澳門金融管理局
AUTORIDADE MONETÁRIA DE MACAU

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GUIDELINE ON SUPERVISORY REVIEW PROCESS

The Monetary Authority of Macao (AMCM), under the powers conferred by Article 9 of the Charter approved by Decree-Law No.14/96/M of 11th March and by Article 6 of the Financial System Act of Macao (FSAM) approved by Decree-Law No.32/93/M of 5th July, establishes the following:

INTRODUCTION

1. The Pillar 2 Supervisory Review Process (SRP) is an integral and important part of the Basel II Regulatory Capital Framework (Basel II). It is intended not only to ensure that banks should have adequate capital to support all the risks in their business, but also to encourage banks to develop and use better risk management techniques in monitoring and managing their risks.

2. The SRP comprises two main components, the Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP).

   (a) Under the ICAAP, the management of a bank should develop its own ICAAP and set capital targets that are commensurate with the bank's risk profile and control environment. The management of a bank bears the responsibility for ensuring that the bank has adequate capital to support its risks beyond the regulatory capital requirement.

   (b) Under the SREP, the AMCM will review and evaluate how well a bank assess its capital needs relative to its risks and take measures, where appropriate. It is intended to generate an active dialogue between a bank and the AMCM so that when excessive risks, insufficient capital or deficiencies are identified, prompt and decisive actions can be taken to reduce risks, address deficiencies or restore capital.

Purpose

3. The purpose of this Guideline[1] is to describe the specific elements that the AMCM requires a bank's ICAAP to encompass. It also provides a transparent and informative description of the methodology and the supervisory procedures that the AMCM will adopt for capital assessment of banks, and that will be integrated into a risk-based supervision framework.

[1] The guideline should be read in conjunction with other guidelines issued by the AMCM that are relevant to the assessment of a bank's risks and capital adequacy.

4. This Guideline follows a principle-based approach with a focus on selected key aspects from a supervisory perspective. The implementation of an ICAAP that is adequate for a bank's particular circumstances remains the responsibility of the bank. The AMCM assesses a bank's ICAAP on a case-by-case basis.

Scope of Application

5. The requirements set out in this Guideline fully apply to all banks incorporated in Macao on both a solo and a consolidated basis.

6. The requirements of the ICAAP are not applicable to branches of overseas incorporated banks in Macao, but the AMCM may refer to the home supervisor's consolidated assessment of the ICAAP of the head office when necessary. The AMCM will also take into account the strength and availability of the support from the head office.

Structure of the Guideline

7. There are three sections in this Guideline:

Section I sets out the principles and arrangements of the SRP;
Section II describes the general requirements and elements that should be included in the ICAAP; and
Section III defines the principles and methodologies of the SREP.

SECTION I – PRINCIPLES AND ARRANGEMENTS OF THE SRP

Principles of the SRP

8. The AMCM's approach to the SRP is underpinned by the following four key principles:

Principle 1: Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital level.

Principle 2: The AMCM has the responsibility and power to review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure their compliance with regulatory capital ratios. The AMCM will take appropriate supervisory action if they are not satisfied with the result of this process.

Principle 3: The AMCM expects banks to operate above the minimum regulatory capital ratios under Pillar 1 and has the ability to require banks to hold capital in excess of the minimum.

Principle 4: The AMCM will seek to intervene at an early stage to prevent capital from falling below the minimum levels required to support the risk characteristics of a particular bank and will require rapid remedial action if capital is not maintained or restored.

Proportionality

9. The concept of proportionality is key to the SRP, including the ICAAP and the SREP. The ICAAP should be commensurate and proportionate to the nature, scale and complexity of the activities of each bank. Similarly, the depth, frequency and intensity of the SREP will be determined by the risks posed to the AMCM's supervisory objectives.

Supervisory Arrangements

10. The SRP will be conducted as part of the AMCM's risk-based supervision and in line with the proportionality concept described above, covering the significant business activities of a bank on a solo and a consolidated basis.

11. For a bank which has overseas branches and/or subsidiaries, the AMCM as home supervisor of the bank may seek comments from relevant host supervisors on the financial and operating soundness of those branches or subsidiaries in their jurisdictions in the course of conducting the SRP on a consolidated basis when necessary.

12. For a bank which is a subsidiary of a foreign bank group, the AMCM will consider the strength and availability of parental support as well as other relevant information from the home supervisor of the group when conducting the SRP.

13. For branches of overseas incorporated banks in Macao, the AMCM will also assess the strength and availability of the support from head office. When necessary, the AMCM may discuss the ICAAP and the SREP with the home supervisor of the foreign bank group to ensure the soundness of the group on a consolidated basis.

<u>SECTION II - THE ICAAP</u>

Overview of the ICAAP

14. As a core component of Pillar 2, the ICAAP is a set of activities and processes which involve ongoing assessment of a bank's risks, how the bank intends to mitigate those risks and how much current and future capital is necessary having considered its risk profile. For detailed requirements regarding the determination of the internal capital requirement, please refer to paragraphs 52-54.

15. Under the ICAAP, a bank should carry out internal capital adequacy assessment based on its risk assessment results of the last financial year[2]. A capital planning with stress testing should also be conducted, covering a period of at least three years following the last financial year. The above results should be presented in a report (i.e. ICAAP report) and submitted to the AMCM not later than 30th April of each year following the last financial year. For detailed requirements regarding the ICAAP report, please refer to paragraphs 55-58.

