Guideline

Subject: Capital Adequacy Requirements (CAR)

Chapter 8 – Operational Risk

Effective Date: November 2017 / January 2018[1]

The Capital Adequacy Requirements (CAR) for banks (including federal credit unions), bank holding companies, federally regulated trust companies, federally regulated loan companies and cooperative retail associations are set out in nine chapters, each of which has been issued as a separate document. This document, Chapter 8 – Operational Risk, should be read in conjunction with the other CAR chapters which include:

Chapter 1	Overview
Chapter 2	Definition of Capital
Chapter 3	Credit Risk – Standardized Approach
Chapter 4	Settlement and Counterparty Risk
Chapter 5	Credit Risk Mitigation
Chapter 6	Credit Risk- Internal Ratings Based Approach
Chapter 7	Structured Credit Products
Chapter 8	Operational Risk
Chapter 9	Market Risk

Please refer to OSFI's *Corporate Governance Guideline* for OSFI's expectations of institution Boards of Directors in regards to the management of capital and liquidity.

[1] For institutions with a fiscal year ending October 31 or December 31, respectively

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Chapter 8 – Operational Risk

1. This chapter is drawn from the Basel Committee on Banking Supervision's (BCBS) Basel II framework, *International Convergence of Capital Measurement and Capital Standards – June 2006*. For reference, the Basel II text paragraph numbers that are associated with the text appearing in this chapter are indicated in square brackets at the end of each paragraph[2].

8.1. Definition of operational risk

2. 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,[3] but excludes strategic and reputational risk. [BCBS June 2006 par 644]

8.2. The measurement methodologies

3. The framework outlined below presents three methods for calculating operational risk capital charges in a continuum of increasing sophistication and risk sensitivity: (i) the Basic Indicator Approach; (ii) the Standardized Approach; and (iii) Advanced Measurement Approaches (AMA). [BCBS June 2006 par 645]

4. Banks are encouraged to move along the spectrum of available approaches as they develop more sophisticated operational risk measurement systems and practices. Qualifying criteria for the Standardized Approach and AMA are presented below. [BCBS June 2006 par 646]

5. Internationally active banks and banks with significant operational risk exposures (for example, specialised processing banks) are expected to use an approach that is more sophisticated than the Basic Indicator Approach and that is appropriate for the risk profile of the institution.[4] A bank will be permitted to use the Basic Indicator or Standardized Approach for some parts of its operations and an AMA for others provided certain minimum criteria are met, see section 8.4. [BCBS June 2006 par 647]

6. A bank will not be allowed to choose to revert to a simpler approach once it has been approved for a more advanced approach without supervisory approval. However, if a supervisor determines that a bank using a more advanced approach no longer meets the qualifying criteria for this approach, it may require the bank to revert to a simpler approach for some or all of its operations, until it meets the conditions specified by the supervisor for returning to a more advanced approach. [BCBS June 2006 par 648]

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2 Following the format: [BCBS June 2006 par x]

3 Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.

4 Supervisors will review the capital requirement produced by the operational risk approach used by a bank (whether Basic Indicator Approach, Standardized Approach or AMA) for general credibility, especially in relation to a firm's peers. In the event that credibility is lacking, appropriate supervisory action under Pillar 2 will be considered.

8.2.1. The Basic Indicator Approach

7. Banks using the Basic Indicator Approach must hold capital for operational risk equal to the average over the previous three years of a fixed percentage (denoted 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.[5] The charge may be expressed as follows:

$$\mathbf{K_{BIA} = [\Sigma(GI_{1\ldots n} \times \alpha)]/n}$$

Where

K_{BIA} = 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%, which is set by the Committee, relating the industry wide level of required capital to the industry wide level of the indicator.
[BCBS June 2006 par 649]

OSFI Notes

8. Newly incorporated institutions using the Basic Indicator Approach having fewer than 12 quarters of gross income data should calculate the operational risk capital charge using available gross income data to develop proxies for the missing portions of the required three years' data. Institutions should refer to the reporting instructions for OSFI's capital adequacy return for further guidance.

9. Gross income is defined as net interest income plus net non-interest income.[6] It is intended that this measure should: (i) be gross of any provisions (e.g. for unpaid interest); (ii) be gross of operating expenses, including fees paid to outsourcing service providers;[7] (iii) exclude realised profits/losses from the sale of securities in the banking book;[8] and (iv) exclude extraordinary or irregular items as well as income derived from insurance. [BCBS June 2006 par 650]

[5] If negative gross income distorts a bank's Pillar 1 capital charge, supervisors will consider appropriate supervisory action under Pillar 2.

[6] As defined by national supervisors and/or national accounting standards.

[7] In contrast 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.

[8] Realized profits/losses from securities classified as "held to maturity" and "available for sale", which typically constitute items of the banking book (e.g. under certain accounting standards), are also excluded from the definition of gross income.

OSFI Notes

10. Institutions should refer to the reporting instructions for the capital adequacy return for the definition of gross income to be used when calculating operational risk capital under the Basic Indicator Approach or the Standardized Approach.

