

and add this figure to risk-weighted assets for credit and market risk to obtain total risk-weighted assets. The final minimum regulatory capital number will be 8 percent of total risk-weighted assets.

The Agencies expect that there will be significant variation in analytical frameworks across institutions, with each institution tailoring its framework to leverage existing technology platforms and risk management procedures. These approaches may only be used, provided they meet the supervisory standards and include, as inputs, internal operational loss event data, relevant external operational loss event data, assessments of business environment and internal control factors, and scenario analysis. The Agencies do expect that there will be some uncertainty and potential error in the analytical frameworks because of the evolving nature of operational risk measurement and data capture. Therefore, a degree of conservatism will need to be built into the analytical frameworks to reflect the evolutionary status of operational risk and its impact on data capture and analytical modeling.

A diversity of analytical approaches is emerging in the industry, combining and weighting these inputs in different ways. Most current approaches seek to estimate loss frequency and loss severity to arrive at an aggregate loss distribution. Institutions then use the aggregate loss distribution to determine the appropriate amount of capital to hold for a given soundness standard. Scenario analysis is also being used by many institutions, albeit to significantly varying degrees. Some institutions are using scenario analysis as the basis for their analytical framework, while others are incorporating scenarios as a means for considering the possible impact of significant operational losses on their overall operational risk exposure.

The primary differences among approaches being used today relate to the weight that institutions place on each input. For example, institutions with comprehensive internal data may place less emphasis on external data or scenario analysis. Another example is that some institutions estimate a unique loss distribution for each business line/loss type combination (bottom-up approach) while others estimate a loss distribution on a firm-wide basis and then use an allocation methodology to assign capital to business lines (top-down approach).

The Agencies expect internal loss event data to play an important role in the institution's analytical framework, hence the requirement for five years of

internal operational risk loss data. However, as footnote 5 makes clear, five years of data is not always required for the analytical framework. For example, if a bank exited a business line, the institution would not be expected to make use of that business unit's loss experience unless it had relevance for other activities of the institution. Another example would be where a bank has made a recent acquisition where the acquired firm does not have internal loss event data. In these cases, the Agencies expect the institution to make use of the loss data available at the acquired institution and any internal loss data from operations similar to that of the acquired firm, but the institution will likely have to place more weight relevant external loss event data, results from scenario analysis, and factors reflecting assessments of the business environment and internal controls.

Whatever analytical approach an institution chooses, it must document and provide the rationale for all assumptions embedded in its chosen analytical framework, including the choice of inputs, distributional assumptions, and the weighting of qualitative and quantitative elements. Management must also document and justify any subsequent changes to these assumptions. This documentation should:

- Clearly identify how the different inputs are combined and weighted to arrive at the overall operational risk exposure so that the analytical framework is transparent. The documentation should demonstrate that the analytical framework is comprehensive and internally consistent. Comprehensiveness means that all required inputs are incorporated and appropriately weighted. At the same time, there should not be overlaps or double counting.

- Clearly identify the quantitative assumptions embedded in the methodology and provide explanation for the choice of these assumptions. Examples of quantitative assumptions include distributional assumptions about frequency and severity, the methodology for combining frequency and severity to arrive at the overall loss distribution, and dependence assumptions between operational losses across and within business lines.

- Clearly identify the qualitative assumptions embedded in the methodology and provide explanations for the choice of these assumptions. Examples of qualitative assumptions include the use of business environment and control factors as well as scenario analysis in the approach.

- Where feasible, provide results based purely on quantitative methods separately from results that incorporate qualitative factors. This will provide a transparent means of determining the relative importance of quantitative versus qualitative inputs.

- Where feasible, provide results based on alternative quantitative and qualitative assumptions to gauge the overall model's sensitivity to these assumptions.

- Provide a comparison of the operational risk exposure estimate generated by the analytical framework with actual loss experience over time, to assess the reasonableness of the framework's outputs.

- Clearly identify all changes to assumptions, and provide explanations for such changes.

- Clearly identify the results of an independent verification of the analytical framework.

The regulatory capital charge for operational risk will include both expected losses (EL) and unexpected losses (UL). The Agencies have considered two approaches that might allow for some recognition of EL; these approaches are reserving and budgeting. However, both approaches raise questions about their ability to act as an EL offset for regulatory capital purposes. The current U.S. GAAP treatment for reserves (or liabilities) is based on an incurred-loss (liability) model. Given that EL is looking beyond current losses to losses that will be incurred in the future, establishing a reserve for operational risk EL is not likely to meet U.S. accounting standards. While reserves are specific allocations for incurred losses, budgeting is a process of generally allocating future income for loss contingencies, including losses resulting from operational risk. Institutions will be required to demonstrate that budgeted funds are sufficiently capital-like and remain available to cover EL over the next year. In addition, an institution will not be permitted to recognize EL offsets on budgeted loss contingencies that fall below the established data thresholds; this is relevant as many institutions currently budget for low severity, high frequency events that are more likely to fall below most institutions' thresholds.

An institution's analytical framework complements but does not substitute for prudent controls. Rather, with improved risk measurement, institutions are finding that they can make better-informed strategic decisions regarding enhancements to controls and processes, the desired scale and scope of the operations, and how insurance and