16. A bank should implement its ICAAP based on the detailed requirements set out in the following paragraphs of this Guideline. Key aspects for the ICAAP implementation have been set out in ***Annex 1*** for reference.

General Requirements

17. A bank has the primary responsibility for defining and developing its ICAAP. It should be able to demonstrate to the AMCM that its ICAAP is in place and comprehensive for assessing its overall capital adequacy in relation to its risk profile and there is a strategy for maintaining its adequate capital levels. Its chosen internal capital targets should be well founded and consistent with its overall risk profile and current operating environment.

18. A bank should ensure the outcome of its ICAAP is not a static capital target. The following aspects should also be taken into account in the ICAAP of a bank:

    (a) The ICAAP should take into account the current stage of the business cycle of a bank and be a forward-looking process capable of timely response to changes in the risk profile and business strategies of a bank, as well as its external environment;

    (b) The ICAAP should address both short and long-term needs and consider the prudence of building excess capital over benign periods of the credit cycle and also to withstand a severe and prolonged market downturn;

    (c) The ICAAP should incorporate rigorous stress testing where possible events or changes in market conditions that could adversely impact the bank were identified. The ICAAP should incorporate the results of these stress tests, where applicable.

19. A bank should implement its ICAAP in a methodical manner and ensure that the ICAAP is comprehensively documented in its policies, processes and procedures.

20. The ICAAP should be integrated in the management and decision-making processes of a bank and duly communicated throughout the bank.

[2] Refers to the financial year before the year of ICAAP report submission hereinafter mentioned.

21. A bank should plan and implement regular (at least annual) and robust review of its ICAAP by appropriately qualified persons who are operationally independent of the conduct of capital management.

22. The extent of formalization and sophistication of the ICAAP of each bank may vary according to the nature, scale and complexity of the activities of each bank. At a minimum, a bank should have the following key elements in its ICAAP:

(a) Board and senior management oversight;

(b) Sound capital assessment;

(c) Comprehensive assessment of risks ;

(d) Monitoring and reporting; and

(e) Internal control review.

Board and Senior Management Oversight

23. The board and senior management of a bank should recognize that a sound risk management process is the foundation for an effective assessment of the adequacy of a bank's capital position. They should view capital planning as a crucial element in a bank's ability to achieve its desired strategic objectives.

24. The board and senior management of a bank should have sufficient knowledge, experience and background to ensure that adequate policies and procedures, internal control and risk monitoring systems are in place.

25. The board of a bank should define the bank's risk appetite and establish an acceptable risk tolerance level while senior management should understand the nature and level of risk being undertaken by the bank and how this relates to adequate capital levels. The board should also ensure that senior management performs the following responsibilities:

(a) Performing an analysis of the current and future capital requirements of the bank in relation to its strategic objectives;

(b) Establishing a strategic plan which clearly outlines the bank's capital needs, anticipated capital expenditures, desired capital levels, and external capital sources;

(c) Establishing frameworks for assessing the various risks facing the bank;

(d) Developing a system to relate risks to the capital level of the bank as part of its internal assessment of capital adequacy;

(e) Establishing detailed policies that set specific institution-wide controls on the bank's activities, which are consistent with its risk appetite and capacity;

(f) Developing and communicating strong internal controls and written policies and procedures for capital planning and assessment throughout the bank; and

(g) Establishing methods for monitoring compliance with regulatory capital standards and internal policies.

26. The board of a bank should at least annually review and approve the target levels and composition of capital, and the process for setting and monitoring such targets, to ensure congruence between the risk profile and capital adequacy of the bank. Senior management should also ensure a comprehensive ICAAP review is conducted at least annually (or more frequently as deemed necessary), to ascertain the ICAAP remains appropriate and effective.

Sound Capital Assessment

27. A sound capital assessment should include the following fundamental elements:

(a) Policies and procedures designed to ensure that the bank identifies, measures, and reports all material risks;

(b) A process reflecting the nature, scale and complexity of the activities of the bank that relates capital to the level of risk in accordance with the risk tolerance level approved by the board;

(c) A process that states the bank's capital adequacy goals with respect to risks, taking account of the bank's strategic focus and business plan; and

(d) A process of internal control, review and audit to ensure the integrity of the overall management process.

28. Based on those material risks identified, a bank should assess both short-term and long-term capital requirements, and further develop its capital plan to ensure capital stability.

29. A bank's capital objective should go beyond the regulatory capital requirement and ensure that it has adequate capital to cover all material risks to which it is exposed. A bank should set both a consolidated capital target level and a solo capital target level for each of its subsidiaries if any through capital planning which should cover a period of at least three years following the last financial year.

30. A bank's capital planning should be established for both normal conditions (ordinary planning) and stress conditions (stress planning) based on the year-end figures of the last financial year, factoring in the potential difficulties of raising additional capital during downturns or other times of stress.

Comprehensive Assessment of Risks

31. A bank should ensure that its ICAAP addresses all material risks faced by the bank as they relate to the adequacy of capital, including:

    (a) Risks captured under Pillar 1 (i.e. credit risk, market risk and operational risk);

    (b) Risks considered but not fully captured under Pillar 1 (e.g. credit concentration risk);

    (c) Risks that are not taken into account by Pillar 1 (e.g. liquidity risk, interest rate risk in the banking book, technology and cyber risk, reputational risk and strategic risk) ; and

    (d) Risks and external factors outside the direct control of the bank, including changes in regulations, accounting rules and the economic environment (e.g. business cycle effects).

