SAMA's Guideline Document On The Internal Capital Adequacy Assessment Plan (ICAAP)

SAMA
BANKING SUPERVISION DEPARTMENT
September 2008

TABLE OF CONTENTS

I. Process of Constructing an ICAAP

- Introduction and Overview
- Objective
- Major Building Blocs of the ICAAP
- Major Challenges in Building an ICAAP
- The ICAAP Process

II. Reporting Format and Contents

- Overview
- Executive Summary
- Objective of an ICAAP
- Summary of Bank's Strategies including its Current and Projected Financial and Capital Positions
- Capital Adequacy and ICAAP
- Approach and Methodology
- Internal Models: Pillar 1 and ICAAP comparisons
- Details on Models Employed
- Stress and Scenario Tests Applied
- Capital Transferability Between Legal Entities
- Aggregation and Diversification
- Challenge and Adoption of the ICAAP
- Use of the ICAAP within the Bank
- Future Refinements of the ICAAP

ATTACHMENT – 1

Details on Stress Testing

I. PROCESS OF CONSTRUCTING AN ICAAP

1. Introduction and Overview:

Basel II's structure is built upon three pillars. Under Pillar 1, minimum capital requirements are calculated based on explicit calculation rules in respect of credit, market and operational risks. However, in Pillar 2, other risks are to be identified and risk management processes and mitigation assessed from a wider perspective, to supplement the capital requirements calculated within the scope of Pillar 1. Pillar 2 involves a proactive assessment of unexpected losses and a methodology to set aside sufficient capital. Effectively, Pillar 2 is the creation of a wider, flexible and risk-sensitive system, and this imposes a major challenge on banks in meeting such requirements. In many respects it involves a new approach to risk assessment and risk management.

One of the cornerstones of the Basel II framework, which very specifically and tangibly affect banks, is the requirement that, within the scope of Pillar 2, they develop their own Internal Credit Adequacy Assessment Plan – ICAAP. This is a tool which ensures that the banks must possess risk capital which is commensurate with their selected risk profile and risk appetite, as well as appropriate governance and control functions, and business strategies. Essentially, an ICAAP is derived from a formal internal process whereby a bank estimates its capital requirements in relation to its risk profile, strategy, business plans, governance structures, internal risk management systems, dividend policies, etc. Consequently, the ICAAP process includes a strategic review of a bank's capital needs and as to how these capital requirements are to be funded, i.e. through internal profits, IPOS, Sukuks, right issues, other debt issues, etc.

It is essential that the ICAAP process involves an assessment of a bank capital needs beyond its minimum capital requirements. Accordingly, it assesses risk beyond the Pillar I risks and, therefore, addresses both additional Pillar I and Pillar II risks. Pillar 2 risks include financial and non-financial risks such as strategic, reputational, liquidity, concentrations, interest rate, etc. Consequently, ICAAP allows a bank to attribute and measure capital to cover the economic effects of all risk taking activities by aggregating Pillar 1 and Pillar 2 risks.

While SAMA has formulated these guidelines with which banks must comply within the scope of their internal capital adequacy assessment process, it is the banks themselves that are to select and design the manner in which these requirements are met. Consequently, SAMA will not prescribe any standard methodology but a set of minimum requirements with respect to the process and disclosure requirements.

2. Objective:

The main purpose of the ICAAP is for the Bank's senior managers to proactively make a strategic assessment of its capital requirements considering its strategies, business plans, all risks, acquisitions, dividend policies. Further, the ICAAP also establishes the capital required for economic, regulatory and accounting purposes and helps identify planned sources of capital to meet these objectives. Also, an ICAAP benefits include greater corporate governance and improved risk assessment in banks, and thereby increases the stability of the financial system. It also help to maintain regulatory capital levels in accordance with its strategy, economic capital, risk profile, governance structures and internal risk management systems.

Another important purpose of the ICAAP document is for senior management to inform the Board of Directors and subsequently SAMA on the ongoing assessment of the bank's risk profile, risk appetite, strategic plan and capital adequacy. It also includes the documentation as to how the bank intends to manage these risks, and how much current and future capital is necessary for its future plan.

3. Major Building Blocs of the ICAAP:

3.1 Bank's Role and Responsibility for the ICAAP

Banks have to convince SAMA that their ICAAP process is comprehensive, rigorous and includes capital commensurate with their risk profile as well as strategic and operational planning. The banks must compose and assemble the specific ICAAP process and methodology based on the objective and requirements imposed by SAMA and on the specific strategic and operational plans set by their Board of Directors. Consequently, banks must have a clear understanding on SAMA's expectations in terms of the definitions, concepts and benchmarks in order for an effective assessment and follow-up by it. An important and obvious example is the manner in which both the risks and the capital are defined.

