9. Capital Charge for Operational Risk

9.1 Definition of Operational Risk

Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk. Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.

BIA approach

9.3 The Basic Indicator Approach

9.3.1 Under the Basic Indicator Approach, banks must hold capital for operational risk equal to the average over the previous three years of a fixed percentage (denoted as alpha) of positive annual gross income. Figures for any year in which annual gross income is negative or zero should be excluded from both the numerator and denominator when calculating the average. If negative gross income distorts a bank's Pillar 1 capital charge, Reserve Bank will consider appropriate supervisory action under Pillar 2. The charge may be expressed as follows:

$$K_{BIA} = [\sum (GI_{1...n} \times \alpha)]/n$$

Where:

KBIA = the capital charge under the Basic Indicator Approach
GI = annual gross income, where positive, over the previous three years
n = number of the previous three years for which gross income is positive
α = 15 per cent, which is set by the BCBS , relating the industry wide level of required capital to the industry wide level of the indicator.

9.3.2 Gross income is defined as "Net interest income" plus "net non-interest income". It is intended that this measure should:

(i) be gross of any provisions (e.g. for unpaid interest) and write-offs made during the year;

(ii) be gross of operating expenses, including fees paid to outsourcing service providers, *in addition to fees paid for services that are outsourced, fees received by banks that provide outsourcing services shall be included in the definition of gross income;*

(iii) exclude reversal during the year in respect of provisions and write-offs made during the previous year(s);

(iv) exclude income recognised from the disposal of items of movable and immovable property;

(v) exclude realised profits/losses from the sale of securities in the *"held to maturity" category*;

(vi) exclude income from legal settlements in favour of the bank;

(vii) exclude other extraordinary or irregular items of income and expenditure; and

(viii) exclude income derived from insurance activities (i.e. income derived by writing insurance policies) and insurance claims in favour of the bank.

9.3.3 Banks are advised to compute capital charge for operational risk under the Basic Indicator Approach as follows:

(a) Average of [Gross Income * alpha] for each of the last three financial years, excluding years of negative or zero gross income

(b) Gross income = *Net profit (+) Provisions & contingencies (+) operating expenses (Schedule 16) (–) items (iii) to (viii) of paragraph 9.3.2.*

(c) Alpha = 15 per cent

9.3.5 Once the bank has calculated the capital charge for operational risk under BIA, it has to multiply this with 12.5 and arrive at the notional risk weighted asset (RWA) for operational risk.

TSA approach

Guidelines on The Standardised Approach for Calculating Operational Risk Capital Charge

In comparison with the Basic Indicator Approach, **The Standardized Approach (TSA**) is a more advanced method to determine the capital required for covering operational risk losses. Under this approach, the business activities of a bank are subdivided into standardized business lines and assigned a relevant indicator. The capital requirement for operational risks corresponds to the sum of capital requirements in the individual business lines. The bank choosing the TSA should apply it both at solo bank level as well as across the entire banking group except insurance business. However, if a bank is not able to apply TSA across the entire banking group, it may initially apply TSA on solo level and Basic Indicator Approach for other entities in the group. The bank should gradually move to its implementation for the entire group. The efforts made by the bank in this regard will be taken into account while carrying out the supervisory review and evaluation process under Pillar II.

1. THE STANDARDISED APPROACH

1.1 In TSA, banks' activities are divided into eight business lines: corporate finance, trading & sales, retail banking, commercial banking, payment & settlement, agency services, asset management, and retail brokerage. The business lines are defined in detail in **Appendix 1**. It is possible that some of these business lines are not being pursued by banks in India departmentally, but are being undertaken through subsidiaries. In such cases, these would be completely omitted from the bank's operational risk capital charge calculations on solo basis, but included in the assessment of group-wide operational risk capital charge.

1.2 Within each business line, gross income is a broad indicator that serves as a proxy for the scale of business operations and thus the likely scale of operational

risk exposure within each of these business lines. The capital charge for each business line is calculated by multiplying gross income by a factor (denoted beta-β) assigned to that business line. Beta serves as a proxy for the industry-wide relationship between the operational risk loss experience for a given business line and the aggregate level of gross income for that business line. It should be noted that in TSA gross income is measured for each business line, not the whole institution, i.e. in corporate finance, the indicator is the gross income generated in the corporate finance business line. However, the sum of the gross income of eight business lines should be equal to the gross income of the institution.

