Basel II – SAMA's Detailed Guidance Document

SAMA
BANKING SUPERVISION DEPARTMENT
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1. Introduction and Overview of Approaches Available to Implement Basel-II

1.1 Introduction

Banks should utilize this Draft Document in conjunction with the guidance offered by the Basel Committee on Banking Supervision's revised framework entitled "International Convergence of Capital Measurement and Capital Standards" of June 2004.

This Document represents an enhanced and revised version of SAMA's earlier Document issued on 31 May, 2005. These revisions and enhancements have been made as a result of further announcements from the Basel Committee, the Islamic Financial Services Board as well as the work done by Banks' Working Groups on Credit Risk Mitigation, IRB Approaches, Operational Risk, etc. A number of minor changes amendments and corrections are being made that were noted by SAMA and the banks resulting in the review process. Also, further guidance is being provided in the following areas;

1. Credit Risk Mitigation
2. Shariah Compliant Banking
3. Operational Risk
4. Pillar 2
5. Stress Testing

1.1.1 Final Implementation Document

The Agency would expect the banks to provide further comments, and suggestions to this Draft Document. These comments and others relevant pronouncements would be incorporated in SAMA's final Detailed Guidance Document.

1.2 Approaches Available to Implement Basel-II

SAMA's proposes to apply the new Basel Framework to all licensed banks operating in Saudi Arabia, by making available the following approaches for its implementation.

Pillar - I

Credit risk

SAMA proposes to make available the IRB and Standardized Approaches. SAMA anticipates, however, that while majority of banks incorporated in Saudi Arabia would initially implement the Standardized Approach, foreign joint venture banks and other Saudi banks would eventually implement the FIRB and eventually AIRB approaches.

Banks planning to implement the Foundation IRB: SAMA expects banks to develop historical data and to create internal rating systems that will permit them to use the Foundation IRB approach.

Banks planning to implement the Advanced IRB: Some banks may wish to develop data and systems to implement Advanced IRB Approach. Such plans will be encouraged and the IRB models to be used will be agreed with SAMA on a case-by-case basis.

Branches of Foreign Banks
A branch of a foreign bank may be permitted to use its parent's IRB methodology subject to SAMA's approval. SAMA's approval process would consider, among other things, the implementing strategies, options and procedures of home supervisory authorities and the appropriateness, for the Saudi marketplace, of the data and experience used to calculate the branch IRB capital requirements.

Operational Risk
SAMA proposes to permit banks operating in Saudi Arabia to implement any one of the following four approaches for measuring operational risk: the Basic Indicator Approach, the Standardized Approach, the Alternative Standardized Approach and the Advanced Measurement Approach.

Market Risk
Bank should continue to apply SAMA's circular No. BCS 355 of Dec. 29,2004.

Pillar - II
Banks operating in Saudi Arabia must have sound, effective and complete strategies and processes to assess and maintain on an ongoing basis the internal capital that they consider adequate to cover their risks. They must perform regular internal reviews of these strategies and processes to ensure that they are proportionate to the nature, scale and complexity of their activities.

SAMA will review and evaluate the risks to which the banks are or might be exposed. Based upon these reviews and evaluations it will determine whether such arrangements and capital levels ensure sound management and coverage of the risks. SAMA will establish the frequency and intensity of these reviews and evaluations, taking into account systemic importance, nature, scale and complexity of banks. It will annually update these reviews and evaluations.

Pillar III

SAMA in consultations with the Banking Working Groups will be issuing its guidance in the near future.

2. Scope of Application of Basel II, and other significant items

2.1 Owned or Controlled Financial Entities

SAMA requires that owned or controlled entities and securities entities should be fully consolidated for Basel II purposes to ensure that it captures the risk of the banking group.

Banking groups are groups that engage predominantly in banking activities and, in some countries, a banking group may be registered as a bank.

Banks are also required to ensure minimum capital adequacy on a consolidated as well as standalone basis by ensuring that the Parent banks also meet the SAMA mandated capital adequacy regulation under Pillar 1 of the Basel guidelines. Going forward all banks would be required to make two sets of prudential returns for Pillar 1 Capital Computations, the first one on a consolidated basis and the other on a standalone basis.

(Refer to Paragraph 21 of International Convergence of Capital Measurement and Capital Standards – June 2006)

2.2. Significant minority equity investments in non-insurance financial entities

"The new Basel framework requires that significant minority investments in financial entities, where control does not exist, be excluded from a bank's capital by deduction of the equity and other investments under certain conditions, may be consolidated on a pro rata basis. National accounting and/or regulatory practices would determine the threshold above which minority investments will be deemed significant and be therefore either deducted or consolidated on a pro rata basis".

SAMA requires that all significant minority interests in banking, securities or other financial entities that exceed 10% of the outstanding equity shares are a substantial minority investment and are to be deducted at 50 percent from Tier 1 capital, and 50 percent from Tier 2 capital.

2.2.1 Subsidiaries and Significant Minority Interests in Insurance Entities

SAMA requires that all subsidiaries and significant minority interest in insurance entities at 10% or more are to be excluded from banks capital at 50% from Tier-I, and 50% from Tier-II capital.

In addition, SAMA would not permit the recognition of surplus capital of an insurance subsidiary for the capital adequacy of the group.

(Refer to Paragraph 33 of International Convergence of Capital Measurement and Capital Standards – June 2006)

SAMA will ensure that majority-owned or controlled insurance subsidiaries, which are not consolidated and for which capital investments are deducted, are themselves adequately capitalized to reduce the possibility of future potential losses to the bank. SAMA, through the parent banks will monitor actions taken by the subsidiary to correct any capital shortfall and, if it is not corrected in a timely manner, the shortfall will also be deducted from the parent bank's capital.

(Refer to Paragraph 34 of International Convergence of Capital Measurement and Capital Standards – June 2006)

2.3 Significant investments in commercial entities

The new Basel framework provides that significant minority and majority investments in commercial entities, which exceed certain materiality levels, are to be deducted from Banks capital"; that means materiality levels of 10% of the bank's capital for individual significant investments in commercial entities and 60% of the bank's capital for the aggregate of such investments. The amount exceeding this threshold would be risk weighted at 1250%.

Investments held below the 10% threshold will be risk weighted at 100% under the Standardized Approach, and as per section 7.2.1 for the IRB Approaches.

(Refer Paragraph 35 of International Convergence of Capital Measurement and Capital Standards – June 2006 & Para 90 of Basel III: A global regulatory framework for more resilient banks and banking systems)

2.4 Stand-alone capital

"The new Basel framework highlights the need for supervisors to test that individual Banks are adequately capitalized on a stand-alone basis".

SAMA recognizes that some Banks are currently in the process of designing the information system architecture required to support the new Basel framework. Banks are therefore encouraged to develop such internal systems that would enable them to provide an internal assessment of their stand-alone capital position on a legal entity basis. These internal systems should be designed to allow the Board, at a minimum, to have an informed view on the adequacy of capital on a legal entity basis including its major subsidiaries.

SAMA plans to discuss with the Banks the development of a framework for the supervisory review of a banks internal assessment of its stand-alone capital adequacy.

2.5 Regulatory Capital and Risk Weighted Assets

Regulatory Capital

Minor changes from the 1988 Accord with respect to treatment of general provisions – refer to IRB Approaches in Section 5.0.

Risk Weighted Assets

Total risk-weighted assets are determined by multiplying the capital requirements for market risk and operational risk by 12.5 (i.e. the reciprocal of the minimum capital ratio of 8%) and adding the resulting figures to the sum of risk-weighted assets for credit risk.

3. **Time Frame, Implementation Dates and Parallel Run**

SAMA expects all Banks in Saudi Arabia to be Basel II compliant by January 1, 2008 unless they have received special permission from the Agency.

3.1 **Standardized Approaches**

SAMA expects banks choosing the standardized approach and the simple operational risk approaches to implement the Basel II requirements by 1st January, 2008

3.1.1 **Internal Rating Based Approaches**

Banks planning to implement the IRB approaches may seek a longer time frame than 1st January 2008. This plans will be approved by SAMA on a case-by-case basis.

[258] "The new Basel framework requires a Banks to produce a formal Bank rollout plan or proposals to implement Basle II for review and approval by the supervisor for the IRB approval. The rollout plan would set out a detailed proposal for implementation of the IRB approaches, specifying to what extent and when it intends to roll out IRB approaches across all significant asset classes and business units over time".

Banks will continue to use Basel 1 up to the time they are ready to implement Basle II.

Banks using the IRB approach to credit risk and any of the permitted operational risk approaches would be expected to submit capital calculations that are compliant with the new Basel framework.

3.2 **Parallel Runs**

Banks planning to use the IRB approach together with any of the permitted operational risk approaches would be expected to conduct parallel runs.

SAMA expects different data quality standards for the initial stage parallel run compared to the subsequent stage parallel run; Banks would provide information during the initial year of the parallel run on a best efforts basis. However, for the subsequent stage parallel run information should be of sufficient quality to represent a meaningful dress rehearsal of the Banks IRB approaches.

For the initial year, Capital requirements for Banks using the Foundation Approaches would be 95% of Basel I, and 90% and 80% for each of the following year. For the AIRB credit risk or AMA operational risk would be subject to a floor set at 90 percent of Basel I. However, for the following year, capital requirements would be subject to a floor set at 80 percent of Basel 1;

However, SAMA based on its bi-lateral discussions with the Banks may establish such floors on a bank to bank basis.

3.3 Waivers for Exclusions from IRB

SAMA recognizes that there may also be some limited circumstances where certain exclusions from IRB rollout continue to be warranted. For example, where it can be demonstrated that for asset classes and/or business units operating in jurisdictions where the reliability of the legal framework for collection of defaulted debts does not support the development of robust data for credit risk estimates, SAMA would consider these exemptions. Consequently, SAMA would create a "limited waiver mechanism" to permit Banks to come forward with proposed exceptions of this type, which would then be considered on a case-by-case basis, including an assessment of materiality, with SAMA retaining the right to approve or decline such waivers in its sole discretion.

SCOPE OF APPLICATION AND

OTHER ISSUES

Reference to **Basel II** Document	Areas of National Discretion	SAMA's Position
	Reference to paragraph 24, 26 & 27 - Choice of rule between consolidation and deduction. All relevant financial activities will be consolidated, but, if not consolidated, deducted from capital. However, where subsidiary holdings are acquired through debt previously contracted and held on a temporary basis, are subject to different regulation, SAMA would require that the same are deducted from the Tier 1 capital base and Tier 2 Capital base in equal proportion i.e. 50% and 50%. SAMA will ensure that the entity that is not consolidated and for which the capital Investment is deducted meets minimum regulatory capital requirements of the concerned regulatory authority. SAMA will monitor actions taken by the subsidiary to correct any capital shortfall and, if it is not corrected in a timely manner, the shortfall will also be deducted from the parent bank's capital. (Refer to Paragraph 26 and 27 of International Convergence of Capital Measurement and Capital Standards – June 2006)	Yes
28	Threshold for minority investments to be deemed significant and be either deducted or consolidated on a pro-rata basis.	Yes
30 – 34	Scope of application: Treatment of significant investments in insurance subsidiaries.	Yes
43	Excess provisions: Recognition of excess of total eligible provisions in Tier 2 capital upto 0.6% of RWA.	Yes
49	Flexibility to develop bank-by-bank floors.	Yes

STANDARDIZED APPROACH

SECTION 4

Terminology

Abbreviations and other terms used in this document have the following meanings:

- "CRM" means credit risk mitigation, which refers to techniques bank use to reduce the credit risk of their exposures;

- "Principal Amount"[1] means the amount of any outstanding claim including accrued commission on, or contingent liability subject to CCF in respect of, the relevant counterparty;

- "Weighted Amount" means the credit risk-weighted amount in terms of which the capital requirement for the credit risk of an exposure is measured;

- "CCF" means credit conversion factor, by which the principal amount of an off-balance sheet exposure is multiplied to derive the credit equivalent amount;

- "ECAI" means an external credit assessment institution recognized by SAMA for capital adequacy purposes;

- "Sovereign" means the central government or the central bank of an economy, or a specified international organization "Specified international organizations" include;

  - The bank for International Settlements;
  - The International Monetary Fund;
  - The European Central Bank;
  - The European Community; and
  - Other entities as may be specified by SAMA from time to time.

- "Domestic Currency Claim" means any claim which is denominated and funded in the currency used domestically in the place in which the obligor is incorporated;

- "PSE" means a public sector entity which is specified as such either by SAMA. ("domestic PSE") or by an overseas banking supervisory authority ("foreign PSE"). It principally include regional governments and local authorities. Domestic PSEs are included in the list specified in SAMA's Guidance Notes on Basel-I the 1988 Accord. For PSES to be considered commercial organizations also refer to this list; Other entities as may be specified by SAMA from time to time.

- "MDB" means a multilateral development bank, which refers to any bank or lending or development body established by agreement between, or guaranteed by, two or more countries, territories or international organizations other than for purely commercial purposes, as specified by SAMA. These include;

    - World Bank
    - The International Bank for Reconstruction and Development;
    - The International Finance Corporation;
    - The Asian Development Bank;
    - The African Development Bank;
    - The European Bank for Reconstruction and Development;
    - The Inter-American Development Bank;
    - The European Investment Bank;
    - The European Investment Fund;
    - The Nordic Investment Bank;
    - The Caribbean Development Bank;
    - The Islamic Development Bank;
    - The Council of Europe Development Bank; and
    - Other entities as may be specified by SAMA from time to time.
    - Also refer to SAMA's Guidance Notes for the Basel I – 1988 Accord.

- "Licensed Banks" mean those that licensed by SAMA.

- "Securities firm" licensed and supervised by the Capital Market Authority (CMA) or by a relevant overseas supervisory authority.

- "Corporate" refers to any proprietorship, partnership or limited company that is neither a PSE, bank, securities firm nor borrower within the definition of regulatory retail exposures.

- "Past due" is a term used to described any exposure that is overdue for more than 90 days or rescheduled. For the definition of rescheduled loans refer to SAMA's Definition through its circular BCS # 312 of 19.1.2004

- **"Small Business Enterprises"** that may be included in the definition of a retail claims should not exceed SR 5 million.

4. Standardized Approach to Credit Risk

4.1 External Credit Assessment Institutions (ECAI's)
In general, risk-weighting of claims is done on the basis of credit assessments provided by external credit assessment institutions (ECAI's). Currently these include Moody's, S&P, Fitch and Capital Intelligence.

4.1.1. Claims on sovereigns

Claims on sovereigns and their central banks will be risk weighted as follows;

Credit Assessment	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Risk Weight	0%	20%	50%	100%	150%	100%

**"Under the Standardized Approach, the applicable risk weight for claims on sovereigns is based on the rating assigned to the sovereign by a recognized external credit assessment institution (ECAI) such as a rating agency. A national supervisory authority may apply a lower risk weight to its banks' exposures to their own sovereign when the exposures are denominated in the local currency and funded in the local currency. Other national supervisory authorities may also permit their banks to apply the same risk weight to domestic currency exposures to this sovereign. In these instances, there is no trans-border risk".

SAMA requires that banks operating in Saudi Arabia, with exposures to other sovereigns meeting the above criteria, to use the preferential risk weight assigned to the sovereign by the relevant national supervisory authority.

**"Risk weights for claims on sovereigns can also be determined using the country risk scores assigned by Export Credit Agencies (ECAs).

SAMA will not allow the use of ECAs' of other countries to provide credit rating for sovereigns.

4.1.2. Claims on Banks and Securities Firms

The new Basel framework allows national supervisory authorities to implement one of two options for risk-weighting claims on banks and securities firms.

Option-1:

Credit Assessment of Sovereign	AAA to AA-	A+to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Risk Weight under Option- 1	20%	50%	100%	100%	150%	100%

Under option 1, the risk weight is one category less favorable than that assigned to claims on the Sovereign of the country of incorporation. However, for claims on Banks in countries with sovereign rated BB+ to B- and on banks in unrated countries the risk weight will be capped at 100%.

Option-2:

Credit Assessment of Banks	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Risk Weight under Option- 2	20%	50%	50%	100%	150%	50%
Risk weight for short-term claims under Option - 2	20%	20%	20%	50%	150%	20%

Under option 2, the risk weight is based on the external rating a bank by a recognized ECAI.

SAMA requires banks operating in Saudi Arabia to use Option 2

National supervisory authorities, who choose to allow preferential treatment for claims on sovereigns may also allow preferential treatment for certain short term claims on banks. To be eligible for this treatment, these exposures must be denominated and funded in the local currency and have an original maturity of three months or less. These exposures may receive a risk weight that is one category less favourable than that assigned to claims on the Sovereign, subject to a floor of 20 percent. However, this preferential treatment is not available for banks risk weighted at 150%.

SAMA will allow banks to adopt the preferential treatment option

4.1.3 **Multilateral Development Banks (MDB's)**

A "0" risk weight may be given to those MDB's that meet qualifying criteria under Basel-II. Alternatively, MDBS will be risk weighted in accordance with their individual ratings as per banks option 2 without any preferential treatments for short-term exposures.

SAMA intends to adopt a 0% risk weight for qualifying MDB's and in general the risk weights to be determined on the basis of individual MDB rating as for option # 2 for banks.

4.1.4. **Claims on public sector entities (PSEs)**

SAMA proposes to continue with the current definition of PSEs as specified in its Capital Adequacy Requirements (CAR) guidelines in ERMs-Q-14.

The new Basel framework allows claims on (PSEs) to be risk weighted using either option 1 or option 2 for claims on Banks.

SAMA requires banks operating in Saudi Arabia to use Option -2.

4.1.5. **Claims on corporates**

Credit Assessment	AAA to AA-	A+ to A-	BBB+ to BB-	Below BB-	Unrated
Risk Weight	20%	50%	100%	150%	100%

Under the new Basel framework, the risk weight for corporate exposures is determined using the rating assigned by a recognized ECAI's. However, national supervisory authorities may allow banks to use the 100 percent risk weight for all corporate exposures in lieu of using external ratings.

SAMA requires the risk weight for all corporate exposures to be in accordance with their external ratings. Unrated corporate exposures to be at 100%.

4.1.6 **Claims included in the regulatory non-mortgage retail portfolios**

There are qualifying requirement based on product type, and the size of the exposure itself. These exposure include loans to individuals, leases, small business facilities, or car loans and other consumer loans, etc. In specific the new Basel framework attaches small business facilities enterprises (SBFE) qualifying criteria for claims that may be treated as retail claims for regulatory capital purposes and included in a regulatory retail portfolio. These criteria include a granularity criterion, which requires that the portfolio be sufficiently diversified to reduce the risk to a level warranting the 75 percent risk weight.

Specifically, with respect to exposure size, national supervisory authorities have the option of setting a numerical limits on the amount of gross exposure before taking into account credit risk mitigation to one counterparty[1]. For example, this limit could be set at 0.2 percent of the total retail portfolio as proposed in the framework.

To meet the 75% RW criteria SAMA requires the non-mortgage retail portfolio claims to meet the above criteria and should not exceed SR. 5 million.

National supervisory authorities should evaluate whether the risk weights in Para 69 are considered to be too low based on default experience for these types of exposures in their jurisdictions. Supervisors therefore may require higher weights. SAMA does not require higher risk weights for such exposures.

4.1.7. Claims secured by residential mortgages
"The new Basel framework allows claims secured by residential mortgages to receive a risk weight of 35 percent. Investments in hotel properties and time-share properties would be excluded from the definition of residential mortgage property. However, this reduced risk weight would only be applicable if there is a substantial security margin. Further, the loan default experience should also be considered".

SAMA will continue to apply a 100 percent retail risk weight to such claims and continue to monitor the default experience of this asset class for future consideration.

4.1.8. Claims secured by commercial real estate
"Under the new Basel framework, mortgages on commercial real estate are risk weighted at 100 percent. However, national supervisory authorities may apply a preferential risk weight of 50 percent to parts of commercial real estate loans under exceptional circumstances".
SAMA will continue to apply 100% risk weight.

4.1.9 Past due loans
"The new Basel framework proposes the following subject to national discretion.

RW	Level of Provisioning [2]
%	%
150	up to 20%
100	20% to 50%
50	50% and above

SAMA requires the above treatment with exception if the level of provisioning is more than 50%; the RW is reduced to 50%. In such cases the RW will be at 100%.

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[1] Aggregate exposure means gross amount subject to the above conditions in para 4.1.6 including such counterparties i.e. affiliated SBE that may be considered as a single beneficiary.
[2] On outstanding loans balance

4.1.10 **Other Assets**

Other Assets

The standard risk weight for all other assets will be 100%.

At national discretion, gold bullion held in own vaults or on an allocated basis to the extent backed by bullion, liabilities can be treated as cash and therefore risk-weighted at 0%.

SAMA requires that the treatment of gold bullion to be equivalent to cash.

4.1.11 **Off balance sheet items:**

Off-balance-sheet items under the Standardized Approach will be converted into credit exposure equivalents through the use of credit conversion factors (CCF).

Commitments with an original maturity of up to one year and commitments with an original maturity over one year will receive a CCF of 20% and 50%, respectively. However, any commitments that are unconditionally cancelable at any time by the bank without prior notice, or that effectively provide for automatic cancellation due to deterioration in a borrower's creditworthiness, will receive a 0% CCF.

For short-term self-liquidating trade letters of credit arising from the movement of goods (e.g. documentary credits collateralized by the underlying shipment), a 20% CCF will be applied to both issuing and confirming banks.

Where there is an undertaking to provide a commitment on an off-balance sheet item, banks are to apply the lower of the two applicable CCFs.

CCFs not specified above remain as defined in the 1988 Accord.

The credit equivalent amount of OTC derivatives and SFTs that expose a bank to counterparty credit risk is to be calculated under the rules set forth in Annex 4 of International Convergence of Capital Measurement and Capital Standards, 2006.

(Refer to Paragraph 87 of International Convergence of Capital Measurement and Capital Standards – June 2006).

With regard to unsettled securities, commodities, and foreign exchange transaction, SAMA requires that bank's prepares its Prudential return submission based on trade date rather than settlement date as per the accounting convention. Banks are encouraged to develop, implement and improve systems for tracking and monitoring the credit risk exposure arising from unsettled transactions as appropriate for producing management information that facilitates action on a timely basis. Furthermore, when such transactions are not processed through a delivery-versus-payment (DvP) or payment-versus-payment (PvP) mechanism, banks must calculate a capital charge as set forth in Annex 3 of International Convergence of Capital Measurement and Capital Standards – June 2006

(Refer to Paragraph 89 of International Convergence of Capital Measurement and Capital Standards – June 2006)

4.2 Domestic and foreign currency assessments

Under the new Basel framework, where unrated exposures are risk-weighted based on the rating of an equivalent exposure to the borrower, generally foreign currency ratings would be used for exposures denominated in foreign currency and domestic currency ratings would only be used for exposures denominated in the domestic currency. However, national supervisory authorities may permit the use of a borrower's domestic currency rating for exposures denominated in a foreign currency where (i) the bank participated in a loan extended by a qualifying multilateral development bank (MDB) or (ii) the trans-border risk of a loan extended by the bank is guaranteed by a qualifying MDB.

SAMA will allow this treatment.

4.3. Qualifying external credit assessments

4.3.1. Eligible ECAIs and the mapping pro*cess*

National supervisory authorities are responsible for determining whether an ECAI's meets the qualifying criteria specified in the new Basel framework. National supervisory authorities must also assign eligible ECAI assessments to the applicable risk weights available under the Standardized Approach.

SAMA proposes to develop a self-assessment questionnaire incorporating the eligibility criteria, which would be completed by identified rating agencies.
These criteria include:
- Objectivity,
- Independence.
- Transparency.
- Disclosures.
- Resources.
- Credibility

SAMA will work with eligible rating agencies to develop a mapping process for mapping their agency grades to the risk weights of the Standardized Approach.

4.3.2. Use of unsolicited ratings

As a general rule, Banks should use solicited ratings from eligible ECAIs. However, the new Basel framework allows national supervisory authorities to permit the use of unsolicited ratings.

SAMA will not allow Banks to use unsolicited ratings.

4.4 National Discretion Items
(Refer to Attached)

National Discretion – The Standardized Approach

Reference to Basel II Document	Areas of National Discretion	SAMA's Position
54	Lower RW to claims on sovereign (or Central Bank) in domestic currency if funded in that currency.	Yes
55	Recognition of ECA's assessments.	No
57	Claims on domestic PSEs as if banks.	Yes
58	Claims on domestic PSEs as if sovereigns.	Listed
60-64	Claims on banks: Opt. 1, RW one category less than sovereign: Opt.2, RW based on the bank's external credit assessment.	Option -2
64	Preferential RW treatment for claims on banks with an original maturity of 3 months or less and denominated and funded in the domestic currency.	Yes
67	Increase standard RW for unrated claims when a higher RW is warranted by the default experience in their jurisdiction.	No
68	To risk weight all corporate claims at 100% without regard to external ratings.	No
69	Definition of claims included in regulatory retail portfolio.	Yes
70	Granularity criterion for the retail portfolio, limit of 0.2% of the overall retail portfolio.	Yes
71	To increase RWs for regulatory retail exposures.	No
72	Definition of claims secured by residential mortgages.	Yes
72-73	To increase preferential RWs for claims secured by residential properties	Yes

Reference to Basel II Document	Areas of National Discretion	SAMA's Position
74 (FN25)	Commercial real estate 50% RW only if strict conditions are met.	No
75 & 78	RW for the unsecured portion of a loan past due, net of specific provisions are more than 50%.	No
75 (FN26)	Past due treatment for non-past due loans to counterparties subject to a 150%RW.	No
76 (FN26)	Transitional period of three years for recognition of a wider range of collateral for higher risk categories (past due assets).	No
77	If a past due loan is fully secured by other forms of collateral, 100% RW may apply when provisions reach 15% of the outstanding amount.	Yes
80	150% or higher RW to other assets.	No
81 (FN28)	RW gold bullion at 0%.	Yes
92	Mapping ECAI's assessments to RWs.	Yes
102 (FN31)	Use a borrower's domestic currency rating for exposure in foreign exchange transactions when loan extended by an MDB.	Yes
108	Use of unsolicited ratings.	No
201	Lower RW to claims guaranteed by the sovereign (or central bank), when dominated and funded in domestic currency.	Yes

INTERNAL RATING BASED APPROACHES

SECTION 5

INTERNAL RATING BASED APPROACH

Major Sections

5.0   Risk Weighting Framework.

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5.2   Application and Examination Procedures for Adoption of the IRB Approach.

RISK WEIGHTING FRAMEWORK
FOR CREDIT RISK
(IRB APPROACH)

SECTION 5.0

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Section 5.0

1.   Introduction

1.1   Terminology

1.1.1 Abbreviations and other terms used in this paper have the following meanings:

- "**PD**" means the probability of default of a counterparty over one year.
- "**LGD**" means the loss incurred on a facility upon default of a counterparty relative to the amount outstanding at default.
- "**EAD**" means the expected gross exposure of a facility upon default of a counterparty.
- "**M**" means the effective maturity which measures the remaining economic maturity of a facility.
- "**Dilution Risk**" means the possibility that the amount of a receivable is reduced through cash or non-cash credits to the receivable's obligor.
- "**EL**" means the expected loss on a facility arising from the potential default of a counterparty or the dilution risk relative to EAD over one year.
- "**UL**" means the unexpected loss on a facility arising from the potential default of a counterparty.
- "**IRB Approach**" means Internal Ratings-based Approach.
- "**Foundation IRB Approach**" means that, in applying the IRB framework, banks provide their own estimates of PD and use supervisory estimates of LGD and EAD, and, unless otherwise specified by SAMA, are not required to take into account the effective maturity of credit facilities.
- "**Advanced IRB Approach**" means that, in applying the IRB framework, banks use their own estimates of PD, LGD and EAD, and are required to take into account the effective maturity of credit facilities.
- "**Standardized Approach**" means a methodology for calculating capital requirements for credit risk in a standardized manner, supported by credit assessments made by recognized external credit assessment institutions. It is the default option for calculating capital requirements for credit risk, except for banks that have obtained SAMA's approval to adopt other available options.
- A "**borrower grade**" means a category of credit-worthiness to which borrowers are assigned on the basis of a specified and distinct set of rating criteria, from which estimates of PD are derived. The grade definition includes both a description of the degree of default risk typical for borrowers assigned the grade and the criteria used to distinguish that level of credit risk.