3.2 SAMA's Role and Responsibility in the ICAAP Process

SAMA is responsible for establishing the frequency and nature of the review, while the Banks are to establish their actual implementation processes and methodology as per SAMA's guidelines.

Thus, while the two processes involved are closely integrated through the Supervisory Review Process, at the same time there is an express division of responsibilities. SAMA's role has the final word in this process as it makes its risk assessment of the banks and, where reason exists, imposes additional requirements on the banks or requires enhanced risk management systems, additional stress testing, etc.

One of the alternative courses of action available to SAMA is to establish a higher capital requirement than that calculated by the bank itself. The level of capital needed is based on the calculation of the capital requirement with respect to credit, market and operational risks based on the explicitly established calculation rules which are laid down within the scope of Pillar 1. However, a supplement could be required as additional capital which, in light of other types of risks (Pillar 2), which may arise within the scope of the internal capital adequacy assessment process. Consequently, this is not the only tool (to set a higher capital requirement) and it will not necessarily be the first choice, in that capital should not be a substitute for adequate risk management. On the other hand, a demand for more capital may be justified even for those banks with high, but well-managed risk exposures.

3.3 <u>ICAAP as a part of Pillar 2</u>

The basic idea is that banks shall, within the framework of Pillar 2, identify all of the risks to which they are exposed. This involves a wider spectrum of risks than those that form the basis for the minimum capital adequacy calculation within Pillar 1, i.e. These include any additional Pillar 1 risks, i.e. credit risks, market risks and operational risks. It involves, among other things, at least the following*:

- Strategic risk – arising from a bank's strategies and changes in fundamental market conditions which may occur;

- Reputational risk – the risk of adverse perception of image in the market or the media, etc.

- Liquidity risk – the risks of difficulties in raising liquidity or capital in certain situations;

- Concentration risk – exposures concentrated on a limited number of customers, industries, certain sectors or geographic area, etc. entailing vulnerability; and

- Macro Economic and Business cycle risk – through lending or otherwise a bank may be vulnerable to business cycle risks or environmental changes

- Interest Rate risk – relevant to the banking book.

These risks, as well as the risks that are addressed within the scope of Pillar 1 are, of course, to a certain degree inter-dependent and to a certain extent, capture various aspects of the same risk classification. For example, a bank, which incurs major credit losses, is probably more exposed to the risk of damage to its reputation and, can be also more easily affected by problems in raising capital.

Consequently, there can be no doubt that Pillar 2 is one of the most important new features in Basel II, and within its scope, banks and SAMA must work together to achieve a comprehensive assessment of risks, risk management, and capital requirements.

---

* Other risks not specifically covered here are described in component 2 of the Document under item #4.3.

Interest rate risk in the banking book:

The measurement process should include all material interest rate positions of the bank and consider all relevant repricing and maturity data. Such information will generally include current balance and contractual rate of interest associated with the instruments and portfolios, principal payments, interest reset dates, maturities, the rate index used for repricing, and contractual interest rate ceilings or floors for adjustable-rate items. The system should also have well-documented assumptions and techniques.

Regardless of the type and level of complexity of the measurement system used, bank management should ensure the adequacy and completeness of the system. Because the quality and reliability of the measurement system is largely dependent on the quality of the data and various assumptions used in the model, management should give particular attention to these items.

(Refer to Paragraph 739-740 of International Convergence of Capital Measurement and Capital Standards – June 2006)

Liquidity risk: Liquidity is crucial to the ongoing viability of any banking organization. Banks' capital positions can have an effect on their ability to obtain liquidity, especially in a crisis. Each bank must have adequate systems for measuring, monitoring and controlling liquidity risk. Banks should evaluate the adequacy of capital given their own liquidity profile and the liquidity of the markets in which they operate.

(Refer to Paragraph 741 of International Convergence of Capital Measurement and Capital Standards – June 2006)

4. Major Challenges in Building an ICAAP:

The major challenge in the internal capital adequacy assessment is to identify and accurately assess the significance of all of the risks faced by a bank and which may have consequences as regards to its financial situation. Subsequently, the risks identified, must be quantified by translating these into a capital requirement.

In all of these stages there are both conceptual difficulties and measurement problems. These include:

1. What constitutes a relevant risk?
2. What is the reasonable possibility that such a risk will actually happen?
3. If such a risk occurs, how large is the damage that it might lead to?
4. Do various risks arise independently or are they co-related with each other?
5. How is the assessed risk to be priced in terms of capital requirements?

