

THE ESSENTIALS OF RISK MANAGEMENT

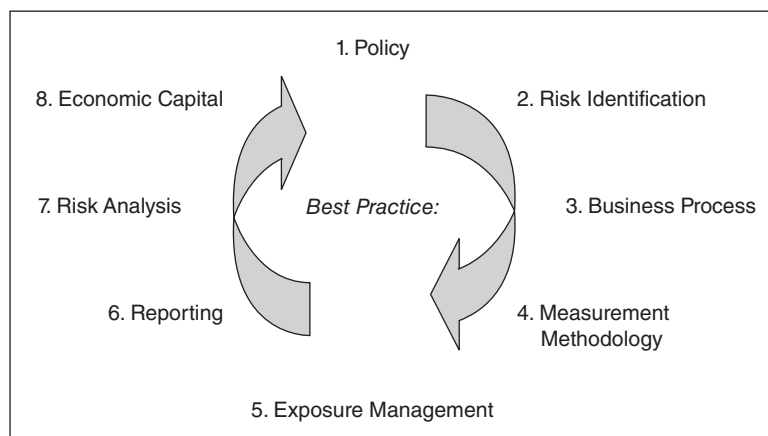
Third Edition (EoRM3)

ONLINE CONTENT FOR CHAPTER 14

Figure 14-1, Box 14-2 [Updated], Box 14-3, New Box, Table 14-2 of EoRM2

From p. 504 of *The Essentials of Risk Management, Second Edition (EoRM2)*

FIGURE 14.1 Eight Key Elements to Achieve Best-Practice Operational Risk Management



From pp. 504–505 of *The Essentials of Risk Management, Second Edition (EoRM2)*

BOX 14-2 [UPDATED]

BASEL PRINCIPLES FOR SOUND MANAGEMENT OF OPERATIONAL RISK [REVISED IN 2021]

Principle 1. The board of directors should take the lead in establishing a strong risk management culture, implemented by senior management. The board of directors and senior management should establish a corporate culture guided by strong risk management, set standards and incentives for professional and responsible behavior, and ensure that staff receives appropriate risk management and ethics training.

Principle 2. Banks should develop, implement, and maintain an operational risk management framework (ORMF) that is fully integrated into the bank's overall risk management process. The

ORMF adopted by an individual bank will depend on a range of factors, including the bank's nature, size, complexity, and risk profile.

Governance

Principle 3. The board of directors should approve and periodically review the ORMF, and ensure that senior management implements the policies, processes, and systems of the ORMF effectively at all decision levels.

Principle 4. The board of directors should approve and periodically review a risk appetite and tolerance statement for operational risk that articulates the nature, types, and levels of operational risk the bank is willing to assume.

Senior Management

Principle 5. Senior management should develop for approval by the board of directors a clear, effective, and robust governance structure with well-defined, transparent, and consistent lines of responsibility. Senior management is responsible for consistently implementing and maintaining throughout the organization policies, processes, and systems for managing operational risk in all of the bank's material products, activities, processes, and systems consistent with the bank's risk appetite and tolerance statement.

Risk Management Environment

Principle 6. Senior management should ensure the comprehensive identification and assessment of the operational risk inherent in all material products, activities, processes, and systems to make sure the inherent risks and incentives are well understood.

Principle 7. Senior management should ensure that the bank's change management process is comprehensive, appropriately resourced, and adequately articulated between the relevant lines of defense.

Monitoring and Reporting

Principle 8. Senior management should implement a process to regularly monitor operational risk profiles and material operational exposures. Appropriate reporting mechanisms should be in place at the board of directors, senior management, and business unit levels to support proactive management of operational risk.

Control and Mitigation

Principle 9. Banks should have a strong control environment that utilizes policies, processes, and systems; appropriate internal controls; and appropriate risk mitigation and/or transfer strategies.

Information and Communication Technology (ICT)

Principle 10. Banks should implement a robust ICT risk management program in alignment with their ORMF.

Business Continuity Planning

Principle 11. Banks should have business continuity plans in place to ensure their ability to operate on an ongoing basis and limit losses in the event of a severe business disruption. Business continuity plans should be linked to the bank's ORMF.

Role of Disclosure

Principle 12. A bank's public disclosures should allow stakeholders to assess its approach to operational risk management and its operational risk exposure.

Source: Abridged from the Basel Committee on Banking Supervision, Revisions to the Principles for the Sound Management of Operational Risk, March 2021.

From pp. 512–514 of *The Essentials of Risk Management, Second Edition (EoRM2)*

BOX 14-3

REGULATORY APPROACHES TO OPERATIONAL RISK MODELS

The Basel regulators offer a spectrum of three increasingly risk-sensitive approaches for measuring operational risk, first set out in Basel II.

Basic Indicator Approach

The least risk-sensitive of these approaches is the Basic Indicator Approach, in which capital is a multiple (capital factor = 15 percent) of a single indicator (base), which is the average annual gross income, where positive, over the previous three years for which gross income was positive. The regulators have postulated that gross income serves as a proxy for the scale of operational risk exposure. Gross income is defined as the sum of net interest and noninterest income.