1.2 Application

1.2.1 The requirements set out in this document are applicable to bank operating in Saudi Arabia which use or intend to use the IRB Approach to measure capital charges for credit risk.

1.2.2 In the case of branches of foreign banking groups, SAMA will, where appropriate, co-ordinate with the home supervisors of those banking groups regarding the application of the requirements of this paper. If such banks plan to adopt in Saudi Arabia any group-wide IRB systems or models, they will need to satisfy SAMA that the relevant systems or models can adequately capture the specific risk characteristics of their domestic portfolios, and that any differences in applying the IRB requirements will not have a material impact on the risk estimates generated. Similarly, SAMA may co-ordinate with the host supervisory authority of Saudi banks overseas branches and subsidiaries.

1.2.3 The requirements set out in this paper apply generally to the following exposures[1]:

- Credit exposures from all on- and off-balance sheet transactions in the banking book;
- Counterparty exposures from over-the-counter derivatives;

1.2.4 Banks adopting an IRB approach are expected to continue to employ an IRB approach. A voluntary return to the standardized or foundation approach is permitted only in extraordinary circumstances, such as divestiture of a large fraction of the bank's credit related business, and must be approved by the supervisor.
(Refer para 261, International Convergence of Capital Measurement and Capital Standards – June 2006)

1.3 Background and scope

1.3.1 The IRB Approach to credit risk relies on banks' internally generated inputs in determining the capital requirement for a given exposure. Subject to meeting the minimum qualifying requirements, banks may seek SAMA's approval to use their internal estimates of risk components in the calculation of capital. In some cases, banks may be required to use supervisory estimates for some of the risk components.

1.3.2 This document describes the weighting framework for credit risk under the IRB Approach, including:
- the definitions of asset classes under the IRB Approach;
- the definitions of the risk components which serve as inputs to the risk-weight functions that produce capital requirements for the UL portion for separate asset classes; the IRB treatment for each asset class, which begins with a presentation of the relevant risk-weight function(s) followed by the risk components and other relevant factors.

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[1]As the IRB Approach does not cover trading book exposures (such as debt and equity securities, derivatives, commodities and certain repo-style transactions held in the trading book), banks adopting this approach will be subject to the market risk capital adequacy regime for the reporting and calculation of capital charges against these exposures,- Refer to SAMA's Market Risk Amendment Document of Dec. 2004

1.3.3   The requirements set out in this paper apply to both the Foundation IRB Approach and the Advanced IRB Approach and to all asset classes (see subsection 2.1 below), unless stated otherwise.

1.3.4   Where banks adopt the internal models approach to calculate capital charges for equity exposures, the relevant requirements are set out in section 7 of this document.

1.3.5   In cases where an IRB treatment is not specified, the risk weight for those other exposures is 100% and the resulting risk-weighted assets are assumed to represent UL only.

1.3.6   Once a bank adopts an IRB approach for part of its holdings, it is expected to extend it across the entire banking group. SAMA recognizes however, that, for many banks, it may not be practicable for various reasons to implement the IRB approach across all material asset classes and business units at the same time. Furthermore, once on IRB, data limitations may mean that banks can meet the standards for the use of own estimates of LGD and EAD for some but not all of their asset classes/business units at the same time.

As such, SAMA intends to allow banks to adopt a phased rollout of the IRB approach across the banking group. The phased rollout includes (I) adoption of IRB across asset classes within the same business unit (or in the case of retail exposures across individual sub-classes); (ii) adoption of IRB across business units in the same banking group; and (iii) move from the foundation approach to the advanced approach for certain risk components. However, when a bank adopts an IRB approach for an asset class within a particular business unit (or in the case of retail exposures for an individual sub-class), it must apply the IRB approach to all exposures within that asset class (or sub-class) in that unit.

The plan should be exacting, yet realistic, and must be agreed with the supervisor. It should be driven by the practicality and feasibility of moving to the more advanced approaches, and not motivated by a desire to adopt a Pillar 1 approach that minimizes its capital charge. During the roll-out period, supervisors will ensure that no capital relief is granted for intra-group transactions which are designed to reduce a banking group's aggregate capital charge by transferring credit risk among entities on the standardized approach, foundation and advanced IRB approaches. This includes, but is not limited to, asset sales or cross guarantees.
(Refer para 258, International Convergence of Capital Measurement and Capital Standards – June 2006)

2.   Mechanics of the IRB Approach

2.1   **Categorization of exposures**

2.1.1   Under the IRB Approach, banks should categorize exposures in the banking book into broad classes of assets with different underlying risk characteristics, subject to the definitions set out below.

2.1.2   The classes of assets are: (i) corporate; (ii) sovereign; (iii) bank; (iv) retail; and (v) equity. Within the corporate asset class, four sub-classes of specialized lending (see paragraph 2.2.4 below) are separately identified. Within the retail asset class, three sub-classes (see paragraph 2.5.2 below) are separately identified.

2.1.3   The classification of exposures mentioned above is broadly consistent with established banking practice. However, some banks may use different definitions in their internal risk management and measurement systems. While it is not the intention of SAMA to require banks to change the way they manage their business and risks, banks are required to apply the appropriate treatment to each exposure for the purpose of deriving their minimum capital requirements. Banks should demonstrate to SAMA that their methodology for assigning exposures to different asset classes is appropriate and consistent over time.

2.1.4   The size or exposure limits used for defining some corporate or retail exposures are denominated in local currency (see paragraphs 2.2.2, and 2.5.4 below). Banks are generally expected to re-classify such exposures when the exposures are no longer within or above the limits, as the case may be. However, SAMA will be flexible if the need for re-classification arises solely from short-term exchange fluctuations for exposures denominated in foreign currencies. Banks should have appropriate policies in place for determining the circumstances for re-classifying the exposures. For example, these may include situations in which the changes are more permanent in nature, having been caused by a major currency revaluation or a natural growth or reduction in size or exposure. Re-classification of an exposure will not be required if its outstanding balance falls below the relevant limit mainly as a result of repayments or write-offs.

2.2 **Definition of corporate exposures**

2.2.1   In general, a corporate exposure is defined as a debt obligation of a corporation, partnership, or proprietorship. Banks are permitted to distinguish separately exposures to small- and medium-sized entities ("SMEs").

SME exposures

2.2.2   SME is defined as a corporate where the reported sales[1] for the consolidated group of which the firm is a part are less than SR. 15 MM and the max claims on the counterparty are at SR. 10 MM. To ensure that the information used is timely and accurate, banks should obtain the consolidated sales figure from the latest available audited financial statements[2] and have it updated at least annually. The basis of consolidation for the borrowing group should follow that used by Banks for their risk management purposes.

2.2.2.1   Banks should manage SME on a pooled basis in their internal risk management systems in the same manner as other retail exposures. This could be as part of a portfolio segment or pool of exposures with similar risk characteristics for risk assessment and quantification.

2.2.2.2   *VIP and High Net Worth Private Accounts*
           These are defined to be exposure to VIP accounts and high net worth individuals that do not meet the criteria for retail exposures under Para 2.5.

Specialized lending ("SL") exposures

2.2.3   Except otherwise specified, a corporate exposure should be classified as SL if it possesses all of the following characteristics, either in legal form or economic substance:

- the exposure is to an entity (often a special purpose entity ("SPE")) which was created specifically to finance and/or operate physical assets;

- the borrowing entity has little or no other material assets or activities, and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the asset(s) being financed;

- the terms of the obligation gives the lender a substantial degree of control over the asset(s) and the income that it generates; and

- as a result of the preceding factors, the primary source of repayment of the obligation is the income generated by the asset(s), rather than the independent capacity of a broader commercial enterprise.

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[1] This term is used interchangeably with "turnover" or "revenue".
[2] This does not apply to those customers that are not subject to statutory audit (such as a sole proprietor). In such cases, banks should obtain their latest available management accounts.

2.2.4 The five sub-classes of specialized lending are project finance, object finance, commodities finance, income-producing real estate, and high-volatility commercial real estate. Each of these sub-classes is defined below.
(Refer para 220, International Convergence of Capital Measurement and Capital Standards – June 2006)

Project finance

2.2.5 Project finance ("PF") is a method of funding in which the lender looks primarily to the revenues generated by a single project, both as the source of repayment and as security for the exposure. This type of financing is usually for large, complex and expensive installations that might include, for example, power plants, chemical processing plants, mines, transportation infrastructure, and telecommunications infrastructure. PF may take the form of financing of the construction of a new capital installation, or refinancing of an existing installation, with or without improvements.

2.2.6 In such transactions, the lender is usually paid solely or almost exclusively out of the money generated by the contracts for the facility's output, such as the electricity sold by a power plant. The borrower is usually an SPE that is not permitted to perform any function other than developing, owning, and operating the installation. The consequence is that repayment depends primarily on the project's cash flow and on the collateral value of the project's assets. In contrast, if repayment of the exposure depends primarily on a well-established, diversified, credit-worthy, contractually obligated end user for repayment, it is considered a secured exposure to that end user.

Object finance

2.2.7 Object finance ("OF") refers to a method of funding the acquisition of physical assets (e.g. ships, aircraft, etc.) where the repayment of the exposure is dependent on the cash flows generated by the specific assets that have been financed and pledged or assigned to the lender. A primary source of these cash flows might be rental or lease contracts with one or several third parties. In contrast, if the exposure is to a borrower whose financial condition and debt-servicing capacity enables it to repay the debt without undue reliance on the specifically pledged assets, the exposure should be treated as a collateralized corporate exposure.

Commodities finance

2.2.8 Commodities finance ("CF") refers to structured short-term lending to finance inventories, or receivables of exchange-traded commodities (e.g. crude oil, metals, or crops), where the exposure will be repaid from the proceeds of the sale of the commodity, and the borrower has no independent capacity to repay the exposure. This is the case when the borrower has no other activities and no other material assets on its balance sheet. The structured nature of the financing is designed to compensate for the weak credit quality of the borrower. The exposure's rating reflects its self-liquidating nature and the lender's skill in structuring the transaction rather than the credit quality of the borrower.

2.2.9   Such lending can be distinguished from exposures financing the inventories, or receivables of other more diversified corporate borrowers. Banks are able to rate the credit quality of the latter type of borrowers based on their broader ongoing operations. In such cases, the value of the commodity serves as a risk mitigant rather than as the primary source of repayment.

2.2.10 Income-producing real estate ("IPRE") refers to a method of providing funding to real estate (such as, office buildings, retail shops, residential buildings, industrial or warehouse premises, and hotels) where the prospects for repayment and recovery on the exposure depend primarily on the cash flows generated by the asset. The primary source of these cash flows would generally be lease or rental payments or the sale of the asset. The distinguishing characteristic of IPRE versus other corporate exposures that are collateralized by real estate is the strong positive correlation between the prospects for repayment of the exposure and the prospects for recovery in the event of default, with both depending primarily on the cash flows generated by a property.

2.2.11 **High Volatility Commercial Real Estate**

High-volatility commercial real estate (HVCRE) lending is the financing of commercial real estate that exhibits higher loss rate volatility (i.e. higher asset correlation) compared to other types of SL. HVCRE includes:

- Commercial real estate exposures secured by properties of types that are categorized by the national supervisor as sharing higher volatilities in portfolio default rates;
- Loans financing any of the land acquisition, development and construction (ADC) phases for properties of those types in such jurisdictions; and
- Loans financing ADC of any other properties where the source of repayment at origination of the exposure is either the future uncertain sale of the property or cash flows whose source of repayment is substantially uncertain (e.g. the property has not yet been leased to the occupancy rate prevailing in that geographic market for that type of commercial real estate), unless the borrower has substantial equity at risk. Commercial ADC loans exempted from treatment as HVCRE loans on the basis of certainty of repayment of borrower equity are, however, ineligible for the additional reductions for SL exposures described in paragraph 277, International Convergence of Capital Measurement and Capital Standards – June 2006
(Refer para 227, International Convergence of Capital Measurement and Capital Standards – June 2006)

  Where SAMA would categorize certain types of commercial real estate exposures as HVCRE in their jurisdictions, it would make public such determinations. SAMA would then ensure that such treatment is then applied equally to banks under their supervision when making such HVCRE loans in that jurisdiction.
  (Refer para 228, International Convergence of Capital Measurement and Capital Standards – June 2006)

2.3 Definition of sovereign exposures

2.3.1 This asset class covers all exposures to counterparties treated as sovereigns under the Standardised Approach, including:
- Sovereigns (and their central banks);

- Public sector entities ("PSEs") that are treated as sovereigns under the Standardised Approach[1];

- Multilateral development banks ("MDBs") that meet the criteria for a 0% risk weight under the Standardised Approach[2]; and other entities that receive a 0% risk weight under the Standardised Approach, namely, World Bank, the Bank for International Settlements, the International Monetary Fund, the European Central Bank and the European Community, Arab Monetary Fund, the Islamic Development Bank.

2.4 Definition of bank exposures

2.4.1 This asset class covers exposures to:

- Banks;
- Regulated securities firms (including all security firms licensed CMA) and by the relevant foreign regulators.
- Domestic PSEs that are treated as banks under the Standardised Approach; and
- MDBs that do not meet the criteria for a 0% risk weight under the Standardised Approach.

2.5 Definition of retail exposures

General
2.5.1 For an exposure to be categorized as retail, it should satisfy two general criteria:
- The borrower is an individual or a small business that meets a specified exposure threshold (see paragraphs 2.5.3 and 2.5.4 below); and
- The exposure should be one of a large pool of exposures, which are managed by banks on a pooled or portfolio basis[3] (see paragraph 2.5.5 below).

2.5.2 Within the retail asset class, banks are required to identify separately three sub-classes of exposures:

- Exposures secured by residential properties (see paragraphs 2.5.5 to 2.5.6 below);
- Qualifying Revolving Retail Exposures (QRRE) - (see paragraph 2.5.9 below); and
- All other retail exposures.

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[1] These mainly refer to claims on foreign PSEs that are regarded by the relevant national supervisors as sovereigns in whose jurisdictions the PSEs were established.

[2] Eligible MDBs (Standardized Approach)". Also refer to the section on terminology

[3] SAMA does not intend to set the minimum number of retail exposures in a portfolio. Banks should establish their internal policies to ensure the granularity and homogeneity of their retail exposures. Also refer to the Standardized Approach.

Exposures to individuals

2.5.3 Exposures to individuals are generally eligible for retail treatment regardless of exposure size. Such exposures include residential mortgage loans, revolving credits and lines of credit (e.g. credit cards, overdrafts, and retail facilities secured by financial instruments) as well as personal term loans (e.g. installment loans, auto loans, personal finance, and other exposures with similar characteristics).

Small business enterprise

2.5.4 Loans extended to small businesses enterprise and managed as retail exposures are eligible for retail treatment provided the total exposure *(On and Off) items* of the banking group[1] to a small business borrower (on a consolidated basis where applicable[2]) is less than *5* million Saudi Riyal. Small business loans extended through or guaranteed by an individual are subject to the same exposure threshold.

Exposures secured by residential properties

2.5.5 Residential mortgage loans are eligible for retail treatment regardless of exposure size so long as the credit is extended to an individual and the property is or will be occupied by the borrower, or rented.

2.5.6 Other exposures secured by residential properties that do not satisfy the above requirements should be classified as other retail or corporate exposures, as appropriate.

Qualifying Revolving Retail Exposures ("QRRE")

2.5.7 A Bank may regard a sub-portfolio of its retail exposures (which should be consistent with the Banks segmentation of retail activities generally) as QRRE, subject to the following criteria being met:

- The exposures are revolving, unsecured, and uncommitted (both contractually and in practice). In this context, revolving exposures are defined as those where customers' outstanding balances are permitted to fluctuate based on their decisions to borrow and repay, up to a limit established by banks;

- The exposures are to individuals;

- The maximum exposure to a single individual in the sub-portfolio is SR. 5 million or less;

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[1]The banking group should, at a minimum, cover all entities within the group that are subject to the capital adequacy regime in Saudi Arabia.
[2]The basis of consolidation should follow that used by a bank for its risk management purposes, provided that exposures to the sole proprietors or partners within the borrowing group are included in the consolidation.

- Because the asset correlation assumptions for the QRRE risk-weight function are markedly below those for the other retail risk-weight functions at low PD values, banks should demonstrate that the use of the QRRE risk-weight function is constrained to portfolios that have exhibited low volatility of loss rates, relative to their average level of loss rates, especially within the low PD bands. SAMA will, for monitoring purposes, review the relative volatility of loss rates across the QRRE sub-portfolios of banks;

- Data on loss rates for the QRRE sub-portfolio should be retained in order to allow analysis of the volatility of loss rates; and

- Treatment as QRRE is consistent with the underlying risk characteristics of the sub-portfolio.

3. Foundation and Advanced IRB Approaches

3.1 General requirements

3.1.1 For each of the asset classes covered under the IRB framework, there are three key elements:

- Risk components - estimates of some risk parameters are provided by banks, and some by the supervisory authorities i.e. PD, LGD and EAD.
- Risk-weight functions - the means by which risk components are transformed into risk-weighted assets and therefore capital requirements;
- Minimum requirements - the minimum standards that should be met in order for a bank to use the IRB Approach for a given asset class[1]

3.1.2 Under the **Foundation IRB Approach**, as a general rule, Banks provide their own estimates of PD and rely on supervisory estimates for other risk components. Under the **Advanced IRB Approach**, bank provide their own estimates of PD, LGD and EAD, and their own calculation of M, subject to meeting minimum standards. For both the **Foundation** and **Advanced IRB Approaches**, banks should always use the risk-weight functions provided in this paper for the purpose of deriving capital requirements.

3.2 Corporate, sovereign and bank exposures

3.2.1 Under the **Foundation IRB Approach**, banks should provide their own estimates of PD associated with each of their borrower grades, but should use supervisory estimates for other risk components, namely, LGD, EAD and M [2].

3.2.2 Under the **Advanced IRB Approach**, Banks should calculate M and provide their own estimates of PD, LGD and EAD.

3.2.3 There is an exception to the general rule for the four sub-classes of assets identified as SL (i.e. PF, OF, CF and IPRE). Banks that do not meet the requirements for the estimation of PD under the **Foundation IRB Approach** for their SL assets in the corporate asset class are required to map their internal risk grades to five supervisory categories, each of which is associated with a specific risk weight. This is referred to as the "supervisory slotting criteria" approach.

3.3 Retail exposures

3.3.1 For retail exposures, banks should provide their own estimates of PD, LGD and EAD. There is no distinction between a foundation and an advanced approach for this asset class.

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[1]These minimum requirements are set out in "Minimum Requirements for Internal Rating Systems under IRB Approach" and "Minimum Requirements for Risk Quantification under IRB Approach".

[2] Explicit maturity adjustment will not be required under the _Foundation IRB Approach_. However, SAMA may allow banks which have systems to calculate the adjusted maturities to measure M for each facility.

4.   Rules for corporate, sovereign and bank exposures

4.1   Risk-weighted assets for corporate, sovereign and bank exposures

Formula for derivation of risk-weighted assets

4.1.1   The derivation of risk-weighted assets is dependent on estimates of PD, LGD, EAD and, in some cases, M, for a given exposure. Paragraphs 4.2.7 to 4.2.13 below discuss the circumstances in which the maturity adjustment applies.

4.1.2   Throughout this section, PD and LGD are measured as decimals, and EAD is measured in Saudi Riyals. For exposures not in default, the formula for calculating risk-weighted assets is [1,2]

Correlation ® = 0.12 × (1 - EXP (-50 × PD)) / (1 - EXP (-50)) + 0.24 × [1 - (1 - EXP (-50 × PD)) / (1 - EXP (-50))]

Maturity adjustment (b) = (0.11852 - 0.05478 × ln (PD))^2

Capital requirement [3] (K) = [LGD × N [(1 - R)^-0.5 × G (PD) + (R / (1 - R))^0.5 × G (0.999)] - PD x LGD] x (1 - 1.5 x b)^ -1 × (1 + (M - 2.5) × b)

Risk-weighted assets (RWA) = K x 12.5 x EAD

4.1.3   The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD and the bank's best estimate of EL (see paragraphs 4.5.1, 4.5.2 and 4.5.5 of "Minimum Requirements for Risk Quantification under IRB Approach"). The amount of risk-weighted asset for the defaulted exposure is the product of K, 12.5, and EAD.

4.1.4   Purposely Missing.

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[1]ln denotes the natural logarithm.

[2]N(x) denotes the cumulative distribution function for a standard normal random variable (i.e. the probability that a normal random variable with mean zero and variance of one is less than or equal to x). G(z) denotes the inverse cumulative distribution function for a standard normal random variable (i.e. the value of x such that N(x) = z). The normal cumulative distribution function and the inverse of the normal cumulative distribution function are, for example, available in Excel as the functions NORMSDIST and NORMSINV.

[3]If this calculation results in a negative capital charge for any individual sovereign exposure, banks should apply a zero capital charge for that exposure.

4.1.5 Under the IRB Approach for corporate credits, banks are permitted to separately distinguish exposures to SME borrowers (defined as corporate exposures where the reported sales for the consolidated group of which the firm is a part is less than SR *15* million) from those to large firms[1]. A firm-size adjustment (i.e. 0.04 x (1 - (S-5) / 45)) is made to the corporate risk-weight formula for exposures to SME borrowers. S is expressed as total annual sales in millions of SR with values of S falling in the range of equal to or less than SR *15* million or greater than or equal to SR 5 million. Reported sales of less than SR 5 million will be treated as if they were equivalent to SR 5 million for the purposes of the firm-size adjustment for SME borrowers.

Correlation ® = 0.12 × (1 - EXP (-50 × PD)) / (1 - EXP (-50)) + 0.24 × [1 - (1 - EXP (-50 × PD)) / (1 - EXP (-50))] - 0.04 × (1 - (S - 5) / *10)*

In the case where total sales are not a meaningful indicator of firm size for particular companies, SAMA may on an exceptional basis allow banks to substitute total assets of the consolidated group for total sales in calculating the SME threshold and the firm-size adjustment. However, banks should not make use of this special treatment to obtain capital relief.

Risk weights for SL

4.1.6 *Banks* that do not meet the requirements for the estimation of PD under the IRB Approach for corporate exposures will be required to map their internal grades for the SL exposures to five supervisory categories, each of which is associated with a specific risk weight. The slotting criteria on which this mapping should be based are provided in Table 2.

4.1.7 The risk weights for UL associated with each supervisory category broadly correspond to a range of external credit assessments[2] as outlined below:

* **Strong**	**Good**	**Satisfactory**	**Weak**	**Default**
70%	90%	115%	250%	0%
BBB- or better	BB+ or BB	BB-or B+	B to C-	Not applicable

4.1.8 Subject to SAMA approval a Bank may assign preferential risk weights of 50% to "strong" exposures, and 70% to "good" exposures, provided they have a remaining maturity of less than 2.5 years or if SAMA determines that a Banks' underwriting and other risk characteristics are substantially stronger than specified in the slotting criteria for the relevant supervisory risk category.

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[1]Banks should not apply a firm-size adjustment to a corporate customer which cannot make available the sales figure for the consolidated group of which the customer is a part.
Also refer to Table –1 on Page 41 for Illustration.
[2]The notations follow the methodology used by Standard & Poor's. The use of Standard & Poor's credit ratings is for reference only; those of some other SAMA approved external credit assessment institutions ("ECAIs") could equally well be used.
* Refer to Table-2 – Attachment 5.9.

4.1.9 Banks that meet the requirements for the estimation of PD are able to use the **Foundation IRB Approach** for corporate exposures to derive risk weights for SL sub-classes.

4.1.10 Banks that meet the requirements for the estimation of PD and LGD and/or EAD are able to use the **Advanced IRB Approach** for corporate exposures to derive risk weights for SL sub-classes.

4.2 Risk components

Probability of default (PD)

4.2.1 For corporate and bank exposures, the PD is the greater of the one-year PD associated with the internal borrower grade to which that exposure is assigned, or 0.03%. For sovereign exposures, the PD is the one-year PD associated with the internal borrower grade to which that exposure is assigned. The PD of borrowers assigned to a default grade(s), consistent with the reference definition of default, is 100%. The minimum requirements for the derivation of the PD estimates associated with each internal borrower grade are outlined in paragraphs 4.4.1 to 4.4.9 of "Minimum Requirements for Risk Quantification under IRB Approach".

Banks where, SAMA has disallowed the application of foundation or advanced approaches to HCVRE must map their internal grades to five supervisory categories, each of which is associated with a specific risk weight. The slotting criteria on which this mapping must be based are the same as those for IPRE, as provided in Annex 6 International Convergence of Capital Measurement and Capital Standards – June 2006, . The risk weights associated with each category are:

Supervisory categories and UL risk weights for high-volatility commercial real estate.

Strong	Good	Satisfactory	Weak	Default
95%	120%	140%	250%	0%

(Refer para 280, International Convergence of Capital Measurement and Capital Standards – June 2006)

Table 1: Illustrative IRB risk weights for UL

Asset Class:	Corporate Exposures (%)		Residential Mortgages (%)		Other Retail Exposures (%)		Qualifying Revolving Retail Exposures (%)	
LGD:	45	45	45	25	45	85	45	85
Maturity 2.5 years								
Turnover (SR. Mn)	500	50						
PD: 0.03	14.44	11.30	4.15	2.30	4.45	8.41	0.98	1.85
0.05	19.65	15.39	6.23	3.46	6.63	12.52	1.51	2.86
0.10	29.65	23.30	10.69	5.94	11.16	21.08	2.71	5.12
0.25	49.47	39.01	21.30	11.83	21.15	39.96	5.76	10.88
0.40	62.72	49.49	29.94	16.64	28.42	53.69	8.41	15.88
0.50	69.61	54.91	35.08	19.49	32.42	61.13	10.04	18.97
0.75	82.78	65.14	46.46	25.81	40.10	75.74	13.08	26.06
1.00	92.32	72.40	56.40	31.33	45.77	86.46	17.22	32.53
1.30	100.95	78.77	67.00	37.22	50.80	95.95	21.02	39.70
1.50	105.59	82.11	73.45	40.80	53.37	100.81	23.40	44.19
2.00	114.86	88.55	87.94	48.85	57.99	109.53	28.92	54.63
2.50	122.16	93.43	100.64	55.91	60.90	115.03	33.98	64.18
3.00	128.44	97.58	111.99	62.22	62.79	118.61	38.66	73.03
4.00	139.58	105.04	131.63	73.13	65.01	122.80	47.16	89.08
5.00	149.86	112.27	148.22	82.35	66.42	125.45	54.75	103.41
6.00	159.61	119.48	162.52	90.29	67.73	127.94	61.61	116.37
10.00	193.09	146.51	204.41	113.56	75.54	142.69	83.89	158.47
15.00	221.54	171.91	235.75	130.96	88.60	167.36	103.89	196.23
20.00	238.23	188.42	253.12	140.62	100.28	189.41	117.99	222.86

Note:
1. The above table provides illustrative risk weights for UL calculated for the corporate asset class and he three retail sub-classes under the IRB Approach to credit risk. Each set of risk weights is produced using the appropriate risk-weight functions set out in this paper. The inputs used to calculate the illustrative risk weights include measures of PD, LGD, and an assumed M of 2.5 years.

2. A firm-size adjustment applies to exposures made to SME borrowers (defined as corporate exposures where the reported sales for the consolidated group of which the firm is a part is less than SR 250 million). Accordingly, the firm-size adjustment is made in determining the second set of risk weights provided in second column of corporate exposures given that the turnover of the firm receiving the exposure is assumed to be SR 5 million.

Loss given default (LGD)

4.2.2 Banks should provide an estimate of the LGD for each corporate, sovereign and bank exposure. There are two approaches for deriving this estimate: the **Foundation IRB Approach** and the **Advanced IRB Approach**.

LGD under the Foundation IRB Approach

Treatment of unsecured claims and non-recognised collateral

4.2.3 Under the **Foundation IRB Approach**, senior claims on corporates, sovereigns and banks not secured by recognised collateral will be assigned a 45% LGD.

4.2.4 All subordinated claims on corporates, sovereigns and banks will be assigned a 75% LGD. A subordinated loan is a facility that is expressly subordinated to another facility.