While there have been developments for analyzing and measuring risks, assessment and risk management are not an exact science in which models and systems automatically provide quantified answers. Analysis, assumptions, methods and models are important tools in order to obtain reasonable answers. However, ultimately, a comprehensive and prudent assessment is required which includes experiences, expert judgment and views other than those that can be formulated in figures. Sound common sense can never be replaced by statistics and model calculations.

There is also a strong linkage between the degree of sophistication with respect to risk measurement and management and the scope and nature of the bank's operations. For example, an international banking group with a large number of business areas and thus a complex risk structure has a need and the resources for a more advanced risk measurement methodology. However, for a small bank this may not be the case. Also, from a systemic risk perspective, more stringent requirements are obviously imposed on a large financial group since deficient risk management in such a bank may have detrimental impact on the entire financial system.

Given that banks are different is an important reason why SAMA will not prescribe any standard arrangement as to how the internal capital adequacy assessment process is to be carried out. It is up to each bank, based on its own operations, its scope of business and risks to formulate an internal capital adequacy assessment process which is suitably adapted and which meets the requirements of SAMA. This means also that the size of the operations is not the sole criterion; rather, it is the complexity and risk level of the operations which should be the main driver.

5. <u>The ICAAP Process</u>:

5.1 <u>Board Responsibility in the ICAAP Process</u>

It is important that an internal capital adequacy assessment process, as an activity, remains the responsibility of senior management and the Board.

In this regard, the board of directors and senior management must be clearly involved in its development, the process itself, and its integration into the ongoing operations and planning. The Board should ensure that the ICAAP is embedded in the bank's business and organizational processes. The Board's responsibility in the ICAAP process must be documented and clarified throughout the organisation.

5.2 <u>Strategic and Capital Planning in the ICAAP Process</u>

As a part of the ICAAP process, the board of directors and senior management must also establish clear goals with respect to the long-term level and composition of capital and integrate it as an element in the bank's strategic planning. There must also be a preparedness to handle unforeseen events that may detrimentally affect the capital adequacy situation.

Consequently, bank's senior management as a significant responsibility must have a process for assessing its capital adequacy relative to its risk profile. In this regard, the ICAAP’s design should be in congruence with a bank's capital policy and strategy. Further, it should be fully documented.

The initial point for a bank's capital requirement and strategic plans must be to identify all of the risks to which it is exposed and which may be of significance. Also, the object is that a well thought-out and a clear decision emerges as to how these risks are to be managed. This requires an approach which includes an assessment of the following:

- The various markets in which the bank operates;
- The products it offers;
- The organizational structure;
- Its financial position;
- Its experience from various disruptions and problems previously experienced, and assessments of what might happen to the banks if risk materializes;

- Strategies, plans and ideas about entering new markets or product areas must also be considered.

- Reviews and analyses of data as well as qualitative assessments.

- For the complex banks, this entails extensive reviews of the risks to which it is exposed on a continuing basis. Stress tests/sensitivity analyses are required in order to be able to measure the effects of a particular disruption. Regular analysis and assessments are required of the manner in which risks are managed, controlled and quantified and how they should be managed in the future. It is also important to identify the connections and links such as co-relations, which may exist between various types of risks. This should lead to a bank's capital requirements including any additional control measures.

- For a bank with more straight forward operations, the analysis work is obviously simpler as there are fewer and less significant factors. On the other hand, this does not mean that a more limited operation with respect to breadth or range or the total turnover of the business is automatically less risky.

A complex operation with many branches of business may involve difficulties in achieving a comprehensive grasp of the total risk structure, as well as of all the factors that affect it. In a more limited operation, the negative aspect is the risks arise from being more dependent on one or a small number of products, perhaps on a limited number of customers and perhaps within a limited geographical area. For such operations, it may also be more difficult to raise capital rapidly at a reasonable cost.

5.3 Documentation and Corporate Governance in the ICAAP Process

The requirement regarding documentation is very significant. This is because in order to be able to evaluate the process it must be verifiable and it is possible for both the banks and SAMA to do a follow-up. Further, the manner in which the process is conducted as well as the decisions to which it leads to must be set forth in business plans, the board's rules of procedure, the minutes, as well as in various strategy and policy documents.

