



## **SAS® Risk Management for Banking and the New Basel Capital Accord**

*Are you prepared for Basel II?*



Act now to achieve maximum value from Basel II compliance. SAS® Risk Management for Banking provides enterprise-wide integration of risk data to ensure full compliance with Basel II, helping to reduce capital requirements and free up more working capital, thus increasing shareholder value and profitability levels.

## **Bank Brussels Lambert (BBL) – Building a Corporate Risk Rating Model with SAS**

In 1998 Bank Brussels Lambert (BBL) merged with the ING Group, a leader in integrated financial services. The primary objective of the ING Group after the merger was to develop a standardized risk rating system for global segments. Says Jurgen Tistaert, Head of Credit Risk Models, "We already had excellent experiences with SAS within BBL. Now we had the opportunity to try out different hypotheses and assess the various models straight away."

### **Flexibility and integration**

Various models were developed, and one was selected for testing at pilot sites in the ING organization. "Our previous knowledge of SAS enabled us to adapt certain components of SAS software ourselves. We were extremely satisfied with the smooth integration of the standard modules with the statistical modules we developed ourselves. This is one of the points where SAS has great flexibility," confirms Tistaert.

### **Quality, timeliness and validation**

"The exemplary robustness and strong statistical foundation of the SAS system provides a guarantee of high-quality results," says Philippe Meunier, Managing Director with special responsibility for Credit Systems & Models. "Housing the model in SAS reduces the time needed to update a version of a rating model to just a few hours, with the results available for display immediately, thanks to SAS' excellent direct visualization facilities," concludes Tistaert. "It allows us to share the work between modelling teams very easily, because everything is integrated into a single SAS structure." Implementation of the risk-rating model in the in-house intranet application made the large corporate rating available to the whole ING Group, and allowed for the possibility of capturing financial and qualitative factors.



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# Collect Collect

## Will you be Basel II compliant in time?

The New Basel Capital Accord, or “Basel II”, is an update of the old Accord (“The 1988 Accord”), which was adopted by over 100 countries worldwide. The new Accord seeks to contribute to the safety and soundness of the financial system by implementing minimum capital requirements on credit, operational and market risk; executing new supervisory review processes; and improving market disclosure.

Basel II, when finalized, will establish the basic capital frameworks for Committee member countries and will enforce that banks have a sound enterprise risk management strategy. Basel II sets new rules for the amount of capital reserves financial institutions must set aside to cover potential losses.

It currently appears that the implementation deadline for Basel II will be end of year 2006, although this date is subject to change. When Basel II does go into effect, however, banks must comply. Already, Basel II is a defined business concern faced by over 30,000 banks worldwide, at all hierar-

chical levels. However, if Basel II is implemented correctly and intelligently, it can also reduce capital reserves, increase the amount of capital available for investments in the banking and/or trading book, and therefore help to increase shareholder value and profitability levels through improved enterprise risk management.

Basel II requires banks to collect and store a minimum of 2 years worth of historical data. Banks will need to ensure data integrity and timeliness of figures, effectively integrate different risk types and guarantee accurate calculation of risk measures.

In order for financial institutions to comply with the new requirements and achieve timely risk intelligence, banks will require a robust IT architecture and an industrial strength reporting capability that can predict and analyze report performance and risk/loss data.

## What are the challenges of the New Accord?

Many banks will have to begin concentrating their efforts on identifying and aggregating their exposure data in order to meet new data validation and corroboration requirements for credit risk management. Because data is often unconsolidated, it can be difficult for banks to effectively manage their credit risk portfolio and report a complete view of risk across the enterprise. Furthermore, estimating default probabilities of corporate, private, sovereign and other counter parties will call for employing various estimation models to reflect different counter party profiles over different asset classes.

In operational risk measurement, one needs to overcome the statistical challenge of estimating a probability distribution with very scarce data. The likelihood that a fraud event will take place under the same circumstances at different points in time is not very high. For most operational risk events, a handful of observations are all that one can use to estimate a probability distribution. Current approaches are too simplistic and vague. As a result of this, the capital reserve may not be as risk sensitive as what would be desirable. Banks need to develop a proactive, rather than reactive, operational risk management strategy.

Market risk pains require technology to perform analytics and interpret results in order to comply with the regulatory reporting and risk disclosure requirements. Banks are looking for ways to re-use available methodologies and software to improve comparability between risk measures, while at the same time the New Accord is asking for compliance with new minimum requirements, as well as new ways of disclosing risk.