11. The gross income definition excludes extraordinary items as reported under line 33 on the Consolidated Statement of Income. Extraordinary items should be reported on the basis of Canadian generally accepted accounting principles (GAAP). Where an institution reports an extraordinary item on its Consolidated Statement of Income (P3) return and including that item in the definition of Gross Income would have had a material impact on the calculation of operational risk regulatory capital, the institution should provide its OSFI relationship manager with an explanation of the nature and significance of the extraordinary item. [9]

OSFI Notes

12. Institutions should perform a reconciliation between the gross income reported on the capital adequacy return and the amounts reported on the Consolidated Statement of Income (P3) regulatory return. In addition, OSFI expects institutions to perform a reconciliation between the gross income amount reported on the capital adequacy return and amounts reported on the audited financial statements. This information should be available to OSFI upon request.

13. These reconciliations should identify any items that are excluded from the operational risk calculation as per the definition of gross income but are included in the Consolidated Statement of Income (P3) regulatory return or audited financial statements.

OSFI Notes

14. When an institution makes a material acquisition, the operational risk capital calculation should be adjusted to reflect those activities. Since the gross income calculation is based on a rolling 12-quarter average, the most recent four quarters of gross income for the acquired business should be based on actual gross income amounts reported by the acquired business. Estimates may be used for the previous eight quarters when actual amounts are not available.

15. For institutions using the Basic Indicator Approach, actual gross income amounts must be used for the most recent four quarters. Estimates may be used for the previous eight quarters when actual amounts are not available.

16. When an institution makes a divestiture, the gross income calculation may be adjusted, with supervisory approval, to reflect this divestiture.

[9] The reporting of extraordinary items is altered under IFRS, effective for annual periods beginning on or after Jan 1, 2013.

17. As a point of entry for capital calculation, no specific criteria for use of the Basic Indicator Approach are set out in this Framework. Nevertheless, banks using this approach are encouraged to comply with the Committee's guidance on Sound Practices for the Management and Supervision of Operational Risk, February 2003. [BCBS June 2006 par 651]

8.2.2. The Standardized Approach[10,11]

18. In the Standardized Approach, 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 8-1. [BCBS June 2006 par 652]

19. 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

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10 The Committee intends to reconsider the calibration of the Basic Indicator and Standardized Approaches when more risk-sensitive data are available to carry out this recalibration. Any such recalibration would not be intended to affect significantly the overall calibration of the operational risk component of the Pillar 1 capital charge.

11 **The Alternative Standardized Approach**
At national supervisory discretion a supervisor can choose to allow a bank to use the Alternative Standardized Approach (ASA) provided the bank is able to satisfy its supervisor that this alternative approach provides an improved basis by, for example, avoiding double counting of risks. Once a bank has been allowed to use the ASA, it will not be allowed to revert to use of the Standardized Approach without the permission of its supervisor. It is not envisaged that large diversified banks in major markets would use the ASA.

Under the ASA, the operational risk capital charge/methodology is the same as for the Standardized Approach except for two business lines – retail banking and commercial banking. For these business lines, loans and advances – multiplied by a fixed factor 'm' – replaces gross income as the exposure indicator. The betas for retail and commercial banking are unchanged from the Standardized Approach. The ASA operational risk capital charge for retail banking (with the same basic formula for commercial banking) can be expressed as:

$$\mathbf{K_{RB} = \beta_{RB} \times m \times LA_{RB}}$$

Where

- K_{RB} is the capital charge for the retail banking business line
- β_{RB} is the beta for the retail banking business line
- LA_{RB} is total outstanding retail loans and advances (non-risk weighted and gross of allowance for loan losses), averaged over the past three years
- m is 0.035

For the purposes of the ASA, total loans and advances in the retail banking business line consists of the total drawn amounts in the following credit portfolios: retail, SMEs treated as retail, and purchased retail receivables. For commercial banking, total loans and advances consists of the drawn amounts in the following credit portfolios: corporate, sovereign, bank, specialised lending, SMEs treated as corporate and purchased corporate receivables. The book value of securities held in the banking book should also be included.

Under the ASA, banks may aggregate retail and commercial banking (if they wish to) using a beta of 15%. Similarly, those banks that are unable to disaggregate their gross income into the other six business lines can aggregate the total gross income for these six business lines using a beta of 18%, with negative gross income treated as described in paragraph 20.

As under the Standardized Approach, the total capital charge for the ASA is calculated as the simple summation of the regulatory capital charges across each of the eight business lines.

gross income by a factor (denoted beta) 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 the Standardized Approach 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. [BCBS June 2006 par 653]

20. 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. 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.[12] 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.[13] The total capital charge may be expressed as:

$$\mathbf{K_{TSA}=\{\Sigma_{years\ 1\text{-}3}\ max[\Sigma(GI_{1\text{-}8}\ x\ \beta_{1\text{-}8}),0]\}/3}$$

Where:

K_{TSA} = the capital charge under the Standardized Approach

$GI_{1\text{-}8}$ = annual gross income in a given year, as defined above in the Basic Indicator Approach, for each of the eight business lines

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

Business Lines	**Beta Factors**
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%

[BCBS June 2006 par 654]

12 At national discretion, supervisors may adopt a more conservative treatment of negative gross income.

13 As under the Basic Indicator Approach, if negative gross income distorts a bank's Pillar 1 capital charge under the Standardized Approach, supervisors will consider appropriate supervisory action under Pillar 2.