5.4 Frequency of ICAAP Review

The ICAAP should form an integral part of the management process and of a decision-making culture, and it should be reviewed regularly by a bank's board or the board's executive committee. SAMA requires that this must take place at least once a year. Additionally, the internal capital adequacy assessment process must be reviewed and a document submitted when significant changes have taken place, whether in relation to the bank's own decisions or external changes. The fist formal ICAAP should be for the year 31.12.2008 and should be submitted to SAMA by 31 January 2009.

Also, in this regard, for a bank which operates in a number of financial sectors and perhaps also in various national markets, it may require a review of the ICAAP more frequently than once a year. SAMA will inform these Banks where a submission other than the annual submission is required. Consequently, for banks that operate within a single and simpler market segments, and where no dramatic changes take place in the market structure, a yearly review may represent an acceptable frequency.

5.5 Risk Based and Comprehensive

The ICAAP should be risk based, comprehensive, forward-looking and take into consideration a bank's strategic plans and external changes. Further, it should also be based on an adequate measurement and assessment processes.

The basis of the internal capital adequacy assessment process lies in the measurement of a bank's minimum capital requirements which is the product of the calculated assessment of credit risks, market risks and operational risks which take place within the scope of Pillar 1 and all relevant Pillar 2 risks. Additional capital may also be required as a result of stress testing results, additional infrastructure expenditures and human resource, i.e. hiring of senior level executives. The internal capital adequacy assessment process challenges banks that they must take a broader approach and perspective of assessing other risks. Also, included are circumstances which affect the bank's total risk profile and which the management must analyze and form conclusions on their effects on the total capital requirements.

In this respect materiality is an aspect, i.e. large risk exposure - large risk management requirement - large capital requirement, and vice versa. However, it is important to understand that all banks - large as well as small, complex and non-complex - must comply with SAMA requirements.

5.6 Models and Stress Testing

Assessments of risks may be made both by using very sophisticated methods, models and also using perhaps simpler measures, and methods. What is appropriate and relevant is determined by the banks operations in question. In case of a large bank, it might be natural to use extensive stress tests which provide quantitative measurements of the impact due to a specified disruption. Generally, larger banks have external analyses with respect to economic and business cycles and financial market trends, including the use of economic capital models and measurements. This type of approach can constitute an important element of the internal capital adequacy assessment process. However, it is limited by the fact that generally it only deals with risks that are quantifiable.

It follows, therefore, it is not necessary for a bank with less complex operations to employ complicated model involving advanced analysis leading to economic capital requirements. However, for a small bank, the most important issue is to assess the effect of, for example, loosing its three largest customers, or an economic sector where the bank has considerable exposure having major problems, as well as consequence of the closure of a large customer.

Should a Bank utilize models relevant and appropriate disclosure of the model such as its generic name, application or use within the risk management process, validation results, internal logic, should be provided.

5.7 Reasonable Results

The ICAAP should produce a reasonable outcome vis-à-vis capital requirements. The process involves weighing together the importance of the risks which a bank encounters, the extent to which it exposes itself to these risks, and how it organizes itself and works in order to address them. This "bottom line" can crystallize into a minimum amount of capital after discussion with SAMA, as well as additional control systems necessary to cover the risks the bank is exposed to.

While capital requirements constitute a minimum requirement, banks in their interest operate above this minimum level as a consequence of their strategic objectives. The reason for this includes higher rating and thereby lower funding costs. It also provides a freedom of action in connection with corporate acquisitions, as well as in the event of losses which may arise due to a rapid and serious downturn in the economy. Consequently, banks, as well as SAMA, expect that bank capital stays above the minimum level.

Generally, if a bank's internal capital adequacy assessment process result in an assessed level of required capital which is the same, or below, the minimum as determined under the Pillar 1, this is an indication that the internal capital adequacy assessment process has not functioned in a satisfactory manner.

II. Reporting Format and Contents

1. <u>Overview of the Reporting Format and Contents</u>:

The ultimate end product of the ICAAP process is the ICAAP document. This section on reporting format and contents is to provide guidance to banks to describe in a logical format the main assumptions and results of the ICAAP process. Consequently, the ICAAP document should bring into one place an assessment of the capital requirements in relation to a bank's risk profile, strategies, business plans, major risks, acquisitions, governance and internal risk management systems, etc. It also must establish the capital required for economic, regulatory and accounting purposes and help identify planned sources of capital to meet its objectives. Further, all relevant assessments and information should be covered and documented in the ICAAP.

Specifically, the objectives of the ICAAP and the related entities of the bank that are included by it should be specified. The main results of the ICAAP effort may be presented in a tabular format indicating the major components of capital requirements, capital available, capital buffers and proposed funding plans. Furthermore, the adequacy of the governance and bank's internal control and risk management processes should be included.