1.3 The total capital charge is calculated as the three-year average of the simple summation of the regulatory capital charges across each of the business lines in each year. For this purpose, the year will be determined as explained in the example at the end of this para. In any given year, negative capital charges (resulting from negative gross income) in any business line may offset positive capital charges in other business lines without limit. However, where the aggregate capital charge across all business lines within a given year is negative, then the input to the numerator for that year will be zero. The total capital charge will be expressed as:

$K_{TSA} = \{\sum_{years\ 1\text{-}3} \max[\sum(GI_{1\text{-}8} X\ \beta_{1\text{-}8}),0]\}/3$

Where,

K_{TSA} = the capital charge under TSA

$GI_{1\text{-}8}$ = annual gross income in a given year, as defined in the Basic Indicator Approach, for each of the eight business lines (Please see **Appendix 2**)

$\beta_{1\text{-}8}$ = a fixed percentage, set by the Basel Committee, relating the level of required capital to the level of the gross income for each of the eight business lines. The values of beta are detailed below:

The value of the betas for TSA

S.No	Business Line	β Factors
1	Corporate finance (β_1)	18%
2	Trading and sales(β_2)	18%
3	Payment and settlement(β_3)	18%
4	Agency services(β_4)	15%
5	Asset management(β_5)	12%
6	Retail brokerage(β_6)	12%
7	Retail banking(β_7)	12%
8	Commercial banking(β_8)	15%

A bank should calculate its annual gross income for the most recent year by aggregating the gross income for the particular business line for the last four financial quarters. A bank should calculate its annual gross income for the two years preceding the most recent year in the same manner.

Example

For a bank calculating its Operational Risk Weighted Assets as at end November 2010, the annual gross income of a particular business line for the previous three years should be calculated as follows:

	Year 3	Year 2	Year 1
Gross Income for Financial quarter ending	September 2010(GI_{3a})	September 2009(GI_{2a})	September 2008(GI_{1a})
	June 2010(GI_{3b})	June 2009(GI_{2b})	June 2008(GI_{1b})
	March 2010(GI_{3c})	March 2009(GI_{2c})	March 2008(GI_{1c})
	December 2009(GI_{3d})	December 2008(GI_{2d})	December 2007(GI_{1d})
Total	$GI_3 = GI_{3a} + GI_{3b} + GI_{3c} + GI_{3d}$	$GI_2 = GI_{2a} + GI_{2b} + GI_{2c} + GI_{2d}$	$GI_1 = GI_{1a} + GI_{1b} + GI_{1c} + GI_{1d}$

Where,

GI = Gross income

AMA approach

Introduction

30.1 Under the Advanced Measurement Approaches (AMA), the regulatory capital requirement will equal the risk measure generated by the bank's internal operational risk measurement system using the quantitative and qualitative criteria for the AMA discussed below. Use of the AMA is subject to supervisory approval.

General standards for using the AMA

30.6 In order to qualify for use of the AMA a bank must satisfy its supervisor that, at a minimum:

(1) Its board of directors and senior management, as appropriate, are actively involved in the oversight of the operational risk management framework;

(2) It has an operational risk management system that is conceptually sound and is implemented with integrity; and

(3) It has sufficient resources in the use of the approach in the major business lines as well as the control and audit areas.

30.7 A bank's AMA will be subject to a period of initial monitoring by its supervisor before it can be used for regulatory purposes. This period will allow the supervisor to determine whether the approach is credible and appropriate. As discussed below, a bank's internal measurement system must reasonably estimate unexpected losses based on the combined use of internal and relevant external loss data, scenario analysis and bank-specific business environment and internal control factors. The bank's measurement system must also be capable of supporting an allocation of economic capital for operational risk across business lines in a manner that creates incentives to improve business line operational risk management.

Qualitative standards for using the AMA

30.8 A bank must meet the following qualitative standards before it is permitted to use an AMA for operational risk capital:

(1) The bank must have an independent operational risk management function that is responsible for the design and implementation of the bank's operational risk management framework. The operational risk management function is responsible for codifying firm-level policies and procedures concerning operational risk management and controls; for the design and implementation of the firm's operational risk measurement methodology; for the design and implementation of a risk-reporting system for operational risk; and for developing strategies to identify, measure, monitor and control /mitigate operational risk.

