2007 U.S. Operational Risk Range of Practice – An Update

Range of Practice Overview

March 31, 2008

Range of Practice Overview

- Objective: Understand industry practice in the management and measurement of operational risk.
  - 2007 Draft Supervisory Guidance on Operational Risk AMA and NPR used as basis of review.

- Range of practice is based on observations made during 2007.
  - Observations for 10 large institutions included.
  - Depth and range of onsite supervisory work varied.
    - No in-depth testing by regulators was performed and this was not a qualification exercise.

Range of Practice Results

Governance

Governance - Framework

- All firms have the three independent framework components: corporate operational risk management, line of business operational risk management, and a verification function.

- Changes in organizational structure or changes to key positions are creating challenges for consistent implementation of the AMA framework at some institutions.

- Policy development is uneven across institutions.

Governance - Oversight

- Boards or designated committees of the Board are overseeing AMA implementation in eight institutions.

- Overall resource availability is considered adequate in a majority of institutions.

  - However, business line resources are increasingly constrained by the implementation of multiple new initiatives.

Governance - Lines of Business

- Business lines are responsible for day-to-day management of operational risk in all institutions.

- Efforts vary in ensuring the consistency of business line practices with firm-wide requirements.

- Several institutions have uneven implementation of the framework within the lines of business.

Governance – Verification & Validation

- All institutions have begun at least limited framework testing and verification.
    - Seven institutions have documented plans and two have made significant progress executing their plans.

- Lack of supporting documentation, insufficient resources, and the lack of comprehensive policies have hindered validation efforts.

- Only two institutions have made significant progress in both framework testing and verification and model validation.

Observations & Challenges-Governance

- Significant variation remains in audit scope, planning and coverage.

- Policy development is uneven, with the most significant gaps noted in quantification and model validation.

- Consistent integration of the operational risk framework into the lines of business is challenging.

- Most institutions are challenged in achieving a balance of analysis and reporting at the appropriate level, and also in providing actionable reports.

Range of Practice Results

Elements of an AMA Framework

Elements - Internal Loss Event Data

- Seven institutions report comprehensive data are available back to at least 2002.

- Four make efforts to reconcile events in the OR loss database in some fashion with the GL.

- Three capture data at the corporate level and seven capture at the LOB level (with corporate oversight).

Elements - Internal Loss Event Data (continued)

- Institutions have different thresholds for collection, quantification and enrichment.

  - Institutions have generally not prepared specific analysis to support appropriateness of thresholds.

- Six have well established policies for data event classification (boundary events), three are enhancing their policies, and one has no policy.

Elements - External Loss Event Data

- Nine institutions have external loss event data either through third party vendors and/or membership in data sharing consortia.

- Most institutions use external data in reporting and discussions around events that should be considered in risk management.

- Approximately half of the banks have processes to select relevant external data, while the remaining banks are developing their approaches.

Elements – Business Environment & Internal Control Factors

- There are four primary tools used to identify the BEICF element.

- All institutions have some form of RCSA.
  - Consistency and aggregation are challenges, especially for granular approaches. Only two institutions can aggregate across LOBs.

- Three institutions are working to use firm-wide KRIs.

- Two institutions use a scorecard process.

- Three institutions use heat maps at the corporate level.

Elements - Scenario Analysis

- Six institutions have established formal policies and procedures addressing how scenario analysis results will be incorporated in the operational risk framework.

- All have established at least a first generation scenario framework, with four revising existing processes due to challenges in producing scenarios.

- One institution considers the use of modified external loss event data to be a form of scenario analysis.

Observations & Challenges–Elements

- Internal data collection processes continue to mature, with some challenges remaining:

  - Verifying older data.

  - Effective dates for legal losses

  - Losses that cross LOB/time/loss categories.

  - Data quality due to M&A and/or overseas operations.

- External loss event data capabilities continue to evolve with developmental challenges remaining for its use in risk management versus quantification.