It is also important to document the strategic position of the bank, its balance sheet strength, planned growth in the major assets based on its Business plans for the next 12 to 18 months indicating the likely consumption in capital for this growth by major category.

Further, the results of major stress tests on capital requirements and capital supply for additional risks deterioration in the economic environment, recessionary periods, or other economic/political downturns are important aspects to be covered.

2. <u>Executive Summary</u>:

The major purpose of the Executive Summary is to describe in a summary form the main results of the ICAAP effort which is to bring into one place objectives of the ICAAP, the assessment of the capital requirements for strategies, business plans, all risks, acquisitions, etc. Also presented and described should be the capital required for economic, regulatory and accounting purposes and identification of planned sources of capital to meet these objectives. The following information should be briefly described and where appropriate, relevant amounts are quantified and presented in a tabular format:

A. 1. <u>Capital Required</u>

- Pillar 1 Capital Requirements
- Pillar 2 Capital Requirements
- Business Plans (Summarized)
  - Growth Rate and amounts by business lines
  - Capital requirements by business lines
- Strategic Initiatives
- Capital Expenses

- Stress testing
- Other capital requirements
- Total capital requirements

2. Capital Available
   - Current Availability
   - IPOS
   - Qualifying Sukuks
   - Qualifying Debt issues
   - Rights issue
   - Other capital sources
   - Total capital sources

3. Buffer Available (1-2)

B. Dividends Proposed

C. Funding plans over the Time Horizon

D. Capital requirement for each subsidiary or affiliate

Other information that may be included in the Executive Summary are comments on significant matters on any of the items above.

3. Objective of an ICAAP:

A description of the bank's specific objectives is desirable. In this regard, the differing purposes that capital serves: shareholder returns, rating objectives for the bank as a whole or for certain securities being issued, avoidance of regulatory intervention, protection against uncertain events, depositor protection, working capital, capital held for strategic acquisitions, etc.

4. Summary of Bank's Strategies including its Current and Projected Financial and Capital Positions:

This section would be the major elements of a bank's strategic and operational plans. It would include the present financial position of the bank and expected changes to the current business profile, the environment in which it expects to operate, its projected business plans (by appropriate lines of business), projected financial position, and future planned sources of capital.

Major aspects to be considered is formulating a business plan and the bank's strategies and initiative including aspects such as the political, economic, legal, components, etc. of the environment their likely profile and impact over the planning period of the Bank. This may consider aspects such as oil prices, legislation related to the Bank, i.e. foreign investments, consumer banking, capital markets, mortgages, leasing and installment companies, etc.

The starting balance sheet and the date over which the assessment is carried out should be disclosed.

The projected balance sheet should clearly indicate the major lines of business which are going to be inspected by the Bank's strategic initiatives, environmental changes and assumption over the planning period and the impact on capital requirements by major lines of business.

Also included would be the projected financial position, the projected capital available and projected capital resource requirements based on expected plans. These might then provide a baseline against which adverse scenarios might be compared.

5. Capital Adequacy and ICAAP:

This section should include the following:

Disclosure of various types of Capital

An ICAAP establishes a framework for economic, legal, regulatory and accounting capital purposes and helps identify planned sources of capital to meet these needs. Consequently, this section should provide a distinction from the bank's perspective of the following capital classification indicating their purpose, minimum requirements and other attributes.

1. Regulatory Capital
2. Accounting Capital
3. Legal Capital
4. Economic Capital (if relevant)

Additionally, a bank will need to describe its position with respect to its definition, assimilation and usage within the bank's risk and performance assessment framework.

Consequently, this section should elaborate on the bank's view of the amount of capital it requires to meet its minimum regulatory needs and disclosure requirements under International Accounting Standards, or whether what is being presented is the amount of capital that a bank believes it needs to meet its strategic business objectives, external ratings, and a support for a dividend policy from a shareholders perspective, etc. For example, whether the capital required is based on a particular desired credit rating or includes buffers for strategic purposes or to minimize the charge for breaching regulatory requirements. Where economic capital models are used this would include the time horizon, economic description, scenario analyses, etc. including a description of how the severity of scenarios have been chosen.

Timing of the ICAAP

Generally, the ICAAP is prepared on an annual basis as at the end of each calendar year, i.e. 31 December 2008 (and is due in SAMA as at 31 January of the following year). However, should there be any variation to this timing, additional details will need to be provided. This will include the reasons for the effective date of the ICAAP. Other information to be provided will also include an analysis and consideration for any events between the effective date and the date of submission which could materially impact the ICAAP and the rationale for the time period over which ICAAP has been assessed.

