanjiv Talwar, PhD, Head of Risk Capital and Stress Testing, Bank of Montreal

To contact your local SAS office, please visit: sas.com/offices

sas
THE POWER TO KNOW.