OSFI Notes

21. Newly incorporated institutions intending to use the Standardized Approach having fewer than 12 quarters of gross income data will be expected to meet all of the qualifying criteria for the Standardized Approach, including the business line mapping requirements outlined in Appendix 8-1. These institutions should use available gross income data to develop proxies for the missing portions of the required three years' data. Institutions should refer to the reporting instructions for OSFI's capital adequacy return for further guidance.

OSFI Notes

22. When an institution makes a material acquisition, the operational risk capital calculation should be adjusted to reflect those activities. Since the gross income calculation is based on a rolling 12-quarter average, the most recent four quarters of gross income for the acquired business should be based on actual gross income amounts reported by the acquired business. Estimates may be used for the previous eight quarters when actual amounts are not available.

23. For institutions using the Standardized Approach, the gross income from the most recent four quarters for the acquired business must be mapped into the eight Basel business lines. Once an institution has obtained the percentage allocation of the gross income from the acquired entity across the eight Basel business lines for the most recent four quarters, it may apply this allocation to the previous eight quarters of gross income. Thus, the mapping exercise for the acquired business need only be performed for the most recent four quarters. The mapping results can be applied to the total gross income of the acquired business for the previous eight quarters to determine the percentage assigned to the eight Basel business lines.

24. When an institution makes a divestiture, the gross income calculation may be adjusted, with supervisory approval, to reflect this divestiture.

OSFI Notes

25. Institutions incorporated in Canada are not permitted to use the Alternative Standardized Approach for any part of their operations.

OSFI Notes

26. For domestic institutions implementing the Standardized Approach, OSFI will allow subsidiaries of these institutions to use either the Basic Indicator Approach or the Standardized Approach to determine operational risk regulatory capital for the subsidiary.

8.2.3. Advanced Measurement Approaches (AMA)

27. Under the 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. [BCBS June 2006 par 655]

28. A bank adopting the AMA may, with the approval of its host supervisors and the support of its home supervisor, use an allocation mechanism for the purpose of determining the regulatory capital requirement for internationally active banking subsidiaries that are not deemed to be significant relative to the overall banking group but are themselves subject to this Framework in accordance with Part 1. Supervisory approval would be conditional on the bank demonstrating to the satisfaction of the relevant supervisors that the allocation mechanism for these subsidiaries is appropriate and can be supported empirically. The senior management of each subsidiary is responsible for conducting its own assessment of the subsidiary's operational risks and controls and ensuring the subsidiary is adequately capitalized in respect of those risks. [BCBS June 2006 par 656]

OSFI Notes

29. OSFI will allow a Canadian subsidiary of a foreign bank or a subsidiary of a domestic institution to use an allocated amount from its parent's AMA provided the conditions set out in paragraph 28 are met.

30. Subject to supervisory approval as discussed in paragraph 52 to 57(d), the incorporation of a well-reasoned estimate of diversification benefits may be factored in at the group-wide level or at the banking subsidiary level. However, any banking subsidiaries whose host supervisors determine that they must calculate stand-alone capital requirements (see Part 1) may not incorporate group-wide diversification benefits in their AMA calculations (e.g. where an internationally active banking subsidiary is deemed to be significant, the banking subsidiary may incorporate the diversification benefits of its own operations – those arising at the sub-consolidated level – but may not incorporate the diversification benefits of the parent). [BCBS June 2006 par 657]

OSFI Notes

31. In those very limited instances where it may be determined that a Canadian subsidiary of a foreign bank should use an AMA on stand-alone basis, OSFI will work with the foreign bank's home supervisor.

32. The appropriateness of the allocation methodology will be reviewed with consideration given to the stage of development of risk-sensitive allocation techniques and the extent to which it reflects the level of operational risk in the legal entities and across the banking group. Supervisors expect that AMA banking groups will continue efforts to develop increasingly risk-sensitive operational risk allocation techniques, notwithstanding initial approval of techniques based on gross income or other proxies for operational risk. [BCBS June 2006 par 658]

33. Banks adopting the AMA will be required to calculate their capital requirement using this approach as well as the 1988 Accord as outlined in Chapter 1 – Overview, section 1.8. [BCBS June 2006 par 659]

8.3. Qualifying criteria

8.3.1. The Standardized Approach[14]

34. In order to qualify for use of the Standardized Approach, a bank must satisfy its supervisor that, at a minimum:

- Its senior management is actively involved in the oversight of the operational risk management framework;
- It has an operational risk management system that is conceptually sound and is implemented with integrity; and
- It has sufficient resources in the use of the approach in the major business lines as well as the control and audit areas.

[BCBS June 2006 par 660]

35. Supervisors will have the right to insist on a period of initial monitoring of a bank's Standardized Approach before it is used for regulatory capital purposes. [BCBS June 2006 par 661]

36. A bank must develop specific policies and have documented criteria for mapping gross income for current business lines and activities into the standardized framework. The criteria must be reviewed and adjusted for new or changing business activities as appropriate. The principles for business line mapping are set out in Appendix 8-1. [BCBS June 2006 par 662]

37. As some internationally active banks will wish to use the Standardized Approach, it is important that such banks have adequate operational risk management systems. Consequently, an internationally active bank using the Standardized Approach must meet the following additional criteria:[15]

OSFI Notes

38. All institutions implementing the Standardized Approach should meet the criteria set out in paragraph 37 to 45. OSFI will consider the institution's risk profile and complexity when reviewing the institution's self-assessment of compliance with these criteria.