Risk Covered in the ICAAP

An identification and appropriate description of the major risks faced in each of the following categories:

- Credit Risk (Additional to Pillar 1)
- Market Risk (Additional to Pillar 1)
- Operational Risk (Additional to Pillar 1)
- Liquidity Risk
- Concentration Risk
- Securitization Risk
- Strategic Risk
- Interest Rate Risk

SAMA recognizes banks' internal systems as the principal tool for the measurement of interest rate risk in the banking book and the supervisory response. To facilitate SAMA's monitoring of interest rate risk exposures across institutions, banks would have to provide the results of their internal measurement systems, expressed in terms of economic value relative to capital, using a standardized interest rate shock.

(Refer to Paragraph 763 of International Convergence of Capital Measurement and Capital Standards – June 2006)

- Macro Economic and Business Cycle Risk
- Reputational Risk
- Global Risk
- Any other Risks identified
- An explanation of how each of the risk has been identified, assessed, measured and the methodology and or models currently or to be employed in the future, and the quantitative results of that assessment;
- where relevant, a comparison of that assessment with the results of the pillar 1 calculations;
- a clear articulation of the bank's risk appetite by risk category; and
- where relevant, an explanation of method used to mitigate these risks.

6. Approach and Methodology:

Current Methodology

A description of how models and assessments for each of the major risks have been approached and the main assumptions made.

For instance, banks may choose to base their ICAAP on the results of Pillar 1 risks calculation with additional risks (e.g. concentration risk, interest rate risk in the banking book, etc.) assessed separately and added to Pillar 1. Alternatively, a bank may decide to base their ICAAP on internal models for all risks, including those covered under Pillar 1 (i.e. Credit, Market and Operational Risks) as additional risks.

The description would make clear which risks are covered by which modeling calculation or approach. This would include details of the models, methodology and process used to calculate risks in each of the categories identified and reason for choosing the models and method used in each case.

Future Approach and Methodology

Banks may provide a summary on the future models and methodologies being considered and developed including their strengths and weaknesses.

Internal Models: Pillar 1 and ICAAP comparisons

Should the internal models vary from any regulatory models approved for pillar 1 purposes, this section would provide a detailed comparison explaining both the methodological and parameterization differences between the internal models and the regulatory models and how those affect the capital measures for ICAAP purposes.

7. Details on Models Employed:

A list of models utilized in the formulation of the ICAAP should be provided giving relevant and appropriate details as given below:

- The key assumptions and parameters within the capital modeling work and background information on the derivation of any key assumptions.
- How parameters have been chosen including the historical period used and the calibration process.
- The limitations of the model.
- The sensitivity of the model to changes in the key assumptions or parameters chosen.
- The validation work undertaken to ensure the continuing adequacy of the model.
- Whether the model is internally or externally developed. If externally acquired its generic name and details on the model developer.
- Details should also be provided as to the extent of its acceptance by other regulatory bodies, users in the international financial community, overall reputation and market acceptance.
- Specific details on the applications within the Bank, i.e. measurement of risks such as credit, liquidity, market, concentration, etc. or for the purpose of establishing internal credit risk classification ratings, risk estimates, PDs, LGDs, EADs, etc.
- Major merits and demerits of the chosen models.
- Results of the model validation obtained through

    - Back testing / Scenario testing
    - Analysis of the internal logic
- Major methodologies or statistical technique used, i.e. value at risk models employing methods such as variance/co-variance; historical simulation, Monte Carlo method, etc.
- Confidence levels embedded for regulatory capital, economic capital, or for external rating purposes.

Further, the explanation of the differences between results of the internal model for Pillar 1 would be set out at the level at which the ICAAP is applied. Therefore, if the firm's ICAAP document breaks downs the calculation by major legal regulated entities, an explanation for each of those individual entities would be appropriate.

SAMA would expect the explanation to be sufficiently granular to show the differences at the level of each of the Pillar 1 risks.

Data definition, i.e. whether the source is external or internal and if any data, manipulation of external data has been done for it to conform with internal data.

8. Stress and Scenario Tests Applied:

Where stress tests or scenario analyses have been used to validate the results of modeling approaches, the following should be provided:

- information on the quantitative results of stress tests and scenario analyses the bank carried out and the confidence levels and key assumptions behind those analyses, including, the distribution of outcomes;
- information on the range of adverse scenarios which have been applied, how these were derived and the resulting capital requirements; and
- where applicable, details of any additional business-unit specific or business plan specific stress tests selected.