LGD under the Advanced IRB Approach

4.2.5 Subject to the minimum requirements specified in subsection 4.5 of "Minimum Requirements for Risk Quantification under IRB Approach", banks are allowed to use their own internal estimates of LGD for corporate, sovereign and bank exposures. The LGD should be measured as a percentage of the EAD. Banks eligible for the IRB Approach that are unable to meet these minimum requirements should utilize the foundation LGD treatment described in paragraphs 4.2.3 to 4.2.4 above.

Exposure at default (EAD)

4.2.6 The following paragraphs on EAD apply to both on and off-balance sheet positions. All exposures are measured gross of specific provisions or partial write-offs. The EAD on drawn amounts should not be less than the sum of:

(i) The amount by which a bank's regulatory capital would be reduced if the exposure were written-off fully; and

(ii) Any specific provisions and partial write-offs.

When the difference between the instrument's EAD and the sum of (i) and (ii) is positive, this amount is termed a discount. The calculation of risk-weighted assets is independent of any discounts. Under the limited circumstances described in paragraph 380, International Convergence of Capital Measurement and Capital Standards – June 2006, discounts may be included in the measurement of total eligible provisions for purposes of the EL-provision calculation set out in Section III.G, International Convergence of Capital Measurement and Capital Standards – June 2006

SAMA hereby intimates that the approaches laid in Annexure 4 (Treatment of Counterparty Credit Risk and Cross-Product Netting), of the International Convergence of Capital Measurement and Capital Standards, 2006, (with the exception of clauses applicable to netting) for the purpose of computing the credit equivalent amount of Securities Financing Transactions and OTC derivatives that

expose a bank to counterparty credit risk, are available to banks and constitute an integral part of the —SAMA Detailed Guidance Document Relating to Pillar 1, June 2006.

(Refer para 334, International Convergence of Capital Measurement and Capital Standards – June 2006)

Effective maturity (M)

4.2.7　For Banks using the **Foundation IRB Approach** for corporate exposures, the M will be 2.5 years except for repo-style transactions where the M will be 6 months. Banks using any element of the **Advanced IRB Approach** are required to measure the M for each facility as defined below.

4.2.8　M is defined as the greater of one year and the remaining effective maturity in years. In all cases, the M will be no greater than five years.

4.2.9　For an instrument subject to a determined cash flow schedule, the M is defined as:

$$M = \sum_t {}^*CF_t / \sum CF_t$$

Where CF_t flows (principal, interest payments and fees) contractually payable by the borrower in period$_t$.

4.2.10　If a bank is not in a position to calculate the M of the contracted payments as noted above, it is allowed to use a more conservative measure of M. An example of this measurement is the maximum remaining time (in years) that the borrower is permitted to take to fully discharge its contractual obligation (principal, interest, and fees) under the terms of the loan agreement. Normally, this will correspond to the nominal maturity of the instrument.

4.2.11　For derivatives subject to a master netting agreement, the weighted average maturity of the transactions should be used when applying the explicit maturity adjustment. Further, the notional amount of each transaction should be used for weighting the maturity.

4.2.12　For repo-style transactions subject to a master netting agreement, the weighted average maturity of the transactions should be used when applying the explicit maturity adjustment. A five-day floor will apply to the average. Further, the notional amount of each transaction should be used for weighting the maturity.

5 Rules for retail exposures

5.1 Risk-weighted assets for retail exposures

5.1.1 There are three separate risk-weight functions for retail exposures, as defined in paragraphs 5.1.2 to 5.1.5 below. Risk weights for retail exposures are based on separate assessments of PD and LGD as inputs to the risk-weight functions. None of the three retail risk-weight functions contains an explicit maturity adjustment. Throughout this section, PD and LGD are measured as decimals, and EAD is measured in Saudi Riyals.

Residential mortgage exposures

5.1.2 For exposures defined in paragraph 2.5.6 above that are not in default and are secured or partly secured[1] by residential mortgages, risk weights are assigned based on the following formula:

Correlation ® = 0.15

Capital requirement (K) = LGD × N[(1 - R)^-0.5 × G (PD) + (R / (1 - R))^0.5 × G (0.999)] - PD x LGD

Risk-weighted assets = K x 12.5 x EAD

5.1.3 The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraphs 4.5.1 to 4.5.2 of "Minimum Requirements for Risk Quantification under IRB Approach") and a banks' best estimate of EL (described in paragraph 4.5.5 of the same paper). The amount of risk-weighted asset for the defaulted exposure is the product of K, 12.5, and the EAD.

5.1.4 **QRRE** For QRRE as defined in paragraph 2.5.8 above that are not in default, risk weights are assigned based on the following formula:

Correlation ® = 0.04

Capital requirement (K) = LGD × N[(1 - R)^-0.5 × G (PD) + (R / (1 - R))^0.5 × G (0.999)] - PD x LGD

Risk-weighted assets = K x 12.5 x EAD

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[1] This means that risk weights for residential mortgages also apply to the unsecured portion of such residential mortgages.

5.1.5 The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraphs 4.5.1 to 4.5.2 of "Minimum Requirements for Risk Quantification under IRB Approach") and a bank's best estimate of EL (described in paragraph 4.5.5 of the same paper). The amount of risk-weighted asset for the defaulted exposure is the product of K, 12.5, and the EAD.

Other retail exposures

5.1.6 For all other retail exposures that are not in default, risk weights are assigned based on the following function, which also allows correlation to vary with PD:

Correlation ® = $0.03 \times (1 - EXP(-35 \times PD)) / (1 - EXP(-35)) + 0.16 \times [1 - (1 - EXP(-35 \times PD)) / (1 - EXP(-35))]$

Capital requirement (K) = $LGD \times N[(1 - R)^{-0.5} \times G(PD) + (R / (1 - R))^{0.5} \times G(0.999)] - PD \times LGD$

Risk-weighted assets = $K \times 12.5 \times EAD$

5.1.7 The capital requirement (K) for a defaulted exposure is equal to the greater of zero and the difference between its LGD (described in paragraphs 4.5.1 to 4.5.2 of "Minimum Requirements for Risk Quantification under IRB Approach") and a banks best estimate of EL (described in paragraph 4.5.5 of the same paper). The amount of risk-weighted asset for the defaulted exposure is the product of K, 12.5, and the EAD.

5.2 Risk components

Probability of default (PD) and loss given default (LGD)

5.2.1 For each identified pool of retail exposures, banks are expected to provide an estimate of the PD and LGD associated with the pool, subject to the minimum requirements as set out in "Minimum Requirements for Risk Quantification under IRB Approach". Additionally, the PD for retail exposures is the greater of the one-year PD associated with the internal borrower grade to which the pool of retail exposures is assigned or 0.03%.

Banks may reflect the risk-reducing effects of guarantees and credit derivatives, either in support of an individual obligation or a pool of exposures, through an adjustment of either the PD or LGD estimate, subject to the minimum requirements in paragraphs 480 to 489 of the International Convergence of Capital Measurement and Capital Standards – June 2006. Whether adjustments are done through PD or LGD, they must be done in a consistent manner for a given guarantee or credit derivative type.
(Refer para 332, International Convergence of Capital Measurement and Capital Standards – June 2006)

Consistent with the requirements outlined above for corporate, sovereign, and bank exposures, banks must not include the effect of double default in such adjustments. The adjusted risk weight must not be less than that of a comparable direct exposure to the protection provider. Consistent with the standardized approach, banks may choose not to recognize credit protection if doing so would result in a higher capital requirement.
(Refer para 333, International Convergence of Capital Measurement and Capital Standards – June 2006)

6. **Treatment of expected losses and recognition of provisions**

Calculation of expected losses

A bank must sum the EL amount (defined as EL multiplied by EAD) associated with its exposures (excluding the EL amount associated with equity exposures under the PD/LGD approach and securitization exposures) to obtain a total EL amount. While the EL amount associated with equity exposures subject to the PD/LGD approach is excluded from the total EL amount, paragraphs 376 and 386, International Convergence of Capital Measurement and Capital Standards – June 2006 apply to such exposures. The treatment of EL for securitization exposures is described in paragraph 563, International Convergence of Capital Measurement and Capital Standards – June 2006.
(Refer para 375, International Convergence of Capital Measurement and Capital Standards – June 2006)

6.1 **Expected loss for exposures other than SL subject to the supervisory slotting criteria**
Banks should calculate the EL as PD x LGD for corporate, sovereign, bank and retail exposures not in default. For corporate, sovereign, bank and retail exposures that are in default, Banks should use their best estimate of EL as defined in paragraph 4.5.5 of "Minimum Requirements for Risk Quantification under IRB Approach", and banks on the **Foundation IRB Approach** should use the supervisory LGD. For SL exposures subject to the supervisory slotting criteria, the EL is calculated as described in paragraph 6.2 below.

6.2 **Expected loss for SL exposures subject to the supervisory slotting criteria**
For SL exposures subject to the supervisory slotting criteria, the EL amount is determined by multiplying by 8% the risk-weighted assets produced from the appropriate risk weights, as specified in the following paragraph, multiplied by EAD.

The risk weights for SL are as follows:
- Strong   5%
- Good   10%
- Satisfactory   35%
- Weak   100%
- Default   625%

SAMA may allow banks to assign preferential risk weights to other SL exposures falling into the "strong" and "good" supervisory categories as outlined in paragraph 4.1.8 above. The corresponding EL risk weight is 0% for "strong" exposures, and 5% for "good" exposures.

Supervisory categories and the risk weights for HVCRE:
The risk weights for HVCRE are as follows:

Strong	Good	Satisfactory	Weak	Default
5%	5%	35	100%	625%

Even where, at national discretion, supervisors allow banks to assign preferential risk weights to HVCRE exposures falling into the "strong" and "good" supervisory categories as outlined in paragraph 282, the corresponding EL risk weight will remain at 5% for both "strong" and "good" exposures.
(Refer para 379, International Convergence of Capital Measurement and Capital Standards – June 2006)

Calculation of provisions

6.3 **Exposures subject to the IRB Approach**
Total eligible provisions are defined as the sum of all provisions (e.g. specific provisions, partial write-offs, portfolio-specific general provisions such as country risk provisions or general provisions[1]) that are attributed to exposures treated under the IRB Approach. Specific provisions set aside against equity should not be included in total eligible provisions.

6.4 **Treatment of expected losses and provisions**

Bank using the IRB Approach should compare the amount of total eligible provisions with the total EL amount as calculated within the IRB Approach. In addition, where a bank is also subject to the Standardized Approach to credit risk for a portion of its credit exposures, general provisions can be included in a bank supplementary capital subject to the limit of 1.25% of risk-weighted assets.

Where the EL amount exceed the total eligible provision, banks should deduct the difference from the capital base at 50% from Tier-1 and 50% from Tier -II.

Where the calculated EL amount is lower than the provisions of the bank, its supervisors must consider whether the EL fully reflects the conditions in the market in which it operates before allowing the difference to be included in Tier 2 capital. If specific provisions exceed the EL amount on defaulted assets this assessment also needs to be made before using the difference to offset the EL amount on non-defaulted assets.
(Refer para 385, International Convergence of Capital Measurement and Capital Standards – June 2006)

The EL amount for equity exposures under the PD/LGD approach is deducted 50% from Tier 1 and 50% from Tier 2. Provisions or write-offs for equity exposures under the PD/LGD approach will not be used in the EL-provision calculation.
The treatment of EL and provisions related to securitization exposures is outlined in paragraph 563.
(Refer para 386, International Convergence of Capital Measurement and Capital Standards – June 2006)

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[1] Banks adopting Accounting Standard IAS #39 or other similar standard may wish to note that the accounting changes arising the reform could have implications on the scope and extent of general provisions to be included in Supplementary Capital under the revised capital adequacy framework.

7. Exposure measurement for off-balance sheet items

For off-balance sheet items, exposure is calculated as the committed but undrawn amount multiplied by a CCF. There are two approaches for the estimation of CCFs: a foundation approach and an advanced approach.

EAD under the foundation approach

The types of instruments and the CCFs applied to them are the same as those in the standardized approach, with the exception of commitments, Note Issuance Facilities (NIFs) and Revolving Underwriting Facilities (RUFs).

A CCF of 75% will be applied to commitments, NIFs and RUFs regardless of the maturity of the underlying facility. This does not apply to those facilities which are uncommitted, that are unconditionally cancellable, or that effectively provide for automatic cancellation, for the example due to deterioration in a borrower's creditworthiness, at any time by the bank without prior notice. A CCF of 0% will be applied to these facilities.

The amount to which the CCF is applied is the lower of the value of the unused committed credit line, and the value that reflects any possible constraining availability of the facility, such as the existence of a ceiling on the potential lending amount which is related to a borrower's reported cash flow. If the facility is constrained in this way, the bank must have sufficient line monitoring and management procedures to support this treatment.

In order to apply a 0% CCF for unconditionally and immediately cancellable corporate overdrafts and other facilities, banks must demonstrate that they actively monitor the financial condition of the borrower, and that their internal control systems are such that they could cancel the facility upon evidence of a deterioration in the credit quality of the borrower.

Where a commitment is obtained on another off-balance sheet exposure, banks under the foundation approach are to apply the lower of the applicable CCFs.

EAD under the advanced approach

Banks which meet the minimum requirements for use of their own estimates of EAD, will be allowed to use their own internal estimates of CCFs across different product types provided the exposure is not subject to a CCF of 100% in the foundation approach.

7.1 **Exposure measurement for FX, interest rate, equity, credit, and commodity-related derivatives.**
Measures of exposure for these instruments under the IRB approach will be calculated as per the rules for the calculation of credit equivalent amounts, i.e. based on the replacement cost plus potential future exposure add-ons across the different product types and maturity bonds.

8. **Scaling factor for risk-weighted assets**

8.1 **Application of scaling factor.** In determining the minimum capital requirements for the IRB Approach, SAMA will apply a scaling factor which could be either greater than or less than one, to the total amount of credit risk-weighted assets calculated based on the rules set out for all asset classes under the IRB Approach. The use of this scaling factor is to broadly maintain the aggregate level of minimum capital requirements derived from the revised capital adequacy framework.

8.2 The current best estimate of the scaling factor is 1.06. In applying this scaling factor, banks should multiply the total amount of credit risk-weighted assets calculated under the IRB Approach by 1.06 for the computation of the capital adequacy ratio.

8.3 SAMA will finalize the size of the scaling factor with reference to the results of the Quantitative Impact Survey conducted by the Basel Committee on Banking Supervision.

MAJOR SECTION 5.1

IMPLEMENTATION PROPOSALS FOR THE IRB APPROACH AND MINIMUM REQUIREMENTS FOR INTERNAL RATING SYSTEM (ATTACHMENT 5.4) AND RISK QUANTIFICATION SYSTEM (ATTACHMENT 5.5)

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ATTACHMENT 5.1

5.1 Implementation Proposals for the IRB Approach and Minimum Requirements for Internal Rating System (Attachment 5.4) and Risk quantification system (Attachment 5.5)

Purpose

5.1.1 This section sets out the SAMA's proposals for implementing the IRB Approach, including the minimum qualifying criteria for adoption of the IRB Approach in Saudi Arabia and the manner in which the SAMA intends to exercise national discretions available under the Approach.

5.1.2 The proposals are based on Basel II. SAMA will take into account the banks views and comparable criteria adopted by other supervisors before finalizing these proposals.

Implementation Approach
Availability and choice of approaches

5.1.3 SAMA plans to allow all available IRB Approaches to banks that are capable of meeting the relevant requirements. SAMA aims to make available for adoption by banks the Foundation Approach and the Advanced Approach from 1 January, 2008 and beyond. Exact timing for implementation would be subject to SAMA's bilateral discussions with banks.

5.1.4 As a general principle, SAMA will not require or mandate any particular bank to adopt the IRB Approach. Banks should conduct their own detailed feasibility study and analysis of the associated costs and benefits in order to decide whether to use this Approach. Nevertheless, for those banks that are building the IRB systems, adopting this Approach will entail significant changes to their existing systems, the collection of extensive data as well as the fulfillment of many other quantitative and qualitative requirements. It would therefore be more practicable for such bank to start with the Foundation Approach rather than going straight to the Advanced Approach. The possibility of moving straight to the Advanced Approach is however not entirely ruled out, if banks concerned can satisfy the more stringent criteria, in particular the ability to measure Loss Given Default (LGD) and Exposures At Default (EAD).

Application / validation procedures

5.1.5 Banks wishing to adopt the IRB Approach should discuss their plans with SAMA and meet the requirements described in Attachment –5.1. Whether they will be able to use the IRB Approach for capital adequacy purposes is subject to the prior approval of SAMA and to their satisfying various qualitative and quantitative requirements relating to internal rating systems and the estimation of Probability of default (PD) Loss Given Default (LGD); Exposure At Default (EAD) and the controls surrounding them. SAMA will conduct on-site validation exercises to ensure that bank internal rating systems and the corresponding risk estimates meet the Basel requirements. It should however be stressed that the primary responsibility for validating and ensuring the quality of bank internal rating systems lies with its management.

5.1.6   In order to allow sufficient time for the SAMA to carry out the necessary validations on their systems, banks should inform SAMA no later than 30 November 2005 of their final plans in writing if they want to use the IRB Approaches. This will be followed by bilateral meetings to discuss the banks Implementation Plans and state of readiness for adopting the IRB Approaches.

5.1.7   In assessing the eligibility of a bank to adopt the IRB Approach, SAMA will adopt the examination processes as outlined in Attachment 5.I. In the case of banks that are branches of foreign banks, SAMA will liaise with the home supervisory authority particularly on the validation arrangements to assess the extent of reliance that it may place on the validation done by the home supervisor. Other aspects will include their Basel II implementation plans, National Discretion, extent of adoption of Saudi portfolios risk characteristic in their internal classification and risk estimates, etc. This approach is consistent with the Basel Concordat and should help keep duplication of supervisory attention to a minimum.

5.1.8   SAMA will provide the banks with more details regarding the application and approval/examination procedures for use of the IRB Approach. Relevant self-assessment questionnaires will also be issued to banks, to assist SAMA in evaluating banks Implementation Plans.

Proposed work programme and implementation timetable

5.1.9   SAMA will discuss with the banks through the Working Groups and bi-laterally concerning their Implementation Plans and strategies relating to the IRB Approach. These guidance rules, cover the proposals on the exercise of national discretions and the minimum qualifying criteria for transition to the IRB Approach.

5.1.10 Regarding the exercise of national discretion, SAMA has provided clear guidance in this document. Banks may seek further clarifications on national discretion items during the Working Groups meetings and on a bi-lateral basis. (Attachment - 5.3.)

5.1.11 Other rules and guidance on the IRB Approach, including the revised capital adequacy returns for users of this Approach will be issued to banks in the future.

Qualifying Criteria for Adoption of IRB Approach

5.1.12 In order for banks to be eligible to use the IRB Approach for capital adequacy purposes, they should comply with a set of minimum qualifying criteria. These requirements generally cover:
(i)   The criteria for transition to the IRB Approach; and
(ii)   Other requirements relating to the qualitative and quantitative aspects of IRB systems i.e. rating system (Attachment 5.4) and Risk Quantification System (Attachment 5.5).

Criteria for transition to the IRB Approach

Adoption of IRB Approach across the banking group

5.1.13 SAMA would expect banks to adopt the IRB Approach except for immaterial exposures that have been exempted by SAMA. The fundamental principle is that a clear critical mass of bank's risk-weighted assets ("RWAs") (as recorded in the banks solo and consolidated capital adequacy returns) would have to be on the IRB Approach before the bank could transition to that Approach for capital adequacy purposes. In this regard, the amount of immaterial exposures that can be exempt from the requirements of the IRB Approach is subject to a maximum limit of 15% of a bank's risk-weighted assets. Exempt exposures will apply the Standardized Approach.

5.1.14A Given the data limitations associated with SL exposures, a bank may remain on the supervisory slotting criteria approach for one or more of the PF, OF, IPRE or HVCRE sub-classes, and move to the foundation or advanced approach for other sub-classes within the corporate asset class.
(Refer para 262, International Convergence of Capital Measurement and Capital Standards – June 2006)

5.1.14 SAMA current proposal is that the ultimate level of IRB coverage should be at least 85% of a bank's RWA's, a bank may be allowed to transition before reaching this level of coverage if it can satisfy the criteria for adopting phased rollout (see paragraphs 5.1.16 to 5.1.18 below).

5.1.15 Prescribing a minimum level of IRB coverage means that some banks might not qualify to adopt IRB immediately (i.e. on 1 January 2008) but might have to wait until they have achieved the requisite level of coverage. This, SAMA believes, is preferable to a situation in which banks are approved to use IRB when in fact a very significant proportion of their RWAs are not actually on IRB. Given that use of IRB-type systems in Saudi Arabia are not well established, a certain degree of caution is considered prudent, and SAMA does not expect banks to rush to adopting IRB when they are not fully ready.
Consequently, banks planning to use the IRB Approach should conduct a well thought out and a comprehensive feasibility study.

5.1.16 Phased rollout and transition period

A bank may be allowed to adopt a phased rollout of the IRB Approach across its banking group within a transition period of up to three years subject to SAMA

being satisfied with its final Implementation Plans. The implementation plan should specify, among other things, the extent and timing for rolling out the IRB Approach across significant asset classes (or sub-classes in the case of retail) and business units over time. The plan should be precise and realistic, and must be approved with SAMA. Further, when a bank adopts the IRB Approach for an asset class within a particular business unit (or in the case of retail exposures for an individual sub-class), it must apply the IRB Approach to all exposures within that asset class (or sub-class) in that unit.

5.1.17 Banks adopting phased rollout should have achieved a certain level of IRB coverage (say, at least 85% of their RWAs) before they could be allowed to use the Approach for capital calculation. By the end of the transition period, all of their non-exempt exposures should have been migrated to the IRB Approach.

5.1.18 Banks adopting the foundation or advanced approaches are required to calculate their capital requirement using these approaches, as well as the 1988 Accord for the time period specified in paragraphs 45 to 49, International Convergence of Capital Measurement and Capital Standards – June 2006
(Refer para 263, International Convergence of Capital Measurement and Capital Standards – June 2006)

Under these transitional arrangements banks are required to have a minimum of two years of data at the implementation of this Framework. This requirement will increase by one year for each of three years of transition.
(Refer para 265, International Convergence of Capital Measurement and Capital Standards – June 2006)

Parallel run and capital floor

5.1.19 There will be a parallel run of Basel II – IRB Approach only.

5.1.20 Banks planning to use the IRB Approach will be subject to a single capital floor for the first three years after they have adopted the IRB Approach for capital adequacy purposes. They should calculate the difference between: (i) the floor as defined in paragraphs 5.1.21 and 5.1.22 below; and (ii) the amount as calculated according to paragraph 5.1.23 below. If the floor amount is larger, Banks are required to add 12.5 times the difference to RWAs. See Example-I for a simple illustration of how the floor works.

5.1.21 The capital floor is based on application of the current Accord. It is derived by applying an adjustment factor to the following amount: (i) 8% of the RWAs; (ii) plus Tier 1 and Tier 2 capital deductions; and (iii) less the amount of general provisions that may be recognized in Tier 2 capital. The adjustment factor for banks using the IRB Approach, whether Foundation or Advanced, for the First year is 95%. The adjustment factor for the Second Year is 90%, and for the Third year is 80%. Such adjustment factors will apply to banks adopting the IRB Approaches during the transition period, i.e. 3 years following the initial period. The timeframe for application of the capital floor and adjustment factors proposed here is different from that in paragraph 46 of the Basel II document. SAMA considers that these rules will ensure a level-playing field for banks that adopt the IRB Approach in different years within the transition period.

5.1.22 For banks using the IRB Approach and AMA approach for operational risk, the floor will be based on calculations using the rules of the Standardized Approach for credit risk. The adjustment factor for banks using the IRB Approaches are given below;

Application of Adjustment Factors

	1st year of Implementation	2nd year of Implementation	3rd year of Implementation	Basis of Comparison
Foundation Approach	95%	90%	80%	Current Accord
Advanced IRB and or operation risk	90%	80%	70%	Standardized Approach

5.1.23 In the years in which the floor applies, banks should also calculate: (i) 8% of total RWAs as calculated under Basel II; (ii) less the difference between total provisions and expected loss amount as described in Section III.G in the Basel II document; and (iii) plus other Tier 1 and Tier 2 capital deductions. Where a bank uses the Standardized Approach for credit risk for any portion of its exposures, it also needs to exclude general provisions that may be recognized in Tier 2 capital for that portion from the amount calculated according to the first sentence of this paragraph.

5.1.24 Should problems emerge during the three-year period of applying the capital floors, SAMA will take appropriate measures to address them, and, in particular, will be prepared to keep the floors in place beyond the third year if necessary.

Transition arrangements

5.1.25 The Basel Committee recommends that some minimum requirements for: (i) corporate, sovereign and bank exposures under the Foundation Approach; (ii) retail exposures; and (iii) the PD/LGD Approach to equity can be relaxed during the transition period, subject to national discretion[1].

SAMA recognizes that bank wishing to adopt the IRB Approach may need an extended period of time to develop/enhance their internal rating systems to come into line with the Basel requirements and to start building up the required data for estimation of PD/LGD/EAD. Therefore, SAMA proposes to apply the transition requirement of a minimum of two years of data at the time of adopting the foundation IRB Approach.

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[1]There are no transition arrangements for the Advanced IRB Approach and the Market based Approach to qualify.

The table below sets out SAMA's arrangements:

Item	Requirement	Transition Arrangement Requirement
Observation period for PD for corporate, bank, sovereign and retail exposures	*At least 2 years*	*2 years of data during the transition- same as normal requirement*
LGD/EAD for corporate, bank and sovereign exposures	At least 7 years	No transition period Reduction
LGD and EADs for retail exposure	At least 5 years	No transition period Reduction

5.1.27 As a 2 year data observation period may not be enough to capture default data during a full credit cycle, SAMA expects banks to exercise conservatism in the assignment of borrower ratings and estimation of risk characteristics. Banks would need to demonstrate and document their methodology and work in this area.

5.1.28 SAMA will incorporate the above proposals in its final implementation document after taking into account the bank's comments and any further discussions with the bank and after reviewing each bank's final Implementation Plans.

Qualitative and quantitative requirements on IRB systems
General

5.1.29 The IRB Approach to the measurement of credit risk relies on banks' internally generated inputs to the calculation of capital. To minimize variation in the way in which the IRB Approach is carried out and to ensure significant comparability across banks, SAMA considers it necessary to establish minimum qualifying criteria regarding the comprehensiveness and integrity of the internal rating systems of banks adopting the IRB Approach, including the ability for those systems to produce reasonably accurate and consistent estimates of risk i.e. PD's LGD's and EAD's. SAMA will employ these criteria for assessing their eligibility to use the IRB Approach.

5.1.30 The minimum IRB requirements focus on a bank's ability to rank order and quantify risk in a consistent, reliable and valid manner. The qualitative aspects of an internal rating system, such as rating system design and operations, corporate governance and oversight, and use of internal ratings, are detailed in the "Minimum Requirements for Internal Rating Systems under IRB Approach" Attachment-5.4. Other quantitative aspects covering risk quantification requirements and validation of internal estimates are prescribed in the "Minimum Requirements for Risk Quantification under IRB Approach" (Attachment-5.3). Apart from meeting the relevant minimum requirements, banks' overall credit risk management practices should also be consistent with the guidelines and sound practices issued by SAMA.

5.1.31 The overarching principle behind the requirements is that an IRB compliant rating system should provide for a meaningful assessment of borrower and transaction characteristics, a meaningful differentiation of credit risk, and reasonably accurate and consistent quantitative estimates of risk. Banks using the IRB approach would need to be able to measure the key statistical drivers of credit risk. They should have in place a process that enables them to collect, store and utilize loss statistics over time in a reliable manner.

5.1.32 The proposed requirements are broadly consistent with the Basel standards. Highlighted below are some specific areas of the requirements.

Use of internal ratings

5.1.33 In order to facilitate banks to transition to IRB over time, SAMA would be flexible in applying the "use" test to a Basel II - compliant internal rating system. Banks would need to demonstrate that such a system has been used for **three years** prior to qualification.

If the internal rating systems of a bank which is owned by a foreign banking group, have been developed and used at the group level for some time, there may be scope for reducing the three year requirement on a case-by-case basis, depending on the level of group support (e.g. in terms of resources and training) provided to the local bank. This, however, will not absolve local management from the responsibility to understand and ensure the effective operation of the IRB systems at the bank level.