32. A bank should ensure that senior management puts in place a risk management system that is robust and comprehensive, and be capable of capturing the nature and magnitude of all material risks faced by the bank. The sophistication of the risk management system should be proportionate to the risks that are present and the size and complexity of the bank.

33. A bank should aggregate multiple types of risks and assess how the aggregate risks impact their capital level after taking into account the risk diversification effects. It should consider risks that do not appear to be significant in isolation, but when combined with other risks could lead to material losses.

34. A bank should fully document the risk assessment process and should be able to demonstrate to the AMCM that all material risks have been considered and accounted for in its ICAAP. Specific requirements of the ICAAP for main risk categories have been set out in ***Annex 2*** for further reference.

35. For each material risk identified in its ICAAP, a bank should incorporate the following into its risk assessment and management process:

    (a) A bank should conduct detailed analysis to determine the effectiveness and appropriateness of risk management techniques in controlling the risks identified;

(b) A bank should ensure that the risk assessments are consistent and objective;

(c) A bank should incorporate changes in its risk profile into its risk assessments on a timely basis;

(d) A bank should conduct both quantitative and qualitative methods of risk assessment; and

(e) A bank should ensure the integrity of data used in its risk measurement process and such data is verifiable.

36. A bank should perform regular reviews of its ICAAP to ensure that all the risks identified continue to be relevant and accounted for, and that new risks are incorporated into the ICAAP on a timely basis. A bank is also expected to make adjustments to its ICAAP in light of changes in its operating profile or environment.

Stress Testing

37. A bank should adopt stress testing as one of the most important risk assessment tools in its ICAAP, and perform it on a regular basis, in order to provide a complementary risk perspective and evaluate additional capital needs.

38. The stress tests conducted by a bank should be rigorous and forward-looking and should cover a period of at least three years following the last financial year for capital planning as indicated in paragraph 30. The assumptions and figures used in the stress tests should be appropriate and reasonable for the above-mentioned planning horizon. The framework, methodology and extent of the stress tests should be commensurate with the bank's nature, size and complexity of its business operation and risk profile.

39. A bank should develop its own scenarios to stress test all its material portfolios and material risks identified according to its ICAAP, and should be able to explain to the AMCM its reasons for the choice of stress testing scenarios.

40. A bank should duly assess the results of stress tests, always taking into account its determined risk appetite and capacity limits. The results should be communicated clearly and regularly to the board and senior management as it is expected that the results will have a meaningful impact on strategic decisions.

41. The result of stress tests should be used to determine the capital buffer that a bank should hold to enable it to withstand risks under stress conditions, adjust business strategies, set exposure limits and adjust controls. The result will form part of a bank's ICAAP report submitted to the AMCM.

42. For more guidance on stress testing, a bank may refer to ***Annex 3*** of this guideline and relevant publications issued by the Basel Committee on Banking Supervision (BCBS).

Monitoring and Reporting

43. A bank should establish adequate systems for monitoring and reporting risk exposures and assessing how changes to its risk profile affect the need for capital. The board and senior management of a bank should receive regular reports or updates on its risk profile and capital needs. These reports should enable senior management to:

    (a) Evaluate the level and trend of material risks and their effect on capital levels;

    (b) Evaluate the sensitivity and reasonableness of assumptions used in the capital assessment and measurement system;

    (c) Determine that the bank holds sufficient capital against the various risks;

    (d) Determine that the bank is in compliance with the regulatory capital requirement (including Pillar 2 capital requirement and other capital buffers if any) set by the AMCM; and

    (e) Assess the future capital requirements based on the bank's risk profile and make necessary adjustments to the bank's strategic plan accordingly.

44. A bank should ensure that the reporting lines on the risk profile and capital position are clear, precise, well-defined, transparent, coherent and enforced.

Internal Control Review

45. A bank's internal control structure is essential to its ICAAP. Effective control of the capital assessment process includes an independent review and, where appropriate, the involvement of internal and external audits.

46. A bank should ensure that the systems for assessing the risks to which it is exposed and for relating those risks to the capital level of the bank are reviewed independently by persons other than those responsible for the design or implementation of the ICAAP.

47. A bank should ensure that the independent review team or person possesses the necessary technical capabilities to perform the independent review in order to provide an effective challenge to persons responsible for the design and implementation of the ICAAP.

48. A bank should conduct periodic reviews of its risk management process to ensure its integrity, accuracy and reasonableness.

49. The independent review performed on a bank's risk management function should at least cover the following areas:

(a) Appropriateness of its capital assessment process given the nature, scale and complexity of its activities;

(b) Identification of large exposures and risk concentrations;

(c) Accuracy and completeness of data inputs into the assessment process;

(d) Reasonableness and validity of scenarios used in the assessment process; and

(e) Stress testing and analysis of assumptions and inputs.

50. The outcomes of independent review should be promptly reported to the board and senior management of a bank, with clear identification of any need for additional capital. A bank should make appropriate adjustments and updates according to the results of the independent review of its ICAAP policies, procedures and implementation.

51. A bank should have complete documentation covering its ICAAP (including methodologies, assumptions, policies and procedures, responsibilities, etc.) to enable the AMCM and third-parties' review and evaluation.

Determination of the Internal Capital Requirement under the ICAAP

52. To determine the internal capital requirement under the ICAAP, a bank should use the regulatory capital requirement under Pillar 1 as a floor and determine a capital add-on so as to cover risks not fully covered, or not captured under Pillar 1 (refer to paragraphs 31 (b)-(d)). The additional capital buffer required to meet regulatory capital requirement set by the AMCM and the management buffer set by the bank (if any) should also be considered and included in the bank's overall internal capital requirement. In addition, it should also determine the composition of its required internal capital.

