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Explanation of Methods for Calculating the Equity Capital and Risk-Weighted Assets of Banks

Calculation of Operational Risk

Operational risk is defined as the risk of loss to a bank resulting from inadequate or failed internal processes, people, and systems of a bank, or from external events, including legal risk, but excluding strategic and reputational risk, for which a capital charge must be imposed.

There are three methods for measuring the capital required for the operational risk of a bank: the Basic Indicator Approach (BIA), Standardised Approach (SA) or Alternative Standardised Approach (ASA), and Advanced Measurement Approaches (AMA).

Without permission from the Financial Supervisory Commission (FSC), a bank will not be allowed to choose to revert to a simpler approach once it has adopted a more advanced approach. However, if the FSC 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 FSC for returning to a more advanced approach.

1. The Basic Indicator Approach

(1) Calculation method

In the Basic Indicator Approach, a single indicator is used to calculate the capital charge 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 (see 5. Calculation Tables 【Table 5-A】).

The calculation method for the Basic Indicator Approach is as follows:

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

[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%

If negative gross income distorts a bank's Pillar 1 capital charge, the FSC will consider appropriate supervisory action under Pillar 2.

(2) Calculation of gross income

Gross income is defined as: net interest income plus net non-interest income.

This measure:

1. is gross of any provisions

2. is gross of operating expenses, including fees paid to outsourcing service providers; 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.

3. excludes realized profits/losses from the sale of securities in the banking book; i.e. realized profits/losses from securities classified as "held to maturity" and "available for sale", which typically constitute items of the banking book.

4. excludes extraordinary or irregular items as well as income derived from insurance (see 4. Annex, Table 1, for the itemized accounting items that should be included).

2. The Standardised Approach and Alternative Standardised Approach

(1) Qualifying criteria

1. Qualifying criteria for the Standardised Approach

- A bank shall obtain approval in advance from the FSC to use the Standardised Approach; the minimum criteria for the approval are as follows:

  (1) The bank's board of directors and senior management are actively involved in the oversight of the operational risk management framework.

  (2) The bank has an operational risk management system that is conceptually sound and is implemented with integrity.

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

- The bank must develop specific policies and have documented criteria for

mapping the gross income for current business lines and activities into the business lines set out in the Standardised Approach. The aforementioned criteria must be reviewed and adjusted for new or changing business activities as appropriate. The principles for business line mapping are set out in detail in 4. Annex, Table 2.

- Before the bank adopts this method for purposes of calculating regulatory capital, the FSC has the right to insist on a period of initial monitoring of the bank.
- When the bank adopts the Standardised Approach, it must also comply with the following qualifying criteria:
  (1) 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 bank-wide policies and procedures concerning operational risk management and controls; for the design and implementation of the bank's operational risk assessment methodology; and for the design and implementation of the bank's operational risk reporting system.
  (2) 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, and its operational risk assessment system must be closely integrated into the risk management processes of the bank. Operational risk assessment output must be an integral part of the process of monitoring and controlling the bank's operational risk profile. For instance, this operational risk assessment 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 bank.

(3) There must be regular reporting of operational risk exposures, including material operational losses, to the board of directors, senior management, and business unit management. 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 noncompliance issues.

(5) 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 the operational risk management function.

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

2. Qualifying criteria for the Alternative Standardised Approach

In addition to meeting the aforementioned qualifying criteria for the Standardised Approach, a bank must prove to the FSC that its use of the Alternative Standardised Approach provides an improved basis by, for example, avoiding double counting of risks. Once a bank has been allowed to use the Alternative Standardised Approach, it will not be allowed to revert to use of the Standardised Approach without the permission of the FSC.

(2) The Standardised Approach calculation method

In the Standardised Approach, a bank's activities are divided into eight major business lines, and the operational risk capital for each business line is calculated by multiplying gross income by a factor (denoted Beta, β) assigned to that business line. The total capital charge for operational risk is calculated as the summation of

the capital charges across the individual business lines. The eight business lines are: 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 4. Annex, Table 2).

Table 1 Bank Business Lines and Their Beta Factors Under the Standardised Approach

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

Gross income is an indicator for operational risk within each business line, and each business line is assigned a separate risk factor. 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); 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 (see 5. Calculation Tables 【Table 5-B】).