Assessment of capital adequacy using stress tests

5.1.34 For the purpose of assessment of capital adequacy using stress tests, it is proposed that stressed scenario chosen by bank should resemble a economic recession and other economic down turns experiences in KSA.

Definition of default

5.1.35 The proposed definition of default is consistent with SAMA's regulatory definition set at 90 days. Further, there is the setting of a materiality threshold to an obligor's credit obligations in determining whether a default is considered to have occurred with regard to the obligor after any portion of the obligor's credit obligations has been past due for more than 90 days. The purpose of applying materiality to the definition of default is to avoid counting as defaulted obligors those that are in past due only for technical reasons. SAMA's preliminary intention is to apply the materiality level on a conservative basis i.e. 5% or more of the obligor's outstanding credit obligations, and banks may set a lower threshold if they choose not to apply the threshold based on their individual circumstances.

5.1.36 The second element is the application of the default definition on a "banking group" or consolidated basis. In other words, once an obligor has defaulted on any credit obligation to the banking group, all of its facilities within the group are considered to be in default. SAMA proposes that a banking group should cover all entities within the group that are subject to full consolidation.

5.1.37 The third element relates to the use of different default triggers in the definition. If a bank owned by a foreign banking group wants to use a different default trigger set by its home supervisor for particular exposures (e.g. 180 days for exposures to retail or public sector entities), the banks should be able to satisfy the SAMA that such a difference in the definition of default will not result in any material impact on the default / loss estimates generated.

Internal validation of IRB Approach

5.1.38 With regard to banks' internal validation of the IRB Approach, SAMA considers that it should be an integral part of a banks rating system architecture to provide reasonable assurances about its rating system. Banks adopting the IRB Approach should have a robust system in place to validate the accuracy and consistency of their rating systems, processes and the estimation of all relevant risk components. They should demonstrate to SAMA that their internal validation process enables them to assess the performance of internal rating and risk estimation systems consistently and meaningfully. It is proposed that the internal validation process should include review of rating system developments, ongoing analysis, and comparison of predicted estimates to actual outcomes i.e. back-testing.

Way Forward

5.1.39 Given that implementation of the IRB Approach is a challenging task and demands significant time and resources, banks planning to use the IRB Approach on 1 January 2008 and beyond should have already completed in sufficient depth their detailed project evaluations, and their implementation plans be well advanced. They should be prepared to provide the SAMA with the full details of their implementation plan and demonstrate how they are monitoring the progress of their Implementation Plans.

5.1.40 SAMA, in the meantime, will carry on with the work of finalizing its relevant guidance (including the risk-weighting framework), the revised capital adequacy return and completion instructions as well as the approval / validation procedures for the IRB Approach for consulting with the banks during 2006.

Calculation of Capital Floor - Numerical Example

Assumptions and calculations

Current Accord

- RWAs of a bank under the current Accord = $ 100
- Tier 1 and Tier 2 capital deductions = $ 1
- General provision recognized in Tier 2 capital = $ 0.5

(i)   8% x $ 100 + $ 1 – $ 0.5
       = $ 8.5

Basel II

- RWAs of banks under Basel II
-     = $ 90
- Tier 1 and Tier 2 capital deductions = $ 1
- Difference between total provisions and expected loss amount (as described in Section III.G in the Basel II Framework) = $ 0.8

(ii)   8% x $ 90 + $ 1 – $ 0.8
        = $ 7.4

Calculation of Floor

- Adjustment factor of 95% is applicable

Floor = 95% x $ 8.5 in (i) = $ 8.075

As the Floor is larger than $ 7.4 in (ii), an amount equivalent to 12.5 x ($ 8.075 – $ 7.4) or $ 8.4375 should be added to the RWAs of $ 90.

Therefore, the regulatory RWAs under Basel II for calculation of the capital adequacy ratio should be $ 98.4375 (i.e. $ 90 + $ 8.4375).

National Discretion – IRB Approach

Reference to Basel II Document	Areas of National Discretion	SAMA's Position
227	Definition of HVCRE.	N/A
231	Establish exposure threshold to distinguish between retail and corporate.	Yes
231	For residential mortgages, set limits on the maximum number of housing units per exposure.	N/A
232	Set a minimum number of exposures within a pool for exposures in that pool to be treated as retail.	No
237 (FN59)	Debts with economic substance of equity may not be included where directly hedged by an equity holding.	Yes
238	Re-characterize debt holding as equities for regulatory purposes.	Yes
242	Purchased receivables: Size and concentration limits above which using the "bottom-up" approach.	No
249 - 251 & 283	HVCRE: banks will be able to use the foundation or advanced approaches, similar to the corporate approach, but with a separate RW function.	N/A
267 - 269	For a maximum of ten years, exempt equity exposures from the IRB treatment.	No
274	Firm-size adjustment and threshold for SME based on total assets instead of total sales.	Yes
277	Lower SL RWs, 75% to strong exposures and 100% to good exposures.	Yes
282	HCVRE: assign preferential RW of 75% to "strong" exposures, and 100% to "good" Exposures.	N/A

National Discretion – IRB Approach

Reference to Basel II Document	Areas of National Discretion	SAMA's Position
288	Employ a wider definition of subordinated loan for a 75% LGD under FIRB.	Yes
318 - 319	Determine whether to use an explicit or implicit M adjustment under FIRB.	Implicit
319	Exemption on explicit M to smaller domestic firms, those with consolidated sales and assets of less than SR. 500 million.	No
321 - 322	Determine within the explicit M adjustment which instrument will apply for the carve-out from the one-year maturity floor.	Yes
341 -342	Equity: which approach or approaches (market based or PD/LGD approach) will be used.	Market
344 - 349	Equity: which market-based approaches [simple risk weight (SRW) or internal models method] to use.	Both
356	Exclude equity whose debt obligations qualify for a zero RW under SA.	No
357	Exemption for equity under legislative Programmes.	No
358	Exemption for equity based on materiality Threshold.	Yes
378	Assign preferential RWs to HVCRE.	N/A
385	Treatment where calculated EL amount is lower than provisions.	Yes
404	Require a greater number of borrowers grades than seven for non-defaulted borrowers and one defaulted.	Yes

National Discretion – IRB Approach

Reference to Basel II Document	Areas of National Discretion	SAMA's Position
257	Phase roll out of the IRB approach across the banking group.	Yes
259	Exemption from IRB for some exposures in non-significant business units that are immaterial	Yes
260	Equity on IRB, even if banks opts for SA.	No
264 - 265	Relaxation of data requirement for a transitional period	Yes
443	Require an external audit of the bank's rating assignment process and estimation of loss characteristics	Yes
452 (FN 82)	For retail and PSE, default is considered if past due more than 180 days. For corporate, only for a transitional period of five years	No
458	Establish more specific requirements on re-ageing	No
467	Mandatory to adjust PD estimates upward for anticipated seasoning effects	Yes
521	Determine other physical collateral as risk mitigant under the foundation approach that meet the criteria.	Yes

**MINIMUM REQUIREMENTS
FOR INTERNAL RATING SYSTEMS
UNDER IRB APPROACH**

CONTENTS

1. Introduction

1.1 Terminology

1.1.1 Abbreviations and other terms used in this paper have the following meanings:
- "PD" means the probability of default of a counterparty over one year.
- "LGD" means the loss incurred on a facility upon default of a counterparty relative to the amount outstanding at default.
- "EAD" means the expected gross exposure of a facility upon default of a counterparty.

- "Dilution risk" means the possibility that the amount of a receivable is reduced through cash or non-cash credits to the receivables obligor.
- "EL" means the expected loss on a facility arising from the potential default of a counterparty or the dilution risk relative to EAD over one year "IRB Approach" means Internal Ratings-based Approach.
- "SL" means Specialized lending.

- "**Foundation IRB Approach**" means that, in applying the IRB framework, banks provide their own estimates of PD and use supervisory estimates of LGD and EAD, and, unless otherwise specified by the SAMA, are not required to take into account the effective maturity of credit facilities.

- "**Advanced IRB Approach**," means that, in applying the IRB framework, banks use their own estimates of PD, LGD and EAD, and are required to take into account the effective maturity of credit facilities. A "borrower grade" means a category of creditworthiness to which borrowers are assigned based on a specified and distinct set of rating criteria, from which estimates of PD are derived. The grade definition includes both a description of the degree of default risk typical for borrowers assigned the grade and the criteria used to distinguish that level of credit risk.

- A "facility grade" means a category of loss severity in the event of default (as measured by LGD or EL) to which transactions are assigned on the basis of a specified and distinct set of rating criteria. The grade definition involves assessing the amount of collateral, and reviewing the term and structure of the transaction (such as the lending purpose, repayment structure and seniority of claims).

- A "rating system" means all of the methods, processes, controls, and data collection and IT systems that support the assessment of credit risk, the assignment of internal risk ratings, and the quantification of default and loss estimates. Key aspects of a rating system are summarized in Table 1.
- "Seasoning" means an expected change of risk parameters over the life of a credit exposure.

1.2 Application

1.2.1 The requirements set out in this paper are applicable to locally incorporated banks, which use or intend to use the IRB Approach to measure capital charges for credit risk.

1.2.2 In the case of branches of foreign banks, all or part of their IRB systems may be centrally developed and monitored on a group basis. In applying the requirements of this paper, the SAMA will consider the extent to which reliance can be placed on the work done at the group level. Where necessary, SAMA will co-ordinate with the home supervisors of those banks regarding the assessment of the comprehensiveness and integrity of the group-wide internal rating systems adopted by their branches in Saudi Arabia. SAMA will also assess whether the relevant systems or models can adequately reflect the specific risk characteristics of the banks' domestic portfolios.

1.3 Background and scope

1.3.1 The IRB Approach to the measurement of credit risk for capital adequacy purposes relies on banks' internally generated inputs to the calculation of capital. To minimize variation in the way in which the IRB Approach is carried out and to ensure significant comparability across banks, the SAMA considers it necessary to establish minimum qualifying criteria regarding the comprehensiveness and integrity of the internal rating systems of banks adopting the IRB Approach. The SAMA will employ these criteria for assessing their eligibility to use the IRB Approach.

1.3.2 This Document:
Prescribes the minimum requirements that a banks internal rating system should comply with at the outset and on an ongoing basis if it were to use the IRB Approach to measure credit risk for capital adequacy purposes; and
Sets out SAMA's supervisory approach where a bank is not in full compliance with the minimum requirements.

1.3.3 The minimum requirements set out herein apply to both the Foundation IRB Approach, and the Advanced IRB Approach and to all asset classes[1] , unless stated otherwise. The standards related to the process of assigning exposures to borrower or facility grades and the related oversight, validation, etc. apply equally to the process of assigning retail exposures to pools of homogenous exposures, unless noted otherwise.

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[1]Under the IRB Approach, assets are broadly categorized into five classes: (i) corporate (with specialized lending as a sub-class); (ii) sovereign; (iii) bank; (iv) retail; and (v) equity.

1.3.4 The minimum requirements for internal rating systems of equity exposures under the PD/LGD Approach are the same as those of the Foundation IRB Approach for corporate exposures, subject to the specifications set out in the "Risk-weighting Framework for IRB Approach". Where banks adopt the internal models approach to calculate capital charges for equity exposures, the relevant requirements are set out in the "Minimum Requirements for Risk Quantification under IRB Approach".

1.3.5 The quantification of default and loss estimates described in this paper should be read in conjunction with the "Minimum Requirements for Risk Quantification under IRB Approach".

2. Composition of minimum requirements

2.1 Overview

2.1.1 The IRB requirements focus on a bank's ability to rank order and quantify risk in a consistent, reliable and valid manner, and generally fall within the following categories:
(i)   Rating system design;
(ii)   Rating system operations;
(iii)   Corporate governance and oversight;
(iv)   Use of internal ratings;
(v)   Risk quantification;
(vi)   Validation of internal estimates;
(vii)   Supervisory LGD and EAD estimates;
(viii) Requirements for recognition of leasing;
(ix)   Calculation of capital charges for equity exposures – internal models approach; and
(x)   Disclosure requirements.

2.1.2 The minimum requirements under categories (i) to (iv) and (x) are detailed in sections 4 to 8 below while those requirements under categories (v) to (ix) are prescribed in the "Minimum Requirements for Risk Quantification under IRB Approach".

The overarching principle behind the requirements is that an IRB-compliant rating system should provide for a meaningful assessment of borrower and transaction characteristics, a meaningful differentiation of credit risk, and reasonably accurate and consistent quantitative estimates of risk. Banks using the IRB Approach would need to be able to measure the key statistical drivers of credit risk i.e. PD's, LGD's and EAD's. They should have in place a process that enables them to collect, store and utilize loss statistics over time in a reliable manner.

2.1.4 The internal ratings and risk estimates generated by the rating system should form an integral part of the bank's daily credit risk measurement and management process.

Generally, all banks adopting the IRB Approach should produce their own estimates of PDs and should adhere to the overall requirements for rating system design, operations, controls, corporate governance, use of internal ratings, recognition of leasing, calculation of capital charges for equity exposures, as well as the requirements for estimation and validation of PD measures. Banks wishing to use their own estimates of LGD and EAD should also meet the additional minimum requirements for these risk factors. See the "Minimum Requirements for Risk Quantification under IRB Approach" for the requirements relating to PD, LGD and EAD estimation.

3. Compliance with minimum requirements

3.1 Ongoing compliance

3.1.1 To be eligible for the IRB Approach, a bank should demonstrate to the SAMA that it meets the minimum requirements at the outset and on an ongoing basis. Bank's overall credit risk management practices should also be consistent with the guidelines and sound practices issued by the SAMA.

3.2 Supervisory approach to non-compliance

3.2.1 Where a bank adopting the IRB Approach is not in full compliance with the minimum requirements, the bank should produce a plan for a timely return to compliance and seek approval from SAMA. Alternatively, the bank should demonstrate to SAMA that the effect of such non-compliance is immaterial in terms of the risk posed to the bank.

3.2.2 Failure to demonstrate immateriality or to produce and satisfactorily implement an acceptable plan will lead SAMA to reconsider the bank's eligibility for the IRB Approach. During the period of non-compliance, SAMA will consider the need for the bank to hold additional capital under the supervisory review process, or to take other appropriate supervisory action (such as reducing its credit exposures), depending on the circumstances of each case.

4.   Rating system design

4.1   Rating dimensions

<u>Corporate, sovereign and bank exposures</u>

4.1.1   Banks adopting the IRB Approach should have a two dimensional rating system that provides separate assessment of borrower and transaction characteristics. This approach assures that the assignment of borrower ratings is not influenced by consideration of transaction specific factors.

Borrower rating

4.1.2   The first dimension should reflect exclusively the risk of borrower default. Collateral and other facility characteristics should not influence the borrower rating.[1] Banks should assess and estimate the default risk of a borrower based on the quantitative and qualitative information regarding the borrower's credit-worthiness (see subsection 4.4 below for risk assessment criteria). Banks should rank and group borrowers into individual grades each associated with an average PD.

4.1.3   Separate exposures to the same borrower should be assigned to the same borrower grade, irrespective of any differences in the nature of each specific transaction. Once a borrower has defaulted on any credit obligation <5% threshold> to a bank (or the banking group[2] of which it is a part), all of its facilities with that bank (or the banking group of which it is a part) are considered to be in default (see the definition of default in subsection 4.2 of the "Minimum Requirements for Risk Quantification under IRB Approach").

4.1.4   There are two exceptions that may result in multiple grades for the same borrower. First, to reflect country transfer risk[3], a bank may assign different borrower grades depending on whether the facility is denominated in local or foreign currency. Second, the treatment of associated guarantees to a facility may be reflected in an adjusted borrower grade.

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[1]For example, in an eight-grade rating system, where default risk increases with the grade number, a borrower whose financial condition warrants the highest investment grade rating should be rated a 1 even if the bank's transactions are unsecured and subordinated to other creditors. Likewise, a defaulted borrower with a transaction fully secured by cash should be rated an 8 (i.e. the defaulted grade) regardless of the remote expectation of loss.

[2]The banking group covers all entities within the group that are subject to the capital adequacy regime in Saudi Arabia.

[3]Country transfer risk is the risk that the borrower may not be able to secure foreign currency to service its external debt obligations due to adverse changes in foreign exchange rates or when the country in which it is operating suffers economic, political or social problems.

4.1.5 In assigning a borrower to a borrower grade, banks should assess the risk of borrower default over a period of at least one year. However, this does not mean that banks should limit their consideration to outcomes for that borrower that are most likely to occur over the next 12 months. Borrower ratings should take into account all possible adverse events that might increase a borrower's likelihood of default (see subsection 4.5 below).

Facility rating

4.1.6 The second dimension should reflect transaction specific factors (such as collateral, seniority, product type, etc.) that affect the loss severity in the case of borrower default.

4.1.7 For banks adopting the Foundation IRB Approach, this requirement can be fulfilled by the existence of a facility dimension which may take the form of:
A facility rating system that provides a measure of EL by incorporating both borrower strength (PD) and loss severity (LGD); or an explicit quantifiable LGD rating dimension,
Representing the conditional severity of loss, should default occur, from the credit facilities.
In calculating the regulatory capital requirements, these banks should use the supervisory estimates of LGD.

4.1.8 For banks using the Advanced IRB Approach, facility ratings should reflect exclusively LGD. These ratings should cover all factors that can influence LGD including, but not limited to, the type of collateral, product, industry, and purpose. Borrower characteristics may be included as LGD rating criteria only to the extent they are predictive of LGD. Banks may alter the factors that influence facility grades across segments of the portfolio as long as they can satisfy the SAMA that it improves the relevance and precision of their estimates.

4.1.9 Banks using the supervisory slotting criteria for the specialized lending ("SL") exposures need not apply this two-dimensional requirement to these exposures. Given the interdependence between borrower and transaction characteristics in SL, Banks may instead adopt a single rating dimension that reflects EL by incorporating both borrower strength (PD) and loss severity (LGD) considerations.

Retail exposures

4.1.10 Rating systems for retail exposures should reflect both borrower and transaction risks, and capture all relevant borrower and transaction characteristics. Banks should assign each retail exposure to a particular pool. For each pool, banks should estimate PD, LGD and EAD. Multiple pools may share identical PD, LGD and EAD estimates.

4.1.11 Banks should demonstrate that this grouping process provides for a meaningful differentiation of risk and results in sufficiently homogeneous pools that allow for accurate and consistent estimation of loss characteristics at the pool level.

4.1.12 Banks should have specific criteria for slotting an exposure into a pool. These should cover all factors relevant to the risk analysis. At a minimum, banks should consider the following risk drivers when assigning exposures to a pool:
Borrower risk characteristics (e.g. borrower type, demographics such as age/occupation);
Transaction risk characteristics including product and/or collateral type. One example of split by product type is to group exposures into credit cards, installment loans, revolving credits, residential mortgages, and small business facilities. When grouping exposures by collateral type, consideration should be given to factors such as loan-to-value ratios, seasoning[1], guarantees and seniority (first vs. second lien). Banks should explicitly address cross-collateral provisions, where present;

Delinquency status: Banks should separately identify delinquent and non-delinquent exposures.

4.2 **Rating structure**

Corporate, sovereign and bank exposures

4.2.1 Banks should have a meaningful distribution of exposures across grades with no excessive concentrations, on both borrower-rating and facility-rating scales (also see paragraph 4.2.4). The number of borrower and facility grades used in a rating system should be sufficient to ensure that management can meaningfully differentiate risk in the portfolio. Perceived and measured risk should increase as credit quality declines from one grade to the next.

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[1]Seasoning can be a significant element of portfolio risk monitoring, particularly for residential mortgages, which may have a clear time pattern of default rates.

Borrower rating

4.2.2 Rating systems should have a minimum of seven borrower grades for non-defaulted borrowers and one for defaulted borrowers[1]. While banks with lending activities focused on a particular market segment may satisfy this requirement with the minimum number of grades, bank's lending to borrowers of diverse credit quality may need to have a greater number of borrower grades.

4.2.3 In defining borrower grades, "+" or "-" modifiers to alpha or numeric grades will only qualify as distinct grades if the bank has developed complete rating descriptions and criteria for their assignment, and separately quantifies PDs for these modified grades.

4.2.4 Banks with loan portfolios concentrated on a particular market segment and a range of default risk should have enough grades within that range to avoid undue concentration of borrowers in particular grades[2]. Significant concentration within a single grade should be supported by convincing empirical evidence that the grade covers a reasonably narrow PD band and that the default risk posed by all borrowers in the grade falls within that band.

4.2.5 For banks using the supervisory slotting criteria for SL exposures, the rating system for such exposures should have at least four grades for non-defaulted borrowers and one for defaulted borrowers. SL exposures that qualify as corporate exposures under the Foundation IRB Approach or the Advanced IRB Approach are subject to the same requirements as those for general corporate exposures (i.e. a minimum of seven borrower grades for non-defaulted borrowers and one for defaulted borrowers).

Facility rating

4.2.6 There is no minimum number of facility grades. Banks using the Advanced IRB Approach should ensure that the number of facility grades is sufficient to avoid facilities with widely varying LGDs being grouped into a single grade. The criteria used to define facility grades should be grounded in empirical evidence.

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[1] For the purpose of reporting under SAMA's loan classification framework, banks should also be able to identify/differentiate defaulted exposures that fall within different categories of classified assets (i.e. Substandard, Doubtful and Loss).

[2] In general, a single corporate borrower grade assigned with more than 30% of the gross exposures (before on-balance sheet netting) could be a sign of excessive concentration.

Retail exposures

4.2.7 The level of differentiation for IRB purposes should ensure that the number of exposures in a given pool is sufficient to allow for meaningful quantification and validation of the loss characteristics at the pool level. There should be a meaningful distribution of borrowers and exposures across pools to avoid undue concentration of a bank's retail exposures in particular pools.

4.3 Multiple rating methodologies/systems

4.3.1 A bank's size and complexity of business, as well as the range of products it offers, will affect the type and number of rating systems it has to employ. Where necessary, a bank may adopt multiple rating methodologies/systems within each asset class, provided that all exposures are assigned borrower and facility ratings and that each rating system conforms to the IRB requirements at the outset and on an ongoing basis and is validated for accuracy and consistency.

4.3.2 The rationale for assigning a borrower to a particular rating system should also be documented and applied in a manner that best reflects the level of risk of the borrower. Borrowers should not be allocated across rating systems inappropriately to minimize regulatory capital requirements (i.e. cherry-picking by choice of rating system).

4.4 Rating criteria

4.4.1 To ensure the transparency of individual ratings, banks should have clear and specific rating definitions, processes and criteria for assigning exposures to grades within a rating system. The rating definitions and criteria should be both plausible and intuitive, and have the ability to differentiate risk. In particular, the following requirements should be observed:

- The grade descriptions and criteria should be sufficiently detailed and specific to allow staff responsible for rating assignments to consistently assign the same grade to borrowers or facilities posing similar risk. This consistency should exist across lines of business, departments and geographic locations. If rating criteria and procedures differ for different types of borrowers or facilities, banks should monitor for possible inconsistency, and alter rating criteria to improve consistency when appropriate.

- Written rating definitions should be clear and detailed enough to allow independent third parties (e.g. SAMA, internal or external audit) to understand the rating assignments, replicate them and evaluate their appropriateness. The criteria should be consistent with a banks internal lending standards and its policies for handling troubled borrowers and facilities.

4.4.2   Banks should take into account all relevant and material information that are available to them when assigning ratings to borrowers and facilities[1]. Information should be current. The less information a bank has, the more conservative should be its rating assignments. An external rating can be the primary factor determining an internal rating assignment. However, the bank should ensure that other relevant information is also taken into account. Banks should refer to **Annex A** for the relevant factors in assigning borrower and facility ratings.

SL exposures within the corporate asset class

4.4.3   Banks using the supervisory slotting criteria for SL exposures should assign these exposures to internal rating grades based on their own criteria, systems and processes, subject to compliance with the IRB requirements. The internal rating grades of these exposures should then be mapped into five supervisory rating categories. The general assessment factors and characteristics exhibited by exposures falling under each of the supervisory categories are provided Attachment.

Banks should demonstrate that their mapping process has resulted in an alignment of grades consistent with the preponderance of the characteristics in the respective supervisory category. Banks should ensure that any overrides of their internal criteria do not render the mapping process ineffective.

4.5   Rating assessment horizon

4.5.1   Although the time horizon used in PD estimation is one year, banks are expected to apply a longer time horizon in assigning ratings. A borrower rating should represent the bank's assessment of the borrower's ability and willingness to contractually perform despite adverse economic conditions or the occurrence of unexpected events. In other words, the Bank's assessment should not be confined to risk factors that may occur in the next 12 months.

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[1] It could be difficult to address the qualitative considerations in a structured and consistent manner when assigning ratings to borrowers and facilities. In this regard, banks may choose to cite significant and specific points of comparison by describing how such qualitative considerations can affect the rating. For example, factors for consideration may include whether a borrower's financial statements have been audited or are merely compiled from its accounts or whether collateral has been independently valued. Formalizing the process would also be helpful in promoting consistency in determining risk grades. For example, a "risk rating analysis form" can provide a clear structure for identifying and addressing the relevant qualitative and quantitative factors for determining a risk rating, and document how grades are set.

4.5.2 Banks may satisfy this requirement by:
basing rating assignments on specific, appropriate stress scenarios (see subsection 5.5 below); or taking appropriate consideration of borrower characteristics that are reflective of the borrower's vulnerability to adverse economic conditions or unexpected events, without explicitly specifying a stress scenario. The range of economic conditions should be consistent with current conditions and those likely to occur over a business cycle within the respective industry/geographic region.

4.5.3 Given the difficulties in forecasting future events and the influence they will have on a particular borrower's financial condition, banks should take a conservative view of projected information. Where limited data are available, banks should adopt a conservative bias to their analysis.

4.5.4 Banks should articulate clearly their rating approaches (see Annex B for details of rating approaches) in their credit policies, particularly how quickly ratings are expected to migrate in response to economic cycles and the implications of the rating approaches for their capital planning process. If a bank chooses a rating approach under which the impact of economic cycles would affect rating migrations, its capital management policy should be designed to avoid capital shortfalls in times of economic stress.

4.6   Use of models

Risk assessment techniques

4.6.1 There are generally two basic methods by which ratings are assigned: (i) a model-based process; and (ii) an expert judgement-based process. The former is a mechanical process, relying primarily on quantitative techniques such as credit scoring/default probability models or specified objective financial analysis. The latter relies primarily on personal experience and subjective judgment of credit officers[1].

4.6.2 For IRB purposes, credit scoring models and other mechanical procedures are permissible as the primary or partial basis of rating assignments, and may play a role in the estimation of loss characteristics.

Nevertheless, sufficient human judgment and oversight is necessary to ensure that all relevant and material information is taken into consideration and that the model is used appropriately.

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[1]In practice, the distinction between the two is not precise. In many model-based processes, personal experience and subjective judgment play a role, at least in developing and implementing models, and in constructing their inputs. In some cases, models are used to provide a baseline rating that serves as the starting point in judgment-based processes.

Requirements for using models

4.6.3 Banks should meet the following requirements for use of statistical models and other mechanical methods in rating assignments or in the estimation of PD, LGD or EAD:

- Banks should demonstrate that a model or procedure has good predictive power and its use will not result in distortion in regulatory capital requirements. The model should not have material biases. Its input variables should form a reasonable set of predictors and have explanatory capability.
- Banks should have in place a process for vetting data inputs into a statistical default or loss prediction model. This should include an assessment of data accuracy, completeness and appropriateness.
- The data used to build the model should be representative of the population of the bank's actual borrowers or facilities.
- When model results are combined with human judgment, the judgment should take into account all relevant information not considered by the model. Banks should have written guidance describing how human judgment and model results are to be combined.
- Banks should have procedures for human review of model-based rating assignments. Such procedures should focus on finding and limiting errors associated with model weaknesses. Banks should have a regular cycle of model validation that includes monitoring of model performance and stability, review of model relationships, and testing of model outputs against outcomes (see section 5 of the "Minimum Requirements for Risk Quantification under IRB Approach").

4.7 Documentation of rating system design

4.7.1 Banks should document in writing the design of their rating systems and related operations (see section 5 below on rating system operations) as evidence of their compliance with the requirements of this paper.

4.7.2 The documentation should provide a description of the overarching design of the rating system, including:
the purpose of the rating system;
portfolio differentiation; and
the rating approach and implications for a bank capital planning process.

