AML Model Validation – Beyond the Guidance

By: Salvatore Cangialosi
February, 2014

Introduction

The Office of the Comptroller of the Currency and the Federal Reserve have both issued guidance on Model Risk Management. The supervisory guidance applies broadly to all quantitative models used throughout a banking organization in the operation of their business. Such models are widely used within AML compliance groups. They are primarily implemented through the AML software solutions; but are also implemented via spreadsheets and other tools used by the compliance organization.

A key aspect of Model Risk Management is a robust validation process. The validation process employed by AML compliance groups has received increasing attention from regulators. Some banks have been unprepared for the level of regulatory review and rigor expected over Model Validations. This article will provide real world insights and guidance on the current issues related to the validation of models used for AML compliance.

Overview of the Guidance as Applied to AML

SR Letter 11-7 of April 4, 2011 (http://www.federalreserve.gov/bankinfreg/srletters/sr1107a1.pdf) provides revised and comprehensive guidance on Model Risk Management. The guidance addresses among other topics Model Validation. As applied to AML, the guidance is meant to assure that:

- The proper models are chosen,
- The models operate correctly, and
- The implementation and use of the models are appropriate for the risk of the bank.

The primary models used by most banks include:

- Customer onboarding and retention,
- Customer and AML risk rating,
- Suspicious activity detection scenarios,
- Scoring, and
- OFAC/Sanctions violation detection.

These models must be independently validated by all banks. The validation must be independent of the developers and users of the models. The independent validation may be performed by an internal group such as audit. It may also be performed by third party consultants having adequate expertise. However, the bank remains responsible for overseeing the results of the work performed by third parties.

Copyright 2014, Telavance, Inc.
A key element of the guidance is how the risk, business activity, and the complexity of the models should be considered in the manner in which a validation is performed.

Recent Trends

In general, AML compliance examinations are increasing in scope and complexity. Findings are becoming more difficult to address while the risk of a regulatory enforcement action has increased. It has also been rumored that there will be a higher probability of criminal prosecutions related to egregious AML deficiencies. Given this backdrop, which is not new to the Chief Compliance Officer (CCO), it is prudent to track examination trends and adapt operations as appropriate to the bank.

The focus of this section is on the recent trends applicable to Model Validations which are as follows:

- **Increased Examination Focus.** Nearly all of the banks we have spoken with have found that a review of the Model Validation process was part of their overall AML examinations. This has been ongoing and appears to also now apply to a wider range of small financial institutions. Additionally, the depth of review of the Model Validation process has increased.

- **Evolving Requirements.** The manner in which the Model Validation process is reviewed seems to vary substantially across individual regulators. To some extent, this is related to the risk and activities of the bank. However, much of the variance does not appear to be explained by risk alone. One can assume that, given the newness of this increased focus, best practices across regulators have not fully matured. Consequently, it may be difficult for a bank to anticipate the level of review and their expected performance in this area.

- **Expected Rigor and Quantitative Process.** What has been a consistent trend in recent examinations is the expected rigor and demand for quantitative support for judgments reached in a Model Validation. This is not surprising given that a quantitative approach is an essential aspect of overall Model Risk Management. Nevertheless, the mathematic, statistical, economic, and analytic skills needed for the expected level of rigor are not always available or anticipated by a bank prior to an examination.

- **The CRAD.** The Compliance Risk Analysis Division of the OCC is comprised of highly skilled professionals in the area of statistical analysis and econometric models. The group is primarily staffed with Ph. D.s in economics and statistics. They provide broad support for the OCC's supervisory and regulatory initiatives. A number of the banks we have spoken with have had the CRAD play a role in their AML examinations. The group has reviewed and provided substantive challenges to the suspicious activity models used by those banks. With respect to those challenges, the bank is expected to justify, in a quantitative manner, detections rules chosen and the thresholds applied to rules.

- **A Question of Cost vs Scope.** The OCC has provided guidance on the use of consultants as part of an enforcement action. See [http://www.occ.treas.gov/news-issuances/bulletins/2013/bulletin-2013-33.html](http://www.occ.treas.gov/news-issuances/bulletins/2013/bulletin-2013-33.html). Although this does not directly apply to Model Validations, it clearly highlights the OCC's interest over a bank's due diligence over third party consultants and the contracts entered into with them. We call attention to this as a bank pointed out the OCC's concern with the cost of
an assessment project. In essence the OCC felt that the cost provided was too low to cover the full scope of work that would be needed to perform a proper Model Validation. Although there was misunderstanding by the OCC as to what the actual project's goals were, it suggests that banks should take care in the definition of the scope of work and the due diligence applied towards third party consulting contracts.