53. In assessing the internal capital requirement for risks that are not captured or not fully captured under Pillar 1, a bank should explain in detail the assumptions applied and justify the appropriateness of its methodology adopted given its risk level and sophistication of its operations.

54. The required internal capital should enable a bank to meet its regulatory capital requirement set by the AMCM in the event of a severe economic recession or of clearly unfavourable business circumstances, and factor in the potential difficulties of raising additional capital under the stress conditions. Thus, regardless of the model adopted, a bank should perform stress tests (including quantitative and qualitative) on each individual material risk to which it is exposed and make appropriate adjustment to the

internal capital requirements determined for its planning horizon under normal conditions accordingly.

ICAAP Report

55. A bank subject to the capital adequacy requirement should submit its annual ICAAP report to the AMCM not later than 30th April of each year, in respect of its ICAAP assessment based on the year-end figures of the last financial year. For a bank with subsidiaries, the ICAAP report should be prepared on a solo and a consolidated basis, taking into account all material risks at the consolidated level.

56. While the AMCM will not rely on a bank's own capital assessment in determining its internal capital requirement under the ICAAP, the AMCM may use information gleaned from a bank's ICAAP report to assess its inherent risk, quality of risk management and capital needs. Whenever appropriate, the AMCM may seek other additional information from the bank on a case-by-case basis.

57. To enhance the comparability of respective ICAAPs across different banks with similar risk profiles and make the ICAAP and the SREP more efficient, a bank should prepare its ICAAP report using the standardised ICAAP report template according to the requirement of the AMCM and following the specific instructions provided with the ICAAP report template.

58. The ICAAP report submitted should be approved by a bank's board and signed off by senior management confirming that the requirements of this Guideline in relation to the ICAAP have been strictly followed and the information provided in this report or along with the report is accurate in all material respects. In addition, the ICAAP report should be reviewed by a bank's internal audit department, and where deemed necessary by the AMCM, the ICAAP report should also be reviewed by an external party. A copy of the internal and/or external review report should be attached to the submission.

SECTION III – THE SREP

Overview of the SREP

59. The SREP is a set of procedures carried out by the AMCM to ensure a bank has in place a sound, effective and comprehensive ICAAP, with the main objective of ensuring the bank has sufficient capital to support its risk profile.

60. The basic components of the SREP are already embedded in the AMCM's existing supervisory framework which rests on two key elements including off-site reviews and on-site examinations. The implementation of the SREP in the context of this Guideline will be more of an elaboration and refinement process, rather than a radical change in existing practices.

61. The AMCM will adopt a proportionate approach to the SREP. The depth, frequency and intensity of the SREP will take into account the nature, scale, complexity and risk profile of each bank. Under normal circumstances, the AMCM will conduct a regular (i.e. annual) review and evaluation on a bank's ICAAP.

62. The SREP of the AMCM will typically involve some combinations of:

(a) On-site examinations or inspections;

(b) Off-site reviews, including review of ICAAP report;

(c) Discussions with banks' management;

(d) Reviews of audit work done focused on capital adequacy issues; and

(e) Periodic reporting by banks.

63. The AMCM will also assess a bank's stress testing methodologies and results as part of the SREP, in order to evaluate and determine the need for the bank to hold adequate capital buffers.

Key Principles

64. The AMCM will adhere to the following principles during its SREP:

(a) The SREP should apply to all banks that are subject to the capital adequacy requirements;

(b) The SREP should cover all activities of a bank;

(c) The SREP should cover all material risks as well as risk management and internal control systems of a bank;

(d) The SREP will review and evaluate a bank's ICAAP;

(e) The SREP will review and assess a bank's compliance with all capital adequacy requirements;

(f) The SREP should identify existing or potential problems and key risks faced by a bank and deficiencies in its risk management and control frameworks;

(g) The SREP should enable the AMCM to identify any prudential measures or other supervisory actions required;

(h) The result of the SREP will be communicated to a bank at the appropriate level together with any action that is required of the bank and any significant action planned by the AMCM.

(i) The SREP should be formally reviewed at least on an annual basis to ensure that it is up-to-date and remains accurate.

Review and Evaluation of the ICAAP

65. The AMCM will review and assess the ICAAP to ensure that its methodology and assumptions are sound and that the following areas are addressed:

(a) Adequacy of risk assessment;

(b) Capital adequacy;

(c) Control environment; and

(d) Compliance with capital requirements.

66. The AMCM will assess the degree to which internal targets and processes incorporate the full range of material risks faced by a bank. Moreover, the AMCM will assess the adequacy of risk measures and their use in determining capital adequacy, evaluating and controlling risks, setting limits and evaluating performance.

67. The AMCM will ensure that a bank's target levels of capital and their composition are appropriate to the nature and scale of the bank's operations, and that the levels of capital are properly monitored and reviewed by senior management. The AMCM will also assess the extent to which the bank's ICAAP sets out its capital plans should an unexpected event occur under a range of external conditions and scenarios.

68. The AMCM will examine the quality of a bank's management information reporting and systems, as well as management's track record in responding to emerging or changing risks. The AMCM will assess whether the determination of capital adequacy is linked to the bank's overall risk profile and the effectiveness of its risk management process.