(a) The bank must have an operational risk management system with clear responsibilities assigned to an operational risk management function. The operational risk management function is responsible for developing strategies to identify, assess, monitor and control/mitigate operational risk; for codifying firm-level policies and procedures concerning operational risk management and controls; for the design and implementation

[14] Supervisors allowing banks to use the Alternative Standardized Approach must decide on the appropriate qualifying criteria for that approach, as the criteria set forth in paragraphs 36 to 45 of this section may not be appropriate.

[15] For other banks, these criteria are recommended, with national discretion to impose them as requirements.

of the firm's operational risk assessment methodology; and for the design and implementation of a risk-reporting system for operational risk.

OSFI Notes

39. The size and complexity of an institution may not warrant the existence of a specific organizational unit dedicated to operational risk management. Where this is the case, an institution should be able to demonstrate to OSFI how its operational risk management framework is appropriate to the size and complexity of the institution's operations. Where an independent unit does not exist, the above responsibilities should be assigned to individuals within the institution, who are independent from the relevant business line.

40. The term operational risk management system does not necessarily refer to a technology application for implementing operational risk management across the institution, although this may be a part of an institution's approach to managing operational risk. Rather, the term system refers to the collective polices and processes in place for identifying, assessing, monitoring and controlling operational risk across the institution.

(b) As part of the bank's internal operational risk assessment system, the bank must systematically track relevant operational risk data including material losses by business line. Its operational risk assessment system must be closely integrated into the risk management processes of the bank. Its output must be an integral part of the process of monitoring and controlling the banks operational risk profile. For instance, this information must play a prominent role in risk reporting, management reporting, and risk analysis. The bank must have techniques for creating incentives to improve the management of operational risk throughout the firm.

OSFI Notes

41. All institutions implementing the Standardized Approach should be able to track and report relevant operational risk data including material operational risk losses by significant business line. The sophistication of this tracking and reporting mechanism should be appropriate for the size of the institution, taking into account its reporting structure as well as the operational risk exposure of the institution.

(c) There must be regular reporting of operational risk exposures, including material operational losses, to business unit management and senior management. The bank must have procedures for taking appropriate action according to the information within the management reports.

OSFI Notes

42. All institutions implementing the Standardized Approach should develop regular reporting of operational risk exposures within the institution. The frequency and content of this reporting should be appropriate for the reporting structure as well as the nature, complexity and risk profile of the institution. The need to formalize this reporting should also reflect the internal

structure of the institution (e.g., the number of employees, the reporting hierarchy). All institutions should develop procedures for taking appropriate action based on the information contained in the operational risk reports.

(d) 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.

OSFI Notes

43. All institutions should develop processes for ensuring compliance with a documented set of internal policies, controls and procedures concerning the management of operational risk.

(e) The bank's operational risk management processes and assessment system must be subject to validation and regular independent review. These reviews must include both the activities of the business units and of the operational risk management function.

OSFI Notes

44. Where the size and complexity of the institution may not warrant the existence of a specific organizational unit dedicated to operational risk management, independent review should focus on the operational risk management processes and may be integrated with the review of the respective business activities.

(f) The bank's operational risk assessment system (including the internal validation processes) must be subject to regular review by external auditors and/or supervisors.

[BCBS June 2006 par 663]

OSFI Notes

45. External audit reviews of an institution's operational risk assessment system are not mandated by OSFI.

8.3.2. Advanced Measurement Approaches (AMA)

(i) General standards

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

- Its senior management is actively involved in the oversight of the operational risk management framework;
- It has an operational risk management system that is conceptually sound and is implemented with integrity; and

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

[BCBS June 2006 par 664]

47. 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. [BCBS June 2006 par 665]

(ii) Qualitative standards

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

(a) 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.

(b) 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.

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

(d) 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.

(e) 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.

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

- Verifying that the internal validation processes are operating in a satisfactory manner; and
- 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.

[BCBS June 2006 par 666]

OSFI Notes

49. External audit reviews of an institution's operational risk management processes and measurement systems are not mandated by OSFI.

(iii) Quantitative standards

AMA soundness standard

50. 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, (i.e. comparable to a one year holding period and a 99.9^{th} percentile confidence interval). [BCBS June 2006 par 667]

51. The Committee recognises that the AMA soundness standard provides significant flexibility to banks in the development of an operational risk measurement and management system. However, in the development of these systems, banks must have and maintain rigorous procedures for operational risk model development and independent model validation. Prior to implementation, the Committee will review evolving industry practices regarding credible and consistent estimates of potential operational losses. It will also review accumulated data, and the level of capital requirements estimated by the AMA, and may refine its proposals if appropriate. [BCBS June 2006 par 668]

Detailed criteria

52. This section describes a series of quantitative standards that will apply to internally-generated operational risk measures for purposes of calculating the regulatory minimum capital charge.

(a) Any internal operational risk measurement system must be consistent with the scope of operational risk defined by the Committee in section 8.1 and the loss event types defined in Appendix 8-2.

