SAS® Solutions for Enterprise Risk Management

A holistic view of risk of risk and exposures for better risk management

Overview

The principal goal of any financial institution is to generate revenue, and every business decision made in support of that goal comes with associated risks. While financial institutions have always engaged in some form of risk management, there is growing pressure on risk management departments due to a variety of factors, including ongoing economic volatility, increasing regulations and innovative financial engineering.

Continued global economic instability stemming from the financial crisis that began in 2007 has highlighted a few key truths about risk management:

- **Risks are interconnected.** This is true across all exposures and risk types, as well as across organizations and markets.
- **A proactive action plan is critical.** Being prepared for likely – as well as unlikely, but possible – events can make all the difference in how (or if) a firm survives a crisis.
- **Firms need both a detailed and broader view of exposures.** To navigate the market safely, particularly in times of high volatility, financial institutions need to see both a granular and a big-picture view of risk exposures.
- **The market requires an overall view of an institution’s risk.** And institutions that cannot – or will not – provide such a view will be penalized.

Despite these truths, most institutions are not at all sure how to go about managing risk effectively. SAS can help.

SAS offers an extensive suite of enterprise risk management solutions, proven methodologies and best practices built on more than 36 years of experience with leading financial institutions around the world. With enterprise risk management software from SAS, you can:

- **Gain a holistic view of risk** supported by a single, detailed data layer; the most powerful analytics available; user-friendly, self-service reporting; and a transparent environment that lets you trace results back to their origin.
- **Enhance your financial performance** by reducing losses, improving capital management and building a risk-aware culture throughout the organization.
- **Reduce your time to– and cost of– compliance** by effectively and efficiently managing all types of risk across the institution, while lowering associated costs.
It’s about embedding risk management into every aspect of your organization

How SAS® Can Help

Technology, business and the world in general have evolved over the years, and risk management must also evolve. There’s a lot of talk these days about adopting an enterprise risk management strategy, but often little understanding about what that really means.

Enterprise risk management (ERM) is about more than balancing risk and reward, and it goes beyond regulatory compliance. It entails embedding risk management into everyday processes, business strategies, products and services at all levels of the organization. And SAS can help you get there.

Gain a Holistic View of Risk

SAS solutions for enterprise risk management give you a current, credible understanding of the risks unique to your organization across a broad spectrum that includes all types of risk (credit, operational, market, liquidity, counterparty, etc.), lines of business and other key dimensions.

Enhance Your Financial Performance

Risk is an integral part of the process of generating favorable returns for shareholders. The question lies in how to best balance that risk against the potential for reward. SAS helps you identify, calculate, analyze and manage risk across the enterprise by infusing sound risk management practices into every aspect of daily business, so you can:

- Reduce losses by adding more control over actions.
- Generate bigger profits by pricing financial instruments strategically.
- Improve capital management and ensure that capital reserves accurately reflect the risk profile.
- Create a risk-aware culture in order to identify potential issues before they become costly problems.

Reduce Your Time to– and Cost of– Compliance

Regulatory mandates put the onus on financial institutions to carry out sound risk management practices. For example, while firms are required to set aside capital to adequately cover potential losses, compliance with this requirement often entails overhauling business processes and investing in additional technology and human resources.

SAS helps you streamline your time to compliance and lower associated costs by enabling you to:

- Effectively manage risk using accurate risk measurements that will satisfy regulators.
- Share information among business units to ensure better-informed decisions and adherence to strategic goals.
- Seize opportunities to enhance revenue and achieve or exceed financial performance targets.
- Eliminate redundancy and foster collaboration across business units.
- Provide assurance to key audiences by delivering auditable data and results, validated processes and models, and end-to-end operational transparency.