The Standardised Approach calculation method is as follows:

$K_{SA} = \{\Sigma_{\text{years 1-3}} \max〔\Sigma (GI_{1-8} \times \beta_{1-8}), 0〕\} /3$

where:

K_{SA} = the capital charge under the Standardised Approach

GI_{1-8} = annual gross income in a given year (as defined in the Basic Indicator Approach) for each of the eight business lines

β_{1-8} = risk factor for each of the business lines

As under the Basic Indicator Approach, if negative gross income distorts a bank's Pillar 1 capital charge under the Standardised Approach, the FSC may consider appropriate supervisory action under Pillar 2.

(3) The Alternative Standardised Approach calculation method

The main difference between the Alternative Standardised Approach (ASA) and the Standardised Approach is that under the ASA, in the operational risk capital charge/methodology for the "retail banking" and "commercial banking" business lines, the balance of loans outstanding, multiplied by a fixed factor 'm' (set by the Basel Committee on Banking Supervision with reference to the deposit-loan interest rate spread of the 10 major industrialized nations), replaces gross income as the exposure indicator. The betas for retail and commercial banking are the same as the Standardised Approach. For the other business lines, gross income remains the indicator (see 5. Calculation Tables【Table 5-C】).

Taking retail banking business for example, the ASA operational risk capital charge can be expressed as:

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

where:

K_{RB} = the capital charge for the retail banking business line

β_{RB} = the beta for the retail banking business line

LA_{RB} = the outstanding retail loans averaged over the past three years (non-risk weighted and gross of provisions)

$m = 0.035$

When using the ASA, loans in the retail banking business line include: general loans to individuals, small and medium-sized entity (SME) loans treated as retail, and purchased retail receivables. For commercial banking, loans include: corporate, sovereign, bank, specialized lending, SMEs treated as corporate, and purchased corporate receivables. The book value of securities held in the banking book is also

included.

Under the ASA, banks may aggregate retail and commercial banking loans using a risk factor (beta) of 15% (see 5. Calculation Tables【5-D】). Similarly, 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 risk factor (beta) of 18% (see 5. Calculation Tables【5-E】). If gross income is negative, in any given year, negative capital charges 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. As under the Standardised Approach, the total capital charge for the ASA is calculated as the summation of the capital charges across each of the eight business lines.

3. Advanced Measurement Approaches

A bank meeting the requirements and standards described in this section may employ the Advanced Measurement Approaches (AMA) by using its internal operational risk measurement system to calculate the regulatory capital required for its operational risk. The bank must calculate its capital adequacy by both the AMA and the original calculation method for one year prior to its formal adoption of the AMA.

(1) Implementation of initial-stage capital floor provisions

During the initial period of implementation of the bank's AMA to measure its operational risk, it must comply with the following capital floor provisions:

1. The "capital floor" is derived by: applying an adjustment factor to the balance of the following calculations:

   a. 8% of the total risk-weighted assets calculated by using the method that is appropriate under the capital adequacy ratio calculation provisions before adopting the AMA,

   b. plus Tier 1 and Tier 2 deductions, and

   c. less the amount of operating reserve and allowance for bad debt that may be recognized in Tier 2 under the Regulations Governing the Capital Adequacy Ratio of Banks.

2. The adjustment factors for some certain years are as follows:

   The adjustment factor for the first year of implementation is 90%; the adjustment factor for the second year is 80%.

3. If the capital floor is higher than the balance derived from the following calculations, the bank must add 12.5 times the difference to the risk-weighted assets:

a. 8% of the total risk-weighted assets calculated by using the method that is appropriate under the capital adequacy ratio calculation provisions after adopting the AMA,

b. plus Tier 1 and Tier 2 deductions, and

c. less the amount of operating reserve and allowance for bad debt that may be recognized in Tier 2 under the Regulations Governing the Capital Adequacy Ratio of Banks.

(2) Basic requirements of the management framework

Prior to adopting the AMA, an approval from the FSC is required. In terms of the management framework, the basic requirements for the approval are as follows:

1. The bank's board of directors and senior management are actively involved in the oversight of the operational risk management framework.

2. The bank has an operational risk management system that is conceptually sound and is implemented with integrity.

3. The bank has sufficient resources in the use of the approach in the major business lines as well as the control and audit areas.