Details on Stress and Scenario Testing:

This section should explain how a bank would be affected by an economic recession or downswings in the business or market relevant to its activities. SAMA is interested in how a bank would manage its business and capital so as to survive for example a recession whilst meeting minimum regulatory standards. The analysis would include financial projections for two to three years based on business plans and solvency calculations.

The severity of recession may typically be one that occurs only once in a 15 year period. The time horizon would be from the present day to at least the deepest part of the recession.

Typical scenarios would include:
- how an economic downturn would affect

    - the bank's capital resources and future earnings; and
    - the bank's strategy takes into account future changes in its projected balance sheet, income statement, cash flow statement, impact on its financial assets, etc.
- In both cases, it would be helpful if these projections showed separately the effects of management actions to changes in a bank's business strategy and the implementation of any contingency plans.
- an assessment by the bank of any other capital planning actions to enable it to continue to meet its regulatory capital requirements through a recession. These actions may include new capital injections from related companies, new share issues through existing shareholders, IPO's, floatation of long term debt, Sukuks, etc.
- For further details, refer to Attachment 1.

9. <u>Capital Transferability Between Legal Entities</u>:

Details of any restrictions on the management's ability to transfer capital during stressed conditions into or out of the business(es) covered. These restrictions, for example, may include contractual, commercial, regulatory or statutory nature. A statutory restriction could be, for example, a restriction on the maximum dividend that could be declared and paid. A regulatory restriction could be the minimum regulatory capital ratio acceptable to SAMA.

10. <u>Aggregation and Diversification</u>:

This section would describe how the results of the various risk assessments are brought together and an overall view taken on capital adequacy. This requires an acceptable methodology to combine risks using quantitative techniques. At the general level, the overall reasonableness or the detailed quantification approaches might be compared with the results of an analysis of capital planning and a view taken by senior management as to the overall level of capital that is appropriate.

- Dealing with the technical aggregation, the following may be described:
    i. any allowance made for diversification, including any assumed correlations within risks and between risks and how such correlations have been assessed including in stressed conditions;
    ii. the justification for diversification benefits between and within legal entities, and the justification for the free movement of capital between legal entities in times of financial stress.

11. <u>Challenge and Adoption of the ICAAP</u>:

This section would describe the extent of challenge and testing of the ICAAP. Accordingly, it would include the testing and control processes applied to the ICAAP models or calculations, and the senior management or board review and sign off procedures.

In making an overall assessment of a bank's capital needs, matters described below should be addressed:

i. the inherent uncertainty in any modeling approach;
ii. weaknesses in bank's risk management procedures, systems or controls;
iii. the differences between regulatory capital and available capital;
iv. the reliance placed on external consultants.
v. An assessment made by an external reviewer or internal audit.

Internal control review

The bank should conduct periodic reviews of its risk management process to ensure its integrity, accuracy, and reasonableness. Areas that should be reviewed include:

- Appropriateness of the bank's capital assessment process given the nature, scope and complexity of its activities;

- Identification of large exposures and risk concentrations;

- Accuracy and completeness of data inputs into the bank's assessment process;

- Reasonableness and validity of scenarios used in the assessment process; and

- Stress testing and analysis of assumptions and inputs.

- (Refer to Paragraph 745 of International Convergence of Capital Measurement and Capital Standards – June 2006)

12. <u>Use of the ICAAP within the Bank</u>:

This area should demonstrate the extent to which capital management is embedded within the bank's operational and strategic planning. This would include the extent and use of ICAAP results and recommendation in the strategic, operational and capital planning process. Important elements of ICAAP including growth and profitability targets, scenario analysis, and stress testing may be used in setting of business plans, management policy, dividend policy and in pricing decisions.

This could also include a statement of the actual operating philosophy and strategy on capital management and how this links to the ICAAP submitted.

13. <u>Future Refinements of ICAAP</u>:

A bank should detail any anticipated future refinements within the ICAAP (highlighting those aspects which are work-in-progress) and provide any other information that will help SAMA review a bank's ICAAP.

ATTACHMENT 1

Details on Stress Testing

Stress Testing is a generic term for the assessment of vulnerability of individual financial institutions and the financial system to internal and external shocks. Typically, it applies 'What if' scenarios and attempts to estimate expected losses from shocks, including capturing the impact of 'large, but plausible events'. Stress testing methods include scenario tests based on historical events and information on hypothetical future events. They may also include sensitivity tests. A good stress test should have attributes of plausibility and consistency and ease of reporting for managerial decisions.