Standardized Approach

The Standardized Approach divides banks' activities into eight lines of business, or LOB_{*i*} (see the discussion that follows). Each line of business is then assigned an exposure indicator EI_{*i*}, which is, as in the Basic Indicator Approach, the average annual gross income for that line of business, where positive, over the previous three years for which gross income was positive. Each business line is assigned a single multiplier (capital factor β_i) to reflect its relative riskiness. The total

capital requirement is defined as the sum of the products of the exposure and the capital factor for each of the N business lines:

$$\text{Capital requirement (OpVaR)} = \sum_{i=1}^N EI_i \times \beta_i$$

The Basel Committee has set the betas to the following values:

Business Line	Beta Factor
Corporate finance (β_1)	18%
Trading and sales (β_2)	18%
Retail banking (β_3)	12%
Commercial banking (β_4)	15%
Payment and settlement (β_5)	18%
Agency services (β_6)	15%
Asset management (β_7)	12%
Retail brokerage (β_8)	12%

Alternative Standardized Approach (ASA)

The Standardized Approach has been criticized because it can lead to double counting for high-default-rate businesses. For these activities, the business is hit twice: first, on the credit side, with high regulatory capital because of the high probability of default of the borrowers, and second, on the operational risk side, with high regulatory capital because of high margins (to the extent that expected loss is priced in).

As an alternative to the Standardized Approach just described, national supervisors can choose to allow banks to employ the Alternative Standardized Approach (ASA). Under the ASA, the operational risk capital framework is the same as for the Standardized Approach except in the case of two business lines: retail banking and commercial banking. For these business lines, the exposure indicator EI is replaced by

$$EI = m \times LA$$

where $m = 0.035$ and LA is the total outstanding retail loans and advances (non-risk-weighted and gross of provisions), averaged over the past three years.

Advanced Measurement Approach (AMA)

Under the AMA, the regulatory capital requirement is the risk measure produced by the bank's internal operational risk model. The loss distribution approach described in the main text is likely to form a core plank of any such model, but individual banks have to meet some strict qualitative standards before they are allowed by regulators to adopt the AMA approach. The regulators say that any operational risk measurement system must have certain key features, including "the use of internal data, relevant external data, scenario analysis and factors reflecting the business environment and internal control systems." Under the AMA, the Basel II regulators have not set out exactly how these ingredients should be used. Instead, the regulators say that a bank needs to

have a “credible, transparent, well-documented and verifiable approach for weighting these fundamental elements in its overall operational risk measurement system.”

BOX [NEW]

BASEL III REVISED STANDARDIZED APPROACH

Basel III introduces a single non-model-based method for the calculation of operational risk capital, the Revised Standardized Approach (RSA).^{*} This will replace all four of the existing approaches for operational risk under Pillar 1. The RSA applies from January 1, 2022.

The revised framework is based on two basic assumptions. Namely, that operational risk increases at an increasing rate with a bank's income. Also, banks with greater historical operational risk losses are more likely to experience operational risk losses in the future.

This new standardized approach for operational risk determines operational risk capital (ORC) requirement. It is based on the product of two components, for each business line of a bank:

- BIC (business indicator component), which is a progressive measure of a bank's income (i.e., as a bank income increases, this component increases at a higher than proportionate rate)
- ILM (internal loss multiplier) component, which is a risk-sensitive component that reflects a bank's historical internal losses

$$\text{ORC} = \text{BIC} \times \text{ILM} = (\alpha i \times \text{BI}) \times \ln [\exp(1) - 1 + (\text{LC}/(\alpha i \times \text{BI}))^{(0.8)}]$$

where:

BIC = Business Indicator Component = $\alpha i \times \text{BI}$

BI = Business Indicator = ILDC + SC + FC

ILDC = Interest, leases and dividend component (income)

SC = Services component (income)

FC = Financial component = net profit and loss on the trading book and the banking book (income)

αi = Marginal coefficient (between 12% and 18% as a function of BI)

ILM = Internal Loss Multiplier = $\ln [\exp(1) - 1 + (\text{LC}/(\alpha i \times \text{BI}))^{(0.8)}]$

LC = Loss component ($15 \times$ average annual operational risk losses over prior 10 years)[†]

^{*} Basel Committee on Banking Supervision, Basel III: Finalizing Post-Crisis Reforms, Minimum Capital Requirements for Operational Risk, pp. 128–136, December 2017.

[†] A bank's internal lost data must be comprehensive and capture all material activities and exposures from all appropriate subsystems and geographic locations. It must be based on a 10-year observation period.

BI is the sum of three components: the interest, leases, and dividends component; the services component; and the financial component—all calculated as averages over three years. $BIC = \sum (\alpha_i \times BI_i)$, where α_i is a coefficient increasing in magnitude and applied based on the size of the BI measured in three additive buckets.

BI RANGES AND MARGINAL COEFFICIENTS

BI Bucket	1	2	3
BI Range	$\leq €1bn$	$€1bn < BI \leq €30bn$	Greater than €30bn
BI Marginal coefficient (α_i)	0.12	0.15	0.18
Example: BI = €35 bn	$€1bn \times 12\%$	$€(30 - 1)bn \times 15\%$	$€(35 - 30)bn \times 18\%$

Example:

Given a BI of €35 bn, then $BIC = (1 \times 12\%) + (30 - 1) \times 15\% + (35 - 30) \times 18\% = €5.37 \text{ bn}$

From p. 523 of EoRM2

TABLE 14-2 Example of Linkage of a Key Risk Indicator to OpVaR

	$\Delta \text{KRI (\%)}$	$\Delta \text{Op VaR (\%)}$
	+20	+25
	+10	+15
Base	0	0
	-10	-10
	-20	-15