4.7.3   Rating criteria and definitions should be clearly documented. These include:

- The relationship between borrower grades in terms of the level of risk each grade implies, and the risk of each grade in terms of both a description of the probability of default typical for borrowers assigned the grade and the criteria used to distinguish that level of credit risk;
- The relationship between facility grades in terms of the level of risk each grade implies, and the risk of each grade in terms of both a description of the expected severity of the loss upon default and the criteria used to distinguish that level of credit risk;
- Methodologies and data used in assigning ratings;
- The rationale for choice of the rating criteria and procedures, including analyses demonstrating that those criteria and procedures should be able to provide meaningful risk differentiation;
- Definitions of default and loss, demonstrating that they are consistent with the reference definitions set out in subsections 4.2 and 4.3 of the "Minimum Requirements for Risk Quantification under IRB Approach"; and
- The definition of what constitutes a rating exception (including an override).

4.7.4   Documentation of the rating process should include the following key topics as a minimum. The Format and size is at the discretions of the banks.

- The organization of rating assignment;
- Responsibilities of parties that rate borrowers and facilities;
- Parties that have authority to approve exceptions (including overrides);
- Situations where exceptions and overrides can be approved and the procedures for such approval;
- The procedures and frequency of rating reviews to determine whether they remain fully applicable to the current portfolio and to external conditions, and parties responsible for conducting such reviews;
- The process and procedures for updating borrower and facility information;
- The history of major changes in the rating process and criteria, in particular to support identification of changes made to the rating process subsequent to the last supervisory view[1]; and
- The rationale for assigning borrowers to a particular rating system if multiple rating systems are used.

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[1]The supervisory review could be a review conducted by either the SAMA or the home supervisor of the bank concerned (in the case of a foreign bank branch).

4.7.5 In respect of the internal control structure, the documentation should cover the following:
- The organization of the internal control structure;
- Management oversight of the rating process;
- The operational processes ensuring the independence of the rating assignment process; and the procedure, frequency and reporting of performance reviews of The rating system (on rating accuracy, rating criteria, rating processes and operations), and parties responsible for conducting such reviews.

4.7.6 Banks employing statistical models in the rating process should document their methodologies. The documentation should include:
- A detailed outline of the theory, assumptions and/or mathematical and empirical basis of the assignment of estimates to grades, individual borrowers, exposures, or pools, and the data sources used to estimate the model;
- The guidance describing how human judgment and model results are to be combined;
- The procedures for human review of model-based rating assessments;
- A rigorous statistical process for validating the model; and
- Any circumstances under which the model does not work effectively.

4.7.7 Use of a model obtained from a third-party vendor that claims proprietary technology is not a justification for exemption from documentation or any other requirements for internal rating systems. The burden is on the model's vendor and the bank to satisfy SAMA.

5. Rating system operations

5.1 Coverage of ratings

5.1.1 For corporate, sovereign and bank exposures, each borrower and all recognized guarantors should be assigned a rating and each exposure should be associated with a facility rating as part of the loan approval process. Similarly, for retail exposures, each exposure should be assigned to a pool as part of the loan approval process.

5.1.2 Each separate legal entity to which a bank is exposed should be separately rated. A bank should demonstrate to SAMA that it has acceptable policies regarding the treatment of individual entities in a connected group, including circumstances under which the same rating may or may not be assigned to some or all related entities.

5.2 Integrity of rating process

Corporate, sovereign and bank exposures

5.2.1 Banks should ensure the independence of the rating assignment process. Rating assignments and periodic rating reviews should be completed or approved by a party that does not stand to benefit from the extension of credit. Credit policies and approval/review procedures should reinforce and foster the independence of the rating process.

5.2.2 Borrowers and facilities must have their ratings refreshed at least on an annual basis. Certain credits, especially higher risk borrowers or problem exposures, must be subject to more frequent review. In addition, banks must initiate a new rating if material information on the borrower or facility comes to light.
(Refer para 425, International Convergence of Capital Measurement and Capital Standards – June 2006)

5.2.3 In addition, borrower and facility ratings should be reviewed whenever material information on the borrower or facility comes to light[1]. Bank should establish an effective process to obtain and update relevant and material information on the borrower's financial condition, and on facility characteristics that affect LGD and EAD (e.g. the condition and value of collateral).

Retail exposures

5.2.4 Banks should review the loss characteristics and delinquency status of each identified risk pool at least on an annual basis. It should include a review of the status of individual borrowers within each pool as a means of ensuring that exposures continue to be assigned to the correct pool. This requirement may be satisfied by review of a representative sample of exposures in the pool.

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[1]The rating should generally be updated within 90 days for performing borrowers and within 30 days for borrowers with weakening or deteriorating financial condition.

5.3 Overrides

5.3.1 Banks should clearly articulate the situations where human judgment may override the inputs or outputs of the rating process. They should identify overrides and separately track their performance.

5.3.2 For model-based ratings, banks should have guidelines and processes for monitoring cases where human judgment has overridden the model's rating, variables were excluded or inputs altered. These guidelines should include identifying personnel that are responsible for approving the overrides.

5.3.3 For ratings based on expert judgment, banks should clearly articulate the situations where staff may override the outputs of the rating process, including how and to what extent such overrides can be used and by whom.

5.4 Data maintenance

5.4.1 Banks should collect and store data on key borrowers and facility characteristics to support their internal credit risk measurement and management process and to enable them to meet the requirements of this paper. The data collection and IT systems should serve the following purposes:
- Improve banks' internally developed data for
- PD/LGD/EAD estimation and validation;
- Provide an audit trail to check compliance with rating criteria;
- Enhance and track predictive power of the rating system;
- Modify risk rating definitions to more accurately address the observed drivers of credit risk; and
- Serve as a basis for supervisory reporting.

5.4.2 The data should be sufficiently detailed to allow retrospective reallocation of borrowers and facilities to grades (e.g. if it becomes necessary to have finer segregation of portfolios in future).

5.4.3 Furthermore, banks should collect and retain data relating to their internal ratings as required under [the disclosure rules].

Corporate, sovereign and bank exposures

5.4.4 Bank should maintain complete rating histories on borrowers and recognized guarantors, which include:
- The ratings since the borrower/guarantor was assigned a grade;
- The dates the ratings were assigned;
- The methodology and key data used to derive the ratings;
- The person/model responsible for the rating assignment;
- The identity of borrowers and facilities that have defaulted, and the date and circumstances of such defaults; and
- data on the PDs and realized default rates associated with rating grades and rating migration.

5.4.5 Banks adopting the Advanced IRB Approach should also collect and store a complete history of data on facility ratings and LGD and EAD estimates associated with each facility. These include:

- The dates the ratings were assigned and the Estimates done;
- The key data and methodology used to derive the facility ratings and estimates;
- The person/model responsible for the rating
- assignment and estimates;
- Data on the estimated and realized LGDs and
- EADs associated with each defaulted facility;
- Data on the LGD of the facility before and after evaluation of the credit risk mitigating effects of the guarantee/credit derivative; and
- Information on the components of loss or recovery for each defaulted exposure, such as amounts recovered, source of recovery (e.g. collateral, liquidation proceeds and guarantees), time period required for recovery, and administrative costs.

5.4.6 Banks utilizing supervisory estimates under the Foundation IRB Approach are encouraged to retain:

- Data on loss and recovery experience for corporate exposures under the Foundation Approach; and
- Data on realized losses for SL exposures where supervisory slotting criteria are applied.

Retail exposures

5.4.7 Banks should collect and store the following data:

- Data used in the process of allocating exposures to pools, including data on borrower and transaction risk characteristics used either directly or through use of a model, as well as data on delinquency;
- Data on the estimated PDs, LGDs and EADs associated with pools of exposures;
- The identity of borrowers and details of exposures that have defaulted; and
- Data on the pools to which defaulted exposures were assigned over the year prior to default and the realized outcomes on LGD and EAD.

5.5 Stress tests under IRB Approaches

5.5.1 Banks adopting the IRB Approaches should implement sound stress-testing processes for use in their assessment of capital adequacy. Stress testing should identify possible events or changes in economic conditions that could have unfavorable effects on a banks' credit exposures, and assess the bank's ability to withstand such changes. Stress tests conducted by a bank should cover a wide range of external conditions and scenarios, and the sophistication of techniques and stress tests used should be commensurate with the bank's activities.

5.5.2 Described below are some common risk factors that are relevant to <u>and need to</u> <u>be considered in</u> credit risk stress tests:

- Counterparty risk characterized by the increase in PDs (e.g. the rise in delinquencies and charge offs) and worsening of credit spreads. Banks should be aware of the major drivers of repayment ability, such as economic/industry downturns and significant market shocks, that will affect entire classes of counterparties or credits;
- Concentration risk in terms of the exposures to individual counterparties, industries, market sectors, countries or regions. Banks should assess the contagion effects and possible linkages between different markets, countries and regions as well as the potential vulnerabilities of emerging markets;
- Market or price risk arising from adverse changes in asset prices (e.g. equities, bonds and real estate) and their impact on relevant portfolios, markets and collateral values; and
- Liquidity risk as a result of the tightening of credit lines and market liquidity under stressed situations.

5.5.3 Banks should determine the appropriate assumptions for stress-testing risk factors included in a particular stress scenario, and formulate the stressed conditions based on their own circumstances. In designing stress scenarios, banks should review lessons from history and tailor the events, or develop hypothetical scenarios, to reflect the risks arising from latest market developments.

5.5.4 SAMA will consider the results of stress tests conducted by a bank and how these results relate to its capital plans.

5.5.5 In addition to the general stress tests described above, banks should conduct a regular credit risk stress tests to assess the effect of certain specific conditions on their total regulatory capital requirements for credit risk. The tests should be meaningful and reasonably conservative. For this purpose, banks should at least consider the effect of mild recession scenarios on their PDs, LGDs and EADs. Where a bank operates in several markets, it need not conduct such a stress test in all of those markets, but it should stress portfolios containing the majority of its total exposures.

5.5.6 At a minimum, a mildly stressed scenario chosen by a bank should resemble the economic recession in Saudi Arabia in the past. Banks should assess the impact of this stress scenario based on a one-year time horizon and take into account the lag effect of an economic downturn on their credit exposures.

5.5.7 Banks may use either a static or a dynamic test to calculate the impact of the stress scenario[1].

5.5.8 Where the results of a bank's stress test indicate a deficiency of the capital calculated based on the IRB Approach (i.e. the capital charge cannot cover the losses based on the stress-testing results), SAMA will discuss this deficiency with the bank's management. Depending on the circumstances of each case, SAMA will require the bank to reduce its risks and/or to hold additional capital/provisions, so that existing capital resources could cover the minimum capital requirements under the IRB Approach plus the result of a recalculated stress test.

5.5.9 Through the review of stress-testing results, regulatory capital could be calculated based on a more forward-looking basis, thereby reducing the impact of rising capital requirements during an economic down turn.

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[1]A static test considers the impact of a stress scenario on a fixed portfolio. A dynamic test typically involves modeling the evolution of a stress scenario through time (possibly including elements such as changes in the composition of a portfolio).

6.   Corporate governance and oversight

6.1   **Corporate governance**

6.1.1   Effective oversight by a bank's Board of Directors and senior management is critical for sound risk rating system operations.

6.1.2   The Board (or an appropriate delegated committee i.e. Audit Committee) and senior management should approve key elements of the risk rating and estimation processes. These parties should possess a general understanding of the bank's risk rating system and detailed comprehension of its associated management reports. Information provided to the Board (or the appropriate delegated committee) should be sufficiently detailed to allow the directors or committee members to confirm the continuing appropriateness of the banks rating approach and to verify the adequacy of the controls supporting the rating system.

6.1.3   Senior management should:

- Have a good understanding of the rating system's design and operations, and approve material differences between established procedures and actual practice;
- Ensure, on an ongoing basis, that the rating system is operating properly;
- Meet regularly with staff in the credit control function to discuss the performance of the rating process, areas requiring improvement, and the status of efforts to improve previously identified deficiencies; and
- Provide notice to the Board (or the appropriate delegated committee) of material changes or exceptions from established policies that will materially impact the operations of the bank's rating system.

6.1.4   Information on internal ratings should be reported to the Board (or the appropriate delegated committee) and senior management regularly. The scope and frequency of reporting may vary with the significance and type of information and the rank of the recipient. The reports should cover the following information:
- Risk profile by grade;
- Risk rating migration across grades;
- Estimation of relevant parameters per grade;
- Comparison of realized default rates (LGDs and EADs where applicable) against expectation;
- Reports measuring changes in regulatory and economic capital;
- Results of credit risk stress-testing; and
- Reports generated by rating system review, audit, and other control units.

6.2 Credit risk control

6.2.1 Banks should have independent credit risk control units that are responsible for the design or selection, implementation and performance of their internal rating systems. The unit(s) should be functionally independent from the staff and management functions responsible for originating exposures. Areas of responsibility should include:

- Design of the rating system;
- Testing and monitoring internal grades;
- Reviewing the compliance with policies and procedures, including application of rating criteria, processes of overrides and policy exceptions;
- Producing and analyzing summary reports from the banks' rating system, to include historical default data sorted by rating at the time of default and one year prior to default, grade migration analyses, and monitoring of trends in key rating criteria;
- Implementing procedures to verify that rating definitions are consistently applied across departments and geographic areas;
- Reviewing and documenting any changes to the rating process, including the reasons for changes;
- Reviewing the rating criteria to evaluate if they remain predictive of risk. Changes to the rating process, criteria or individual rating parameters should be documented and retained for SAMA to review; and participating in the development, selection, implementation and validation of rating models; and
- Assuming oversight and supervisory responsibilities for any models used in the rating process, and ultimate responsibility for the ongoing review of and alterations to rating models.

6.3 Internal and external audit.

6.3.1 Internal audit or an equally independent function should review at least annually a bank's rating system and its operations, including the operations of the credit function and the estimation of PDs, LGDs and EADs. Areas of review include adherence to all applicable minimum requirements.

6.3.2 Internal audit should document its findings and report them to the Board (or the appropriate delegated committee) and senior management. The findings would facilitate the bank to disclose information in relation to its rating processes and controls surrounding these processes, which is required under Pillar-III.

6.3.3 SAMA may commission an external audit under Banking Control Law to review rating assignment process and estimation of loss characteristics or risk drivers i.e. PD, LGDs and EAD's where necessary.

6.4 Staff competence

6.4.1 Senior management should ensure that the staff responsible for any aspect of the rating process, including credit risk control and internal validation, are adequately qualified and trained to undertake the role. In particular, staff responsible for assigning or reviewing ratings should receive adequate training to generate consistent and accurate rating assignments.

7. Use of internal ratings

7.1 Use test

7.1.1 Internal ratings and default and loss estimates should play an essential role in the credit approval, risk management, internal capital allocations, and corporate governance functions of bank using the IRB Approach.

7.1.2 Rating systems and estimates designed and implemented exclusively for the purpose of qualifying for the IRB Approach and used only to provide IRB inputs are not acceptable.

7.1.3 It is recognized that bank may not necessarily be using exactly the same estimates for both IRB and all internal purposes. For example, pricing models are likely to use PDs and LGDs relevant to the life of the asset. Where there are such differences, banks should document their justifications.

7.2 Credible track record

7.2.1 A bank should have a credible track record in the use of information generated by its internal rating system. The bank should demonstrate that it has been using a rating system that was broadly in line with the requirements of this document for at least three years prior to qualification. Improvements to a bank's rating system will not render the bank non-compliant with this requirement.

7.2.2 If the internal rating systems of a bank, which is owned by a foreign bank, have been developed and used at the group level for an extended period of time, the bank is still required to meet the "use" test locally. Nevertheless, there may be scope for the SAMA to consider whether the two-year requirement can be reduced on a case-by-case basis, depending on the level of group support (e.g. in terms of resources and training) provided to the local branch.

7.2.3 Banks adopting a phased rollout of the IRB Approach should demonstrate that they have met the "use" test in respect of individual rating systems prior to their rollout. In the case of a rating system that is applicable to different exposures (or segments of a portfolio) with different rollout dates, SAMA will regard the rating system as having met the "use" test if that system has already fulfilled the three-years requirement for a material portion (say, at least 50%) of the exposures covered by the system.

8. Disclosure requirements

8.1 In order to be eligible for the IRB Approach, banks should meet the requirements set out in the disclosure rules under Pillar III. Failure to meet the disclosure requirements will render a bank ineligible to use the relevant IRB Approach.

Table 1: Summary of Key Aspects of an Internal Rating System

(A) Requirements	(B) Rating Process	(C) Use of Ratings
Rating structure: • Maintain a two-dimensional system. • Appropriate gradation. • No excessive concentration in a single grade	**Rating assignment:** • Ratings assigned before lending/investing. • Independent review of ratings assigned at origination. • Comprehensive coverage of ratings.	**Credit risk measurement and management:** • Credit approval • Loan pricing • Reporting of risk profile of portfolio to senior management and board of directors. • Analysis of capital adequacy, reserving and profitability of Banks
Key data requirements: • Probability of default (PD) • Loss given default (LGD) • Exposure at default (EAD) • History of borrower defaults • Rating decisions • Rating histories • Rating migration. • Information used to assign the ratings • Party/model that assigned the ratings • PD/LGD estimate histories • Key borrower characteristics and facility information.	**Rating review:** • Independent review (annual or more frequent depending on loan quality and availability of new information) by control functions such as credit risk control unit, internal and external audit. • Oversight by senior management and board of directors.	**Stress test used in assessment of capital adequacy:** • Stress-testing should include specific scenarios that assess the impact of rating migrations. • Three areas that banks could usefully examine are economic or industry downturns, market risk events and liquidity conditions.
System requirements: • The IT system should be able to store and retrieve data for exposure aggregation, data collection, use and management reporting.	**Internal Validation:** • A robust system for validating the accuracy and consistency of rating systems, processes, and risk estimates. • A process for vetting data inputs. • Compare realized default rates with estimated PDs.	**Disclosure of key internal rating information:** • Disclosure of items of information as started under (the disclosure rules).

Annex A : Assessment factors in assigning ratings

A1 Borrower ratings

A1.1 The following are the relevant factors that banks should consider in assigning borrower ratings. However, these factors are not intended to be exhaustive or prescriptive, and certain factors may be of greater relevance for certain borrowers than for others:

- the historical and projected capacity to generate cash to repay a borrower's debt and support its other cash requirements (e.g. capital expenditures required to keep the borrower a going concern and to sustain its cash flow);
- The capital structure and the likelihood that unforeseen circumstances could exhaust the borrower's capital cushion and result in insolvency;
- The quality of earnings (i.e. the degree to which the borrower's revenue and cash flow emanate from core business operations as opposed to unique and non-recurring sources);
- The quality and timeliness of information about the borrower, including the availability of audited financial statements and their conformity with applicable accounting standards;
- The degree of operating leverage and the resulting impact that deteriorating business and economic conditions might have on the borrower's profitability and cash flow;
- The borrower's ability to gain additional funding through access to debt and equity markets;
- The depth and skill of management to effectively respond to changing conditions and deploy resources, and the degree of prudence reflected from business strategies employed;
- The borrower's position within the industry and its future prospects; and
- The risk characteristics of the country the borrower is operating in, and the extent to which the borrower will be subject to transfer risk or currency risk if it is located in another country.

A2 Facility ratings

A2.1 Banks should look at the following transaction specific factors, where applicable, when assigning facility ratings:

- The presence of third-party support (e.g. owner/guarantor). Considerable care and caution should be exercised if ratings are to be improved because of the presence of any third-party support. In all cases, banks should be convinced that the third party is committed to ongoing support of the borrower. Banks should establish specific rules for third-party support;
- The maturity of the transaction. It is recognized that higher risk is associated with longer-term facilities while shorter-term facilities tend to have lower risk. A standard approach is to consider further adjustment to the facility rating (after adjusting for third-party support), taking into account the remaining term to maturity;

- The structure and lending purposes of the transaction, which influence positively or negatively the strength and quality of the credit. These may refer to the status of borrower, priority of security, any covenants attached to a facility, etc. Take, for example, a facility that has a lower rating due to the term of a loan. If its facility structure contains very strong covenants which mitigate the effects of its term of maturity (say, by means of default clauses), it may be appropriate to adjust its facility rating to offset (often partially) the effect of the maturity term.
- The presence of recognized collateral. This factor can have a major impact on the final facility rating because of its significant effect on the LGD of a facility. Banks should review carefully the quality of collateral (e.g. documentation and valuation) to determine its likely contribution in reducing any loss. While collateral value is often a function of movements in market rates, it should be assessed in a conservative manner (e.g. based on net realizable value or forced-sale value where necessary).

Annex B : Rating approaches

B1 Background

B1.1 In choosing the architecture of its rating system, a bank should decide whether borrowers are graded according to their expected default rates over the following year (i.e. a point-in-time rating system) or their expected default rates over a wider range of possible stress outcomes (i.e. a through-the-cycle rating system). Choosing between a point-in-time rating system and a through-the-cycle rating system has implications on the banks capital planning process because of the different impact an economic cycle may have on the rating transitions arising from the two different systems.

B2 Point-in-time rating system

B2.1 In a point-in-time rating system, an internal rating reflects an assessment of the borrower's current condition (such as its financial strength) and/or most likely future condition over the forecast horizon (say one year). As such, the internal rating changes as the borrower's condition changes over the course of the economic/business cycle. As the economic circumstances of many borrowers reflect the common impact of the general economic environment, the transitions in point-in-time ratings will reflect fluctuations in the economic cycle.

B2.2 A Bank adopting a point-in-time rating system is likely to experience greater changes in its capital requirements in response to fluctuations in an economic cycle than others adopting a through-the-cycle rating system (see subsection B3 below). Therefore, the bank's capital management policy should be designed to avoid capital shortfall in times of systemic economic stress.

B3 Through-the-cycle rating system

B3.1 A through-the-cycle process requires assessment of the borrower's risk ness based on a worst-case scenario, i.e. the bottom of an economic/business cycle. In this case, a borrower rating would tend to stay the same over the course of an economic cycle unless the borrower experiences a major unexpected shock to its perceived long-term condition or the original "worst" case scenario used to rate the borrower proves to have been too optimistic.

B3.2 Similar to point-in-time ratings, through-the-cycle ratings also change from year to year to reflect changes in borrowers' circumstances. However, year-to-year transitions in through-the-cycle ratings will be less influenced by changes in the actual economic environment as this approach abstracts from the immediate economic circumstances and considers the implications of hypothetical stressed circumstances.

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CONTENTS

1. Introduction

1.1 Terminology

1.1.1 Abbreviations and other terms used in this paper have the following meanings:

- "PD" means the probability of default of a counterparty over one year;
- "LGD" means the loss incurred on a facility upon default of a counterparty relative to the amount outstanding at default;
- "EAD" means the expected gross exposure of a facility upon default of a counterparty;
- "Dilution risk" means the possibility that the amount of a receivable is reduced through cash or non-cash credits to the receivable's obligor;
- "EL" means the expected loss on a facility arising from the potential default of a counterparty or the dilution risk relative to EAD over one year;
- "IRB Approach" means Internal Ratings-based approach;
- "Foundation IRB Approach" means that, in applying the IRB framework, banks provide their own estimates of PD and use supervisory estimates of LGD and EAD, and, unless otherwise specified by the SAMA, are not required to take into account the effective maturity of credit facilities;
- "Advanced IRB Approach" means that, in applying the IRB framework, banks use their own estimates of PD, LGD and EAD, and are required to take into account the effective maturity of the credit facilities;
- A "borrower grade" means a category of creditworthiness to which borrowers are assigned on the basis of a specified and distinct set of rating criteria, from which estimates of PD are derived. The grade definition includes both a description of the degree of default risk typical for borrowers assigned the grade and the criteria used to distinguish that level of credit risk;
- A "facility grade" means a category of loss severity in the event of default (as measured by LGD or EL) to which transactions are assigned on the basis of a specified and distinct set of rating criteria. The grade definition involves assessing the amount of collateral, and reviewing the term and structure of the transaction (such as the lending purpose, repayment structure and seniority of claims);
- A "rating system" means all of the methods, processes, controls, and data collection and IT systems that support the assessment of credit risk, the assignment of internal risk ratings, and the quantification of default and loss estimates;
- "Seasoning" means an expected change of risk parameters over the life of a credit exposure;
- "VAR" means value-at-risk.

1.2 Application

1.2.1 The requirements set out in this paper are applicable to locally incorporated banks, which use or intend to use the IRB Approach to measure capital changes for credit risk *in KSA*.

1.2.2 In the case of banks that are branches of foreign banking groups, all or part of their IRB systems may be centrally developed and monitored on a group basis. In applying the requirements of this paper, SAMA will consider the extent to which reliance can be placed on the work done at the group level. Where necessary, SAMA will co-ordinate with the home supervisors of those banking groups regarding the assessment of the comprehensiveness and integrity of the group-wide internal rating systems adopted by their authorized bank in Saudi Arabia. SAMA will also assess whether the relevant systems or models can adequately reflect the specific risk characteristics of the bank' domestic portfolios.

1.3 Background and scope

1.3.1 The IRB Approach to the measurement of credit risk for capital adequacy purposes relies on banks' internally generated inputs to the calculation of capital. To minimize the variation in the way in which the IRB Approach is carried out and to ensure significant comparability across banks, SAMA considers it necessary to establish minimum qualifying criteria concerning the comprehensiveness and integrity of the internal rating systems of banks adopting the IRB Approach. SAMA will employ these criteria for assessing their eligibility to use the IRB Approach.

1.3.2 This paper:
prescribes the minimum requirements relating to risk quantification under the IRB Approach that a bank should comply with at the outset and on an ongoing basis if it were to use the IRB Approach to measure credit risk for capital adequacy purposes; and

Sets out SAMA's supervisory approach to circumstances where a bank is not in full compliance with the minimum requirements.

1.3.3 The minimum requirements set out herein apply to both the Foundation IRB Approach and the Advanced IRB Approach and to all asset classes[1], unless stated otherwise.

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[1]Under the IRB Approach, assets are broadly categorized into five classes: (i) corporate (with specialized lending as a sub-class); (ii) sovereign; (iii) bank; (iv) retail; and (v) equity. Within the corporate and retail asset classes, a distinct treatment for purchased receivables may also apply provided certain conditions are met.

1.3.4 The minimum requirements for risk quantification of equity exposures under the PD/LGD Approach are the same as those of the Foundation IRB Approach for corporate exposures, subject to the specifications set out in the Basle II document. The minimum requirements for adopting the internal models approach to calculation of capital charges for equity exposures are set out in section 8 below.

The requirements for internal rating systems described in this paper should be read in conjunction with the "Minimum Requirements for Internal Rating Systems under IRB Approach".

2. Composition of minimum requirements

2.1 Overview

2.1.1 The IRB requirements focus on a bank's ability to rank order and quantify risk in a consistent, reliable and valid manner, and generally fall within the following categories:
(i)   Rating system design;
(ii)   Rating system operations;
(iii)   Corporate governance and oversight;
(iv)   Use of internal ratings;
(v)   Risk quantification;
(vi)   Validation of internal estimates;
(vii)   Supervisory LGD and EAD estimates;
(viii) Requirements for recognition of leasing;
(ix)   Calculation of capital charges for equity exposures –internal models approach; and
(x)   Disclosure requirements.

2.1.2 The minimum requirements under categories (v) to (ix) are detailed in sections 4 to 8 below while those requirements under categories (i) to (iv) and (x) are prescribed in the "Minimum Requirements for Internal Rating Systems under IRB Approach".

2.1.3 The overarching principle behind the requirements is that an IRB-compliant rating system should provide for a meaningful assessment of borrower and transaction characteristics, a meaningful differentiation of credit risk, and reasonably accurate and consistent quantitative estimates of risk. Banks using the IRB Approach would need to be able to measure the key statistical drivers of credit risk. They should have in place a process that enables them to collect, store and utilize loss statistics over time in a reliable manner.

2.1.4 The internal ratings and risk estimates generated by the rating system should form an integral part of the bank's daily credit risk measurement and management process.

2.1.5 Generally, all banks adopting the IRB Approach should produce their own estimates of PD[1] and should adhere to the overall requirements for rating system design, operations, controls, corporate governance, use of internal ratings, recognition of leasing, calculation of capital charges for equity exposures, as well as the requirements for estimation and validation of PD measures. Banks wishing to use their own estimates of LGD and EAD should also meet the additional minimum requirements for these risk factors. See the "Minimum Requirements for Internal Rating Systems under IRB Approach" for the requirements relating to the overall architecture of internal rating systems.