Before a bank can use the AMA to calculate its regulatory capital, the FSC is entitled to subject it to a period of initial monitoring. This period is mainly to allow the FSC to determine whether the approach is credible and appropriate. A bank’s internal measurement system must be capable of reasonably estimating 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 be capable of supporting an allocation of economic capital to meet operational risk exposure across business lines while creating incentives to improve operational risk management.

(3) Qualitative standards

To use an AMA for operational risk capital, a bank must meet the following qualitative standards:

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 bank-wide policies and procedures concerning operational risk management and controls; for the design and implementation of the bank'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 assessment system must be 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, and risk analysis, and the bank must use it as a basis for creating incentives to improve the management of operational risk.

3. There must be regular reporting of operational risk exposures and loss experience to the board of directors, senior management, and business unit management. 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 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 noncompliance issues.

5. The operational risk management processes and measurement systems must undergo regular reviews by internal and external auditors. These reviews must include both the activities of the business units and of the operational risk management function.

6. The validation of the operational risk measurement system by external auditors and the FSC includes the following:

   - Verifying that the internal validation processes are operating in a satisfactory manner.
   - Making sure that data flows and processes associated with the risk measurement system are transparent and accessible. In particular, it is necessary that when the auditors and the FSC audit the system, they have easy access to the system's specifications and parameters.

(4) Quantitative standards

To use an AMA, a bank must meet the following quantitative standards:

1. AMA soundness standard

With respect to the specific approach and distributional assumptions required to generate the operational risk measure and calculate regulatory capital, a bank must demonstrate that its approach captures potentially severe 'tail' loss events in probability distribution. 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 (IRB) approach for credit risk, (e.g., for precise measurement of risk, comparable to the possible losses over a one-year holding period with a 99.9th percentile confidence interval).

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 adopt and maintain rigorous procedures for operational risk model development and independent model validation.

2. Detailed criteria

The quantitative standards listed below apply to the calculation of the minimum regulatory capital for operational risk:

- Any internal operational risk measurement system must be consistent with the operational risk definition and the loss event types (see 4. Annex, Table 3).
- The FSC 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 accurately calculating EL in its current 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 the FSC that it has measured and accounted for its EL exposure.
- A bank's risk measurement system must be sufficiently comprehensive to capture the major drivers of operational risk affecting the shape of the tail of the loss estimates.
- Regulatory capital requirements for different operational risk estimates must be added for purposes of calculating the regulatory minimum capital requirement. However, the FSC may permit the bank to use internally determined correlations in calculating operational risk losses across individual operational risk estimates, provided it can demonstrate that its systems for determining correlations are sound, implemented with integrity, take into account the uncertainty surrounding any such correlation estimates (particularly in periods of stress), and meet the requirements of the FSC. The bank must validate its correlation assumptions using appropriate quantitative and qualitative techniques.

- Any operational risk measurement system must have certain key features to meet the soundness standard of the FSC. These elements include the use of internal data, relevant external data, scenario analysis and factors reflecting the business environment and internal control systems.
- A bank needs to have a credible, transparent, well-documented and verifiable process 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 an insufficient 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 utilizing the four fundamental elements should be internally consistent and avoid the double counting of qualitative assessments or risk mitigants.

(5) Loss database

1. Internal data

Internally generated operational risk measures used by banks for purposes of calculating regulatory capital 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. A bank must establish documented procedures for on-going monitoring and assessing the relevance of internal data. When the bank first moves to the AMA, a three-year historical data window is acceptable. To qualify for regulatory capital purposes, a bank's internal loss data collection processes must meet the following standards:

- To assist in validation by the FSC, a bank must map its historical internal loss data into the relevant level 1 categories based on the business line and loss type classification principles set out by the FSC, and provide these data to the FSC upon request. It must have documented, objective criteria for allocating losses to the specified business lines and event types.
- A bank's internal loss data must cover all material business activities and all exposures from sub-systems and geographic locations. A bank must be able to prove that any excluded business 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 loss threshold for internal loss

data collection, and the thresholds should be broadly consistent with those used by peer banks with similar business activities and sizes.

