In an operational risk management framework, risk indicators are one of the key tools used to support risk assessment and risk monitoring. Risk indicators are a broad category of measures used to monitor the activities and status of the control environment of a particular business area for a given operational risk category. While typical control assessment processes occur only periodically, risk indicators can be measured as often as daily. Risk indicators help keep the operational risk management process dynamic and risk profiles current. As the use of risk indicators becomes integrated into a risk management process, indicator levels/measures must have a frame of reference, commonly referred to as escalation criteria or trigger levels. These levels represent thresholds of an indicator or a tolerance that, when passed, require management to step up its actions.

### Objectives and Limitations

When indicator programs are established, there are a few primary objectives. Above all, indicators must be risk sensitive, that is, they must give insight into changes in the resulting loss profile. This is easier said than done. The indicator should be directionally consistent with changes in losses suffered and, ideally, give insight into the risk of one business area or process relative to another. However, this falls far short of being a true predictor of loss.

By the same token, indicators have certain limitations. For example, many indicators are specific to an individual risk and often specific to a business or process. It is difficult to design a framework that is consistent across business lines and locations, as well as logically consistent across risks. Without this as an objective, the value of the framework may be undermined. It is much more difficult to create indicators for some risk categories than for others. While all this effort is designed to predict problems or losses, there is little proven correlation between the risk indicators and actual events. We do not really know which indicators are predictive, and we do not really know the types of losses they predict.

Risk indicators should be differentiated from performance measures. Practitioners use risk indicators and the reporting framework to monitor the effectiveness of controls, efficiency, and customer service. Performance measures are typically more global, historically focused, and tied to a balanced scorecard that ultimately influences compensation.

### Who Uses Risk Indicators?

There are generally two groups of users, as can be seen in Figure 1. First, the business unit operational risk managers manage specific operational risks and events, as well as the overall status of the environment. They work with the business unit managers to define and accept appropriate indicators and then to work within that framework. This is where the operational risk framework defines risk indicators as one tool used to provide transparency and to communicate risk appetite.

The group level risk managers set the risk appetite and translate that into the thresholds or escalation triggers for each business area. They also...
aggregate risk information across business areas and risk categories. Risk managers may use risk indicators for causal analysis; they also may overlay the observed changes in the control environment over the historical observed losses to generate more forward-looking measures.

Both groups should be consulted in the design phase, and the risk indicator framework should be a common data set that meets the needs of each.

**Designing a Framework**

In designing a framework it is necessary to consider three types of measures, which may include both ex post (lagging) and ex ante (leading) measures of risk (see Figure 2)—losses, process indicators, and environmental indicators.

Loss measures monitor the actual out-of-pocket costs incurred for operational risks. Losses can be measured by loss category, effect, process, and business unit, and they typically are trended over time. By definition, loss measures are ex post. The average of historical experience is used as a basis to estimate the expected loss level. These measures provide insight into where the exposures are, may bring focus to unresolved issues inhibiting final cost determinations, and provide information for pricing.

Process measures help monitor the quality of operations for all risk types. The most common measures are ex post measures, which inform us of what has happened but may not provide insight about where to focus resources today. One challenge is to transform these measures into leading indicators that can be more predictive of future problems. Common measures for processing operations include P&L breaks, open confirmations, and failed trades and settlements. These can be transformed into more leading measures by making them more exception oriented—for example, by focusing on issues open after some specified time period, such as 24 hours. Other common measures address outstanding issues, error rates, and systems reliability or service levels.

Environmental measures are typically more ex ante and often have a large qualitative component. Examples would include the number of customer complaints, changes in the experience levels of staff, employee satisfaction, training levels, and rate of change in technology. Many banks have struggled with these more subjective measures, and there’s no proof that they relate to changes in either ex post measures or losses. As leading indicators, however, they should be used by management to influence the risk profile.

In reality, an effective indicator framework combines ex post and ex ante measures. By specifically relating the indicators to categories of risk, the risk framework will have more credibility and be easier to defend. It will also make future causal modeling easier.

**Implementing Escalation Criteria**

We can set escalation criteria for most risk indi-
cators. These define the acceptable levels of performance, related to risk appetite or target quality levels. Escalation criteria are not limits in the strict sense of market or credit limits; rather, they set the level at which a higher layer of management should be informed. They also may be used to set the standard for quality expectations. Managers should expect to explain what is happening and why, what they are doing to gain better control, and whether or not more resources are required. Some firms establish multiple bands of escalation criteria defining which level needs to be informed.

Improving Effectiveness of Risk Indicators

Improving effectiveness in terms of risk sensitivity should be an ongoing objective of management. Sensitivity is the level to which any measure is a true indication of loss or some other type of problem. Testing effectiveness is not easy. It typically starts with an intuitive determination of which indicators should be sensitive to future issues. After a period of measurement and analysis, many exceptions are often found, as well as much noise in the data, and the subsequent effort focuses on taking the noise out of the measures. Examples of this might be to remove items of low or no risk from population counts or to focus environmental measures on specific groups of key people rather than broader organizational groups. Lagging indicators can be transformed to leading indicators by making them exception oriented and focused on the most important component of the risk.

The more sophisticated testing borders on causal modeling and is designed to show the level of relationship or correlation between the measures chosen and some properties of the loss stream—for example, rate of loss or average severity. Experiences to date have shown that the chosen measures often are not highly correlated to the rate of loss, yet these concepts are the goal for many institutions. To determine which measures are truly indicative, more work is necessary on the selection of measures and consistent measurement of the indicators and related losses over a longer time frame.

Considerations for Success

Experience indicates that there are many (often too many) indicators used throughout most institutions. However, the program is often fragmented, with large risk types going unmonitored, and the potential benefits are not being obtained. Here are some important considerations in designing an effective risk indicator program:

Think through the risks and design the best measures. Given a comprehensive set of risk categories, select measures that will be effective—preferably, leading measures for each risk category. Design the best measures independent of data availability and then set an implementation plan, using interim measures as necessary when the desired data is not available.

Develop measures for types of risk that consider all stakeholders (for example, shareholders, customers, employees, vendors, regulators, and the community).

Limit measures to those that are most representative. Too many can dilute their value.

Balance the objective ex post measures with the more predictive but more subjective ex ante measures. Ex-ante measures have the most value to provide insight into future issues.

Get support from senior management. Most people do not like to be measured. Work with management in designing indicators, try to cover the needs of each constituent group, and gain buy-in. Management must show support and the right level of investment in the indicator process.

Understand risk indicators versus performance measures. Indicators are current and operational. Performance measures are more long term. Tie the key measures into the balanced scorecard of performance measures.

Keep measures simple enough to be readily understood. There is value in simplicity, and all must be able to understand the derivation and rationale for what is being measured and reported.

Establish a consistent framework of measures that can be implemented across business areas and locations, where possible. This will give the framework more credibility and aid in the reporting and aggregation of risk.
Make sure the measures are quantifiable. Some things we want to measure don’t have measures. Invest in the technology to extract and report. Many programs operate on spreadsheets, but this is labor intensive and error prone. To be timely and cost effective, technology should extract the required information from production systems, perform the related calculations, maintain a history, and support reporting.

Use escalation criteria. This is a key advantage of quantitative measures. Escalation criteria are objective trigger points for management review issues. Expected levels of indicators are established by building a baseline using available history and set escalation criteria whenever possible.

Approach indicators as a work in progress. Experience will help refine measures to those most valuable to any one risk or process.

Follow these steps to implement a program in which operational risks are managed on a proactive basis with management involvement and to gain insight into how to add value for all stakeholders.

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