(b) Supervisors will require the bank to calculate its regulatory capital requirement as the sum of expected loss (EL) and unexpected loss (UL), unless the bank can demonstrate that it is adequately capturing EL in its internal business practices. That is, to base the minimum regulatory capital requirement on UL alone, the bank must be able to demonstrate to the satisfaction of its national supervisor that it has measured and accounted for its EL exposure.

OSFI Notes

53. An institution may hold capital against UL alone provided that it can demonstrate that it has measured and accounted for its EL exposure. For EL to be "measured" to OSFI's satisfaction, the institution's measure of EL should be consistent with the EL-plus-UL capital charge calculated using the institution's AMA approved by OSFI.

54. OSFI may allow offsets to EL that take the following form: (i) allowances for operational loss created under Canadian generally accepted accounting principles (GAAP) and (ii) other means (e.g., pricing, budgeting) provided that it can demonstrate that the corresponding losses are highly predictable and reasonably stable, and that the estimation process is consistent over time.

55. The maximum offset for operational risk EL is bounded by the EL exposure calculated by the institution's approved AMA.

56. Allowable offsets for operational risk EL should be available to cover EL with a high degree of certainty over a one-year time horizon. Where the offset is something other than allowances, its availability should be limited to those business lines and event types with highly predictable, routine losses. Because exceptional operational risk losses do not fall within EL, specific allowances for any such events that have already occurred will not qualify as allowable EL offsets.

57. The institution should clearly document how its operational risk EL is measured and accounted for, including how any EL offsets meet the conditions outlined above.

(c) A bank's risk measurement system must be sufficiently 'granular' to capture the major drivers of operational risk affecting the shape of the tail of the loss estimates.

(d) Risk measures for different operational risk estimates must be added for purposes of calculating the regulatory minimum capital requirement. However, the bank may be permitted to use internally determined correlations in operational risk losses across individual operational risk estimates, provided it can demonstrate to the satisfaction of the national supervisor that its systems for determining correlations are sound, implemented with integrity, and take into account the uncertainty surrounding any such correlation estimates (particularly in periods of stress). The bank must validate its correlation assumptions using appropriate quantitative and qualitative techniques.

(e) Any operational risk measurement system must have certain key features to meet the supervisory soundness standard set out in this section. These elements must include the use of internal data, relevant external data, scenario analysis and factors reflecting the business environment and internal control systems.

(f) 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. For example, there may be cases where estimates of the 99.9th percentile confidence interval based primarily on internal and external loss event data would be unreliable for business lines with a heavy-tailed loss distribution and a small number of observed losses. In such cases, scenario analysis, and business environment and control factors, may play a more dominant role in the risk measurement system. Conversely, operational loss event data may play a more dominant role in the risk measurement system for business lines where estimates of the 99.9th percentile confidence interval based primarily on such data are deemed reliable. In all cases, the bank's approach for weighting the four fundamental elements should be internally consistent and avoid the double counting of qualitative assessments or risk mitigants already recognised in other elements of the framework.

[BCBS June 2006 par 669]

Internal data

58. Banks must track internal loss data according to the criteria set out in this section. 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. [BCBS June 2006 par 670]

59. 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. [BCBS June 2006 par 671]

60. 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 Chapter 1 – Overview, section 1.8). [BCBS June 2006 par 672]

61. To qualify for regulatory capital purposes, a bank's internal loss collection processes must meet the following standards:

- To assist in supervisory validation, a bank must be able to map its historical internal loss data into the relevant level 1 supervisory categories defined in Appendices 8-1 and 8-2 and to provide these data to supervisors upon request. It must have documented, objective criteria for allocating losses to the specified business lines and event types. However, it is left to the bank to decide the extent to which it applies these categorisations in its internal operational risk measurement system.

- A bank's internal loss data must be comprehensive in that it captures all material activities and exposures from all appropriate sub-systems and geographic locations. A bank must be able to justify that any excluded activities or exposures, both individually and in combination, would not have a material impact on the overall risk estimates. A bank must have an appropriate *de minimis* gross loss threshold for internal loss data collection, for example CAD $12500. The appropriate threshold may vary somewhat between banks, and within a bank across business lines and/or event types. However, particular thresholds should be broadly consistent with those used by peer banks.
- Aside from information on gross loss amounts, a bank should collect information about the date of the event, any recoveries of gross loss amounts, as well as some descriptive information about the drivers or causes of the loss event. The level of detail of any descriptive information should be commensurate with the size of the gross loss amount.
- A bank must develop specific criteria for assigning loss data arising from an event in a centralised function (e.g. an information technology department) or an activity that spans more than one business line, as well as from related events over time.
- Operational risk losses that are related to credit risk and have historically been included in banks' credit risk databases (e.g. collateral management failures) will continue to be treated as credit risk for the purposes of calculating minimum regulatory capital under this Framework. Therefore, such losses will not be subject to the operational risk capital charge.[16] Nevertheless, for the purposes of internal operational risk management, banks must identify all material operational risk losses consistent with the scope of the definition of operational risk (as set out in paragraph 2 and the loss event types outlined in Appendix 8-2), including those related to credit risk. Such material operational risk-related credit risk losses should be flagged separately within a bank's internal operational risk database. The materiality of these losses may vary between banks, and within a bank across business lines and/or event types. Materiality thresholds should be broadly consistent with those used by peer banks.
- Operational risk losses that are related to market risk are treated as operational risk for the purposes of calculating minimum regulatory capital under this Framework and will therefore be subject to the operational risk capital charge.