69. The AMCM will ensure a bank's internal methodologies, which provide integrity to its reported capital measures such as risk mitigation, risk management standards and disclosure, meet minimum supervisory requirements.

70. A bank must be able to explain and demonstrate to the satisfaction of the AMCM:

(a) How its ICAAP meets supervisory requirements;

(b) How it defines, categorises and measures its material risks;

(c) How the internal capital targets are chosen and how they relate to the overall risk profile and current operating environment of the bank; and

(d) How these targets are consistent with the present and future business needs of the bank.

Determination of Total Capital Requirement under the SREP

71. The AMCM will carry out an overall assessment of a bank's risk profile and the capital needs derived from its risk profile, in order to determine the bank's total capital requirement under the SREP.

72. The total capital requirement set by the AMCM is made up of the regulatory capital requirement under Pillar 1 plus a capital add-on as required by Pillar 2 to address overall risks and uncertainties faced by a bank, including a capital buffer required to cover stress testing, as well as a supervisory capital add-on imposed by the AMCM when considered necessary under the SREP.

Dialogue with Banks

73. Under the SREP, the AMCM will enter into an active dialogue with a bank for the following purposes:

(a) To obtain a deeper understanding of the bank's overall risk profile and its risk control system;

(b) To understand the approach of the bank towards the risks not fully covered or not captured by Pillar 1 and the amount of capital allocated to them;

(c) To evaluate the extent of reliance on the ICAAP in the AMCM's assessment of the capital adequacy of the bank;

(d) To exchange information on the key findings of the SREP and any recommendations; and

(e) To ensure follow-up on the implementation of any prudential measures that may be decided by the AMCM.

74. This dialogue will take place with the management, the compliance officer and the officers in charge of risk measuring and monitoring or any person at an appropriate level designated by a bank.

Supervisory Response

75. After the completion of the SREP, the AMCM will consider whether the existing regulatory capital requirement remains appropriate for a bank or whether it needs to be changed in the light of the results and findings of the SREP.

76. The AMCM will discuss with a bank the results of its assessment, including any areas of concern, which may lead to an increase in its regulatory capital requirement. The AMCM will explain the factors that have led to this assessment and recommend actions which the bank should take to address the concerns.

77. When there is a proposed increase in the regulatory capital requirement, a bank will be consulted before a final decision is taken.

78. The AMCM also has the power to take a range of actions including but not limited to the following:

    (a) Intensifying the monitoring of a bank;

    (b) Restricting current activities;

    (c) Prohibiting new activities or acquisitions;

    (d) Restricting or prohibiting the payment of dividends;

    (e) Requiring a bank to prepare and implement a satisfactory capital adequacy restoration plan; and

    (f) Requiring a bank to raise additional capital.

79. The AMCM has the discretion to use the tools best suited to the circumstances of a bank and its operating environment.

80. The AMCM will monitor the progress made by a bank in implementing the remedial actions.

~ End~

Annex 1 – Key Aspects for the ICAAP Implementation

1. Key Steps in the ICAAP Implementation

The AMCM, in terms of the ICAAP, as part of the SREP would expect the following distinct four steps to be included in the implementation process for a bank.

Step 1- Definition of Internal Requirement

A bank should first identify the range of applicable supervisory requirements, especially in respect of this Guideline. The general requirements should then be deployed and specified to reflect the special characteristics of the bank. During the ICAAP, all material risks should be identified, which will form the starting point for the definition of the bank's risk profile. After the definition of the current risk profile of the bank, the required state should be defined in terms of capital, governance and internal control system.

Step 2- Gap Analysis

Once the internal requirement has been defined, a bank should analyse those requirements which are currently not or not completely fulfilled. In this process, the bank should review the current state of methods, processes and structure in its internal risk management system. The comparison of the required or target state to the actual state can help identify the gaps which will need to be bridged during implementation. The result of this exercise should be documented in detail in the ICAAP report.

Step 3- Implementation Planning

During the planning, the required measures should first be prioritized so that implementation resources can be allocated appropriately. The individual measures should then be assigned to the organizational unit which will perform them. Finally, due dates and responsibilities should be specified for each process.

Step 4- Implementation

A bank should include the elaboration or adaption of methodological plans in the first phase of implementation. Next, the bank can execute actions which are targeted at establishing compliance with requirements set by the ICAAP. Then the process-related aspects and responsibilities within the ICAAP should be defined and documented (e.g. linking up risks and required capital, limit monitoring, taking actions). The ICAAP should be integrated in the bank's strategic and operational control mechanisms (e.g. annual strategic planning and budgeting). Furthermore, the ICAAP should also be an integral part of the bank's governance and decision-making processes.

2. ICAAP Building Blocks

A bank may follow the phased approach presented below as a checklist or a quick reference guide for a complete ICAAP implementation, together with related requirements included in this Guideline.