3. Compliance with minimum requirements

3.1 Ongoing compliance

3.1.1 To be eligible for the IRB Approach, a bank should demonstrate to SAMA that it meets all minimum requirements at the outset and on an ongoing basis.

Furthermore, the bank's overall credit risk management practices should be consistent with the guidelines and sound practices issued by SAMA.

3.2 Supervisory approach to non-compliance

3.2.1 Where a bank adopting the IRB Approach is not in full compliance with the minimum requirements, bank should produce a plan for a timely return to compliance and seek approval from SAMA. Alternatively, the bank should demonstrate to SAMA that the effect of such noncompliance is immaterial in terms of the risk posed to the bank.

3.2.2 Failure to demonstrate immateriality or to produce and satisfactorily implement an acceptable plan will lead the SAMA to reconsider the bank eligibility for the IRB Approach. During the period of non-compliance, SAMA will consider the need for the bank to hold additional capital under the supervisory review process, or to take other appropriate supervisory action (such as reducing its credit exposures), depending on the circumstances of each case.

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[1] Banks are not required to produce their own estimates of PD for certain equity exposures and certain exposures that fall within the specialized lending sub-class (see the "Risk-weighting Framework for IRB Approach" for details).

4. Risk quantification

4.1 Overall requirements for estimation

General

4.1.1 This section addresses the broad standards for a bank's own estimates of PD, LGD, and EAD. Except for certain equity and specialized lending exposures, all banks using the IRB Approach should estimate a PD for each internal borrower grade for corporate, sovereign and bank exposures or for each pool in the case of retail exposures.

4.1.2 PD estimates should be a long run average of one-year default rates for borrowers in the grade, with the exception of retail exposures (see paragraphs 4.4.10 to 4.4.12). Requirements specific to PD estimation are provided in subsection 4.4.

4.1.3 Banks on the Advanced IRB Approach should estimate an appropriate LGD (as defined in paragraph 4.5.1) for each of their facilities (or retail pools). Requirements specific to LGD estimation are set out in subsection 4.5. They should also estimate an appropriate long run default weighted average EAD for each of their facilities (as defined in paragraphs 4.6.1 and 4.6.2). Requirements specific to EAD estimation are set out in subsection 4.6.

4.1.4 Banks that are on the Foundation IRB Approach or do not meet the requirements for their own estimation of EAD or LGD for corporate, sovereign and bank exposures should use the supervisory estimates of these parameters.

4.1.5 The quantification process, including the role and scope of expert judgment, should be fully documented. It should cover all stages of the estimation process including data collection, estimation, mapping and application. Adequate documentation would promote consistency and allow third parties to review and replicate the entire process.

4.1.6 Periodic updates to the quantitative process should be conducted to ensure that new data and analytical techniques and evolving industry practices are incorporated into the process.

PD/LGD/EAD estimation

4.1.7 Estimates of PD, LGD and EAD measured by the quantification process should be updated at least annually or whenever it is considered necessary (e.g. when new data and other information have become available or methods for estimation have changed). The updating process should be documented in banks' internal policies. Particular attention should be given to new business lines or portfolios in which the mix of obligors is believed to have changed substantially.

4.1.8 Estimates should be grounded in historical experience and empirical evidence, and not based purely on subjective or judgmental considerations. They should incorporate all relevant, material and available data, information and methods. Any changes in lending practice or the process for pursuing recoveries over the data observation period should be taken into account.

4.1.9 Banks may utilize internal data and data from external sources (including pooled data) in their own estimation. Where such data are used, banks should demonstrate that their estimates are representative of long run experience.

4.1.10 The population of exposures represented in the data used for estimation, and the lending standards in use when the data were generated, and other relevant characteristics should be closely matched to or at least comparable with those of a bank's exposures and standards. The bank should also demonstrate that economic or market conditions underlying the data are relevant to current and foreseeable conditions.

For estimates of LGD and EAD, banks should take into account paragraphs 4.5.1 to 4.5.2 and 4.6.3 to 4.6.9 respectively. The number of exposures in the sample, and the data period used for quantification should be sufficient to provide a bank with confidence in the accuracy and robustness of its estimates. The estimation technique should perform well in out-of-sample tests.

4.1.12 SAMA may allow some flexibility in the application of required standards for data that are collected prior to a bank adoption of the IRB Approach. However, in such cases the bank should demonstrate to the SAMA that appropriate adjustments have been made to achieve broad equivalence with the data without such flexibility. Data collected beyond the date of adoption[1] should conform to the minimum standards unless otherwise stated.

4.1.12A Date of adoption is the data a bank starts to accumulate data. For applying IRB approaches.

Conservatism

4.1.13 Judgmental adjustments may form a part of the quantification process, but should not be biased toward lower estimates of risk. Consistent signs of judgmental decisions that lower parameter estimates materially may be evidence of bias. The reasoning and empirical support for any adjustments, as well as the mechanics of the calculation, should be documented. Banks should conduct sensitivity analysis to demonstrate that the adjustment procedure is not biased toward reducing capital requirements. The analysis should consider the impact of any judgmental adjustments on estimates and risk weights, and should be fully documented.

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[1] Date of adoption is the date a bank start to accumulate data on a prospective basis in conformance with SAMA's minimum qualitative and quantitative requirements.

4.1.14 Estimates of PD, LGD and EAD should incorporate a degree of conservatism that is appropriate for the overall robustness of the quantification process. In general, such estimates are likely to involve unpredictable errors. In order to avoid undue optimism, banks should add to their estimates a margin of conservatism that is related to the likely range of errors. Where methods and data are less satisfactory and the likely range of errors is larger, the margin of conservatism should be larger.

4.1.15 There should be an appropriate degree of conservatism to adequately account for all uncertainties and weaknesses relating to risk quantification. Improvements in the quantification process (e.g. use of better data and estimation techniques) may reduce the appropriate degree of conservatism over time.

4.1.16 Estimates of PD, LGD, EAD or other parameters should be presented with statistical indicators that facilitate an assessment of the appropriate degree of conservatism.

Review and validation

4.1.17 Banks should subject all aspects of the quantification process, including design and implementation, to an appropriate degree of independent review and validation. An independent review is an assessment conducted by persons not accountable for the work being reviewed. The reviewers may either be internal or external parties.

4.1.18 The review serves as a check on the quantification process to ensure that it is sound and works as intended; it should be broad-based, and should include all of the elements of the quantification process that lead to the ultimate estimates of PD, LGD and EAD. The review should cover the full scope of validation, including:
- an evaluation of the integrity of data inputs;
- an analysis of the internal logic and consistency of the process;
- a comparison with relevant benchmarks; and
- appropriate back-testing based on actual outcomes.
- Detailed requirements for ongoing validation and back testing of estimates are set out in section 5.

4.2   Definition of default for different asset classes

General definition of default.

4.2.1 A default is considered to have occurred with regard to a particular obligor when either or both of the two following events have taken place:

- A bank considers that the obligor is unlikely to pay in full its credit obligations to the bank (or the banking group[1] of which it is a part), without recourse by the bank to actions such as realizing security (if held);
- The obligor is past due for more than 90 days[2] on any material portion of its credit obligations to the bank (or the banking group of which it is a part). Past due credit obligations are regarded as material if they represent 5% or more of the obligor's outstanding credit obligations. Banks may however set a lower threshold or choose not to apply the threshold based on their individual circumstances. Overdrafts will be considered as past due once the customer has breached an advised limit or been advised of a limit smaller than the current outstanding balance (see also paragraph 4.2.7). The criteria for determining overdue assets are set out in SAMA's circular BCS # 312 of 19.1.2004 entitled "SAMA's Rules Concerning Loan Classifications, Provisioning and Credit Review".

4.2.2   The elements to be taken as indicators of unlikeliness to pay include:
A Bank puts the credit obligation on non-accrual status.
- The criteria for putting an obligation on non-accrual status and those for restoring the "accrual" status are set out in SAMA's circular # 312 of 19.1.2004 entitled "SAMA circular on loan classification, provisioning and credit review".
- A bank makes a charge-off or account-specific provision resulting from a significant perceived decline in asset quality subsequent to the bank taking on the exposure[3];
- A bank sells the credit obligation at a material credit related economic loss;
- A bank gives consent to a distressed restructuring/rescheduling of the credit obligation where this is likely to result in a diminished financial obligation caused by the material forgiveness, or postponement, of principal, interest or, where relevant, fees. [4]The criteria for determining rescheduled assets and those for uplifting the "rescheduled" status are set out SAMA's circular # 312[5].
- A bank has filed for the obligor's bankruptcy or a similar order in respect of the obligor's credit obligation to the bank;
- The obligor has sought or has been placed in bankruptcy or similar protection where this would avoid or delay repayment of the credit obligation to the bank.

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[1]The banking group covers all entities within the group that are subject to the capital adequacy regime in Saudi Arabia.

[2]In the event that a branch owned by a foreign banking group wants to use a different default trigger set by its home supervisor for particular exposures (e.g. 180 days for exposures to retail or public sector entities), the bank will need to satisfy SAMA that such a difference in the definition of default will not result in any material impact on the default and loss estimates generated. Where necessary, if the relevant models are centrally developed and validated at the home country, the views of the home supervisor will be sought.

[3]Specific provisions on equity exposures set aside for price risk do not necessarily signal default.

[4]Including, in the case of equity holdings assessed under a PD/LGD approach, such distressed restructuring of the equity itself.

[5]Also see "Rescheduled Loans", SAMA circular # 312 of 19.1.2004, which provides guidance on the definition of "rescheduled loans".

4.2.3 For retail exposures, the definition of default can be applied at the level of a particular facility, rather than at the level of the obligor. As such, default by a customer on one obligation does not require a bank to treat all other obligations of the customer to the bank (or its banking group) as defaulted.

4.2.4 Banks should record actual defaults on IRB asset classes using the reference definition mentioned above. They should also use the reference definition for their estimation of PDs, and, where relevant, LGDs and EADs. In arriving at these estimations, banks may use external data available to them that are not itself consistent with that definition, subject to the requirements set out in paragraphs 4.4.3 to 4.4.7.

4.2.5 In such cases, however, bank should demonstrate to the SAMA that appropriate adjustments to the data have been made to achieve broad equivalence with the reference definition. The same condition would apply to any internal data used up to the time when a bank adopts the IRB Approach. Larger discrepancies require larger adjustments for the sake of conservatism. Internal data (including those pooled by bank) used in such estimates beyond the date of adoption of the IRB Approach should be consistent with the reference definition.

4.2.6 If a bank considers that the status of a previously defaulted exposure is such that the trigger of the reference definition no longer applies, the bank should rate the borrower and estimate LGD as it would for a non-defaulted facility. Should the reference definition be subsequently triggered, a second default would be deemed to have occurred.

Treatment of overdrafts

4.2.7 Overdraft facilities authorized by a bank to a customer should be subject to a formal credit limit and brought to the knowledge of the customer. Any breach of this limit should be monitored. If the account were not brought under the limit after 90 days, it would be considered as defaulted. Temporary or non-authorized overdrafts will be associated with a zero limit for IRB purposes. Thus, the days past due commence once any credit is granted to the customer concerned. If such credit were not repaid within 90 days, the exposure would be regarded as in default. Banks should have in place rigorous internal policies for assessing the credit-worthiness of customers who are offered overdraft accounts.

Re-ageing

4.2.8 Re-ageing is a process by which the delinquency status of loans, the terms of which have not been changed, is adjusted based on subsequent good performance, even though not all arrears under the original repayment schedule have been paid off.

The bank must have clearly articulated and documented policies in respect of the counting of days past due, in particular in respect of the re-ageing of the facilities and the granting of extensions, deferrals, renewals and rewrites to existing accounts. At a minimum, the re-ageing policy must include: (a) approval authorities and reporting requirements; (b) minimum age of a facility before it is eligible for re-ageing; (c) delinquency levels of facilities that are eligible for re-ageing; (d) maximum number of re-ageings per facility; and (e) a reassessment of the borrower's capacity to repay. These policies must be applied consistently over time, and must support the 'use test' (i.e. if a bank treats a re-aged exposure in a similar fashion to other delinquent exposures more than the past-due cut off point, this exposure must be recorded as in default for IRB purposes). Some supervisors may choose to establish more specific requirements on re-ageing for banks in their jurisdiction.
(Refer para 458, International Convergence of Capital Measurement and Capital Standards – June 2006).

4.3 Definition of loss for all asset classes

4.3.1 The definition of loss used in estimating LGD is economic loss. When measuring economic loss, all relevant factors should be taken into account. This should include material discount effects and material direct and indirect costs associated with collecting on the exposure.

4.3.2 Banks should not simply measure the loss recorded in accounting records. They should be able to compare accounting and economic losses (some Banks may also adopt the concept of economic loss in their accounting records). Banks' own workout and collection expertise significantly influences their recovery rates, and should be reflected in their LGD estimates. However, adjustments to estimates for such expertise should be conservative until a bank has maintained sufficient internal empirical evidence to manifest the impact of its expertise.

4.4 Requirements specific to PD estimation

Data observation period

4.4.1 Irrespective of whether a bank is using external, internal, or pooled data sources, or a combination of the three, for its PD estimation, the length of the underlying historical observation period used must be at least five years for at least one source. If the available observation period spans a longer period for any source, and this data is relevant and material, this longer period must be used.
(Refer para 463, International Convergence of Capital Measurement and Capital Standards – June 2006)

4.4.1A Irrespective of whether banks are using external, internal, pooled data sources, or a combination of the three, for their estimation of loss characteristics, the length of the underlying historical observation period used must be at least five years.

If the available observation spans a longer period for any source, and these data are relevant, this longer period must be used. A bank need not give equal importance to historic data if it can convince its supervisor that more recent data are a better predictor of loss rates.
(Refer para 466, International Convergence of Capital Measurement and Capital Standards – June 2006)

4.4.2 The SAMA applies the transitional requirement of a minimum of two years of data at the time of adopting the Foundation IRB Approach for corporate, sovereign, and bank exposures or the IRB Approach for retail exposures.

Corporate, sovereign, and bank exposures

4.4.3 Bank should use information and techniques that take appropriate account of the long run experience when estimating the average PD for each rating grade. For example, banks may use one or more of the three specific techniques set out below (i.e. internal default experience, mapping to external data, and statistical default models),

4.4.4 Banks may have a primary technique and use others as a point of comparison and potential adjustment. SAMA will not be satisfied by mechanical application of a technique without supporting analysis. Banks should recognize the importance of judgmental considerations in combining results of techniques and in making adjustments for limitations of techniques and information.

4.4.5 Banks may use data on internal default experience for the estimation of PD. They should demonstrate in their analysis that the estimates are reflective of actual default experience and of any differences in the rating system that generated the data and the current rating system. Where only limited data are available, or where underwriting standards or rating systems have changed, Banks should add a greater margin of conservatism in their estimate of PD. The use of pooled data across banks may also be recognized. A bank should demonstrate that the internal rating systems and criteria of other bank in the pool are comparable with its own.

4.4.6 Banks may associate or map their internal grades to the scale used by an external credit assessment institution ("ECAI") and then attribute the default rate observed for the ECAI's grades to the bank's grades. Mappings should be based on a robust comparison of internal rating criteria to the criteria used by the ECAI and on a comparison of the internal and external ratings of any common borrowers. Biases or inconsistencies in the mapping approach or underlying data should be avoided.

4.4.7 The ECAI's criteria underlying the data used for quantification should be oriented to the risk of the borrower and not reflect transaction characteristics. A bank's analysis should include a comparison of the default definitions used, subject to the requirements in subsection 4.2 above. The bank should document the basis for the mapping.

4.4.8 Banks that aggregate the PD of individual portfolio obligors when calculating PD estimates for internal grades should have a clear policy governing the aggregation process. A mean of PD estimates for individual borrowers in a given grade should be used. A bank would only be allowed to calculate this estimate differently if it can demonstrate that the alternative method provides a better estimate of the long run average PD. To obtain this evidence, the bank should at least compare the results of both methods.

4.4.9 Banks' use of default probability models for estimating PD should meet the standards specified in subsection 4.6 of the "Minimum Requirements for Internal Rating Systems under IRB Approach".

Retail exposures

4.4.10 Given the bank specific basis of assigning exposures to pools, banks should regard internal data as the primary source of information for estimating loss characteristics. Banks are permitted to use external data or statistical models for quantification provided a strong link can be demonstrated between:(i) the bank's process of assigning exposures to a pool and the process used by the external data source; and (ii) the bank's internal risk profile and the composition of the external data. In all cases banks should use all relevant and material data sources as points of comparison.

4.4.11 One method for deriving long run average estimates of PD and default-weighted average loss rates given default (as defined in 4.5.1) for retail would be based on an estimate of the expected long run loss rate. A bank may (i) use an appropriate PD estimate to infer the long run default-weighted average loss given default; or (ii) use a long run default-weighted average loss rate given default to infer the appropriate PD. In either case, it is important to recognize that the LGD used for the IRB capital calculation cannot be less than the long run default-weighted average loss rate given default and should be consistent with the concept defined in paragraph 4.5.1.

4.4.12 Seasoning can be quite material for some long-term retail exposures characterized by seasoning effects that peak several years after origination. Banks should anticipate the implications of rapid exposure growth and take steps to ensure that their estimation techniques are accurate, and that their current capital level and earnings and funding prospects are adequate to cover their future capital needs.

4.4.13 In order to avoid gyrations in their required capital positions arising from short-term PD horizons, banks are also encouraged to adjust PD estimates upward for anticipated seasoning effects, provided such adjustments are applied in a consistent fashion over time.

4.4.14 If a bank does not take seasoning effects into account and its own estimates of PD are considered to be too low, SAMA may require banks to use higher values of PD for the calculation of capital charges. PD's will be considered too low if validation tests, stress tests, back testing indicates lack of predictability.

4.5 Requirements specific to own-LGD estimates

4.5.1 Banks should estimate an LGD for each facility that aims to reflect economic downturn conditions where necessary to capture the relevant risks. This LGD cannot be less than the long run default-weighted average loss rate given default calculated based on the average economic loss of all observed defaults within the data source for that type of facility. In addition, a bank should take into account the potential for the LGD of the facility to be higher than the default-weighted average during a period when credit losses are substantially higher than average.

In all cases, both the borrower and all recognized guarantors must be assigned a borrower rating at the outset and on an ongoing basis. A bank must follow all minimum requirements for assigning borrower ratings set out in this document, including the regular monitoring of the guarantor's condition and ability and willingness to honor its obligations.

Consistent with the requirements in paragraphs 430 and 431, International Convergence of Capital Measurement and Capital Standards – June 2006, a bank must retain all relevant information on the borrower absent the guarantee and the guarantor. In the case of retail guarantees, these requirements also apply to the assignment of an exposure to a pool, and the estimation of PD.
(Refer para 481, International Convergence of Capital Measurement and Capital Standards – June 2006)

4.5.2 For certain types of exposures, loss severities may not exhibit such cyclical variability and LGD estimates may not differ materially (or possibly at all) from the long run defaulted-weighted average. However, for other exposures, this cyclical variability in loss severities may be important and bank will need to incorporate it into their LGD estimates. For this purpose, banks may use averages of loss severities observed during periods of high credit losses, forecasts based on appropriately conservative assumptions, or other similar methods. Appropriate estimates of LGD during periods of high credit losses might be formed using either internal and/or external data. SAMA will continue to monitor and encourage the development of appropriate approaches to this issue.

4.5.3 In its analysis, a bank should consider the extent of any dependence between the risk of the borrower and that of the collateral or collateral provider. Cases where there is a significant degree of dependence should be addressed in a conservative manner. Any currency mismatch between the underlying obligation and the collateral should also be considered and treated conservatively in the bank's assessment of LGD.

4.5.4 LGD estimates should be grounded in historical recovery rates and, when applicable, should not solely be based on the estimated market value of collateral. This requirement recognizes the potential inability of banks to gain both control of their collateral and liquidate it expeditiously. To the extent, that LGD estimates take into account the existence of collateral, bank should establish internal requirements for collateral management, operational procedures, legal certainty and risk management process that are generally consistent with those required for the Standardized Approach for calculating credit risk capital changes.

4.5.5 Recognizing the principle that realized losses can at times systematically exceed expected levels, the LGD assigned to a defaulted asset should reflect the possibility that the bank would have to recognize additional, unexpected losses during the recovery period. For each defaulted asset, the bank should also construct its best estimate of the expected loss on that asset based on current economic circumstances and facility status. The amount, if any, by which the LGD on a defaulted asset exceeds the bank's best estimate of expected loss on the asset represents the capital requirement for that asset, and should be set by the bank on a risk-sensitive basis. Instances where the best estimate of expected loss on a defaulted asset is less than the sum of specific provisions and partial charge-offs on that asset will attract supervisory scrutiny and should be justified by the bank.

4.5.6 Estimation of LGD may involve mapping facility-specific data elements in a bank's portfolio to the factors in reference data sets used by ECAIs. The mapping process should be based on a robust comparison of available common elements in the reference data and the bank's portfolio. The bank should also have a policy describing how it combines multiple sets of reference data. Biases or inconsistencies in the mapping approach or underlying data should be avoided.

4.5.7 Banks that aggregate LGD estimates for facility grades from individual exposures should have a clear policy governing the aggregation process. In general, simple averaging is preferred. This requirement is however irrelevant for bank that choose to assign LGD estimates directly to individual exposures rather than grades, because aggregation is not required in that case.

4.5.8 For corporate, sovereign, and bank exposures, estimates of LGD should be based on a minimum data observation period that should ideally cover at least one complete economic cycle but should in any case be no shorter than a period of seven years for at least one source. If the available observation period spans a longer period for any source, and the data are relevant, this longer period should be used.

4.5.9 For retail exposures, the minimum data observation period for LGD estimates is five years. The less data a bank has, the more conservative it should be in its estimation. A bank need not give equal importance to historical data if it can demonstrate to SAMA that more recent data are a better predictor of loss rates.

4.6 Requirements specific to own-EAD estimates

4.6.1 EAD for an on-balance sheet or off-balance sheet item is defined as the expected gross exposure of the facility upon default of the obligor. For on-balance sheet items, banks should estimate EAD at no less than the current drawn amount, subject to recognizing the effects of on balance sheet netting as specified in the Foundation IRB Approach (see the "Risk-Weighting Framework for IRB Approach"). The minimum requirements for the recognition of netting are the same as those under the Foundation IRB Approach.

4.6.2 The additional minimum requirements for internal estimation of EAD under the Advanced IRB Approach, therefore, focus on the estimation of EAD for off-balance sheet items (excluding derivatives). Banks using the Advanced IRB Approach should have established procedures in place for the estimation of EAD

for off balance sheet items. These should specify the estimates of EAD to be used for each facility type. Banks' estimates of EAD should reflect the possibility of additional drawings by the borrower up to and after the time a default event is triggered. Where estimates of EAD differ by facility type, the delineation of these facilities should be clear and unambiguous.

4.6.3   Banks using the Advanced IRB Approach should assign an estimate of EAD for each facility. It should be an estimate of the long run default-weighted average EAD for similar facilities and borrowers over a sufficiently long period of time, but with a margin of conservatism appropriate to the likely range of errors in the estimate.

4.6.4   If a positive correlation can reasonably be expected between the default frequency and the magnitude of EAD, the EAD estimate should incorporate a larger margin of conservatism. Moreover, for exposures for which EAD estimates are volatile over the economic cycle, banks should use EAD estimates that are appropriate for an economic downturn, if these are more conservative than the long run average.

4.6.5   For banks that have been able to develop their own EAD models, this could be achieved by considering the cyclical nature, if any, of the drivers of such models. Other banks may have sufficient internal data to examine the impact of previous recessions. However, some banks may only have the option of making conservative use of external data.

4.6.6   The criteria by which estimates of EAD are derived should be plausible and intuitive, and represent what banks believe to be the material drivers of EAD. The choices should be supported by banks' credible internal analysis. Banks should be able to provide a breakdown of their EAD experience by the factors they see as the drivers of EAD. Banks should use all relevant and material information in their derivation of EAD estimates. Across facility types, banks should review their estimates of EAD when material new information comes to light and at least on an annual basis.

4.6.7   Due consideration must be paid by the bank to its specific policies and strategies adopted in respect of account monitoring and payment processing. The bank must also consider its ability and willingness to prevent further drawings in circumstances short of payment default, such as covenant violations or other technical default events. Banks must also have adequate systems and procedures in place to monitor facility amounts, current outstanding against committed lines and changes in outstanding per borrower and per grade. The bank must be able to monitor outstanding balances on a daily basis.

477(i). For transactions that expose banks to counterparty credit risk, estimates of EAD must fulfill the requirements set forth in Annex 4 of this Framework.
(Refer para 477, International Convergence of Capital Measurement and Capital Standards – June 2006)

4.6.8   For corporate, sovereign, and bank exposures, estimates of EAD should be based on a time period that should ideally cover a complete economic cycle but should in any case be no shorter than a period of seven years. If the available observation period spans a longer period for any source, and the data are relevant, this longer period should be used. EAD estimates should be calculated using a default-weighted average and not a time weighted average.

4.6.9 For retail exposures, the minimum data observation period for EAD estimates is five years. The less data a bank, the more conservative it should be in its estimation. A bank need not give equal importance to historical data if it can demonstrate to SAMA that more recent data are a better predictor of draw-downs.

4.6.10 SAMA applies the transitional requirement of a minimum of two years of data at the time of adopting the IRB Approach for retail exposures to banks that can implement such an approach during the period from 1 January 2007 to 31 December 2009. This requirement will increase by one year for each of the three years after year-end 2009.

5. Validation of internal estimates
5.1 General requirements
5.1.1 Validation is an integral part of a bank's rating system architecture to provide reasonable assurances about its rating system. Banks adopting the IRB Approach should have a robust system in place to validate the accuracy and consistency of their rating systems, processes and the estimation of all relevant risk components. They should demonstrate to SAMA that their internal validation process enables them to assess the performance of internal rating and risk estimation systems consistently and meaningfully.

5.1.2 The validation process should include review of rating system developments (see subsection 5.2), ongoing analysis (see subsection 5.3), and comparison of predicted estimates to actual outcomes (i.e. back-testing, as described paragraphs 5.1.3 and 5.1.4 and subsection 5.4).

5.1.3 Banks should regularly compare realized default rates with estimated PDs for each grade and be able to demonstrate that the realized default rates are within the expected range for that grade. The actual long run average default rate for each rating grade should not be significantly greater than the PD assigned to that grade. The methods and data used in such comparisons by banks should be clearly documented. This analysis and documentation should be updated at least annually.

5.1.4 Similarly, banks using the Advanced IRB Approach should complete such analysis for their estimates of LGD and EAD. Such comparisons should make use of historical data that are over as long a period as possible. The actual loss rates experienced on defaulted facilities should not be significantly greater than the LGD estimates assigned to those facilities.

5.1.5 Banks should also use other quantitative validation tools and comparisons with relevant external data sources. The analysis should be based on data that are appropriate to the portfolio, are updated regularly, and cover a relevant observation period. Banks' internal assessments of the performance of their own rating systems should be based on long data histories, covering a range of economic conditions, and ideally one or more complete business cycles.

5.1.6 Banks should have in place a process for vetting data inputs, including the assessment of accuracy, completeness and appropriateness of the data specific to the assignment of an approved rating. Detailed documentation of exceptions to data input parameters should be maintained and reviewed as part of the process cycle of validation.

5.1.7 The process cycle of validation should also include: ongoing periodic monitoring of rating system performance, including evaluation and rigorous statistical testing of the dynamic stability of the models used and their key coefficients; identifying and documenting individual fixed relationships in the rating system or model that are no longer appropriate; and a rigorous change control process, which stipulates the procedures that should be followed prior to making changes in the rating system or model in response to validation outcomes.

5.1.8 Bank should demonstrate that quantitative testing and other validation methods do not vary systematically with the economic cycle[1] which incorporate the general impact of economic downturn and upswings of the subject economy. Changes in methods and data (both data sources and periods covered) should be clearly documented.