[BCBS June 2006 par 673]

External data

62. 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,

[16] This applies to all banks, including those that may only now be designing their credit risk and operational risk databases.

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 (e.g. 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. [BCBS June 2006 par 674]

Scenario analysis

63. 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. [BCBS June 2006 par 675]

Business environment and internal control factors

64. 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 qualify for regulatory capital purposes, the use of these factors in a bank's risk measurement framework must meet the following standards:

- The choice of each factor needs to be justified as a meaningful driver of risk, based on experience and involving the expert judgment of the affected business areas. Whenever possible, the factors should be translatable into quantitative measures that lend themselves to verification.
- The sensitivity of a bank's risk estimates to changes in the factors and the relative weighting of the various factors need to be well reasoned. In addition to capturing changes in risk due to improvements in risk controls, the framework must also capture potential increases in risk due to greater complexity of activities or increased business volume.
- The framework and each instance of its application, including the supporting rationale for any adjustments to empirical estimates, must be documented and subject to independent review within the bank and by supervisors.

- Over time, the process and the outcomes need to be validated through comparison to actual internal loss experience, relevant external data, and appropriate adjustments made.

[BCBS June 2006 par 676]

(iv) Risk mitigation[17]

65. Under the AMA, a bank will be allowed to recognise the risk mitigating impact of insurance in the measures of operational risk used for regulatory minimum capital requirements. The recognition of insurance mitigation will be limited to 20% of the total operational risk capital charge calculated under the AMA. [BCBS June 2006 par 677]

66. A bank's ability to take advantage of such risk mitigation will depend on compliance with the following criteria:

- The insurance provider has a minimum claims paying ability rating of A (or equivalent).
- The insurance policy must have an initial term of no less than one year. For policies with a residual term of less than one year, the bank must make appropriate haircuts reflecting the declining residual term of the policy, up to a full 100% haircut for policies with a residual term of 90 days or less.
- The insurance policy has a minimum notice period for cancellation of 90 days.
- The insurance policy has no exclusions or limitations triggered by supervisory actions or, in the case of a failed bank, that preclude the bank, receiver or liquidator from recovering for damages suffered or expenses incurred by the bank, except in respect of events occurring after the initiation of receivership or liquidation proceedings in respect of the bank, provided that the insurance policy may exclude any fine, penalty, or punitive damages resulting from supervisory actions.
- The risk mitigation calculations must reflect the bank's insurance coverage in a manner that is transparent in its relationship to, and consistent with, the actual likelihood and impact of loss used in the bank's overall determination of its operational risk capital.
- The insurance is provided by a third-party entity. In the case of insurance through captives and affiliates, the exposure has to be laid off to an independent third-party entity, for example through re-insurance, that meets the eligibility criteria.
- The framework for recognising insurance is well reasoned and documented.
- The bank discloses a description of its use of insurance for the purpose of mitigating operational risk.

[BCBS June 2006 par 678]

[17] The Committee intends to continue an ongoing dialogue with the industry on the use of risk mitigants for operational risk and, in due course, may consider revising the criteria for and limits on the recognition of operational risk mitigants on the basis of growing experience.

67. A bank's methodology for recognising insurance under the AMA also needs to capture the following elements through appropriate discounts or haircuts in the amount of insurance recognition:

- The residual term of a policy, where less than one year, as noted above;
- A policy's cancellation terms, where less than one year; and
- The uncertainty of payment as well as mismatches in coverage of insurance policies.

[BCBS June 2006 par 679]

8.4. Partial use

68. A bank will be permitted to use an AMA for some parts of its operations and the Basic Indicator Approach or Standardized Approach for the balance (partial use), provided that the following conditions are met:

- All operational risks of the bank's global, consolidated operations are captured;
- All of the bank's operations that are covered by the AMA meet the qualitative criteria for using an AMA, while those parts of its operations that are using one of the simpler approaches meet the qualifying criteria for that approach;
- On the date of implementation of an AMA, a significant part of the bank's operational risks are captured by the AMA; and
- The bank provides its supervisor with a plan specifying the timetable to which it intends to roll out the AMA across all but an immaterial part of its operations. The plan should be driven by the practicality and feasibility of moving to the AMA over time, and not for other reasons.

[BCBS June 2006 par 680]

OSFI Notes

69. An institution may make partial use of an AMA provided that it can demonstrate that this partial use is not intended for capital arbitrage. An institution implementing an AMA will not be restricted to using only one of the simpler approaches (i.e., the Basic Indicator Approach and the Standardized Approach) for operations not covered under the AMA. Institutions may use the Standardized Approach in combination with the Basic Indicator Approach for any operations not captured by the AMA (refer to paragraph 77 for partial use application of the Standardized Approach).

70. Upon implementation of a partial use AMA, a "significant" part (defined as 75%) of a bank's operations must adopt the AMA. The bank has five years to roll out the AMA to a "material" part (defined as 90%) of its operations.

71. To determine whether an institution meets the conditions of "material" and "significant" defined above, the institution must calculate the capital charge using the Standardized Approach for those business activities adopting an AMA and compare this amount to the total capital charge calculated for the entire bank using the Standardized Approach (and the Basic Indicator

Approach as applicable). This ratio must be at least 75% for AMA operations to be considered “significant” and 90% for AMA operations to be considered “material”.

