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Implementing a Credit Risk Management Dashboard with SAS®

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Abstract

In my presentation I describe how to facilitate better credit risk decision-making throughout the organization by implementing a credit risk dashboard with SAS and what are the common pitfalls to avoid. Better credit decision making means that banks need to improve their data risk aggregation in order to effectively identify and manage their credit exposures and credit risk, create early warning signs, and improve the ability of risk managers to challenge the business and independently assess and address evolving changes in credit risk. My presentation focuses on using SAS® Credit Risk Dashboard to achieve all of the above. Clearly, you can use my method and principles of building a credit risk dashboard to build other dashboards for other types of risks as well (market, operational, liquidity, compliance, reputation, etc.). In addition, because every bank must integrate the various risks with a holistic view, each of the risk dashboards can be the foundation for building an effective enterprise risk management (ERM) dashboard that takes into account correlation of risks, risk tolerance, risk appetite, breaches of limits, capital allocation, risk-adjusted return on capital (RAROC), and so on. This will support the actions of top management so that the bank can meet shareholder expectations in the long term.

Introduction

Banking is about managing multiple risk types. The global financial crisis in 2008, followed by a $700 billion US government bailout, raised concerns about the effectiveness of banking risk management. As a result, risk management in the banking industry has become increasingly proactive as well as more independent and powerful. In addition to its major responsibility to maintain the bank's stability, risk management also increasingly supports the business in achieving its goals, before decisions are made, in real time and in a more effective way.

The key success factor in risk management is the ability to identify where and how a bank can proactively manage its risks and assets to gain a competitive advantage. One of the major tools that the chief risk officer (CRO) can use to accomplish this is an effective risk management dashboard.

Credit Risk Management Dashboard

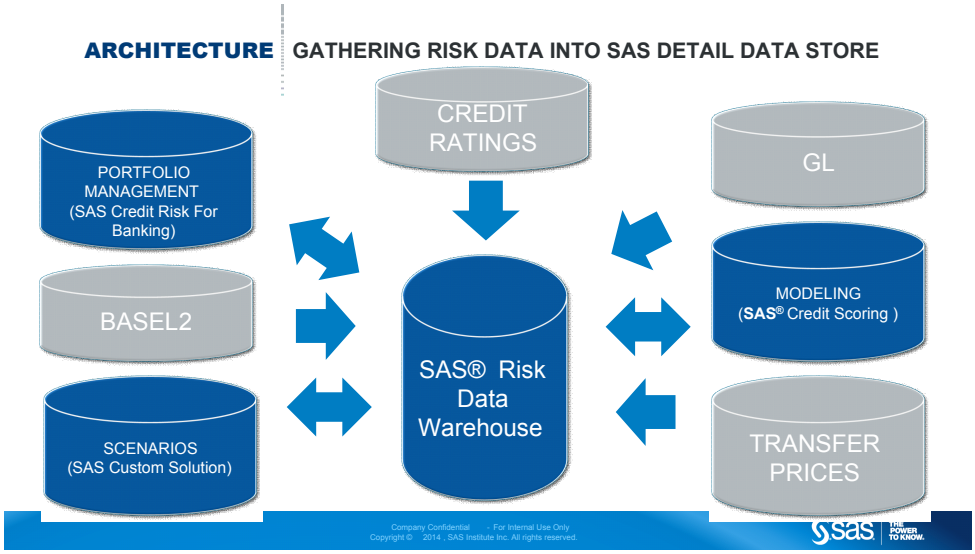
When you analyze the testimonies of bank CEOs to the United States Financial Crisis Inquiry Commission (FCIC) in 2010, it is clear that one of the major flaws in the banking system was the lack of risk data aggregation and reporting that would have revealed the banks' true exposures and their portfolios' performance strengths and weaknesses. Effective risk data aggregation is essential for adequately monitoring credit limits, using risk-adjusted pricing, and preparing sound annual work plans. Moreover, it is critical for risk managers to use in effectively challenging business initiatives, where appropriate.

The first requirement in implementing a credit risk management dashboard is to have single representations of data rather than multiple databases, which usually lead to inconsistencies. We built a unified credit risk data warehouse (which is called SAS® Detail Data Store) to represent a single version of the true credit risk of our consolidated portfolio. Having only one version of the "truth" is a key element in achieving a synchronized, consistent, competent database that you can trust and understand. SAS Detail Data Store also saves a lot of time and resources, because it prevents the need to compare, adjust, and explain the differences among the various data sources within the organization.