## Who will be affected?

All Central Banks that report to the European Central Bank will have to ensure the compliance of the banks in their countries. Banks outside the European Union will have to be Basel II compliant for their branches in EU countries. Basel I was adopted by over 100 countries, and it is expected that the same number of countries will enforce compliance with the New Capital Accord. The scope of application will be extended to include holding companies that are parents of banking groups, to ensure that risk is captured within the whole banking group. SAS Risk Management for Banking enables you to comply at both national and corporate levels.

## Achieve Basel II compliance with SAS

Implementing a comprehensive data risk management architecture is the only guaranteed way that banks can begin to comply with the new regulations, by ensuring that their risk calculations are accurate, complete and reliable.

SAS delivers the solutions you need to execute a comprehensive risk management strategy for your banking institution. Built on our industry-leading Intelligence Architecture, SAS® Risk Management for Banking provides Basel II compliant solutions consisting of an integrated enterprise-wide framework for covering all relevant risk types, including credit risk, operational risk and market risk.

The framework capability includes credit risk analysis techniques, such as credit scoring to determine default probabilities, and tailored exposure calculations and risk factor modelling. It also includes operational risk analysis techniques, whereby operational risk capital can be calculated based on scarce data, and the data captured, incorporated and then used to assess operational loss likelihood via an extensive risk-engine (which includes Monte Carlo and historical simulation, profit & loss calculations, scenario analysis and many other techniques); and market risk reporting, whereby risk disclosure can be achieved via on-line, multidimensional reports with drill-down and aggregation possibilities.

## Flexibility to match your unique business needs

SAS Risk Management for Banking is a packaged, complete solution that has the flexibility to be easily integrated across your enterprise, to match your distinctive business requirements. SAS provides a comprehensive modelling engine where users can define and fit (G)ARCH, GBM and many other models. SAS incorporates all relevant analysis methods to measure risk on the basis of current and potential exposure.

A core strategic advantage of SAS Risk Management for Banking is that it incorporates SAS' industry-leading data warehousing capabilities to access data from numerous, disparate sources. This functionality allows organizations to efficiently create a global risk data warehouse, which is a centralized data repository that consolidates and organizes enterprise-wide financial data – regardless of geographic location, system, hardware platform, or origin – allowing decision makers to evaluate multiple dimensions of risk, as well as their institution's overall risk. SAS Risk Management for Banking solves immediate requirements such as Basel II regulatory capital measurement and reporting, while allowing the freedom to cover related areas, such as economic capital measurement, risk factor modelling, and an enormous range of risk reporting capabilities.



## Capitalize on your Basel II investment with SAS

SAS software can create a holistic view of your enterprise's risk position that extends beyond the pure Basel II requirements regarding calculation of capital adequacy, eliminating the need to invest in any additional risk management systems. There are no other competitive systems available today that address the complete scope of Basel II requirements. SAS is the only vendor offering a complete Basel II compliant risk management system of fully integrated solutions.

With SAS Risk Management for Banking you can customize the core solution to exactly match your current and future requirements and risk measurement methodologies. SAS software allows a phased implementation, resulting in enterprise risk intelligence that delivers unmatched insights across all risk types, improved profitability and faster ROI.

Globally recognized as the industry leader in analytics and data management, SAS software provides the methodology and technology to implement more effective risk management and business strategies, thus maximizing shareholder value. SAS Risk Management for Banking is Basel II compliant and will meet your specific needs today, and will grow with your risk management strategies for tomorrow.

## The SAS Intelligence Advantage

In a competitive marketplace, financial institutions must focus scarce resources on the strategies most likely to yield success. SAS can help you achieve this focus.

We leverage the investments you've already made in operational systems and applications by adding a layer of intelligence you can't get anywhere else. SAS solutions and services empower your organization to transform raw data – from any source and across every channel – into usable intelligence about customers, suppliers, your organization, and the overall performance of your enterprise. We call it SAS Intelligence, and we deliver it through our industry-leading data management and analytics.

Because all SAS solutions rely on the same open, flexible and extensible framework – the Intelligence Architecture – it's easy to link individual solutions and leverage existing technology to produce reliable information that decision makers can act upon with confidence.