72. Subject to the approval of its supervisor, a bank opting for partial use may determine which parts of its operations will use an AMA on the basis of business line, legal structure, geography, or other internally determined basis. [BCBS June 2006 par 681]

OSFI Notes

73. Institutions may determine partial use on a business line or legal entity basis, or a combination of the two. Any activity that is excluded from the AMA calculation cannot be included in the determination of group-wide diversification benefits within the AMA.

74. Subject to the approval of its supervisor, where a bank intends to implement an approach other than the AMA on a global, consolidated basis and it does not meet the third and/or fourth conditions in paragraph 68, the bank may, in limited circumstances:

- Implement an AMA on a permanent partial basis; and
- Include in its global, consolidated operational risk capital requirements the results of an AMA calculation at a subsidiary where the AMA has been approved by the relevant host supervisor and is acceptable to the bank’s home supervisor.

[BCBS June 2006 par 682]

OSFI Notes

75. An institution that chooses to adopt the Standardized Approach may be required to implement an AMA for a subsidiary operating in another jurisdiction. In this case, the institution may, with supervisory approval, incorporate that AMA capital amount in its operational risk capital calculation.

76. Approvals of the nature described in paragraph 74 should be granted only on an exceptional basis. Such exceptional approvals should generally be limited to circumstances where a bank is prevented from meeting these conditions due to implementation decisions of supervisors of the bank’s subsidiary operations in foreign jurisdictions. [BCBS June 2006 par 683]

OSFI Notes

77. OSFI will allow partial use for an institution adopting the Standardized Approach on a transitional basis only. An institution will be permitted to use the Basic Indicator Approach for part of its operations for a period not exceeding three years after implementation of the Standardized Approach. OSFI will permit partial use only where the institution can demonstrate that it is not being implemented for capital arbitrage purposes. OSFI expects partial use to be used only under specific circumstances where the bank can develop a clear rationale for why it is needed.

8.5. Appendix 8-1 - Mapping of Business Lines

[BCBS June 2006 Annex 8]

Mapping of Business Lines

Level 1	Level 2	Activity Groups
Corporate Finance	Corporate Finance	Mergers and acquisitions, underwriting, privatisations, securitisation, research, debt (government, high yield), equity, syndications, IPO, secondary private placements
	Municipal/Government Finance	
	Merchant Banking	
	Advisory Services	
Trading & Sales	Sales	Fixed income, equity, foreign exchanges, commodities, credit, funding, own position securities, lending and repos, brokerage, debt, prime brokerage
	Market Making	
	Proprietary Positions	
	Treasury	
Retail Banking	Retail Banking	Retail lending and deposits, banking services, trust and estates
	Private Banking	Private lending and deposits, banking services, trust and estates, investment advice
	Card Services	Merchant/commercial/corporate cards, private labels and retail
Commercial Banking	Commercial Banking	Project finance, real estate, export finance, trade finance, factoring, leasing, lending, guarantees, bills of exchange
Payment and Settlement[18]	External Clients	Payments and collections, funds transfer, clearing and settlement
Agency Services	Custody	Escrow, depository receipts, securities lending (customers) corporate actions
	Corporate Agency	Issuer and paying agents
	Corporate Trust	
Asset Management	Discretionary Fund Management	Pooled, segregated, retail, institutional, closed, open, private equity
	Non-Discretionary Fund Management	Pooled, segregated, retail, institutional, closed, open
Retail Brokerage	Retail Brokerage	Execution and full service

[18] Payment and settlement losses related to a bank's own activities would be incorporated in the loss experience of the affected business line.

Principles for business line mapping[19]

(a) All activities must be mapped into the eight level 1 business lines in a mutually exclusive and jointly exhaustive manner.

(b) Any banking or non-banking activity which cannot be readily mapped into the business line framework, but which represents an ancillary function to an activity included in the framework, must be allocated to the business line it supports. If more than one business line is supported through the ancillary activity, an objective mapping criteria must be used.

(c) When mapping gross income, if an activity cannot be mapped into a particular business line then the business line yielding the highest charge must be used. The same business line equally applies to any associated ancillary activity.

(d) Banks may use internal pricing methods to allocate gross income between business lines provided that total gross income for the bank (as would be recorded under the Basic Indicator Approach) still equals the sum of gross income for the eight business lines.

(e) The mapping of activities into business lines for operational risk capital purposes must be consistent with the definitions of business lines used for regulatory capital calculations in other risk categories, i.e. credit and market risk. Any deviations from this principle must be clearly motivated and documented.

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19 **Supplementary business line mapping guidance**

There are a variety of valid approaches that banks can use to map their activities to the eight business lines, provided the approach used meets the business line mapping principles. Nevertheless, the Committee is aware that some banks would welcome further guidance. The following is therefore an example of one possible approach that could be used by a bank to map its gross income:

Gross income for retail banking consists of net interest income on loans and advances to retail customers and SMEs treated as retail, plus fees related to traditional retail activities, net income from swaps and derivatives held to hedge the retail banking book, and income on purchased retail receivables. To calculate net interest income for retail banking, a bank takes the interest earned on its loans and advances to retail customers less the weighted average cost of funding of the loans (from whatever source ─ retail or other deposits).