- Aside from information on gross loss amounts, a bank shall collect information about the date of the event, any recoveries of gross loss amounts, and some descriptive information about the drivers or causes of the loss event. The level of detail of any descriptive information shall be commensurate with the size of the gross loss amount. The following operational risk loss information is required to be collected:
  (1) Name and description of the event.
  (2) Unit in which the event occurred (as reported and in the resulting accounting treatment)
  (3) Unit with responsibility for the event.
  (4) Geographic location of the event.
  (5) Type of the event (of seven broad types).
  (6) Business lines affected by the event.
  (7) Date of occurrence of the event.
  (8) Date of discovery of the event.
  (9) Date of conclusion of the event.
  (10) Follow-up plan.
  (11) Amount of loss.
  (12) Content of loss (e.g., litigation costs)
  (13) Amount of loss recovered.
  (14) Method of loss recovery (e.g., insurance)
  (15) Insurance content.
- A bank shall adopt specific criteria for assigning loss arising from an event in a centralized control department (e.g. an information technology department) or an activity that spans more than one business line, as well as from events occurring over a time span.
- 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 be treated as credit risk for the purposes of calculating minimum regulatory capital, and will not be subject to the operational risk capital charge. Nevertheless, for the purposes of internal operational risk management, banks must identify all material operational risk losses, including such losses related to credit risk. Such material [operational risk-related credit risk] losses must be

flagged within the internal operational risk database. The materiality of these losses may vary between banks, and within a bank across business lines and/or event types. Loss 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 when calculating regulatory capital.

2. External data

A bank's operational risk measurement system must use relevant external data (either public data 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 shall include data on actual loss amounts, information on the scale of business operations where the event occurred, information on the causes and extent of effect 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.

(6) Business environment and internal control factors

In addition to using actual loss data or scenario-based loss data, a bank's bank-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 requirement 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 in practice and soliciting opinions of experts with respect to the affected business areas. Whenever possible, the factors should be translatable into measurable quantitative indicators to proceed with validation.
- To improve the sensitivity of a bank's risk estimates, possible changes in 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.
- A bank's risk measurement framework and each instance of its application, including the

rationale for any adjustments to empirical estimates, must be documented and subject to independent review within the bank and by the FSC.

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

(7) Scenario analysis

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 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. Such assessments need to be compared to actual loss experience and validated and re-assessed on an ongoing basis to ensure their reasonableness.

(8) Risk mitigation

1. 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 to reduce the regulatory capital charge. The total amount of mitigation will be limited to 20% of the total operational risk capital charge.
2. A bank's ability to take advantage of insurance risk mitigation will depend on whether the insurance complies with the following criteria:
    - The insurance provider has a minimum claims paying ability rating of A.
    - To qualify for risk mitigation, 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, when calculating risk mitigation effect, the bank must make appropriate haircuts reflecting the residual term of the policy. A full 100% haircut must be applied to policies with a residual term of 90 days or less.
    - The insurance policy shall have a minimum notice period for cancellation of 90 days.
    - The insurance policy cannot have any exclusions or limitations triggered by supervisory actions. If the policy already excludes any losses from fines or penalties resulting from supervisory actions, such exclusion shall not preclude the bank, receiver, or liquidator from recovering for loss events occurring before the initiation of receivership or liquidation proceedings.
    - The risk mitigation calculations must reflect the bank's insurance coverage, and be clear in its relationship to, and consistent with, the actual likelihood and

impact of loss used in the bank's determination of its operational risk capital.

- The insurance is provided by a third party. In the case of insurance provided other than by a third party, this exposure must be further laid off to an independent third-party entity, for example through re-insurance to meet requirements.
- The overall framework for operational risk mitigation through insurance must be reasonable, clear, and documented.
- The bank must disclose a description of the substance of its insurance use for the purpose of mitigating operational risk.

3. A bank using an AMA to measure operational risk also must capture the following information in calculating the extent of recognition of insurance mitigation:

- The residual term of a policy; where less than one year, shall be treated in accordance with the principals set out above.
- A policy's cancellation terms, where less than one year.
- The uncertainty of payment as well as mismatches in coverage of insurance policies.

(9) Principles for the selection (partial or combined use) of measurement approaches

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

- All of the bank's operational risks are captured;
- All of the bank's operations that are covered by the AMA meet the qualitative criteria for using an AMA, while those of its operations that are using one of the simpler approaches meet the qualifying criteria for that approach;
- When a bank begins to implement an AMA, the major part of its operational risks are captured by the AMA; and
- The bank provides the FSC 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.