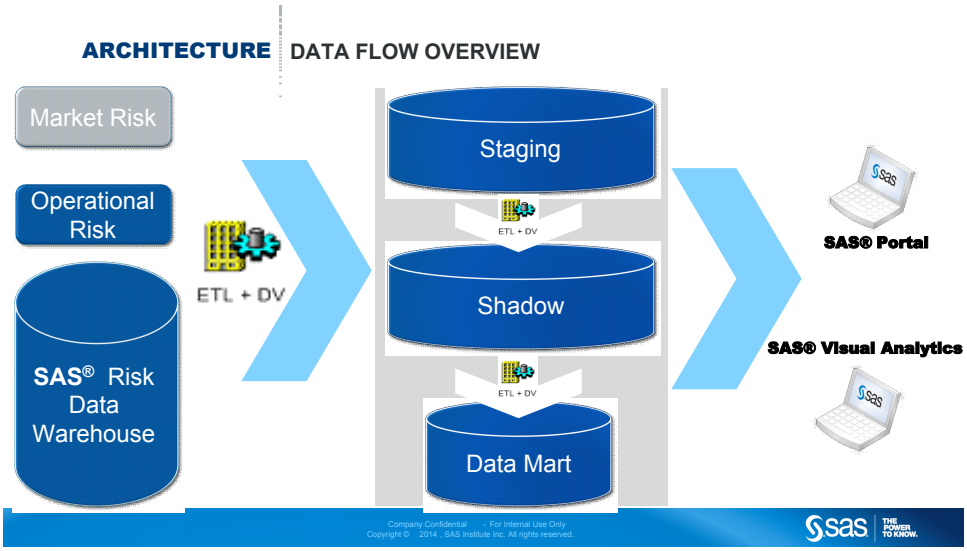
As described in slide 1, SAS Detail Data Store contains the input of all our credit risk systems; their outputs are also stored there.

The architecture that supports our ERM dashboard (credit risk, market risk, operational risk, and ERM) is shown in slide 2.

Slide 1. SAS Detail Data Store: data from different solutions gathered into a single version of the truth – SAS Risk Data Warehouse.



Slide 2. Architecture



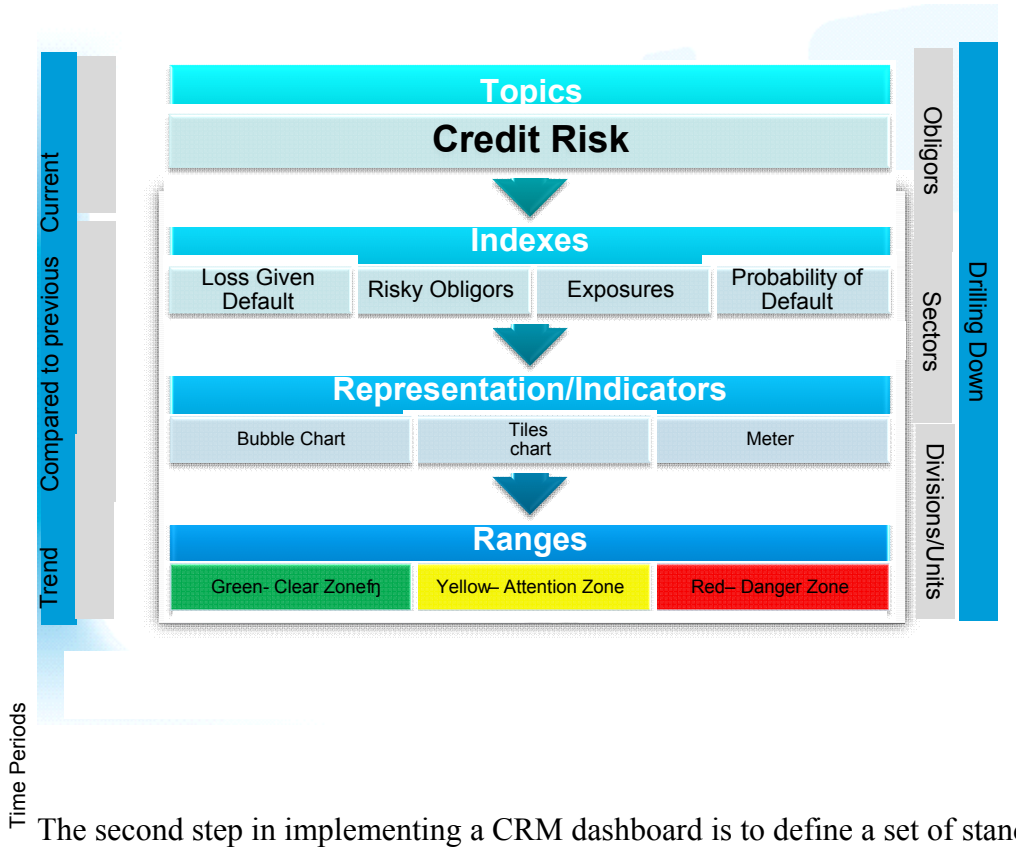
A bank faces two key questions: Does it have red flags that signal when its credit risk changes? Do its CRO and its top managers who own the credit risk have a good understanding of what is happening to the credit portfolio that they are responsible for?
A CRM dashboard can help risk executives to address needs by enhancing their insight into credit risk and to visualize risk indicators at a glance with drill-down