5.1.9 Some differences across individual grades between observed outcomes and the estimates can be expected.
However, if systematic differences suggest a bias toward lowering regulatory capital requirements, the integrity of the rating system (of either the PD or LGD dimensions or of both) becomes in doubt.

5.1.10 Bank should have well-articulated internal standards for situations where deviations in realized PDs, LGDs and EADs from expectations become significant enough to call the validity of the estimates into question. These standards should take account of business cycles and similar systematic variability in default experiences. Where realized values continue to be higher than expected values, banks should revise estimates upward to reflect their default and loss experience.

5.2 Review of rating system developments

5.2.1 The first analytical support for the validity of a bank's rating system is review of rating system developments, in particular analyzing its design and construction. The aim of the review is to assess whether the rating system could be expected to work reasonably if it is implemented as designed. Such review should be revisited whenever the bank makes a change to its rating system. As the rating system is likely to change over time as the bank learns about the effectiveness of the system, the review is likely to be an ongoing part of the process. The particular steps taken in the review depends on the type of rating system.

5.2.2 Regarding a model-based rating system, the review of rating system developments should include information on the logic that supports the model and an analysis of the statistical model-building techniques. The review should also include empirical evidence on how well the ratings might have worked in the past, as such models are chosen to maximize the fit to outcomes in the development sample. In addition, statistical models should be supported by evidence that they work well outside the development sample. Use of out-of-time and out-of-sample performance tests is a good model-building practice to ensure that the model is not merely a statistical quirk of the particular data set used to build the model. Where a bank uses scoring systems for assigning credit ratings, it should demonstrate that those systems have adequate discriminating power.

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[1] Economic cycle refer to ensuring that validation of internal estimates incorporate the general impact of economic downturn and upswings of the subject economy.

5.2.3 Regarding an expert judgment-based rating system, the review of rating system developments requires asking two groups of raters how they would rate credits based on the rating definitions, processes and criteria for assigning exposures to grades within the rating system (see sections 4 and 5 of the "Minimum Requirements for Internal Rating Systems under IRB Approach" on requirements for rating criteria and processes). These two sets of rating results could then be compared to determine whether the ratings were consistent. Conducting such tests would help identify any factors, which may lead to different or inconsistent ratings. While some differences and inconsistencies may arise from the exercise of judgment, those findings should be considered for the development of the rating system.

5.2.4 Where an expert judgment-based rating system which employs quantitative guidelines or model results as inputs, the review of the rating system that features guidance values of financial ratios or scores of a scoring model might include a description of the logic and evidence relating the values of the ratios or scores to past default and loss outcomes.

5.3 Ongoing analysis

5.3.1 The second analytical support for the validity of a bank's rating system is the ongoing analysis intended to confirm that the rating system is implemented and continues to perform as intended. Such analysis involves process verification and benchmarking.

Process verification

5.3.2 Specific verification activities depend on the rating approach. If a model is used for rating, verification requires reviewers who are independent of the model development to evaluate the soundness of the model, including the theory, assumptions and mathematical/empirical basis. In addition, the evaluation should include the assessment of the compliance with the requirements set out in subsection 4.6 of the "Minimum Requirements for Internal Rating Systems under IRB Approach" on use of models.

5.3.3 If expert judgment is used for rating, verification requires other individual reviewers to evaluate whether the rater has followed rating policy. The minimum requirements for verification of ratings assigned by individuals are:
- a transparent rating process;
- a database with information used by the rater; and
- documentation of how the decisions were made.

5.3.4 Rating process verification also includes override monitoring. The requirements for overrides are set out in subsection 5.3 of the "Minimum Requirements for Internal Rating Systems under IRB Approach". A reporting system capturing data on reasons for overrides could facilitate learning about whether overrides improve accuracy.

Benchmarking

5.3.5 Benchmarking is a set of activities that uses alternative tools to draw inferences about the correctness of ratings before outcomes are actually known. Benchmarking of a rating system demonstrates whether another rater or rating method attaches the same rating to a particular obligor or facility. At a minimum,

banks should establish a process in which a representative sample of its internal ratings is compared to third-party ratings (e.g. independent internal raters, external rating agencies, models, or other market data sources) of the same credits. Regardless of the rating approach, the benchmark can either be a judgment-based or a model based rating. Examples of such benchmarking include: rating reviewers completely re-rate a sample of credits rated by individuals in a judgment-based system; an internally developed model is used to rate credits rated earlier in a judgment-based system; individuals rate a sample of credits rated by a model; internal ratings are compared against results from external agencies or external models.

Banks can also consider benchmarking which includes activities designed to draw broader inferences about whether the rating system – as opposed to individual ratings – is working as expected. Bank can look for consistency in ranking or consistency in the values of rating characteristics for similarly rated credits. Examples of such benchmarking activities include:
analyzing the characteristics of obligors that have received common ratings;
monitoring changes in the distribution of ratings over time;
calculating a transition matrix from changes in ratings in a bank portfolio and comparing it to historical transition matrices from publicly available ratings or external data pools.

5.3.6   If benchmarking evidence suggests a pattern of rating differences, it should lead the bank to investigate the source of the differences. Thus, the benchmarking process illustrates the possibility of feedback from ongoing validation to model development.

5.4   Back-testing

5.4.1   Back-testing is the comparison of predictions with actual outcomes. It is the empirical test of the accuracy and calibration of the estimates, i.e. PDs, LGDs and EADs, associated with borrower and facility ratings, respectively.

5.4.2   At a minimum, banks should:
- develop their own statistical tests to back-test their rating systems;
- establish internal tolerance limits for differences between expected and actual outcomes; and
- have a policy that requires remedial actions be taken when policy tolerances are exceeded.

5.4.3   However, the data to perform comprehensive back testing would not be available in the early stages of implementing an IRB rating system. Therefore, banks should rely more heavily on review of rating system developments, process verification, and benchmarking to assure themselves and other interested parties that there rating systems are likely to be accurate. Validation in its early stages should also depend on a bank's management exercising informed judgment about the likelihood of the rating system working — not simply on empirical tests.

5.4.4   Where banks rely on supervisory, rather than internal, estimates of risk parameters, they are encouraged to compare realized LGDs and EADs to those set by the SAMA. The information on realized LGDs and EADs should form part of a bank's assessment of economic capital.

MAJOR SECTION 5.2

APPLICATION AND EXAMINATION PROCEDURES
FOR ADOPTION OF THE IRB APPROACH

Section 5.2 Application and examination procedures for adoption of the IRB Approach

Purpose

5.2.1 This section sets out:
The application and recognition process that banks will go through if they wish to use the IRB Approach for capital adequacy purposes; and
SAMA's preliminary approach to conducting IRB validations.

5.2.2 Self-assessment questionnaires (currently in draft form) that will be used by banks for the recognition of their internal rating systems are also provided for reference.

Background

5.2.3 Under its implementation proposals, SAMA plans to allow various IRB Approaches applicable to different asset classes to banks that are capable of meeting the relevant requirements. SAMA will aim to make available for adoption by bank the Foundation IRB Approach based on SAMA's bi-lateral discussions

5.2.4 5.2.4 Banks wishing to adopt the IRB Approach are expected to discuss their plans with SAMA. Whether they will be able to use the IRB Approach for capital adequacy purposes is subject to the prior approval of SAMA and to their satisfying the minimum qualifying criteria. These criteria are set out in major Section 5.1 Entitled "Implementation Proposed for the IRB Approach":

(i) The criteria for transition to the IRB Approach (see paragraphs 5.1.13 to 5.1.28) of major section 5.1; and

(ii) Various qualitative and quantitative requirements in relation to internal rating systems and the estimation of probability of default ("PD") / loss given default ("LGD") / exposure at default ("EAD"), and the controls surrounding them. (See paragraphs 5.1.29 to 5.1.38 and the guidance papers as Attachment 5.4 and Attachment 5.5 for details.

5.2.5 SAMA will conduct on-site validation and recognition exercises starting some time in 2007 to ensure that banks' internal rating systems and the corresponding risk estimates meet the minimum requirements. It should however be stressed that a bank's management has the primary responsibility for validating and ensuring the quality of its internal rating systems.

IRB Recognition Process

5.2.6 The first step of the IRB recognition process is to identify those banks with a firm commitment to implement the IRB Approach for capital adequacy purposes. In order to provide sufficient time for SAMA to conduct the necessary IRB validations, such banks should lodge an application with SAMA, using the IRB recognition request form attached at Attachment 5.6. In completing this form, banks are required to provide information on its IRB implementation plan, the target date for adopting the IRB Approach, the estimated level of IRB coverage, and the contact person for the IRB implementation project.

5.2.7 Banks that are planning to start using the Foundation IRB Approach or the Advanced IRB Approach for capital calculation should submit the IRB recognition request form to SAMA no later than 31 December 2006. This is to ensure that their recognition requests can be taken into account in SAMA's validation

schedule for the next few years. Banks that intend to adopt the IRB Approach in later periods may also submit this form to facilitate SAMA's scheduling of validation visits, but the priority for conducting IRB validations will be given to those with an earlier IRB adoption date.

5.2.8 Upon receipt of the IRB recognition request, SAMA will work with the bank concerned to satisfy itself that the IRB systems/models and the risk management practices surrounding the use of such systems/models meet the minimum standards specified by SAMA. The IRB recognition process, as depicted under Attachment 5.7, generally includes the following steps:

    (i)   **Pre-examination meeting** – SAMA will arrange a meeting with the banks to discuss the details of its Implementation Plan and other matters related to the recognition process. Prior to the meeting, SAMA will provide the Bank with a set of self-assessment questionnaires for its completion;

    (ii)   **Self-assessment** – Banks will complete the questionnaire in the stipulated time frame. Completed questionnaire and supporting documentation will be submitted for SAMA's approval.

    (iii)   **On-site examination** – SAMA will conduct the on-site examination to review both the technical details of the systems/models and the risk management practices that govern the use of such systems/models. The examination may take three weeks to a month, depending on the quality of the bank's self-assessment, the complexity of its IRB systems and any compliance issues identified. After concluding the assessment, SAMA will issue the examination report, including the decision of whether to allow the bank to use the IRB Approach;

5.2.9 In the case of banks that are branches of foreign banking groups, SAMA will liaise with the relevant home supervisor, particularly on their Implementation Plans and validation arrangements, to assess the extent of reliance that it may place on the validation work done by the home supervisor.

Approach to IRB Recognition

5.2.10 While SAMA is still developing its detailed approach to IRB recognition, Attachment-5.8 will facilitate banks' IRB implementation efforts.

Self-assessment Questionnaires

5.2.11 Self-assessment questionnaires are being developed by SAMA. Banks that would implement the IRB approaches will be given questionnaire. It is important for banks to make a detailed self-assessment and support the assessment with adequate documentation and internal reports.

Final Applications and Executive Procedures

5.2.12 SAMA is planning to issue before Dec. 2005 its final application and assessment procedures for IRB recognition as described in this section.

Request for Recognition of Internal Rating Systems for Measurement of Credit
Risk Capital Charge under the Internal Ratings-based ("IRB") Approach

This form is to be completed by "Bank" wishing to adopt the IRB Approach for
measurement of credit risk capital charge. Please return the completed form (including
Table 1) to Mr. Fahd Al-Mufarrij, Director of Banking Supervision. SAMA should be
notified of any subsequent changes to the information provided in this form and Table 1.

I.   **Name of the Bank**:
_____

II.   **IRB implementation plan:**
(a)   Please provide information regarding the bank's IRB implementation plan by
completing Table 1.
(b)   What is the bank's target date for adopting the IRB Approach for capital adequacy
purposes? In the case of a phased rollout implementation plan, please specify the target
dates for the first and last phases of rollout.
_____
(c)   What is the bank's estimate of the percentage of credit risk-weighted assets
covered under IRB on a consolidated basis? Please specify the reference date used for
the estimate. In the case of a phased rollout implementation plan, please provide
estimates for the first and last phases of rollout.
_____

III.   **Contact person for the IRB implementation project:**
Name: _____
Position: _____
Telephone no: _____
Fax No: _____
Email address: _____

Signed by:
General Managers or Managing Directors: _____
                                              (Name)

                                              (Signature)
                                       _____
Date: _____

Table –1 IRB Information Plan

Name of Banks

Asset classes under IRB [1] (I)	Type of IRB Approach-es to be adopted (II)	Exposures as % of credit risk weighted assets ("RWAs") [2] As of _____		Geographical location of exposures (V)	Internal Rating Systems		
		Solo basi[3] (III)	Consolidated basis[3] (IV)		Name (VI)	Centrally developed by Parent/Group (A)[4] or Developed locally (B) (VII)	Date ready for SAMA's recognition [5] (VIII)
I. Corporate Exposures							
a. Small and medium sized entities (SMEs)							
b. Specialised lending (SL)							
project finance object finance commodities finance income producing real estate							
c. Purchase corporate receivables d. Other corporate exposures							
II. Bank exposures							
a. Banks b. Other exposures treated as bank exposures i) Securities firms ii) Public Sector Entities iii) Multilateral development bank							
III. Sovereign exposures							
a. Sovereigns (and their central banks) b. Other exposures treated as sovereign exposures i) PSEs ii) MDBs and other qualifying entities							

Asset classes under IRB [1]	Type of IRB Approaches to be adopted	Exposures as % of credit Risk Weighted Assets ("RWAs") [2] As of _____		Geographical location of exposures	Internal Rating Systems		
		Solo basi[3]	Consolidated basis[3]		Name	Central developed by Parent/Group (A)[4] or Developed locally (B)	Date ready for SAMA's recognition [5]
(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
IV. Retail exposures							
a. Exposures secured by residential properties							
b. Qualifying revolving retail exposures							
c. Purchased retail receivables							
d. Other retail exposures (please specify)							
V. Equity exposures							
(please specify)							
VI. Assets under Securitisation							
(please specify)							

[1]Banks should categories banking book exposures into different asset classes (i.e. corporate, bank, sovereign, retail and equity exposures, as well as assets under securitisation), subject to definitions set out in paragraphs 215-243, 273 and 538-542 of the "International Convergence of Capital Measurement and Capital Standards : A Revised Framework" issued by the Basel Committee on Banking Supervision in June 2004.

[2]RWAs should be calculated based on the Current Basel Capital Accord

[3] Missing

[4]In the case of banks that are branch of foreign banking groups, all or part of their IRB systems may be centrally developed by the parent bank and monitored on a group basis.

[5]For the purpose of this table, an internal rating system is regarded as ready for SAMA's recognition if the bank considers that it meets all the minimum qualifying criteria set out the Implementation Plan of the "Basel II" in Saudi Arabia" issued by SAMA in May 2005.

IRB Recognition Process

Banks submits IRB recognition request to SAMA

Pre-examination meeting between bank and SAMA
(Self –assessment questionnaires given to bank)

Completion of self-assessment by bank

Review of self-assessment by SAMA

SAMA conducts on-site examination on bank

SAMA issues examination report, including decision
on whether to allow bank to use IRB Approach

SAMA follows up implementation of
recommendations in examination report, and
monitors performance of bank's systems.

The SAMA's Preliminary Approach to IRB Recognition

Background

1.   IRB systems are the cornerstone for calculating regulatory capital charges under the IRB Approach, as they form the basis of determining a borrower's probability of default ("PD") and, where applicable, two other risk components, namely, a facility's loss given default ("LGD") and exposure at default ("EAD"). As a consequence, validation of these three parameters, which are key inputs to the calculation of regulatory capital, and the underlying rating system is a major part of the IRB recognition process.

2.   It is useful to differentiate from the outset a bank's internal IRB validation from the SAMA's IRB recognition and ongoing monitoring (which refer to the SAMA's first evaluation exercise and subsequent reviews). The primary responsibility for conducting internal validation to ensure the quality of a bank's internal rating systems lies with its management.

3.   Explicit requirements in SAMA's guidance paper "Minimum Requirements for Risk Quantification under IRB Approach" underline the need for banks to validate internal rating systems. Banks should demonstrate to SAMA that they can assess the performance of their internal rating and risk estimation systems consistently and meaningfully. More detailed requirements demand, for example, that realized default rates have to be within an expected range; that banks should use different quantitative validation tools; and that well-articulated internal standards should exist for situations where significant deviations occur between observed values of the key risk components and their estimates.

4.   The design of a validation methodology (Figure-1 Page 124) depends on the type of rating system and its underlying data. Rating systems can differ in various ways, depending on the borrower type, the materiality of the exposure, the dynamic properties of the estimation methodology (point-in-time versus through-the-cycle), and the availability of default data and external credit quality assessments (external ratings or vendor models). For example, the ratings for retail lending will typically be of a more quantitative nature, based on a rather large quantity of data. Sovereign ratings instead will typically put more emphasis on qualitative aspects because these borrowers are more opaque and default data are scarce.

5.   As a result, issues in relation to the internal IRB validation conducted by banks and the IRB recognition conducted by SAMA are relatively complex and require a good understanding of the rating system and its properties. Some of the issues are not currently well developed thus posing many challenges to both banks and supervisors. It is SAMA's aim to work with banks to raise the standards of IRB recognition in Saudi Arabia. The following paragraphs set out the key components of IRB recognition to be conducted by SAMA.

Key components of IRB recognition

6.   Figure 1 shows the key components of SAMA's validation of IRB systems. The examination process mainly includes a review of the self-assessment questionnaires completed by a bank and an on-site examination to review both the technical details of the bank's IRB systems/models and the risk management practices that govern the use of those systems/models.

Qualitative aspects

7.   The qualitative aspects of the recognition process can be broken down into three areas:

IRB coverage of assets – This should meet the criteria for transition to the IRB Approach.

Rating system design - This involves evaluating the development of the rating method and monitoring of its ongoing performance. In the case of a model-based rating system, this includes a review of the economic plausibility of the risk factors and the treatment of problems in data quality. The stability of a rating system, whether based on expert judgment or models, is a central issue that can be analyzed (for example by looking at the rating migrations over time).

Page empty (124) (Figures –1)

Rating assignment process and the controls surrounding it -

Important issues to be examined include the consistent application of a rating methodology across the bank and the requirement that these validation activities are subject to independent internal review. Underlying the controls should be adequate corporate governance and audit. Equally important are the transparency of the rating procedures and use of internal ratings, which should be supported by proper documentation. Use of internal ratings relates in particular to issues like internal reporting and how the rating system is being used by the credit officers. Furthermore, the rating system should be integrated into the bank's policies and procedures, which deal with such aspects as the training of credit officers and specialists responsible for operating the rating system and measures to ensure a uniform application of the rating system across different branches and business units of the bank.

8. Banks are expected to evaluate the above aspects in their self-assessment. SAMA will review banks' self-assessment results, and check for compliance during the on-site visit based on the criteria for transition to IRB Approach and other requirements set out in the guidance paper "Minimum Requirements for Internal Rating Systems under IRB Approach".

Quantitative aspects – Banks' internal validation

9. SAMA considers that internal validation of the IRB Approach should be an integral part of a bank's rating system architecture to provide reasonable assurances about its rating system. Banks adopting the IRB Approach should have a robust system in place to validate the accuracy and consistency of their rating systems, and the estimation of all relevant risk measures (i.e. PD/LGD/EAD). In addition, Banks should demonstrate the assessment of the discriminatory power (a measure of a rating system's ability to distinguish between good and bad credits) of their rating systems (including credit scoring systems) based on quantitative methods.[1]

10. In the guidance paper "Minimum Requirements for Risk Quantification under IRB Approach", it is proposed that the internal validation process should include review of rating system developments, ongoing analysis, and comparison of predicted estimates to actual outcomes (i.e. back-testing).

Quantitative aspects – banks' internal stress-testing

11. For the purpose of assessment of capital adequacy using stress tests, it is proposed that a stressed scenario chosen by a bank should resemble the economic recession in Saudi Arabia. (see subsection 5.5 of "Minimum Requirements for Internal Rating Systems under IRB Approach" for details) entitled stress test.

12. In reviewing the stress tests conducted by a bank, SAMA will have regard to the following:
- The complexity and level of risks of a bank's activities;
- The adequacy of stress tests (e.g. stress scenarios and parameters chosen) employed by the bank in relation to its activities;
- The appropriateness of the assumptions used in the stress tests;
- The adequacy of the bank's risk management policies and stress testing procedures;
- The level of oversight exercised by the Board and senior management on the stress-testing programme and results generated; and
- The adequacy of the bank's internal review and audit of its stress testing programme.

Quantitative aspects – data quality

13. Another key component of an IRB system is an advanced data management system that produces credible and reliable risk information. The standard governing an IRB data maintenance system is that it should support the requirements for the other IRB system components, as well as the bank's broader risk management and reporting needs. (See subsection of "Minimum Requirements for Internal Rating Systems under IRB Approach" for details.)

14. The SAMA recognizes that the data quality challenge for IRB is significant. Perfection is therefore not its goal. The underlying requirement is that data should be fit for purpose. Banks are expected to produce information that is reliable and takes proper account of the different users of the information produced (the Board and senior management, customers, shareholders, regulators and other market participants).

15. SAMA's assessment of data accuracy and completeness will include an evaluation of the systems and controls that banks have in place to produce IRB information. SAMA will require that where an asset has a PD, LGD and EAD risk measure, this can be relied on and has been appropriately validated, captured and reported, both internally and externally.

16. Banks are encouraged to develop automated data capture processes to safeguard the integrity of the calculation and reporting process with full and appropriate levels of documentation, suitably audited. Formal documentation should also be prepared for all manual or spreadsheet based approaches, including appropriate risk mitigating action taken.

17. SAMA will require banks to self-assess against demonstrable measures (tests) on data quality as part of the overall approach to implementation of IRB. Banks should identify key risk areas in the regulatory capital calculation and underlying processes in relation to their data maintenance systems. SAMA will work with banks to establish a set of tests for assessing data quality, including the appropriate quantifiable measures that can truly reflect banks' specific differences. It aims for a consistent approach for assessing data quality among banks through development of the set of tests, and allows banks the scope to tackle other areas of data quality in accordance with their internal priorities and scale of operations.

18. Tests on data quality should be designed principally to cover the quality and integrity of the data, including associated risk controls, used in the capital calculation processes, and the integrity of the supporting processes themselves. The challenge will be for banks to demonstrate compliance with their internal policies in a quantitative way. In addition, there are some common tests that are appropriate for all banks, for example, that all areas of the balance sheet are appropriately covered in their data maintenance systems.

Quantitative aspects – SAMA's validation of PD/LGD//EAD estimates

19. SAMA's validation of PD/LGD//EAD estimates can be broken down into the two areas listed below:
    - Back-testing means the use of statistical methods to compare estimates of the three risk estimates to realized outcomes. It is the empirical test of the accuracy and calibration of the estimates associated with borrower and facility ratings, respectively.
    - Benchmarking refers to a comparison of internal estimates across banks and/or with external benchmarks (e.g. external ratings or vendor models used by banks).

    The data to perform comprehensive back-testing would not be available in the early stages of implementing an IRB system. This is due to the infrequency of default events and the impact of default correlation[1]. Even if the data requirements of Basel II for the length of time series for the risk estimates are met, the explanatory power of statistical tests will still be limited. Therefore, statistical tests alone will be insufficient to establish supervisory acceptance of an internal rating system.

21. Due to the limitations of using statistical tests to verify the accuracy of risk quantification, benchmarking can be a complementary tool for the validation and/or calibration of risk estimates. Benchmarking involves the comparison of a bank's risk estimates to results from alternative sources. It is quite flexible in the sense that it gives banks and SAMA latitude to select an appropriate benchmark. An important technical issue is the design of the mapping from a bank's estimates to the benchmark. Benchmarking can be a promising validation technique that would enable SAMA to make inferences about the characteristics of the internal rating system.

    Benchmarking may also from a part of the whole process of producing internally generated estimates from banks' IRB systems. For example, banks could use external and independent references to calibrate their own IRB systems in terms of PD. Benchmarking internal risk estimates with external and independent risk estimates is implicitly given a special credibility, and deviations from this benchmark (in particular where the internal estimates are systematically lower than the benchmarking values) provide a reason to review the internal risk estimates.

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[1]Due to correlation between defaults in a portfolio, observed default rates can systematically exceed the critical PD values if these are determined under the assumption of independence of the default events.

23. SAMA will work with individual banks to establish standards and techniques of benchmarking for validation purposes. It aims for a consistent approach among banks through development of such standards and techniques. The benchmarking techniques would largely be based on those used by banks internally. SAMA will also compare banks' internal estimates of risk components (e.g. PD) across a panel. For example, it will compare PD estimates on corporates with respect to a peer group of banks. The main purpose of such comparison is to assess the correlation of the estimates or conversely the identification of potential "outliers" (e.g. variance analysis or robust regression) but not to determine if these estimates are accurate or not.

24. If bank's benchmarking is not sufficient to establish supervisory acceptance of its internal risk estimates (for example, the requirements regarding benchmarking set out in section 5 of "Minimum Requirements for Risk Quantification under IRB Approach" have not been met), the SAMA would consider to use supervisory benchmarking models as a complementary tool for the validation of the risk estimates. SAMA will let the bank understand the methodologies (including the theories and empirical data used) of the supervisory benchmarking models.

Way Forward
25. IRB validation and recognition should be understood as an ongoing process. As rating systems become more refined, the validation methodology will also develop. It will be useful for SAMA to monitor this process by staying in close contact with the banks. In addition, there are two areas where further action is warranted. One area concerns developments of qualitative and quantitative techniques and collection of historical data that are necessary for estimation and validation. This is the responsibility of banks.

26. The other area is further guidance on the implementation of the IRB minimum requirements. In particular, the requirements for the estimation of the three risk components, which will have a strong impact on the validation/recognition methodology, are not yet fully understood by banks. Providing on-going guidance to banks is the foremost responsibility of SAMA.

ATTACHMENT- 5.9

Table 2: Supervisory slotting criteria for specialized lending

Table 2.1 – Supervisory rating grades for project finance exposures

	Strong	Good	Satisfactory	Weak
I. Financial strength				
Market Conditions	Few competing suppliers OR substantial and durable advantage in location, cost, or technology. Demand is strong and growing.	Few competing suppliers OR better than average location, cost, or technology but this situation may not last. Demand is strong and stable.	Project has no advantage in location, cost, or technology. Demand is adequate and stable.	Project has worse than average location, cost, or technology. Demand is weak and declining.
Financial ratios (e. g debt service coverage ratio (DSCR), loan life coverage ration (LLCR), project life coverage ration (PLCR), and debt-to-equity ratio)	Strong financial ratios considering the level of project risk; very robust economic assumptions	Strong to acceptable financial ratios considering the level of project risk; robust project economic assumptions	Standard financial ratios considering the level of project risk	Aggressive financial ratios considering the level of project risk
Stress analysis	The project can meet its financial obligations under sustained, severely stressed economic or sect oral conditions.	The project can meet its financial obligations under normal stressed economic or sect oral conditions. The project is only likely to default under severe economic conditions.	The project is vulnerable to stresses that are not uncommon through an economic cycle, and may default in a normal downturn.	The project is likely to default unless conditions improve soon.
Financial structure • Duration of the credit compared to the duration of the project • Amortization schedule	Useful life of the project significantly exceeds tenor of the loan. Amortizing debt	Useful life of the project exceeds tenor of the loan. Amortizing debt	Useful life of the project exceeds tenor of the loan. Amortizing debt repayments with limited bullet payment	Useful life of the project may not exceed tenor of the loan. Bullet repayment or amortizing debt repayments with high bullet repayment

Table 2.1 – Supervisory rating grades for project finance exposures (cont'd)

	Strong	**Good**	**Satisfactory**	**Weak**
	II. Political and legal environment			
Political risk, including transfer risk, considering project type and mitigants	Very low Exposure; strong mitigation instruments, if needed	Low exposure; satisfactory mitigation instruments, if needed	Moderate exposure; fair mitigation instruments	High exposure; no or weak mitigation instruments
Force majored risk (war, civil unrest, etc)	Project of strategic importance for the country (preferably export-oriented). Strong support from Government	Project considered important for the country. Good level of support from Government	Project may not be strategic but brings unquestionable benefits for the country. Support from Government may not be explicit	Project not key to the country. No or weak support from Government
Stability of legal and regulatory environment (risk of change in law)	Favorable and stable regulatory environment over the long term	Favorable and stable regulatory environment over the medium term	Regulatory changes can be predicted with a fair level of certainty	Current of future regulatory issues may affect the project.
Acquisition of all necessary supports and approvals for such relief from local content laws	Strong	Satisfactory	Fair	Weak
Enforceability of contracts, collateral and security	Contracts, collateral and security are enforceable.	Contracts, collateral and security are enforceable.	Contracts, collateral and security are considered enforceable even if certain non-key issues may exist.	There are unresolved key issues in respect of actual enforcement of contracts, collateral and security.
	III. Transaction characteristics			
Design and technology risk	Fully proven technology and design	Fully proven technology and design	Proven technology and design – start-up issues are mitigated by a strong completion package	Unproven technology and design; technology issues exist and/or complex design.