Stress Testing Under Pillar 1:

The Basel II document has several references for banks to develop and use stress testing methodology to support their work on credit, market and operational risks. There are several reference to stress testing under Pillar 1 which are summarized hereunder:

Para 434	An IRB Bank must have in place sound stress testing processes for use in the assessment of capital adequacy. Examples of scenarios that could be used are (i) economic or industry downturn (b) market-risk events (c) liquidity conditions.
Para 435	The bank must perform a credit risk stress test to assess the effect of certain specific conditions on its IRB regulatory capital requirements. The bank's stress test in this context should consider at least the effect of a mild recession scenario e.g. two consecutive quarters of zero growth to assess the impact on its PD's, LGD's and EAD's.
Para 436	The bank's method should consider the following sources of information: bank's own data should allow estimation of the ratings migration; impact of a small deterioration in credit environment on a bank's rating; evaluate evidence of rating migration in external ratings.
Para 437	National discretion with supervisors to issue guidance on design of stress tests.

Additional Pillar 1 Guidance on Stress Testing:

Para 527(j)	For calculation of capital charge for equity exposures where internal models are used there are some minimum quantitative standards to be applied. One of these standards requires that a rigorous and comprehensive stress testing program must be in place.

In addition, under the Basel Market Risk Amendment document of 1996 there are stress testing requirements for banks using the internal models. These are contained in Section B.5 of the (1996) Amendment and are as follows:

- Among more qualitative criteria that banks would have to meet before they are permitted to use a models based approach are the following:

  - Rigorous and comprehensive stress testing program should be in place.
  - Cover a range of factors that can create extraordinary losses or gains in trading portfolios.
  - Major goals of stress testing are to evaluate the capacity of the bank's capital to absorb potential large losses and to identify steps the bank can take to reduce its risk and conserve capital.
  - Results of stress testing should be routinely communicated to senior management and periodically, to the bank's board of directors.

- Results of stress tests should be reflected in the policies and limits set by the management.

- Prompt steps are expected for managing revealed risks appropriately, e.g.
  - Hedging
  - Reducing size of exposures

- Scenarios to be employed:
  - Historical without simulation (largest losses experienced)
  - Historical with simulation (assessing effects of crisis scenarios or changes in underlying parameters on current portfolios)
  - Mostly for adverse events, based on individual portfolio characteristics of institutions

Stress testing under Pillar 2:

Under the Supervisory Review Process SAMA will initially review the Pillar 1 stress testing requirement for credit and market risks. How-ever, the Basle II document also covers stress testing under Pillar 2 and the relevant references are included in the following paragraphs:.

Para 726	In assessing capital adequacy, bank management needs to be mindful of the particular stage of the business cycle in which the bank is operating. Rigorous, forward looking stress testing that identifies possible events or changes in market conditions that could adversely impact the bank should be performed. Bank management clearly bears primary responsibility for ensuring that the bank has adequate capital to support its risks.
Para 738	For market risk this assessment is based largely on the bank's own measure of value-at-risk or the standardised approach for market risk. Emphasis should also be placed on the institution performing stress testing in evaluating the adequacy of capital to support the trading function.
Para 775	For credit concentration risk a bank's management should conduct periodic stress tests of its major credit risk concentrations 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.
Para 777	In the course of their activities, supervisors should assess the extent of a bank's credit risk concentrations, how they are managed, and the extent to which the bank considers them in its internal assessment of capital adequacy under Pillar 2. Such assessments should include reviews of the results of a bank's stress tests.
Para 804	Under Securitization banks should use techniques such as static pool cash collections analyses and stress tests to better understand pool performance. These techniques can highlight adverse trends or potential adverse impacts. Banks should have policies in place to respond promptly to adverse or unanticipated changes. Supervisors will take appropriate action where they do not consider these policies adequate. Such action may include, but is not limited to, directing a bank to obtain a dedicated liquidity line or raising the early amortisation credit conversion factor, thus, increasing the bank's capital requirements.

<u>Other aspects related to stress testing</u>:

- There are no specific or explicit requirements in the Basel II document on stress testing for liquidity risk although some banks may wish to develop 'What if' scenarios for liquidity under stress conditions.

- SAMA expects all banks to closely review the above Basel II recommendations on stress testing and develop specific strategies and methodologies to implement those that are relevant and appropriate for their operations. The Agency in its evaluation of banks method and systems under Pillar I will examine the implementation of these stress test requirements. It will also review the stress test methodologies and systems as part of its Supervisory Review Process.

- As a minimum bank should carryout stress tests at least on an annual basis.