capabilities (slicing by different variables—exposure, region, sector, and so on). They can use the dashboard as a tool to monitor risk escalation. It provides a comprehensive risk assessment, including a forward-looking picture of the portfolio and an integrated view of risk reward capital.

The CRM dashboard presents an updated view of the bank's risk profile, which must be immediately accessible and easy to understand. Therefore, the dashboard should be built based on the following four principles:

Visualization: instant graphic presentation in context
Availability: the right information to the right person at the right time
Warnings: identifying outliers, changes, and trends
Action: support for decision making and actions

There are two practical steps in implementing a CRM dashboard.
The first step is to make a list of questions that you must to be able to answer in order to ensure healthy, long-term profitable lending operations and to get a single, holistic view of the bank's risk profile.
Thus, you must determine the following:
a) Which indexes will be used to answer these questions (for example, level of risk can and should be determined by more than one index: probability of default, ratings, transition matrix, tail risk, concentration, level of provisions, and so forth)
b) How the indexes (absolute values, averages, ratios) should be measured, which dimensions will be analyzed and drilled down (interactions, changes over periods of time, geographies, SIC codes, units, and so on), and how to represent them (traffic light, speedometer, graph type, heat map, and so on). In my presentation I discuss typical mistakes you should be aware of in designing the methodology for this step.
c) How to set ranges and differentiate between the green zone (clear), the yellow zone (attention), and the red zone (danger).



The second step in implementing a CRM dashboard is to define a set of standard reports and to design a dashboard that gives immediate access to credit risk insight. As mentioned earlier, the dashboard is based on a data warehouse (SAS Detail Data Store) and enables drilling down and performing further analysis. SAS® Visual Analytics is an important tool to complement the dashboard and help you discover points of connection that you hadn't been aware of. It gives you a way to find previously unknown relationships in your data and to spot trends in data by using an intuitive user interface.

Conclusion

Creating an effective risk management dashboard is an effort to put risk at the center and to take full advantage of new and advanced technology.

With the credit risk dashboard, top management has visual access to credit risk insights. The dashboard enables managers to see risk indicators at a glance, drill down, identify hot spots, and start investigating what has gone wrong and why. It is an important tool to help you gain a competitive advantage and to provide a good understanding of what the portfolio looks like and how it is performing (including timely notification of risk events such as credit downgrades or crossing limits thresholds).

SAS Visual Analytics can be used for further investigation. Its intuitive user interface enables you to discover relationships that you weren't aware of.

Recommended Reading

1. Senior Supervisors Group (2009). *Risk Management Lessons from the Global Banking Crisis of 2008*. October 21. https://www.sec.gov/news/press/2009/report102109.pdf.<BG: Please verify my addition of URLs to both Recommending Reading entries.>

2. Basel Committee on Banking Supervision (2013). *Principles for Effective Risk Data Aggregation and Risk Reporting*. January. Published by the Bank for International Settlements. http://www.bis.org/publ/bcbs239.pdf.

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