Key Benefits

- Gain a holistic view of risk exposures and promote a unified approach to and understanding of risk by distributing risk and compliance information—based on common data—to users and stakeholders across the organization.
- Ensure that executives have access to timely risk information at the level of detail they require—from high-level information on overall exposures all the way to granular, drill-down details.
- Get early warning about issues and threats via key indicators, macro trending, critical control testing and self-examination.
- Be proactive by identifying problems prior to control failures and having a plan of action for risk mitigation.
- Seize opportunities to enhance revenue and achieve or exceed financial performance targets.
- Cut operating expenses by eliminating redundancy and fostering collaboration across business units.
- Provide assurance to key audiences by delivering auditable data and results, validated processes and models, and end-to-end operational transparency.
Capabilities

With SAS, there’s no need for the added cost and hassle of piecing together a multivendor risk management solution. That’s because SAS cost-effectively integrates information management, analytics and reporting into a robust end-to-end risk management environment.

Comprehensive Information Management

SAS combines data integration, data quality and master data management into a single, unified framework to ensure the consistency, accuracy and timeliness of your data. The entire data management process is automated – from data collection and aggregation to data validation and cleansing.

In addition, SAS provides:

- A banking-specific risk data model with preconfigured data flows.
- A built-in data profiler that finds and fixes data quality issues automatically.
- Hundreds of predefined data structures and data transformation routines that automatically integrate data across risk types, products and lines of business, as well as other functions (e.g., finance and marketing).
- A robust risk data architecture that enables risk-based performance management across functional areas.

The Most Powerful Risk Analytics Available

A sophisticated risk engine

A powerful, yet flexible risk engine supports more quantitative risk methods than any other risk engine available. You can configure user-defined risk factor, pricing and cash flow models using the engine’s flexible, custom method development framework. In addition, the SAS risk engine:

- Performs complex calculations on large volumes of data in record time.
- Calculates multiple regulatory, economic capital, and market, credit, counterparty and liquidity risk measures.

SAS business data network risk glossary with Basel III and liquidity risk terms.
“SAS Risk Management for Insurance helps us to streamline our solvency calculations and reporting in accordance with the new requirements. SAS also offers excellent support for our internal risk management... . Good capital and solvency management supports sound decision making to plan and steer more efficient business operations. It is also the best way to protect the interests of the insured.”

Raoul Berglund
Head of Risk Management
Fennia Mutual

Technology-enabled end-to-end enterprise risk management

- Runs both standard and advanced preconfigured risk analyses, as well as pricing.
- Offers users significant flexibility to configure their own analysis.
- Supports a broad set of mathematical, statistical, econometric and optimization techniques.
- Includes sound scientific methods for aggregating disparate risk types (credit, market, operational) and aggregating risks along various dimensions (lines of business, products, legal entities, etc.).

High-performance risk analytics
A high-performance analytics infrastructure delivers risk calculation results faster than anyone else. Patent-pending techniques dramatically accelerate processing time for even the most complex risk calculations. In addition, significant performance gains are made possible through:
- In-memory analytics, which can process complex analytical computations in record time.
- Grid computing, which processes jobs in a shared, centrally managed pool of IT resources.
- Multithreading techniques, which enable simultaneous, parallel execution of multiple tasks.

User-Friendly, Self-Service Visualization and Reporting
A self-service business intelligence environment lets stakeholders interact directly with the information they need, without having to involve the risk management group or IT. Easy-to-use visualization tools give even those with limited analytical expertise the ability to visually explore risk data on demand.

A wide array of preconfigured reports and risk analysis workflows are available, and you can choose from a variety of options for delivering reports and information, including Microsoft Office applications (e.g., Excel) and the Web.

Transparency and Traceability
Only SAS provides complete transparency and traceability across the entire risk management process, with automated, end-to-end process documentation to ease the pain of internal and external audits. A robust, self-documenting metadata environment archives all data and related process flows. You can also drill down into reports for more detail and track information all the way back to the source.
ERM Solutions from SAS

SAS® Risk Dimensions®

As the SAS risk engine, SAS Risk Dimensions supports a wide range of risk analysis methods and provides the ideal user interface for quantitative risk analysts and model builders who need to configure models and analyses for market risk, credit risk, asset and liability management, and risk aggregation.