2. Subject to the approval of the FSC, 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 internal factors.
3. Subject to the approval of the FSC, where a bank implements an AMA other than on a global, consolidated basis and it does not meet the third and/or fourth conditions in

point 1 above, after approval by the FSC, the bank may, in special 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 supervisor in the host country and is acceptable to the bank's home Competent Authority.

4. Approvals of the nature described in point 3 must 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.

4. Annex

Operational Risk Table 1　Calculation of Gross Income

Definition of gross income	GI notation[1]	Items	Remarks
Net interest income	+	Interest income	
	—	Interest expense	
Net non-interest income	+	Net income from fees	
	+	Profits/losses on financial assets and liabilities held for trading purposes	
	+	Investment profits/losses recognized under the equity method	Profit/loss from sale is excluded
	+	Foreign exchange profits/losses	
	+	Other net non-interest profits/losses	
		Realized profits/losses from sale of available-for-sale financial assets	Excluded
		Realized profits/losses from sale of held-to-maturity financial assets	Excluded

Definition of gross income: net interest income plus net non-interest income.

This measure: (i) is gross of any provisions.

(ii) is gross of operating expenses, including fees paid to outsourcing service providers; 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.

(iii) excludes realized profits/losses from the sale of securities in the banking book; i.e. realized profits/losses from securities classified as "held to maturity" and "available for sale," which typically constitute items of the banking book, are excluded from the definition of gross income.

(iv) excludes extraordinary or irregular items as well as income derived from insurance.

[1] GI notation: "+" indicates an addition to gross income, "—" indicates a deduction from gross income.

Operational Risk Table 2 Definitions of Business Lines Under the Standardised Approach

Business unit	Business line		Activities
	Level 1	Level 2	
Investment Finance	Corporate Financial Planning And Financing	Corporate Finance	Mergers and acquisitions, underwriting, privatizations, securitization, research, debt (government, high yield), equity securities, syndications, IPOs, secondary private placements
		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	
General Finance	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 & Settlement	External Client	Payments and collections, funds transfer, clearing and settlement
	Agency Services	Custody	Escrow, depository receipts, securities lending custody, corporate actions, custodian bank subsidiary business
		Corporate Agency	Issuer and paying agents
		Corporate Trust	
Other	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

Principles for business line mapping:

(A) All activities must be mapped into the eight level 1 business lines.

(B) Any activity which cannot be clearly mapped into the eight business lines must be allocated to the business line to which it is ancillary and which it supports.

(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.

(D) Banks may use internal pricing methods to allocate gross income between the eight 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 business lines.

(E) The definitions used in the mapping of activities into business lines for operational risk capital charge purposes must be consistent with the treatment of market risk and credit risk.

(F) The mapping process used must be documented in detail, and documentation must be kept on record appropriately to allow third parties to replicate the business line mapping.

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

(H) Senior management is responsible for formulating and executing the mapping policy, which is subject to the approval by the board of directors.

(I) The mapping process must be subject to independent review by a unit other than the executing unit.

Illustrations for mapping gross income into the eight business lines:

(A) Gross income mapped into retail banking includes:

(1) Net interest income on loans to retail customers or financing to SMEs treated as retail banking【(interest income) - (weighted average funding cost for retail banking credit extension business)】.

(2) Service fee income from retail banking business.

(3) Net income from swaps and derivatives held to hedge the retail banking book.

(4) Income on purchased retail receivables in the retail banking line.

(B) Gross income mapped into commercial banking includes:

(1) Net interest income on loans to corporate, interbank, and government clients and financing to SMEs treated as commercial banking 【(Interest income) - (weighted average funding cost for commercial banking credit extension business)】.

(2) Income on purchased corporate receivables in the commercial banking line.

(3) Service fee income from commercial banking activities, e.g. from commitments, guarantees, remittance and currency exchange.

(4) Net income (e.g. from coupons or dividends) on securities held in the banking book.

(5) Profits/losses on swaps and derivatives held to hedge the commercial banking book. The calculation of net interest income is based on interest earned on loans to corporate, interbank and government clients less the weighted average cost of

funding for these loans.

(C) Gross income mapped into trading and sales includes: net income (net revenue − average cost of funding) on financial instruments held for trading purposes, plus fees from wholesale broking.