Similarly, gross income for commercial banking consists of the net interest income on loans and advances to corporate (plus SMEs treated as corporate), interbank and sovereign customers and income on purchased corporate receivables, plus fees related to traditional commercial banking activities including commitments, guarantees, bills of exchange, net income (e.g. from coupons and dividends) on securities held in the banking book, and profits/losses on swaps and derivatives held to hedge the commercial banking book. Again, the calculation of net interest income is based on interest earned on loans and advances to corporate, interbank and sovereign customers less the weighted average cost of funding for these loans (from whatever source).

For trading and sales, gross income consists of profits/losses on instruments held for trading purposes (i.e. in the mark-to-market book), net of funding cost, plus fees from wholesale broking.

For the other five business lines, gross income consists primarily of the net fees/commissions earned in each of these businesses. Payment and settlement consists of fees to cover provision of payment/settlement facilities for wholesale counterparties. Asset management is management of assets on behalf of others.

(f) The mapping process used must be clearly documented. In particular, written business line definitions must be clear and detailed enough to allow third parties to replicate the business line mapping. Documentation must, among other things, clearly motivate any exceptions or overrides and be kept on record.

(g) Processes must be in place to define the mapping of any new activities or products.

(h) Senior management is responsible for the mapping policy.

(i) The mapping process to business lines must be subject to independent review.

OSFI Notes

1. Institutions should develop a business line mapping process consistent with these principles. The mapping process should be objective, verifiable and repeatable such that the overall operational risk capital would not change by a material amount based on misclassification of business line mapping.

2. When an institution undergoes internal management restructuring, the regulatory mapping would not have to be restated for prior periods if the institution can demonstrate that this type of restructuring would not result in material differences in the operational risk capital charge. When management restructuring occurs, this assessment should be documented by the institution and be made available to OSFI upon request.

8.6. Appendix 8-2 - Detailed Loss Event Type Classification

[BCBS June 2006 Annex 9]

Detailed Loss Event Type Classification

Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)
Internal fraud	Losses due to acts of a type intended to defraud, misappropriate property or circumvent regulations, the law or company policy, excluding diversity/ discrimination events, which involves at least one internal party	Unauthorised Activity	Transactions not reported (intentional) Transaction type unauthorised (w/monetary loss) Mismarking of position (intentional)
		Theft and Fraud	Fraud / credit fraud / worthless deposits Theft / extortion / embezzlement / robbery Misappropriation of assets Malicious destruction of assets Forgery Check kiting Smuggling Account take-over / impersonation / etc. Tax non-compliance / evasion (wilful) Bribes / kickbacks Insider trading (not on firm's account)
External fraud	Losses due to acts of a type intended to defraud, misappropriate property or circumvent the law, by a third party	Theft and Fraud	Theft/Robbery Forgery Check kiting
		Systems Security	Hacking damage Theft of information (w/monetary loss)
Employment Practices and Workplace Safety	Losses arising from acts inconsistent with employment, health or safety laws or agreements, from payment of personal injury claims, or from diversity / discrimination events	Employee Relations	Compensation, benefit, termination issues Organised labour activity
		Safe Environment	General liability (slip and fall, etc.) Employee health & safety rules events Workers compensation
		Diversity & Discrimination	All discrimination types

Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)
Clients, Products & Business Practices	Losses arising from an unintentional or negligent failure to meet a professional obligation to specific clients (including fiduciary and suitability requirements), or from the nature or design of a product.	Suitability, Disclosure & Fiduciary	Fiduciary breaches / guideline violations Suitability / disclosure issues (KYC, etc.) Retail customer disclosure violations Breach of privacy Aggressive sales Account churning Misuse of confidential information Lender liability
		Improper Business or Market Practices	Antitrust Improper trade / market practices Market manipulation Insider trading (on firm's account) Unlicensed activity Money laundering
		Product Flaws	Product defects (unauthorised, etc.) Model errors
		Selection, Sponsorship & Exposure	Failure to investigate client per guidelines Exceeding client exposure limits
		Advisory Activities	Disputes over performance of advisory activities
Damage to Physical Assets	Losses arising from loss or damage to physical assets from natural disaster or other events.	Disasters and other events	Natural disaster losses Human losses from external sources (terrorism, vandalism)
Business disruption and system failures	Losses arising from disruption of business or system failures	Systems	Hardware Software Telecommunications Utility outage / disruptions
Execution, Delivery & Process Management	Losses from failed transaction processing or process management, from relations with trade counterparties and vendors	Transaction Capture, Execution & Maintenance	Miscommunication Data entry, maintenance or loading error Missed deadline or responsibility Model / system misoperation Accounting error / entity attribution error Other task misperformance Delivery failure Collateral management failure Reference Data Maintenance
		Monitoring and Reporting	Failed mandatory reporting obligation Inaccurate external report (loss incurred)
		Customer Intake and Documentation	Client permissions / disclaimers missing Legal documents missing / incomplete

Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)
		Customer / Client Account Management	Unapproved access given to accounts Incorrect client records (loss incurred) Negligent loss or damage of client assets
		Trade Counterparties	Non-client counterparty misperformance Misc. non-client counterparty disputes
		Vendors & Suppliers	Outsourcing Vendor disputes