Plan and Design the ICAAP	• Engage the board and senior management; • Establish an ICAAP Steering Committee and an ICAAP Implementation Team; • Assign the responsibility for the implementation and supervision.
Assess Internal and External Business Environment	• Assess group structure and business model/products/services; • Review shareholding structure; • Assess current political, economic and business environment.
Assess Internal Governance Framework, Risk Management System and Internal Control System	• Assess organizational structure and governance framework including the responsibilities of the board and senior management; • Evaluate risk management, internal control and review functions, including related policies and procedures; • Assess compliance level with regulatory requirements and conformance with internal and/or external auditor's recommendations if any.
Perfom Risk Assessment	• Perform risk assessment for risks covered under Pillar 1, risks not fully covered and not covered under Pillar 1. • Determine the internal capital requirement for each material risk for a period covering the last financial year and at least three years following the last financial year.
Conduct Stress Testing	• Assess and quantify risks using forward-looking stress testing scenarios through appropriate methodologies including sensitivity analysis, scenario analysis and reverse stress testing; • Evaluate impact on profitability and capital adequacy for at least three years following the last financial year.
Assess Capital Adequacy and Establish Capital Plans	• Assess internal capital adequacy in respect of the last financial year; • Establish a business plan and projected financial figures for at least three years following the last financial year; • Prepare a capital plan for at least three years following the last financial year based on the above financial projections and the results of stress tests, including the determination of internal capital needs under the ICAAP; • Decide the additional capital and/or controls allocated for material risks identified.
Next Steps and ICAAP Report	• Define next steps to mitigate material risks identified, strengthen internal control system and assign responsibility for implementation; • Prepare and approve the annual ICAAP report as at the end of the last financial year; • Submit the annual ICAAP report to the AMCM not later than 30th April of each year following the last financial year.

Annex 2 - Specific Requirements of ICAAP for Main Risk Categories

1. As mentioned in paragraph 34 of this Guideline, this Annex sets out additional details on the expectations of the AMCM with regard to the ICAAP of a bank. While this Annex is intended to help a bank in assessing the comprehensiveness and rigor of its ICAAP, it should not be construed as an exhaustive compliance checklist. A bank should refer to the Pillar 2 principles and guidance as well as relevant risk management publications issued by the Basel Committee and the AMCM. The following main risk categories are covered in this Annex:

    (a) Credit risk;

    (b) Market risk;

    (c) Operational risk;

    (d) Credit concentration risk;

    (e) Liquidity risk;

    (f) Interest rate risk in the banking book (IRRBB);

    (g) Technology and cyber risk;

    (h) Reputational risk;

    (i) Strategic risk; and

    (j) Other material risks.

Credit Risk

2. Credit risk is most simply defined as the potential that a borrower or counterparty of a bank will fail to meet its obligations in accordance with agreed terms. Credit risk has two dimensions: the possibility of default by the counterparty on a bank’s credit exposure and the amount of loss that a bank may suffer when the default occurs.

3. Sources of credit risk exist throughout the activities of a bank in the banking book and trading book, and both on and off the balance sheet. In addition to loans, a bank faces credit risk from trade finance and acceptances, interbank transactions, commitments and guarantees, financial derivative contracts, bond and equity holdings and settlement of transactions.

4. A bank should design its credit risk management process to identify and manage the credit risk inherent in the products it offers and the activities in which it engages.

5. A bank should conduct periodic stress tests for credit risk and review the results of those tests to identify and respond to potential changes in market conditions that could adversely impact the bank's performance.

6. A bank should employ standardised approach to assess the credit risk involved in exposures to individual borrowers or counterparties as well as at the portfolio level. At a minimum, it should comply with the requirements as instructed in "*Credit Risk Return Completion Instructions*" contained in Circular no.028/B/2015-DSB/AMCM issued by the AMCM.

Market Risk

7. Market risk is the risk of losses in on and off balance sheet positions arising from movements in market prices, such as equity prices, interest rates, foreign exchange rates and commodity prices. A bank should have methodologies that enable it to assess and actively manage the market risk wherever it arises.

8. A bank should design its market risk management process to properly measure the material risk in the instruments it trades as well as the trading strategy it pursues.

9. A bank should conduct periodic stress tests for market risk and demonstrate that it has enough capital to not only meet the minimum capital requirement but also to withstand a range of severe but plausible market shocks. The market shocks applied in the stress tests should reflect the nature of portfolios and the time it would take to hedge out or manage risks under severe market conditions.

10. A bank should employ standardised approach to assess its market risk. At a minimum, it should comply with the requirements as instructed in "*Market Risk Return Completion Instructions*" contained in Circular no.028/B/2015-DSB/AMCM issued by the AMCM.

Operational risk

11. Operational risk arises from potential problems due to inadequate or failed internal processes, people and systems, or from external events. It includes legal risk, but excludes strategic and reputational risk. Operational risk is inherent in all banking products, activities, processes and systems, and the effective management of operational risk is a fundamental element of a bank's risk management programme. The failure to properly manage operational risk can result in misstatement of a bank's risk/return profile and expose the bank to significant losses.

12. A bank should have an operational risk management framework that is responsible for managing operational risk and evaluating the adequacy of capital given this framework. The framework should cover the bank's appetite and tolerance for operational risk, as

specified through the policies for managing this risk, including the extent and manner in which operational risk is transferred outside the bank. The framework should consider risk factors that may not have been adequately assessed under the Pillar 1 process.

13. A bank should set out clearly the policies and procedures for the identification, assessment, monitoring, and control and mitigation of operational risk inherent in all material products, activities, processes and systems, in its operational risk management framework. Any deviation from the established policies should be reported to the board or senior management, as appropriate.

14. A bank should keep track of relevant losses by business line and create incentives for the improvement of operational risk. There should be regular reporting of operational risk losses throughout the bank.

15. A bank should employ basic indicator approach to assess operational risk. At a minimum, it should comply with the requirements as instructed in "*Operational Risk Return Completion Instructions*" contained in Circular no.028/B/2015-DSB/AMCM issued by the AMCM.