(D) Gross income mapped into the other business lines (such as corporate finance, agency services, and retail brokerage) includes the net fees or commissions earned in each of these businesses.

(E) Gross income mapped into the payment and settlement business line includes: fees to cover provision of payment/settlement facilities for other commercial entities.

(F) Asset management is management of assets on behalf of customers under their mandate.

Operational Risk Table 3 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 company property, or circumvent the law, regulations, or company policy, (excluding diversity/discrimination events), which involves at least one internal party	Unauthorized Activity	Transactions intentionally not reported, Monetary loss due to unauthorized transaction type, Intentional mismarking of position
		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/fictitious trading, Tax non-compliance/willful tax evasion, Bribes/kickbacks, Insider trading (not on firm's account)
External Fraud	Losses due to acts of a type intended to defraud, misappropriate company property, or circumvent the law or regulations, by a third party	Theft and Fraud	Theft/robbery, Forgery, Check kiting
		Systems Security	Hacking attack, Monetary loss due to theft of information
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, Organized labor activity
		Safe Environment	General liability, Employee health and 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, Retail customer disclosure violations, Breach of privacy, Aggressive sales, Account churning, Misuse of confidential information, Lender liability
		Improper Business or Market Practices	Antitrust, Improper operations/market practices, Market manipulation, Insider trading (on firm's account), Unlicensed activity, Money laundering
		Product Flaws	Product defects, Model errors
		Selection, Sponsorship, and Exposure	Failure to investigate client per guidelines, Exceeding client exposure limits
		Advisory Services	Disputes over performance of advisory activities
Damage to physical assets	Loss 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	Information 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, and 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

Event-Type Category (Level 1)	Definition	Categories (Level 2)	Activity Examples (Level 3)
		Monitoring and reporting	Failed mandatory reporting obligation, Loss incurred by inaccurate external report.
		Customer intake and documentation	Client permissions/disclaimers missing, Legal documents missing/incomplete
		Customer/Client Account management	Unapproved access given to data, Loss incurred by incorrect client data, Negligent loss or damage of client assets
		Trade Counterparties	Non-client counterparty misperformance, Miscellaneous non-client counterparty disputes
		Vendors & Suppliers	Outsourcing, Vendor disputes

Notes:

1. Loss or damage to physical assets: Natural disasters (earthquakes, typhoons, hurricanes, storm winds, floods, etc.) occurring within 72 hours, unless occurring in different places or not occurring simultaneously, shall be deemed individual incidents when classifying loss types.
2. Business disruption and system failures: Single event or a sequence of events resulting from the same cause (e.g., machinery failures occurring in the same parts, errors occurring in a particular program) shall be deemed an individual event when classifying loss types.

5. Calculation Tables

【Table 5－A】 _____Bank

Calculation of the Capital Charge for Operational Risk (Basic Indicator Approach)

Date: In Thousands of New Taiwan Dollars

Items		FY	FY
Interest income (1)			
Interest expense (2)			
Net interest income (3) = (1) - (2)			
Net income from fees (4)			
Profit/loss on financial assets and liabilities held for trading purposes (5)			
Investment profit/loss recognized under the equity method (excluding profit/loss on disposal of investment) (6)			
Foreign exchange profits/losses (7)			
Other net non-interest profits/losses (8)			
Net non-interest income[1] (9) = (4) + (5) + (6) + (7) + (8)			
Total gross income for each year[2] (10) = (3) + (9)	(A)	(B)	(C)[3]
Required capital charge for operational risk[4]【Table 1-C, (2) 】 (11) ＝【[(A) ＋ (B) ＋ (C)] ×15%】／n			

Note: Gross income equals net interest income plus net non-interest income. This measure: (i) is gross of any provisions; (ii) is gross of operating expenses, including fees paid to outsourcing service providers; 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; (iii) excludes realized profits/losses from the sale of securities in the banking book, i.e. realized profits (or losses) from securities classified as "held to maturity" and "available for sale," which typically constitute items of the banking book; (iv) excludes extraordinary or irregular items as well as income derived from insurance.

註解 [U1]:

[1] Realized profits/losses from financial assets "available for sale" and "held to maturity" are excluded from Net non-interest income.

[2] Please fill in【Table 5-A1】when calculating the gross income for FY2004 and FY2005.

