

Why is a model validation program necessary in a Sarbanes-Oxley environment?



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by Ric Pace and Steve Robertson

Financial institutions rely heavily on various financial and economic models for financial reporting applications, such as financial instrument valuation and loan loss forecasting and reserving. The level of sophistication of these models typically varies greatly from relatively simple spreadsheet models to complex statistical models. Regardless of the level of sophistication, model usage exposes an organization to some level of model risk; for example, model errors may cause a valuation model to estimate incorrectly the fair market value of a financial asset. Based on our experience, model errors are usually caused by one or more of the following factors:

- Data quality / integrity issues;
- Poor / incorrect model design and development;
- Inexperienced model users / developers;
- Computer programming errors;
- Little or no internal controls; and
- Little or no on-going model validation.

In the previous issue of this newsletter, we shared some thoughts about managing financial and economic model risk management. Specifically, we discussed the expectations for model validation outlined by the Office of the Comptroller of the Currency (OCC). OCC Bulletin 2000-16 discusses regulatory guidance for elements of a sound model validation program and the scope of model validation procedures.

With the Sarbanes-Oxley Act of 2002; however, the need for a well-designed and effective model validation program is even more important. In this article, we discuss how a model validation program can form an integral part of management's internal control structure over financial reporting, and we highlight three key steps that we believe are crucial in the design and operation of an effective model validation program.

1. Identify models used in financial reporting procedures

A useful method for identifying models that are key elements of financial reporting procedures is to map financial statement line items back to source data and systems. This mapping exercise should enable management to recognize models that directly influence financial statement line items and develop an inventory of such models. Most financial institutions that have performed this type of mapping exercise have developed an extensive inventory of models that required an in-depth review of model risks and controls. However, given the large inventory of models that will likely require further review, management may want to consider prioritizing such reviews based on



the materiality of the financial statement line item a model impacts, or management's initial assessment of a model's controls (or lack thereof).

2. Develop a model validation policy

Senior management should establish a formal model validation policy to provide a framework for the company's model validation program. This model validation policy should articulate key elements of the company's model validation program such as:

- Policy scope outlining the types of models to which the model validation policy applies;
- Roles and responsibilities for key departments/committees, model developers/owners, and Internal Audit in the model validation process ¹ ;
- Minimum model documentation and performance standards that are required before a model can be approved for use in a production environment;
- A set of consistent review and documentation standards that senior management requires for all independent model reviews / validations; and
- Specific guidance on the set of required internal controls that must be developed and implemented for various types of models, including specific management approval authorities, change management controls, controls to ensure on-going model validation, model security and version controls, etc.

3. Perform model reviews and assess model controls environment

Using the standards articulated in the company's model validation policy, and the procedures contained in the model validation program, the company should perform model risk assessments and control reviews on the inventory of models that impact financial statement line items. Consistent with policy, management should ensure that:

- These reviews are performed by personnel with the appropriate level of modelling subject matter expertise that is commensurate with the complexity of a model being reviewed;
- The model review procedures and findings are documented to provide evidence of testing of the specific control activities for each model;
- The findings from the model review process are used to form an assessment of the design and operating effectiveness of the internal controls framework for models that impact financial reporting; and
- Action plans addressing identified model control weaknesses are established and tracked.

1. A key regulatory expectation when defining roles and responsibilities in the model validation process is that model reviewers should be independent of model developers.

Conclusions

As discussed above, a model validation policy helps a company to establish its control environment over financial reporting risks, while a model validation program represents an important “monitoring of controls” activity. Together with appropriately designed and implemented model-level control activities, these elements should form an appropriate and effective internal control framework that satisfies the certification process for Sarbanes-Oxley Section 404.

PricewaterhouseCoopers has a team of professionals available to answer your questions about model validation and performs reviews of a wide-range of model applications. Please contact Steve Robertson in Minneapolis at (612) 596-6000 or steve.robertson@us.pwc.com or Ric Pace in Washington, D.C. at (202) 414-1690 or ric.pace@us.pwc.com with any questions or comments.

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