Credit Concentration Risk

16. A risk concentration is any single exposure or group of exposures with the potential to produce losses large enough (relative to a bank's capital, total assets, or overall risk level) to threaten a bank's health or ability to maintain its core operations. As lending is the primary activity of most banks, credit risk concentrations are often the most material risk concentrations within a bank.

17. Credit risk concentrations, by their nature, are based on common or correlated risk factors, which, in times of stress, have an adverse effect on the creditworthiness of each of the individual counterparty making up the concentration. Concentration risk arises in both direct exposures to obligors and may also occur through exposures to protection providers. The types of credit concentration mainly include single name, sectoral, and geographic concentration.

18. A bank should have in place effective internal policy, system and control to identify, measure, monitor, and control their credit risk concentrations. It should explicitly consider the extent of its credit risk concentrations in its assessment of capital adequacy under Pillar 2. The related policy should cover the different forms of credit risk concentrations to which a bank may be exposed.

19. A bank's framework for managing credit risk concentrations should be clearly documented and should include a definition of the credit risk concentrations relevant to the bank and how these concentrations and their corresponding limits are calculated. Limits should be defined in relation to a bank's capital, total assets or, where adequate

measures exist, its over risk level. In order to facilitate peer comparison and supervisory judgment, a bank should also assess their credit concentration risk by using the Herfindahl-Hirschman Index (HHI) besides its other own methodologies.

20. A bank should conduct periodic stress tests for credit concentration risk and take into account changes in the business environment that may occur and that would lead to the materialisation of the concentration risk.

21. A bank should ensure that its internal policies, systems and controls for credit concentration risk management are in compliance with Chapter VII "*Prudential rules on exposure of banks*" of the FSAM.

Liquidity Risk

22. Liquidity risk is the risk that a bank will have difficulties in paying its financial liabilities. This may be caused by funding liquidity risk or market liquidity risk. Funding liquidity risk is the risk that a bank will not be able to meet efficiently both expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the bank. Market liquidity risk is the risk that a bank cannot easily offset or eliminate a position at the market price because of inadequate market depth or market disruption.

23. A bank should adopt sound liquidity risk management practices that are commensurate with its size and sophistication, and with the risk and complexity of its activities.

24. A bank should conduct periodic stress tests for liquidity risk and maintain sufficient liquidity to withstand a range of stress events and to weather prolonged periods of financial market stress and illiquidity.

25. A bank should consider the relationship between liquidity and capital since liquidity risk can impact capital adequacy which, in turn, can aggravate the bank's liquidity profile. It should evaluate its capital adequacy taking into account its liquidity profile and the liquidity of the markets in which it operates.

26. At a minimum, a banks should refer to "*Guideline on Management of Liquidity Risk*" (Circular no.003/B/2011-DSB/AMCM) issued by the AMCM for the detailed requirements on liquidity risk management.

Interest Rate Risk in the Banking Book (IRRBB)

27. Interest rate risk in the banking book (IRRBB) refers to the current or prospective risk to a bank's capital and earnings arising from adverse movements in interest rates that affect the bank's banking book positions.

28. As interest income constitutes a significant portion of the total revenue of a bank, it is important for a bank to have in place a risk management framework to manage its IRRBB associated with its business activities and ensure that it has sufficient capital to cover its IRRBB exposures. A bank with large regional exposures should also assess the impact of interest rate risk on its operations in these countries. This is especially pertinent in countries whose currencies are relatively less actively traded in the international financial markets.

29. A bank's measurement systems and models used for IRRBB should be based on accurate data and subject to appropriate documentation, testing and controls to give assurance on the accuracy of calculations.

30. A bank should conduct periodic stress tests for IRRBB to measure its vulnerability to loss under stressful market conditions, including the breakdown of key assumptions. It should demonstrate that it has enough capital to not only meet the minimum capital requirement but also to withstand a range of severe but plausible market shocks.

31. Measurement outcomes of IRRBB and hedging strategies should be reported to senior management or its delegates on a regular basis, at relevant levels of aggregation.

32. Information on the level of IRRBB exposure and practices for measuring and controlling IRRBB should be disclosed to the public on a regular basis.

33. At a minimum, a bank should refer to "*Guideline on Management of Interest Rate Risk*" (Circular no.051/B/2008-DSB/AMCM) issued by the AMCM for the detailed requirements on the management of IRRBB.

Technology and Cyber Risk

34. Technology and cyber risk is becoming more prominent to the operations of a bank. Technology risk refers to risks emanating from the use of information technology (IT) and the Internet. These risks arise from failures or breaches of IT systems, applications, platforms or infrastructure, which could result in financial loss, disruptions in financial services or operations, or reputational harm to a bank. Cyber risk is a subset of technology risk, which might compromise a bank's cyber security. This could materialize in a variety of ways, such as deliberate and unauthorized breaches of security to gain access to information systems, unintentional or accidental breaches of security and operational IT risks due to factors such as poor system integrity.

35. A bank should ensure that the technology and cyber risk management is an integral part of the bank's enterprise risk management framework, with appropriate written policies and procedures. It should include the following:

    (a) Clear definition of technology and cyber risk;

(b) Clear responsibilities assigned for the management of technology and cyber risk at different levels and across functions, with appropriate governance and reporting arrangements;

(c) The identification of technology and cyber risk to which the bank is exposed, including risks from the adoption of new or emerging technology;

(d) Risk classification of all information assets or systems based on its criticality;

(e) Risk measurement and assessment approaches and methodologies;

(f) Risk controls and mitigations; and

(g) Continuous monitoring to timely detect and address any material risks.