[3] When calculating the interim capital adequacy ratio, the standard for determination of gross income shall in principal be the average of the gross income for the preceding three years, however , a bank also may voluntarily raise the gross income for purposes of calculating the capital charge.

[4] If any of (A), (B), or (C) is negative or zero, it shall be excluded when calculating (11); n = number of (A), (B), (C) with a positive value.

【Table 5－A1】

Bank

Calculation of the Capital Charge for Operational Risk (Basic Indicator Approach) – FY 2004 and FY 2005

Date: In Thousands of New Taiwan Dollars

Operating Revenue	FY	FY	FY	Operating Costs	FY	FY	FY
Interest income				Interest expense			
Fee income				Fee expense			
Gains on sale of securities held for operations				Loss on sale of securities held for operations			
Gains on market price recovery of short-term investment				Unrealized valuation losses on short-term investments			
Securities broking and underwriting revenue				Securities broking and underwriting expense			
Gains on trading bills and bonds (excluding those in the banking book)				Loss from trading bills and bonds (excluding those in the banking book)			
Gains on long-term equity investments (excluding profit on disposal of investments)				Loss on long-term equity investments (excluding loss on disposal of investments)			
Gains on real estate investments				Loss on real estate investments			
Foreign exchange gains				Foreign exchange loss			
Gains on derivatives				Cash transferring expense			
Rent income from operating assets				Loss on derivatives			
Other operating revenue				Rent expense from operating assets			
				Other operating expenses			
Total operating revenue	(1)	(2)	(3)[1]	Total operating cost	(4)	(5)	(6)
Total gross income for each year (annual operating revenue － annual operating cost)	(7)＝(1)－(4)	(8)＝(2)－(5)	(9)＝(3)－(6)				
Required capital charge for operational risk[2] (10) ＝【[(7) ＋ (8) ＋ (9)] ×15%】／n	(10)						

[1] When calculating the interim capital adequacy ratio, the standard for determination of gross income shall in principal be the average of the gross income for the preceding three years, however, a bank also may voluntarily raise the gross income for purposes of calculating the capital charge.

[2] If any of (7), (8), or (9) is negative or zero, it shall be excluded when calculating (10); n = number of (7), (8), (9) with a positive value.

【Table 5－B】

_____Bank

Calculation of the Capital Charge for Operational Risk (Standardised Approach)

Date: In Thousands of New Taiwan Dollars

Eight lines of business[1]	FY		FY		FY[2]		Risk factor (β)
	Gross income (1)	Capital charge[3] (1) ×β	Gross income (2)	Capital charge (2) ×β	Gross income (3)	Capital charge (3) ×β	
Corporate finance							18%
Trading & sales							18%
Retail banking							12%
Commercial banking							15%
Payment & settlement							18%
Agency services							15%
Asset management							12%
Retail brokerage							12%
Aggregate capital charge for each year		(4)		(5)		(6)	
Required capital charge for operational risk[4] (7) =[(4) ＋ (5) ＋ (6)]／3	(7) 【Table 1-C, (2) 】						

【Table 5－C】

[1] The principles for business line mapping set out under Annex 4, Table 2 should be followed.

[2] When calculating the interim capital adequacy ratio, the standard for determination of gross income shall in principal be the average of the gross income for the preceding three years, however, a bank also may voluntarily raise the gross income for purposes of calculating the capital charge.

[3] Capital charge ＝ annual gross income for each business line × the risk factor (β) assigned to that business line.

[4] Where the aggregate capital charge across all business lines within a given year (4), (5) or (6) is negative, then the input to the numerator for (7) for that year will be zero.

_____Bank

Calculation of the Capital Charge for Operational Risk (Alternative Standardised Approach [1])

Date: In Thousands of New Taiwan Dollars

Eight lines of business[1]	FY			FY			FY[2]			Risk factor (β)
	Outstanding loans	M	Charge	Outstanding loans	M	Charge	Outstanding loans	M	Charge	
Retail banking	(1)	0.035	(2)[3]		0.035			0.035		12%
Commercial banking	(3)	0.035	(4)[4]		0.035			0.035		15%
	Gross income	Capital Charge		Gross income	Capital Charge		Gross income	Capital Charge		
Corporate finance	(5)	(6)[5]								18%
Trading & sales		(7)								18%
Payment & settlement		(8)								18%
Agency services		(9)								15%
Asset management		(10)								12%
Retail brokerage		(11)								12%
Capital charge		(12)[6]			(13)			(14)		
Required capital charge for operational risk[7] 【Table 1-C, (2) 】	(15) =[(12) + (13) + (14)]／3									

【Table 5－D】

[1] The principles for business line mapping set out under Annex 4, Table 2 should be followed.