(2) The bank's internal operational risk measurement system must be closely integrated into the day-to-day risk management processes of the bank. Its output must be an integral part of the process of monitoring and controlling the bank's operational risk profile. For instance, this information must play a prominent role in risk reporting, management reporting, internal capital allocation, and risk analysis. The bank must have techniques for allocating operational risk capital to major business lines and for creating incentives to improve the management of operational risk throughout the firm.

(3) There must be regular reporting of operational risk exposures and loss experience to business unit management, senior management, and to the board of directors. The bank must have procedures for taking appropriate action according to the information within the management reports.

(4) The bank's operational risk management system must be well documented. The bank must have a routine in place for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operational risk management system, which must include policies for the treatment of non-compliance issues.

(5) Internal and/or external auditors must perform regular reviews of the operational risk management processes and measurement systems. This review must include both the activities of the business units and of the independent operational risk management function.

(6) The validation of the operational risk measurement system by external auditors and/or supervisory authorities must include the following:

    (a) Verifying that the internal validation processes are operating in a satisfactory manner; and

    (b) Making sure that data flows and processes associated with the risk measurement system are transparent and accessible. In particular, it is necessary that auditors and supervisory authorities are in a position to have easy access, whenever they judge it necessary and under appropriate procedures, to the system's specifications and parameters.

Quantitative standards for using the AMA

30.9 Given the continuing evolution of analytical approaches for operational risk, the Committee is not specifying the approach or distributional assumptions used to generate the operational risk measure for regulatory capital purposes. However, a bank must be able to demonstrate that its approach captures potentially severe "tail" loss events. Whatever approach is used, a bank must demonstrate that its operational risk measure meets a soundness standard comparable to that of the internal ratings-based approach for credit risk (ie comparable to a one year holding period and a 99.9th percentile confidence interval).

30.10 In the development of operational risk measurement and management systems, banks must have and maintain rigorous procedures for operational risk model development and independent model validation.

30.12 Banks must track internal loss data according to the criteria set out in OPE30.12 to OPE30.15. The tracking of internal loss event data is an essential prerequisite to the development and functioning of a credible operational risk measurement system. Internal loss data is crucial for tying a bank's risk estimates to its actual loss experience. This can be achieved in a number of ways, including using internal loss data as the foundation of empirical risk estimates, as a means of validating the inputs and outputs of the bank's risk measurement system, or as the link between loss experience and risk management and control decisions.

30.13 Internal loss data is most relevant when it is clearly linked to a bank's current business activities, technological processes and risk management procedures. Therefore, a bank must have documented procedures for assessing the on-going relevance of historical loss data, including those situations in which judgement overrides, scaling, or other adjustments may be used, to what extent they may be used and who is authorised to make such decisions.

30.14 Internally generated operational risk measures used for regulatory capital purposes must be based on a minimum five-year observation period of internal loss data, whether the internal loss data is used directly to build the loss measure or to validate it. When the bank first moves to the AMA, a three-year historical data window is acceptable (this includes the parallel calculations in RBC20.14).

30.16 A bank's operational risk measurement system must use relevant external data (either public data and/or pooled industry data), especially when there is reason to believe that the bank is exposed to infrequent, yet potentially severe, losses. These external data should include data on actual loss amounts, information on the scale of business operations where the event occurred, information on the causes and circumstances of the loss events, or other information that would help in assessing the relevance of the loss event for other banks. A bank must have a systematic process for determining the situations for which external data must be used and the methodologies used to incorporate the data (eg scaling, qualitative adjustments, or informing the development of improved scenario analysis). The conditions and practices for external data use must be regularly reviewed, documented, and subject to periodic independent review.

30.17 A bank must use scenario analysis of expert opinion in conjunction with external data to evaluate its exposure to high-severity events. This approach draws on the knowledge of experienced business managers and risk management experts to derive reasoned assessments of plausible severe losses. For instance, these expert assessments could be expressed as parameters of an assumed statistical loss distribution. In addition, scenario analysis should be used to assess the impact of deviations from the correlation assumptions embedded in the bank's operational risk measurement framework, in particular, to evaluate potential losses arising from multiple simultaneous operational risk loss events. Over time, such assessments need to be validated and re-assessed through comparison to actual loss experience to ensure their reasonableness.