36. A bank should effectively implement enterprise-wide independent technology and cyber risk management function and ensure its information assets and technologies are adequately protected. It includes advising on critical technology projects and ensuring critical issues that may have an impact on the bank's risk tolerance are adequately deliberated or escalated in a timely manner, as well as providing independent views to the board and senior management on third party assessments, where necessary.

37. A bank should establish appropriate governance requirements commensurate with the risk and complexity of technology projects undertaken. This should include project oversight roles and responsibilities, authority and reporting structures, and risk assessments throughout the project life cycle.

38. A bank should ensure that there is an enterprise-wide focus on effective management of cyber risk and establish related management framework, including managing its cyber resilience objectives and risk tolerance, with due regard to the evolving cyber threat environment. At a minimum, it should refer to "*Guideline on Cyber Resilience*" (Circular no.016/B/2019-DSB/AMCM) issued by the AMCM for the detailed requirements on the management of cyber risk.

Reputational Risk

39. Reputational risk refers to the risk that a bank's reputation is damaged by one or more than one reputation event, as reflected from negative publicity about the bank's business practices, conduct or financial condition. Such negative publicity, whether true or not, may impair public confidence in the bank, result in costly litigation, or lead to a decline in its customer base, business or revenue.

40. A bank should have appropriate policies in place to identify sources of reputational risk and carry out regular analysis on the reputational risk to which it is exposed.

41. Once a bank identifies potential exposures arising from reputational concerns, it should measure the amount of support it might have to provide or losses it might experience under adverse market conditions. In particular, in order to avoid reputational damages and to maintain market confidence, a bank should develop methodologies to measure as precisely as possible the effect of reputational risk in terms of other risk types (e.g. credit, liquidity, market or operational risk) to which it may be exposed.

42. A bank should develop appropriate contingency plans based on the risk assessment result. When necessary and feasible, testing on the contingency plans should be conducted.

Strategic Risk

43. Strategic risk is the possibility of occurrence of adverse effects on a bank's financial result and capital due to the absence of appropriate policies and strategies, their inadequate implementation, as well as changes in the environment where the bank operates or absence of appropriate response of the bank to those changes.

44. A bank should develop appropriate policies and processes that allow for independent reviews of its strategies for identification and management of strategic risk likely to have a material impact on the bank's ability to achieve its mission and objectives.

45. A bank should adequately evaluate the negative impact of strategic risk that might have on its capital, and allocate appropriate capital relative to the level of its strategic risk if any.

Other Material Risks

46. A bank should also consider whether there are any other risks to which it is materially exposed and the impact they may have on overall capital adequacy.

Annex 3 - Guidance on Stress Testing

1. This Annex provides guidance on stress testing methodologies including the stress scenarios commonly used for the ICAAP.

2. Stress testing is not a one-size-fits-all approach and requires the use of various types of methodologies. The range of methodologies acceptable for a bank greatly depends on nature, size and complexity of its business operations and risk profile. With a view to the principle of proportionality, however, the AMCM requires that the applied stress testing methodology should be sufficiently sophisticated for all material risks to which a bank is exposed.

3. The stress tests applied under the framework of the ICAAP in business and regulatory practice usually relate to the following three main methods (i.e. sensitivity analysis, scenario analysis and reverse stress test). These may be used either separately or in conjunction with each other.

   (1) **Sensitivity analysis.** It is usually based on a less complex methodology and illustrates how a bank's position would change, in case a single relevant risk factor is modified, but all other circumstances remain unchanged. It can be used as a simple technique for assessing the impact of a change in risks when a quick response or when more frequent results are needed.

   (2) **Scenario analysis.** It assumes the simultaneous change of several risk factors and quantify their combined impact on a bank's position, suitably taking into consideration the secondary and delayed effects. It can also be based on hypothetical and historic scenarios. This method takes into consideration the relationship among risk factors and thereby enables the capturing of a bank's risks in an integrated approach.

   (3) **Reverse stress test.** It requires a bank to assess scenarios and circumstances that would render its business model unviable, thereby identifying potential business vulnerabilities. It starts from a known stress test outcome (such as breaching regulatory capital ratios, illiquidity or insolvency) and then works backward to identify the causes and consequences that could lead to such an outcome. It is seen as one of the risk management tools complementing general stress testing techniques and can help senior management in considering the range of scenarios that impact on a bank's viability or solvency.

4. A bank should identify its main risk factors that require stress testing according to its ICAAP and develop its own scenarios to cover all its major risks and material portfolios. For example, it may include the following stress scenarios listed below for capital planning. This is an indicative and not exhaustive sample of stress scenarios that the AMCM would consider as worth of mention in the ICAAP Report.

(1) <u>Credit Risk</u>
- A drop in mortgaged collateral value;
- An increase in non-performing loans (NPLs) due to downgrade of loans, etc.

(2) <u>Market Risk</u>
- A decline in market value of financial instruments held due to adverse changes in market prices (e.g. equity prices, interest rates, foreign exchange rates and commodity prices), etc.

(3) <u>Credit Concentration Risk</u>
- Default by major non-bank borrowers/ group of borrowers;
- Default in exposures of major sectors;
- Default in major Mainland-related exposures, etc.

(4) <u>Liquidity Risk</u>
- A fall in liquid liabilities (i.e. deposits, interbank borrowing, etc.), etc.

(5) <u>Interest Rate Risk in the Banking Book (IRRBB)</u>
- A parallel interest rate shock, etc.