[2] When calculating the interim capital adequacy ratio, the standard for determination of gross income shall in principal be the average of the gross income for the preceding three years, however, a bank also may voluntarily raise the gross income for purposes of calculating the capital charge.

[3] (2) ＝ (1) × 0.035 × 12%.

[4] (4) ＝ (3) × 0.035 × 15%.

[5] (6) ＝ (5) × 18% (and so forth for each of the business lines below).

[6] (12) ＝ (2)＋(4)＋(6)＋(7)＋(8)＋(9)＋(10)＋(11)

[7] Where the aggregate capital charge across all business lines within a given year (12), (13) or (14) is negative, then the input to the numerator for that year will be zero.

_____Bank

Calculation of the Capital Charge for Operational Risk (Alternative Standardised Approach [2])

Date: In Thousands of New Taiwan Dollars

Eight lines of business[1]	FY			FY			FY[2]			Risk factor (β)
	Outstanding loans	M	Charge	Outstanding loans	M	Charge	Outstanding loans	M	Charge	
Retail banking Commercial banking	(1)	0.035	(2)[3]		0.035			0.035		15%
	Gross income	Capital Charge		Gross income	Capital Charge		Gross income	Capital Charge		
Corporate finance	(3)	(4)[4]								18%
Trading & sales		(5)								18%
Payment & settlement		(6)								18%
Agency services		(7)								15%
Asset management		(8)								12%
Retail brokerage		(9)								12%
Aggregate capital charge for each year		(10)[5]			(11)			(12)		
Required capital charge for operational risk[6] 【Table 1-C, (2) 】	(13) =[(10) + (11) + (12)]／3									

【Table 5－E】

[1] The principles for business line mapping set out under Annex 4, Table 2 should be followed.

[2] When calculating the interim capital adequacy ratio, the standard for determination of gross income shall in principal be the average of the gross income for the preceding three years, however, a bank also may voluntarily raise the gross income for purposes of calculating the capital charge.

[3] (2) ＝ (1) × 0.035 × 15%.

[4] (4) ＝ (3) × 18% (and so forth for each of the business lines below).

[5] (10)＝(2)＋(4)＋(5)＋(6)＋(7)＋(8)＋(9)

[6] Where the aggregate capital charge across all business lines within a given year (10), (11) or (12) is negative, then the input to the numerator for that year will be zero.

_____Bank

Calculation of the Capital Charge for Operational Risk (Alternative Standardised Approach [3])

Date: In Thousands of New Taiwan Dollars

Eight lines of business[1]	FY			FY			FY[2]			Risk factor (β)
	Outstanding loans	M	Charge	Outstanding loans	M	Charge	Outstanding loans	M	Charge	
Retail banking	(1)	0.035	(2)[3]		0.035			0.035		15%
Commercial banking										
	Gross income	Capital Charge		Gross income	Capital Charge		Gross income	Capital Charge		
Corporate finance	(3)	(4)[4]								18%
Trading & sales										
Payment & settlement										
Agency services										
Asset management										
Retail brokerage										
Aggregate capital charge for each year		(5)[5]			(6)			(7)		
Required capital charge for operational risk[6] 【Table 1-C, (2) 】	(8) =[(5) + (6) + (7)]／3									

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[1] The principles for business line mapping set out under Annex 4, Table 2 should be followed.

[2] When calculating the interim capital adequacy ratio, the standard for determination of gross income shall in principal be the average of the gross income for the preceding three years, however, a bank also may voluntarily raise the gross income for purposes of calculating the capital charge.

[3] (2) ＝ (1) × 0.035 × 15%。

[4] (4) ＝ (3) × 18%。

[5] (5) ＝ (2) ＋ (4)

[6] Where the aggregate capital charge across all business lines within a given year (5), (6) or (7) is negative, then the input to the numerator for that year will be zero.