Observations & Challenges–Elements (continued)

- Scenario efforts are evenly distributed, with some institutions refining developed processes, others developing initial processes, and others evolving their plans.

- While advances have been observed in the scenario process, challenges remain in generating scenario data that can be incorporated into the model.

- Institutions are evenly split in their efforts to develop BEICFs with half evolving initial plans and the other half refining mature processes.

Range of Practice Results

Quantification

Quantification - Analytical Framework

- Significant differences remain across institutions in terms of level of development of the AMA framework, the amount of progress being made, and the techniques being applied.

- Progress made in 2007:

  - Four institutions' frameworks remain similar to what was seen in 2006.

  - Three made significant progress.

  - Three have existing AMA models, but are either implementing or considering substantial changes.

Quantification – Use of Elements

■ **Significant dispersion remains how the four elements are used and their relative importance for quantification:**

  ❑ Elements Used Directly: Two institutions use all four elements directly in the capital calculation, five use three elements, and one uses two elements.

  ❑ Primary Element: Seven use internal data as the primary element, two use external data, and one uses scenarios.

Quantification - Element Combination

- Three institutions pool internal and consortia data in units of measure where internal data is scarce.

- Three calculate separate capital estimates using different elements.

- Two use internal data to estimate the frequency distribution and another element to estimate severity.

Quantification – Element Combination (continued)

- Five institutions use external data as a direct model input and three use them to inform scenarios.

- Five make capital adjustments based on BEICF, while three incorporate BEICF into scenarios that are used in capital calculations.

- Five institutions use scenario analysis results directly in their capital model primarily to estimate the severity distribution tail.

  - One institution uses scenario analysis results to benchmark modeling results.

Quantification - Offsets

- As was the case in 2006, no institution has provided any documentation that it covers EOL via such mechanisms as reserves or pricing.

- Risk Mitigation:

  - Two institutions model the full risk mitigation effects of insurance by incorporating them at the event level in their simulations.

  - Two take an ex-post adjustment for insurance, similar to a haircut.

  - Six still consider modeling risk mitigation as not worth the effort.

Quantification – Unit of Measure

- There has been a movement towards a more granular unit of measure (UOM), though a variety of practices persists:

  - Three institutions define UOM at the enterprise level, although two of these are exploring more granular alternatives.

  - Three define UOM by business line and event type, two by business line only, and one by event type only.

- Some institutions have begun to analyze the appropriateness of their choice of UOM.

Quantification - Dependence

- Dependence modeling remains a challenge, but some institutions have made progress towards successfully leveraging the available data.
  - All but one institution has done work on dependence.
  - Three have incorporated this work into their model, increasing their capital to reflect dependence.
  - Five institutions assume full independence, with three due to a bank-wide UOM.

Quantification - Documentation

- Two institutions have fairly comprehensive documentation.

- Two have documentation that is detailed, but that nonetheless omits key elements of their models.

- Three have not updated their documentation to reflect changes to their models.

- Three continue to present documentation that is at a relatively high level.

Observations & Challenges-Quantification

- Achieving the right balance between models and management judgment is proving difficult.

- Banks are experimenting with a variety of quantitative techniques:

  - For example, one uses the Bayesian approach, and another uses robust estimators.

  - Banks are also using some unproven techniques whose validity is not supported.

- Some institutions have not attempted to incorporate all four elements into the model.

Observations & Challenges- Quantification (continued)

- Institutions have introduced various mechanisms to limit the impact of outliers:

  - Traditional caps

  - Constrained optimization

  - Robust estimation

- Some of these techniques may be cause for concern, to the extent that they result in an unsupported reduction in capital.

Status of Quantification

- Two banks have well-developed models including documentation and a credible and systematic approach for weighting the four elements.

- Approximately half of the banks have a working model with further refinement needed in the model, documentation and/or weighting the four elements.

- The remaining institutions are in earlier stages of development.

2007 AMA Range of Practice

Questions?