- **Confusion with System Assessments.** Many banks have performed AML system assessments. Again, this work is often carried out by independent consultants. It is common that the definition of a system assessment varies from one consultant to another. Generally, the assessment will cover a review of rules that partially or fully meets the criteria for a Model Validation. With increased regulatory focus on Model Validations, the clarity of the definition applied to a system assessment must be assured.

### Challenges Encountered by Banks

With an increasing focus on a larger range of banks, Model Validations need to be considered a priority by all CCOs. In developing a process for sound validations, one must understand the challenges to that outcome. These challenges can be broadly categorized as:

- **Validation Approach.** Although the OCC guidelines apply to all Model Validations, its implementation can vary greatly from bank to bank. The variability is based on several factors including AML specific requirements, risk profile, and the views of the regulator. Without the benefit of several refinements to the process, a bank may face strong criticism that can lead to regulatory actions.

- **System Limitations.** Model Validations are inherently system focused. Most AML systems are acquired from a software vendor. The vendor has a proprietary interest in maintaining their intellectual property rights and will often provide models as a "black box". Without adequate disclosure from the software vendor, the correctness of model design and implementation cannot be directly assessed. Validation is limited to a testing and analysis methodology which is less comprehensive.

- **Required Skill Set.** This is the most difficult challenge for many banks. A proper Model Validation requires a range of skill sets that may not be available or are not easily accessible to the bank. Essentially a team approach is needed for the validation. The team should be composed of members with the following skills:
  - AML compliance domain expertise
  - AML system expertise
  - Econometric, statistical, and mathematical
  - Data analytics
  - Audit

- **Needed Tools.** Accessing and analyzing data, performing tests, and interpreting results are greatly enhanced with the availability of automated tools. These tools include:
  - AML typology models
Data analytics platforms

Data analytics platforms such as Tableau, Spotfire, and many others can be acquired from commercial vendors. However, they require a learning curve or existing in-house expertise. AML typology tools are more problematic. They are highly complex, are not commercially available, and very few practitioners in the AML Model Validation space have the expertise to develop these systems.

- **Reliance on Consultants.** With the range of skills required for a validation, banks may employ an independent consulting firm to perform part or most of the required work. Where the bank is lacking familiarity of the overall requirements for an AML Model Validation, the selection process can be difficult. Further adding to the difficulty is the large number of small consulting firms that will engage contractors for the work performed. The use of contractors by the consulting firm can lead to inconsistent processes and a lack of continuity over subsequent engagements.

- **Communicating with Regulators.** There is much latitude in the implementation of a Model Validation process. When the bank takes an approach that is not fully understood by the regulator or where the regulator suggest an alternate approach, it is required that the bank adequately explain all aspects of the validation approach. The explanation may need to be made to the primary regulator as well as to specialized teams such as the CRAD. Each of these groups may require a different level of detail and explanation. Having the appropriate staff to provide these explanations is often a challenge.

- **Budgeting.** Senior management must fully understand the importance, scope of work, and time commitment needed for a successful Model Validation. Whether the work is done with in-house staff or by third party consultants, adequate resources must be made available. Given this need, the CCO along with audit must develop a justification approach that will be successful.

**Recommendations**

Performing a Model Validation for a financial institution is clearly not a simple undertaking. The range of skill sets needed and the challenges inherent in the process call for a well-organized approach. In this section, we provide a number of categorized recommendations that should be considered.

**Governance**

1. It is highly recommended that the CCO assure the involvement of senior management.

2. Final reports should be delivered to the board of directors or similar oversight structure.

3. The firm or internal group performing the Model Validation must be clearly independent of the creation and use of the models.

**Regulatory Considerations**

1. The bank's regulators should be consulted periodically concerning plans for the Model Validation.
2. The CCO should develop a network of peers and consultants that he can reach out to periodically to discuss current regulatory expectations and findings.

3. Comprehensive documentation should be developed to support the Model Validation. This documentation at a minimum should include:
   a. The statement of work or other document describing the scope of the engagement and any specific limitations. It is essential that the scope of work be clearly detailed. It is also important that the scope of work indicate that it will be performed in accordance with OCC guidelines for Model Validations.
   b. Bios of the people participating in the validation.
   c. Detailed and comprehensive project plan.
   d. Written report with separate version control documenting the reason that changes were made.
   e. Work papers.

Qualifications

1. The qualifications of the firm and the specific team assigned to a Model Validation must be reviewed. It is recommended that the engagement should be performed by a team. The team should be made up of individuals with the following skills:
   a. Subject matter expertise in AML and Sanctions Compliance with strong experience guiding Model Validations.
   b. Quantitative analysis. This individual should have demonstrable skills evidenced by an appropriate mathematics or statistics degree and a proven record of experience.
   c. Technical business analyst. A person able to access and evaluate data from multiple system sources and with a good understanding of the business needs of the AML Compliance Group.
   d. Strong project management experience.