30.18 In addition to using loss data, whether actual or scenario-based, a bank's firm-wide risk assessment methodology must capture key business environment and internal control factors that can change its operational risk profile. These factors will make a bank's risk assessments more forward-looking, more directly reflect the quality of the bank's control and operating environments, help align capital assessments with risk management objectives, and recognise both improvements and deterioration in operational risk profiles in a more immediate fashion. To

SMA approach

CHAPTER -II

BASEL III STANDARDISED APPROACH (BASEL III SA)

4. Components of Basel III SA

4.1 Basel III SA calculation methodology is based on the following components:

(i) the **Business Indicator (BI)**, which is a financial-statement-based proxy for operational risk;

(ii) the **Business Indicator Component (BIC**), which is calculated by multiplying the BI by a set of marginal coefficients (α_i); and

(iii) the **Internal Loss Multiplier (ILM),** which is a scaling factor that is based on a bank's average historical losses and the BIC.

4.2 Business Indicator (BI)

The BI shall be computed as the summation of the following three components,

$$BI = ILDC+SC+FC$$

Where,

ILDC is the Interest, Lease and Dividend Component;
SC is the Services Component; and
FC is the Financial Component.

4.3 The ILDC, SC and FC shall be computed as per the formula below, where a bar above a term indicates that it is calculated as the average over three years: t, t-1 and t-2, and:

- $ILDC = Min[\overline{Abs(Interest\ Income - Interest\ Expense)}; 2.25\% \times \overline{Interest\ Earning\ Assets}] + \overline{Dividend\ Income}$
- $SC = Max[\overline{Other\ Operating\ Income}; \overline{Other\ Operating\ Expense}] + Max\ [\overline{Fee\ Income}; \overline{Fee\ Expense}]$
- $FC = \overline{Abs\ (Net\ P\&L\ Trading\ Book)} + \overline{Abs\ (Net\ P\&L\ banking\ Book)}$

Where,

Max=Maximum,

Min=Minimum, and

Abs= Absolute value of sub-components irrespective of their signs (+ or -)

The definitions for each of the components of the BI are provided in Annex 1.

4.4 Business Indicator Component (BIC)

The BIC shall be calculated by multiplying the BI with the marginal coefficients (α_i), which increase with the size of the BI as shown in Table 1 below.

BI ranges and marginal coefficients **Table 1**

Bucket	BI Range (in ₹ Crore)	BI Marginal Coefficients (α_i)
1	≤8000	12%
2	8000<BI≤240000	15%
3	>240000	18%

4.5 Internal Loss Multiplier (ILM)

4.5.1 A bank's internal operational risk loss experience affects the calculation of operational risk capital through the ILM. The ILM shall be calculated as given below,

$$ILM = ln\left\{\exp(1) - 1 + \left[\frac{LC}{BIC}\right]^{0.8}\right\}$$

Where the Loss Component (LC) is equal to 15 times average annual operational risk losses.

4.5.2 The calculation of average losses in the LC shall be based on 10 years of high-quality operational risk annual loss data. However, banks that do not have 10 years of high-quality loss data but have five years and above of high-quality loss data shall make use of such available high-quality loss data of five years and above to calculate the LC.

4.6 Operational Risk Capital (ORC)

4.6.1 (i) **For banks in bucket 1, and (ii) For banks in buckets 2 & 3 that do not have 5 years of high-quality operational risk annual loss data**

The ORC requirement shall be equal to BIC, as defined in section 4.4 of this Chapter:

$$ORC = BIC$$

The Reserve Bank (Department of Supervision) may however require banks in buckets 2 & 3 to calculate ORC requirement using fewer than five years of losses if the ILM is greater than 1 and the supervisor believes that the losses are representative of the bank's operational risk exposure. In such cases, ORC requirement shall be calculated in accordance with section 4.6.2.

4.6.2 For banks in buckets 2 & 3 having 5 years and above of high-quality operational risk annual loss data

The ORC requirement shall be calculated by multiplying the BIC as defined in section 4.4 of this Chapter by the ILM as given in section 4.5 of this Chapter:

$$ORC = BIC \times ILM$$

4.7 Risk-weighted assets

The risk-weighted assets (RWA) for operational risk shall be calculated by multiplying the ORC by 12.5.