

## **MODEL RISK: INDUSTRY & REGULATORY PERSPECTIVES**

### **Model Risk: Industry Perspective**

Almost five years ago, in 1996, the Risk Standards Working Group released their perspective on model risk as part of “Risk Standards for Institutional Investment Managers and Institutional Investors”. Twenty risk standards were promulgated to provide guidance to institutional investors to use when developing risk measurement and management practices (It is worth noting here that banks were well represented on the Comment Group of this organization). These standards were classified into three risk categories: Management, Measurement, and, Oversight. These “Risk Standards” may still be viewed as a “best practices” approach to risk management. It was noted in the Foreword to “Risk Standards” that the implementation of all the standards would be costly and time-consuming. Their agenda was not to mandate the standards for all institutions; rather it was to “help ensure that risks are identified, understood, and acceptable.”

Many of these “Risk Standards” are integral parts of either FFIEC’s Policy Statement on Interest Rate Risk or their Policy Statement on Investment Securities. Selected “Risk Standards” are now familiar to bankers and regulators as they are also included in the Sensitivity component of the CAMELS rating system.

Some of the Management standards implicitly incorporated the notion of model validation. Several of the Measurement and Oversight standards do so explicitly. These are, in numeric order:

#### **Measurement**

Risk Standard 10: Valuation procedures

This standard notes that management should understand valuation methodologies and procedures.

Risk Standard 15: Back testing

This suggests that risk and return forecasts be back tested at least quarterly (wow)!

Risk Standard 16: Assessing model risk

This comments that management’s dependence on models and assumptions should be evaluated and monitored.

### **Oversight**

Risk Standard 16: Due diligence, policy compliance, and guideline monitoring  
Frequent, independent review of policies and controls are recommended.

Risk Standard 19: Independent review of methodologies, models, and systems  
“ All methodologies, models, and related systems should be independently reviewed or audited prior to use as well as annually.” Depending on your point of view of what guidance means (see below), this is what bank regulators are suggesting or requiring.

### **Model Risk: Regulatory Perspective**

Perhaps believing that not all banks have yet to incorporate all of the “Risk Standards” into action, the Office of the Comptroller of the Currency (OCC) released Bulletin 2000-16, Risk Modeling: Model Validation. Their stated intent was to provide guidance to financial institutions on mitigating risks emanating from dependence on computer-based models that have not been thoroughly tested and validated. It is rational to assume that the guidance proffered in 2000-16 will be followed in regulatory examinations by all bank regulators in this and subsequent years.

The bulletin noted: “Computer models are abstract representations of the various relationships among events and values in the real world. They are used in banking to estimate risk exposures, analyze various business strategies, and estimate fair values of financial instruments and acquisitions.” This regulatory statement succinctly outlines not only the uses of computer models in general, but in asset-liability management models in particular. Indeed, the Office of the Comptroller of the Currency (OCC) specifically mentioned that a routine use of computer models in banks is typically for asset-liability management.

Bulletin 2000-16 defines a model as consisting of three components:

1. Information input component. This is where both data and assumptions are input into the model. Countless articles and numerous issues of Bank Asset/Liability Management have dealt with these topics.

2. Theoretical model. This is the computer code or what practitioners refer to as “the A/L model”. A software vendor increasingly provides the theoretical model as banks (and regulators) have realized that designing, coding, and maintaining an Asset/Liability model is not usually a bank’s core competency. Most banks, however, still have what the OCC would deem to be “theoretical models” as adjuncts to their third party software due to varying degrees of functionality of A/L software. Again, Bank Asset/Liability Management covers this topic on a regular basis.

3. Reporting. This component transforms the raw computer data into useful business information. Errors in any component show up here. Reporting formats tend to be institution-specific, but many bankers (including the author) still err, on occasion, by confusing numerous pages of data with useful business information. We all can learn from other industries on this topic.

According to the OCC, there are three general procedures for model validation (perhaps someone will be clever enough to present this as a 3x3 box checklist). Our approach to model validation, snappily entitled “Model Validation: Industry & Regulatory Perspectives” will be published in a future issue.

As with prior regulatory pronouncements on risk management, the agenda of the regulatory agency is as important as the specifics of the proclamation itself. In this instance, the OCC clearly explained why they believed this guidance was currently necessary:

“Model development is a complex and error-prone process”, which is a statement that all readers of this newsletter can attest to.

“The internal logic of most models is usually very abstract and limiting, so it requires considerable

judgment and expertise to apply model results outside the very narrow context under which they are derived”, which is a suitable disclaimer for many bank ALCO and Board reports.

Finally, we should consider the OCC’s daunting reminder:

“The OCC has observed instances in which decision makers relied on erroneous price or exposure estimates, or on a overly broad interpretation of model results, with serious consequences for their bank’s reputation and profitability”.

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