It is not necessary that these skills be represented by separate people. For example, in a smaller engagement the subject matter expert may also provide overall project management. Further, it is common that the quantitative analyst will have the database and other technical skills to work with the various systems.

Planning

1. Prior to starting an engagement, it is essential that the contract, statement of work, or internal project description clearly describe that a Model Validation is to be performed in accordance with
OCC and Federal Reserve guidelines.

For a number of reasons, a bank may decide that the project will not fully conform to those guidelines. Perhaps some of the work will be done by bank staff and other work by a third party consulting firm. It is essential that all work that will be performed, as well as work that is excluded, be clearly described at the point of approving the project and documented in the final report to the CCO.

2. Documentation should also identify overall responsibility for the project and specific responsibilities for key phases, particularly when work is done by third party firms.

3. When parts of an overall Model Validation are done by separate groups, the overall project plan should document how the separate reports will be reviewed and relied upon to issue an opinion.

4. The project plan itself should be prepared prior to the commencement of work. It should detail all major tasks, responsibilities, and timelines for completion. Periodic review of progress against the plan should be undertaken and documented.

5. The validation should be guided by a comprehensive framework. The framework is one that should be applicable in general to any independent assessment and also contain the detailed requirements for a Model Validation. In particular the framework should address:
   a. Key stakeholders and their involvement
   b. Project planning and reporting
   c. Data confidentiality and security protocols
   d. Required tools and other supports
   e. Information gathering process
   f. Methods of analysis
   g. List of all documentation and artifacts needed
   h. Test period, plans, cases, and results
   i. Report preparation, review, and approval
   j. Work paper management
   k. Methodology for following up on findings

Review

1. Develop or update the catalog of all models used by the AML compliance group. The catalog should contain:
   a. Name of the model
   b. Purpose
   c. Description of its operation
   d. Data requirements
   e. Control parameters
   f. Expected results
   g. Scheduling
   h. Date validated prior to use
i. Date implemented
j. Date of last validation
k. Other pertinent notes

2. Gather and evaluate the change control process used for model development and implementation.

3. Obtain the AML Risk Assessment, business requirements document and other information that describes the rationale for the models used by the AML group.


5. Before analyzing models, it is essential that the model development process be reviewed to assure that it meets the OCC guidelines. For models provided by third parties, the bank must receive sufficient information to judge conformance. Some of the information that should be reviewed includes:
   
   a. BIOs of key individuals involved with model development

   b. Documentation of all models describing their purpose, expected results, and control parameters or other mechanisms that influence processing results.

6. Obtain and review all prior Model Validation and User Acceptance Test reports.

7. For each model in the catalog, review and assess the soundness of its implementation.

Testing

1. All tests performed of models should be conducted with a data repository developed specifically for the purpose of Model Validation. The data repository should be constructed to support all tests and the range of outcomes expected.

2. A statistically valid methodology for data sampling must be determined and documented. Note that data sampling may be needed for various test goals and therefore the sampling methodology should be consistent with the data, volumes, and test goals.

3. Perform a comprehensive data quality review. The data quality review should address:
   
   a. Accuracy of data elements used by the models. For example, does the database contain the latest values for each transaction? Or, might data be added to the database prior to a modification in the originating system.

   b. Completeness of the data. Are all relevant fields representing a transaction present? Often the details from the originating message are separate from the recording of the banking transaction. In this case are the two sources combined appropriately? Also consider that data elements may be optional in the originating system. If so, is this addressed in the AML
c. Consistency. Are the same data values represented in a consistent manner? An example of this issue is in the use of inconsistent abbreviations. Another form of inconsistency would be the order in which names are recorded.

4. Tests should be conducted that verify that all models perform in accordance with their intended functionality. This can be accomplished in several ways and are generally termed “back testing”. One method is to use a tool that simulates how each model should perform. The simulation is then applied to historical data to assure that the same results that were originally obtained against historical data are again received. Any variation should be explained as acceptable or not.

5. In addition to back testing, a series of "Above the Line" (ATL) and "Below the Line " (BTL) tests should be performed. These tests are designed to evaluate each model's behavior against changes in their thresholds or other control mechanisms. A key outcome of the tests is an assessment of the threshold changes on false positives and false negatives. One way of visualizing the impact of the changes is with a Disposition Curve. This graph will show the increasing or decreasing rate of productive alerts for the changes made to thresholds.

Analysis

The analysis process should be documented and comprehensive. The specific analytical methods will vary based on the factors discussed above. But often they should include:

1. Review and explanation of differential alerts from Above and Below the Line Testing
2. Assessment of the change in the number if productive alerts as thresholds are modified.
3. Assessment of productivity levels against AML risk assessment and acceptable risk
4. Disposition curves that graphically present the relationship between parameter changes and productive alerts
5. Assessment of false positives and false negatives
6. Analysis of time spent on various alert types
7. Review of quality controls