A flexible, custom method development framework lets users efficiently build custom risk applications. The user interface enables the graphical analysis of advanced risk results based on either detailed or summarized output.

SAS® High-Performance Risk

SAS High-Performance Risk merges the power of an integrated risk platform with a high-performance analytics infrastructure to enable fast, accurate risk exposure assessments and well-informed decisions that will safeguard and enhance a firm’s overall financial position.

The solution uses in-memory analytics, grid computing and multithreading techniques – along with a user-friendly interface – to deliver:

- Faster processing speeds.
- Greater precision in extremely complex portfolio valuations.
- Always-up-to-date portfolio views of aggregated risk.

- The right level of detail – from executives needing high-level summary views, to analysts needing to drill into the most granular details in response to regulatory inquiries.

SAS® Risk Management for Banking

SAS Risk Management for Banking is a complete enterprise wide risk management solution that covers the entire spectrum of risk types – including market, credit, counterparty and liquidity risk – and supports all associated data management and reporting requirements.

This highly configurable solution not only supports current requirements for risk management applications, but also provides a platform for handling future requirements.

The user interface of SAS High-Performance Risk supports both scalar variables and risk measures.
The solution includes a user-friendly interface, along with integrated risk application components for:

- **Market Risk.** Enables risk analysts to configure and calculate the market and theoretical value of various financial instruments, conduct stress tests, perform portfolio optimization and VaR calculations, and compute other risk measures using various types of simulation, analytical or user-defined models.

- **Credit Risk.** Calculates and stress tests credit risk exposures, as well as performing credit portfolio analytics, counterparty exposure analytics, and optimization.

- **Asset and Liability Management.** Allows analysts to valuate traditional balance-sheet instruments and calculate cash flows, measure funding gaps and net interest income, and analyze funds transfer pricing and profitability, as well as support Basel III regulatory liquidity risk reporting requirements.

- **Firmwide Risk.** Performs aggregation of risks from various sources (credit, market, operational, etc.) to the enterprise level for economic capital calculations and other business purposes.

The solution facilitates regulatory compliance by delivering a standardized workflow for calculating regulatory capital with data-driven calculations that are configurable and extensible.

**SAS® Risk Management for Insurance**

SAS Risk Management for Insurance performs risk analysis and risk-based capital calculations for both life and P&C insurance companies. The solution supports the standard model approach, internal models and ORSA calculations for Solvency II compliance, and includes integrated risk application components for:

- **Market Risk.** Allows risk analysts to configure and calculate the market value of financial instruments and assets.

- **Life Insurance Risk.** Enables analysts to blend actuarial and financial techniques to value complex life insurance liabilities.

- **P&C Insurance Risk.** Allows analysts to blend actuarial and financial techniques to value P&C insurance liabilities on both an accident- and underwriting-year basis.

- **Firmwide Risk.** Aggregates risk across the enterprise and calculates the quantitative measures required for Solvency II.

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“We are working on developing a better interaction between the bank’s risk experts and the bank managers, as well as the interaction between IT and business in this area … One important element is that we are able to manage all parts of our calculations and develop, change and understand the analysis behind the figures ourselves. We want to drill down and understand the dynamics, and at the same time, become better at compressing and communicating this knowledge to the management of the bank.”

Simon Haldrup
Head of Risk and Capital Management, Danske Bank
Chartis Research considers SAS to be one of the leading technology vendors for Basel III solutions, with one of the most complete offerings available in the market. As a Category Leader, Chartis considers SAS to be a technology vendor with both a product that is sufficiently functionally and technologically advanced and a suitable market strategy to capture a considerable portion of the market for Basel III solutions.”

Chartis RiskTech Quadrant for Basel 3, Chartis Research, July 2012
About SAS

SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions, SAS helps customers at more than 60,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world THE POWER TO KNOW®.