Whether you're focused on one facet of your business or committed to improving performance throughout the enterprise, SAS Intelligence can help you maximize profitability, minimize risk and achieve competitive advantage.

Solutions from SAS, the world's largest privately held software company, are used at more than 38,000 business, government and university sites around the world, and in over 600 banks within the EMEA region. Customers include 99 of the top 100 businesses on the Fortune 500.

For over 25 years, SAS has been giving our customers *The Power to Know™*.

For more information, visit us at [www.sas.com](http://www.sas.com).

# Definitions

## Risk Definitions

### Credit Risk

Inadequate credit risk management often stems from: a high concentration of exposure to one market segment; lack of consideration for credit quality of counter party; subjective decision-making; and lack of risk sensitive pricing. Some of the main difficulties are due to: credit standards for borrowers that are not stringent enough; inadequate credit risk management across portfolios and inattention to circumstances that could affect a party's credit standing. Basel II sets new rules for how much capital financial institutions must set aside to cover potential losses.

For the measurement of credit risk, two principal options are being proposed. The first is the traditional standardized approach, and the second is the internal ratings-based (IRB) approach. Under the IRB approach, banks will be allowed to use their internal estimates of borrower creditworthiness to assess credit risk in their portfolios. Building on the increased capability of banks to quantify the credit risk of their exposures, the IRB approach will provide for a single framework by which a given set of risk components are translated into minimum capital requirements.

### Operational Risk

A common industry definition of operational risk is: "the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems, or from external events". In other words, operational risk problems can stem from internal sources such as employee or executive incompetence and corruption, and/or external sources such as experiencing a natural or man-made catastrophe. The Basel II regulations will seek to require banks to set aside capital to mitigate operational risk by aligning capital charges more directly with risk taking.

### Market Risk

Market risk is risk to earnings and capital arising from adverse movements in the financial markets, such as bond prices, security and commodity prices and foreign exchange rates. Effective disclosure of this risk is vital to ensure that market participants can better understand banks' risk profiles. Basel II contains disclosure requirements and recommendations on how banks calculate capital adequacy and risk determination processes via risk and regulatory reporting, and gives banks incentives to preserve a strong capital base as a shield against potential future losses that could occur from its risk exposures.

## ***Banca Nazionale del Lavoro (BNL) uses SAS to comply with Basel II credit risk management regulations***



*Substantial changes in the financial and regulatory environment are calling for banks to revise their credit risk management strategies.*

*In response to the new regulations, the Credit Risk Division of the Banca Nazionale del Lavoro (BNL) Group, a leading Italian banking group and one of the top 100 banks worldwide, turned to SAS to make the transformation toward a Basel II compliant strategy.*

### ***SAS chosen***

*SAS created a credit data warehouse to ensure ever-deeper knowledge of the borrowers, as well as a credit risk management model designed to comply with Basel II requirements and to strengthen BNL's competitive edge. The goal of the project was to develop a reliable solution capable of evaluating the probability of customer default, especially those in the corporate segment, and then to use the results as the basis for developing more advanced credit risk management models.*

*"In order to develop a reliable behavioural 'score' model we have to process a vast amount of data," explains Giovanni Parrillo, head of the Credit Policy Service at BNL. "To carry out this process we chose SAS solutions, which have proved useful, especially at the modelling stage, because of the flexibility they allow us to make rapid changes of specifications and data sampling methods in certain situations." Data is analyzed using SAS to better understand and refine the predictive variables, as well as for easy management of a huge quantity of data.*

### ***Benefits of compliance***

*SAS' expertise in risk management, data warehousing and facilitation of the transformation process allows BNL to estimate the probability of default via credit rating and to identify which attributes are predictive.*

*According to Giovanni Porcelli, Portfolio Monitoring Manager for BNL, "Where the statistical models were concerned there was no need to develop anything in-house, because the solutions provided by SAS were more than adequate."*

*Parrillo concludes, "Thanks to the flexibility of the SAS solutions we have used, we have succeeded in fully meeting the Basel II project requirements, and we have laid a solid foundation for the implementation of the subsequent phases."*

### ***A step up on the competition***

*With SAS' help, BNL is well on their way to complying with the risk-sensitive framework of the new Basel II accord, which will translate into substantial savings on capital requirements.*

*Acting now gives a bank a lead over its competition. With this view, BNL is already ahead of the game.*



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