Table 2.1 - Supervisory rating grades for project finance exposures (cont'd)

	Strong	**Good**	**Satisfactory**	**Weak**
Construction risk • Permitting and sitting	All permits have been obtained.	Some permits are still outstanding but their receipt is considered very likely.	Some permits are still outstanding but the permitting process is well defined and they are considered routine.	Key permits still need to be obtained and are not considered routine. Significant conditions may be attached.
• Type of construction contract	Fixed-price date-certain turnkey construction EPC (engineering and procurement contract)	Fixed-price date-certain turnkey construction EPC	Fixed-price date-certain turnkey construction contract with one or several contractors	No or partial fixed-price turnkey contract and/or interfacing issues with multiple contractors
Completion Guarantees	Substantial liquidated damages supported by financial substance **AND/OR** strong completion guarantee from sponsors with excellent financial standing	Significant liquidated damages supported by financial substance **AND/OR** Completion guarantee from sponsors with good financial standing	Adequate liquidated damages supported by financial substance **AND/OR** Completion guarantee from sponsors with good financial standing	Inadequate liquidated damages or not supported by financial substance **OR** weak completion guarantees
Track record and financial strength of contractor in constructing similar projects	Strong	Good	Satisfactory	Weak
Operating risk • Scope and nature of operations and maintenance (O&M) contracts	Strong long-term O&M contract, preferably with contractual performance incentives, and/or O&M reserve accounts	Long-term O&M contract, and/or O&M reserve accounts	Limited O&M contract or O&M reserve account	No O&M contract: risk of high operational cost overruns beyond mitigants
• Operator's expertise, track record, and financial strength	Very strong, **OR** committed technical assistance of the sponsors	Strong	Acceptable	Limited/weak, **OR** local operator dependent on local authorities

	Strong	**Good**	**Satisfactory**	**Weak**
Off-take risk (a) If there is a take-or-pay or fixed-price off-take contract:	. Excellent creditworthiness of off-taker; strong termination clauses; tenor of contract comfortably exceeds the maturity of the debt.	Good Credit worthiness of off-taker; strong termination clauses; tenor of contract exceeds the maturity of the debt.	Acceptable financial standing of off-taker; normal termination clauses; tenor of contract generally matches the maturity of the debt.	Weak off-taker; weak termination clauses; tenor of contract does not exceed the maturity of the debt.
(b) If there is no take-or-pay or fixed-price *off-*take contract:	Project produces essential services or a commodity sold widely on a world market; output can readily be absorbed at projected prices even at lower than historic market growth rates.	Project produces essential services or a commodity sold widely on a regional market that will absorb it at projected prices at historical growth rates.	Commodity is sold on a limited market that may absorb it only at lower than projected prices.	Project output is demanded by only one or a few buyers **OR** is not generally sold on an organized market.
Supply risk • Price, volume and transportation risk of feed-stocks; supplier's track record and financial strength	Long-term supply contract with supplier of excellent financial standing	Long-term supply contract with supplier of good financial standing	Long-term supply contract with supplier of good financial standing – a degree of price risk may remain	Short-term supply contract or long-term supply contract with financially weak supplier - a degree of price risk definitely remains
• Reserve risks (e.g. natural resource development)	Independently audited, proven and developed reserves well in excess of requirements over lifetime of the project	Independently audited, proven and developed reserves in excess of requirements over lifetime of the project	Proven reserves can supply the project adequately through the maturity of the debt.	Project relies to some extent on potential and undeveloped reserves.
IV. Strength of sponsor				
Sponsor's track record, financial strength, and country/sector experience	Strong sponsor with excellent track record and high financial standing	Good sponsor with satisfactory track record and good financial standing	Adequate sponsor with adequate track record and good financial standing	Weak sponsor with no or questionable track record and/or financial weaknesses

Table 2.1 - Supervisory rating grades for project finance exposures (cont'd)

	Strong	**Good**	**Satisfactory**	**Weak**
Sponsor support, as evidenced by equity, ownership clause and incentive to inject additional cash if necessary	Strong. Project is highly strategic for the sponsor (core business - long-term strategy).	Good. Project is strategic for the sponsor (core business - long-term strategy).	Acceptable. Project is considered important for the sponsor (core business).	Limited. Project is not key to sponsor's long-term strategy or core business.
V. Security package				
Assignment of contracts and Accounts	Fully comprehensive	Comprehensive	Acceptable	Weak
Pledge of assets, taking into account quality, value and liquidity of assets	First perfected security interest in all project assets, contracts, permits and accounts necessary to run the project	Perfected security interest In all project assets, contracts, permits and accounts necessary to run the project	Acceptable security interest in all project assets, contracts, permits and accounts necessary to run the project	Little security or collateral for lenders; weak negative pledge clause
lender's control over cash flow (e.g. cash sweeps, independent escrow Accounts)	Strong	Satisfactory	Fair	Weak
Strength of the covenant package (mandatory prepayments, Payment deferrals, Payment cascade, Dividend restrictions, etc.)	Covenant package is strong for this type of project. Project may issue no additional debt.	Covenant package is satisfactory for this type of project. Project may issue extremely limited additional debt.	Covenant package is fair for this type of project. Project may issue limited additional debt.	Covenant package is insufficient for this type of project. Project may issue unlimited additional debt.
Reserve funds (debt service, O&M, renewal and replacement, unforeseen events, etc.)	Longer than Average coverage period, all reserve funds fully funded in cash or letters of credit from highly rated bank	Average coverage period, all reserve funds fully funded	Average coverage period, all reserve funds fully funded	Shorter than average coverage period, reserve funds funded from operating cash flows

Table 2.2 - Supervisory rating grades for income-producing real estate exposures

	Strong	Good	Satisfactory	Weak
1. Financial strength				
Market conditions The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is equal or lower than forecasted demand.	The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is roughly equal to forecasted demand.	Market conditions are roughly in equilibrium. Competitive properties are coming on the market and others are in the planning stages. The project's design and capabilities may not be state of the art compared to new projects.	Market conditions are weak. It is uncertain when conditions will improve and return to equilibrium. The project is losing tenants at lease expiration. New lease terms are less favorable compared to those expiring.	The supply and demand for the project's type and location are currently in equilibrium. The number of competitive properties coming to market is equal or lower than forecasted demand.
Financial ratios and advance rate	The property's debt service coverage ratio (DSCR) is considered strong (DSCR is not relevant for the construction phase) and its loan to value ratio (LTV) is considered low given its property type. Where a secondary market exists, the transaction is underwritten to market standards.	The DSCR (not relevant for development real estate) and L TV are satisfactory. Where a secondary market exists, the transaction is underwritten to market standards.	The property's DSCR has deteriorated and its value has fallen, increasing its L TV.	The property's DSCR has deteriorated significantly and its L TV is well above underwriting standards for new loans.
Stress analysis	The property's resources, contingencies and liability structure allow it to meet its financial obligations during a period of severe financial stress (e.g. interest rates, economic growth).	The property can meet its financial obligations under a sustained period of financial stress (e.g. interest rates, economic growth). The property is likely to default only under severe economic conditions.	During an economic downturn, the property would suffer a decline in revenue that would limit its ability to fund capital expenditures and significantly increase the risk of default.	The property's financial condition is strained and is likely to default unless conditions improve in the near term.

Table 2.2 - Supervisory rating grades for income-producing real estate exposures (cont'd)

	Strong	**Good**	**Satisfactory**	**Weak**
Cashflow predictability (a) For complete and stabilized property:	The property's leases are long-term with creditworthy tenants and their maturity dates are scattered. The property has a track record of tenant retention upon lease expiration. Its vacancy rate is low. Expenses (maintenance, insurance, security, and property taxes) are predictable.	Most of the property's leases are long-term, with tenants that range in creditworthiness. The property experiences a normal level of tenant turnover upon lease expiration. Its vacancy rate is low. Expenses are predictable.	Most of the property's leases are medium rather than long-term with tenants that range in creditworthiness. The property experiences a moderate level of tenant turnover upon lease expiration. Its vacancy rate is moderate. Expenses are relatively predictable but vary in relation to revenue.	The property's leases are of various terms with tenants that range in creditworthiness. The property experiences a very high level of tenant turnover upon lease expiration. Its vacancy rate is high. Significant expenses are incurred preparing space for new tenants.
(b) For complete but not stabilized property:	Leasing activity meets or exceeds projections. The project should achieve stabilization in the near future.	Leasing activity meets or exceeds projections. The project should achieve stabilization in the near future.	Most leasing activity is within projections; however, stabilization will not occur for some time.	Market rents do not meet expectations. Despite achieving target occupancy rate, cash flow coverage is tight due to disappointing revenue.
(c) For construction phase:	The property is entirely pre-leased through the tenor of the loan or pre-sold to an investment grade tenant or buyer, or the bank has a binding commitment for take-out financing from an investment grade lender.	The property is entirely pre-leased or pre-sold to a creditworthy tenant or buyer, or the bank has a binding commitment for permanent financing from a creditworthy lender.	Leasing activity is within projections but the building may not be pre-leased and there may not exist a take-out financing. The bank may be the permanent lender.	The property is deteriorating due to cost overruns, market deterioration, tenant cancellations or other factors. There may be a dispute with the party providing the permanent financing.

Table 2.2 – Supervisory rating grades for Income-producing real estate exposures (cont'd)

	Strong	**Good**	**Satisfactory**	**Weak**
II. Asset characteristics				
Location	Property is located in highly desirable location that is convenient to services that tenants desire.	Property is located in desirable location that is convenient to services that tenants desire.	The property location lacks a competitive advantage.	The property's location, configuration, design and maintenance have contributed to the property's difficulties.
Design and condition	Property is favored due to its design, configuration, and maintenance, and is highly competitive with new properties.	Property is appropriate in terms of its design, configuration and maintenance. The property's design and capabilities are competitive with new properties.	Property is adequate in terms of its configuration, design and maintenance.	Weaknesses exist in the property's configuration, design or maintenance.
Property is under construction	Construction budget is conservative and technical hazards are limited. Contractors are highly qualified.	Construction budget is conservative and technical hazards are limited. Contractors are highly qualified.	Construction budget is adequate and contractors are ordinarily qualified.	Project is over budget or unrealistic given its technical hazards. Contractors may be under qualified.

Table 2.2 – Supervisory rating grades for Income-producing real estate exposures (cont'd)

	Strong	Good	Satisfactory	Weak
III. Strength of sponsor/developer				
Financial capacity and willingness to support the property	The sponsor/developer made a substantial cash contribution to the construction or purchase of the property. The sponsor/developer has substantial resources and limited direct and contingent liabilities. The sponsor/developer's properties are diversified geographically and by property type.	The sponsor/developer made a material cash contribution to the construction of the property. The sponsor/developer's financial condition allows it to support the property in the event of a cash flow shortfall. The sponsor/developer's properties are located in several geographic regions.	The sponsor/developer's contribution may be immediate or non-cash. The sponsor/developer is average to below average in financial resources.	The sponsor/developer lacks capacity or willingness to support the property.
Reputation and track record with similar properties	Experienced management and high sponsors' quality. Strong reputation and lengthy and successful record with similar properties.	Appropriate management and sponsors' quality. The sponsor or management has a successful record with similar properties.	Moderate management and sponsors' quality. Management or sponsor track record does not raise serious concerns.	Ineffective management and substandard sponsors' quality. Management and sponsor difficulties have contributed to difficulties in managing properties in the past.
Relationships with relevant real estate actors	Strong relationships with leading actors such as leasing agents.	Proven relationships with leading actors such as leasing agents.	Adequate relationships with leasing agents and other parties providing important real estate services.	Poor relationships with leasing agents and/or other parties providing important real estate services.
IV. Security package				
Nature of lien	Perfect first lien*	Perfect first lien*	Perfect first lien*	Ability of lender to foreclose is constrained.

Table 2.2 – Supervisory rating grades for Income-producing real estate exposures (cont'd)

	Strong	Good	Satisfactory	Weak
Assignment of rents (for projects leased to long-term tenants)	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to remit rents directly to the lender, such as a current rent roll and copies of the project's leases.	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as a current rent roll and copies of the project's leases.	The lender has obtained an assignment. They maintain current tenant information that would facilitate providing notice to the tenants to remit rents directly to the lender, such as a current rent roll and copies of the project's leases.	The lender has not obtained and assignment of the leases or has not maintained the information necessary to readily provide notice to the building's tenants.
Quality of the insurance coverage.	Appropriate	Appropriate	Appropriate	Substandard

Table 2.3 – Supervisory rating grades for object finance exposures

	Strong	Good	Satisfactory	Weak
I. Financial Strength				
Market conditions	Demand is strong and growing, strong entry barriers, low sensitivity to changes in technology and economic outlook	Demand is strong and stable, some entry barriers, some sensitivity to changes in technology and economic outlook	Demand is adequate and stable, limited entry barriers, significant sensitivity to changes in technology and economic outlook.	Demand is weak and declining, vulnerable to changes in technology and economic outlook, highly uncertain environment
Financial ratios (debt service coverage ratio and loan-to-value ratio)	Strong financial ratios considering the type of asset. Very robust economic assumptions	Strong/acceptable financial ratios considering the type of asset. Robust project economic assumptions.	Standard financial ratios for the asset type.	Aggressive financial ratios considering the type of asset
Stress analysis	Stable long-term revenues, capable of withstanding severely stressed conditions through an economic cycle.	Satisfactory short-term revenues. Loan can withstand some financial adversity. Default is only likely under severe economic conditions.	Uncertain short-term revenues. Cash flows are vulnerable to stresses that are not uncommon through an economic cycle. The loan may default in a normal downturn.	Revenues subject to strong uncertainties; even in normal economic conditions the asset may default, unless conditions improve.
Market liquidity	Market is structure on a world-wide basis; assets are highly liquid	Market is world wide or regional; assets are relatively liquid.	Market is regional with limited prospects in the short term, implying lower liquidity.	Local market and/or poor visibility. Low or no liquidity, particularly on niche markets.
II. Political and legal environment				
Political risk, including transfer risk	Very low; strong mitigation instruments, if needed.	Low; satisfactory mitigation instruments, if needed.	Moderate; fair mitigation instruments.	High; no or weak mitigation instruments.

Table 2.3 – Supervisory rating grades for object finance exposures (cont'd)

	Strong	**Good**	**Satisfactory**	**Weak**
Legal and regulatory risk.	Jurisdiction is favorable to repossession and enforcement of contracts.	Jurisdiction is favorable to repossession and enforcement of contracts.	Jurisdiction is generally favorable to repossession and enforcement of contracts, even if repossession might be long and/or difficult.	Poor or unstable legal and regulatory environment. Jurisdiction may make repossession and enforcement of contracts lengthy or impossible.
III. Transaction characteristics				
Financing term compared to the economic life of the asset.	Full payout profile/minimum balloon. No grace period.	Balloon more significant, but still at satisfactory levels.	Important balloon with potentially grace periods.	Repayment in fine or high balloon.
IV. Operational Risk				
Permits/licensing.	All permits have been obtained; asset meets current and foreseeable safety regulations.	All permits obtained or in the process of being obtained; asset meets current and foreseeable safety regulations.	Most permits obtained or in process of being obtained, outstanding ones considered routine, asset meets current safety regulations.	Problems in obtaining all required permits, part of the planned configuration and/or planned operations might need to be revised.
Scope and nature of O&M contracts.	Strong long-term O&M contract, preferably with contractual performance incentives, and/or O&M reserve accounts (if needed).	Long-term O&M contract, and/or O&M reserve accounts (if needed).	Limited O&M contract or O&M reserve account (if needed).	No O&M contract: risk of high operational cost overruns beyond mitigants.
Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease.	Excellent track record and strong re-marketing capability	Satisfactory track record and re-marketing capability.	Weak or short track record and uncertain re-marketing capability.	No or unknown track record and inability re-market the asset.

Table 2.3 – Supervisory rating grades for object finance exposures (cont'd)

	Strong	Good	Satisfactory	Weak
V. Asset characteristics				
Configuration, size, design and maintenance (i.e. age, size for a plane) compared to other assets on the same market	Strong advantage in design and maintenance. Configuration is standard such that the object meets a liquid market.	Above average design and maintenance. Standard configuration, maybe with very limited exceptions-such that the object meets a liquid market.	Average design and maintenance. Configuration is somewhat specific, and thus might cause a narrower market for the object.	Below average design and maintenance. Asset is near the end of its economic life. Configuration is very specific; the market for the object is very narrow.
Real value	Current resale value is well above debt value.	Resale value is moderately above debt value.	Resale value is slightly above debt value.	Resale value is below debt value.
Sensitivity of the asset value and liquidity to economic cycles.	Asset value and liquidity are relatively insensitive to economic cycles.	Asset value and liquidity are sensitive to economic cycles.	Asset value and liquidity are quite sensitive to economic cycles.	Asset value and liquidity are highly sensitive to economic cycles.
VI. Strength of sponsor				
Operators' financial strength, track record in managing the asset type and capability to remarket asset when it comes off-lease.	Excellent tract record and strong re-marketing capability.	Satisfactory track record and re-marketing capability.	Weak or short track record and uncertain remarketing capability.	No or unknown tract record and inability to remarket the asset.
Sponsors' track record and financial strength.	Sponsors with excellent track record and high financial standing	Sponsors with good track record and good financial standing.	Sponsors with adequate track record and good financial standing.	Sponsors with no or questionable track record and/or financial weaknesses.
VII. Security package				
Asset control	Legal documentation provides the lender effective control (e.g. a first perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it.	Legal documentation provides the lender effective control (e.g. a perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it.	Legal documentation provides the lender effective control (e.g. a perfected security interest, or a leasing structure including such security) on the asset, or on the company owning it.	The contract provides little security to the lender and leaves room to some risk of losing control on the asset.

Table 2.3 – Supervisory rating grades for object finance exposures (cont'd)

	Strong	Good	Satisfactory	Weak
Rights and means at the lender's disposal to monitor the location and condition of the asset.	The lender is able to monitor the location and condition of the asset, at any time and place (regular reports, possibility to lead inspections).	The lender is able to monitor the location and condition of the asset, almost at any time and place.	The lender is able to monitor the location and condition of the asset, almost at any time and place.	The lender is able to monitor the location and condition of the asset is limited.
Insurance against damages	Strong insurance coverage including collateral damages with top quality insurance companies.	Satisfactory insurance coverage (not including collateral damages) with good quality insurance companies.	Fair insurance coverage (not including collateral damages) with acceptable quality insurance companies.	Weak insurance coverage (not including collateral damages) or with weak quality insurance companies.

Table 2.4 – Supervisory rating grades for commodities finance exposures

	Strong	Good	Satisfactory	Weak
I. Financial strength				
Degree of over-collateralization of trade.	Strong	Good	Satisfactory	Weak
II. Political and legal environment				
Country risk	No country risk	Limited exposure to country risks (in particular, offshore location of reserves in an emerging country)	Exposure to country risk (in particular, offshore location of reserves in an emerging country)	Strong exposure to country risk (in particular, inland reserves in an emerging country)
Mitigation of country risk	Very strong mitigation: Strong offshore mechanism Strategic commodity 1st class buyer	Strong mitigation: Offshore mechanisms Strategic commodity Strong buyer	Acceptable mitigation: Offshore mechanisms Less strategic commodity Acceptable buyer	Only partial mitigation: No offshore mechanisms Non-strategic commodity Weak buyer
III. Asset characteristics				
Liquidity and susceptibility to damage	Commodity is quoted and can be hedged through futures or OTC instruments. Commodity is not susceptible to damage.	Commodity is quoted and can be hedged through OTC instruments. Commodity is not susceptible to damage.	Commodity is not quoted but is liquid. There is uncertainty about the possibility of hedging. Commodity is not susceptible to damage.	Commodity is not quoted. Liquidity is limited given the size and depth of the market. No appropriate hedging instruments. Commodity is susceptible to damage.
IV. Strength of sponsor				
Financial strength of trader	Very strong, relative to trading philosophy and risks.	Strong	Adequate	Weak

Table 2.4– Supervisory rating grades for commodities finance exposures (cont'd)

	Strong	**Good**	**Satisfactory**	**Weak**
Track record, including ability to manage the logistic process	Extensive experience with the types of transaction in question. Strong record of operating success and cost efficiency.	Sufficient experience with the type of transaction in question. Above average record of operating success and cost efficiency.	Limited experience with the type of transaction in question. Average record of operating success and cost efficiency.	Limited or uncertain track record in general. Volatile costs and profits.
Trading controls and hedging policies	Strong standards for counterparty selection, hedging and monitoring.	Adequate standards for counterparty selection, hedging, and monitoring.	Past deals have experienced no or minor problems.	Trader has experienced significant losses on past deals.
Quality of financial disclosure	Excellent	Good	Satisfactory	Financial disclosure contains some uncertainties or is insufficient.
V. Security package				
Asset control	First perfected security interest provides the lender legal control of the assets at any time if needed.	First perfected security interest provides the lender legal control of the assets at any time if needed.	At some point in the process, there is a rupture in the control of the assets by the lender. The rupture is mitigated by knowledge of the trade process or a third party undertaking as the case may be.	Contract leaves room for some risk of losing control over the assets. Recovery could be jeopardized.
Insurance against damages	Strong insurance coverage including collateral damages with top quality insurance companies	Satisfactory insurance coverage (not including collateral damages) with good quality insurance companies	Fairs insurance coverage (not including collateral damages) with acceptable quality insurance companies.	Weak insurance coverage (not including collateral damages) or with weak quality insurance companies.

6.   CREDIT RISK MITIGATION

Collateral Management

The new Basel framework identifies two primary types of credit risk mitigation (CRM): guarantees and collateral.

Guarantees are legally binding promises from a third party that the loan obligations of the borrower would be met. The conditions for a guarantee to be eligible are the same as those in current Accord requiring that they are direct, explicit, irrevocable and unconditional. Under the new Basel framework, eligible guarantees would also include additional operational requirements and a treatment for maturity mismatches. The principle of substitution has been retained from current requirements.

The guarantee must be evidenced in writing, non-cancellable on the part of the guarantor, in force until the debt is satisfied in full (to the extent of the amount and tenor of the guarantee) and legally enforceable against the guarantor in a jurisdiction where the guarantor has assets to attach and enforce a judgment. However, in contrast to the foundation approach to corporate, bank, and sovereign exposures, guarantees prescribing conditions under which the guarantor may not be obliged to perform (conditional guarantees) may be recognized under certain conditions. Specifically, the onus is on the bank to demonstrate that the assignment criteria adequately address any potential reduction in the risk mitigation effect.

Under the new Basel framework, eligible guarantees would also include additional operational requirements and a treatment for maturity mismatches. The principle of substitution has been retained from current requirements.
(Refer para 484, International Convergence of Capital Measurement and Capital Standards – June 2006)

Collateral, on the other hand, can be thought of as using financial assets to secure a loan.   With collateral, there is the chance that under certain circumstances risk can be eliminated. However, since the financial collateral is subject to valuation changes due to market prices additional criteria has been introduced to account for these changes in value.

No transaction in which CRM techniques are used should receive a higher capital requirement than an otherwise identical transaction where such techniques are not used.
(Refer para 113, , International Convergence of Capital Measurement and Capital Standards – June 2006)

The effects of CRM will not be double counted. Therefore, no additional supervisory recognition of CRM for regulatory capital purposes will be granted on claims for which an issue-specific rating is used that already reflects that CRM. As stated in paragraph 100, International Convergence of Capital Measurement and Capital Standards – June 2006 of the section on the standardized approach, principal-only ratings will also not be allowed within the framework of CRM.
(Refer para 114, International Convergence of Capital Measurement and Capital Standards – June 2006)

While the use of CRM techniques reduces or transfers credit risk, it simultaneously may increase other risks (residual risks). Residual risks include legal, operational, liquidity and market risks. Therefore, it is imperative that banks employ robust procedures and processes to control these risks, including strategy; consideration of the underlying credit; valuation; policies and procedures; systems; control of roll-off risks; and management of concentration risk arising from the bank's use of CRM techniques and its interaction with the bank's overall credit risk profile. Where these risks are not adequately controlled, SAMA may impose additional capital charges or take other supervisory actions as outlined in Pillar 2.
(Refer para 115, International Convergence of Capital Measurement and Capital Standards – June 2006)

A collateralized transaction is one in which:

- Banks have a credit exposure or potential credit exposure; and
- That credit exposure or potential credit exposure is hedged in whole or in part by collateral posted by a counterparty or by a third party on behalf of the counterparty.

Here "counterparty" is used to denote a party to whom a bank has an on- or off-balance sheet credit exposure or a potential credit exposure. That exposure may, for example, take the form of a loan of cash or securities (where the counterparty would traditionally be called the borrower), of securities posted as collateral, of a commitment or of exposure under an OTC derivatives contract.
(Refer para 119, International Convergence of Capital Measurement and Capital Standards – June 2006)

6.1 **Financial Collateral**
The options in the new Basel framework for recognizing financial collateral are, the Simple Approach and the Comprehensive Approach. For the IRB approaches, only the Comprehensive Approach is applicable. For the Standardized Approach both the Simple and the Comprehensive Approaches are available

i. **Simple Approach**:
In this method the approach of substitution is maintained.
This method requires the collateral to be pledged for at least the life of the exposure and that it is marked to market and revalued at least every six months. The collateralized portion of the loan is subject to the risk weight of the collateral, with a floor on the risk-weighting of 20 percent. For detail refer to Para 182 to Para 185 of the Basel II document.

ii) **Comprehensive Approach**:

The comprehensive approach for the treatment of collateral (Also refer to paragraphs 130 to 138 and 145 to 181 - International Convergence of Capital Measurement and Capital Standards – June 2006) will also be applied to calculate the counterparty risk charges for OTC Derivatives and repo-style transactions booked in the trading book.
(Refer para 112, International Convergence of Capital Measurement and Capital Standards – June 2006)

Further, the comprehensive approach calculate their adjusted exposure to a counterparty for capital adequacy purposes in order to take account of the effects of that collateral. Using haircuts, banks are required to adjust both the amount of the exposure to the counterparty and the value of any collateral received in support of that counterparty to take account of possible future fluctuations in the value of either[1] occasioned by market movements. This will produce volatility adjusted amounts for both exposure and collateral. Unless either side of the transaction is cash, the volatility adjusted amount for the exposure will be higher than the exposure and for the collateral it will be lower.

Additionally where the exposure and collateral are held in different currencies an additional downwards adjustment must be made to the volatility adjusted collateral amount to take account of possible future fluctuations in exchange rates.

Where the volatility adjusted exposure amount is greater than the volatility adjusted collateral amount including any further adjustment for foreign exchange risk banks shall calculate their risk weighted assets as the difference between the two multiplied by the risk weight of the counterparty.

In principle, banks have two ways of calculating the haircuts: (i) standard supervisory haircuts using parameters set by Basel-II and (ii) bank's own internal estimate haircuts, using banks' own internal estimates of market price volatility. Supervisors will allow banks to use own-estimate haircuts only when they fulfill certain qualitative and quantitative criteria.

A bank may choose to use standard or own estimate haircuts independently of the choice it has made between the standardized approach and the foundation IRB approach to credit risk. However, if banks seek to use their own-estimate haircuts, they must do so far the full range of instrument types for which they would be eligible to use own estimates, the exception being immaterial portfolios where they may use the standard supervisory haircuts.

The size of the individual haircuts will depend on the type of instrument, type of transaction and the frequency of marking to market and remargining. For example, repostyle transactions subject to daily marking to market and to daily remargining will receive a haircut based on a 5 business day holding period and secured lending transactions with daily mark to market and no remargining clauses will receive a haircut based on a 20 business day holding period. These haircut numbers will be scaled up using the square root of time formula depending on the frequency of remargining or marking to market.

As a further alternative to standard supervisory haircuts and own estimate haircuts, banks may use VaR models for calculating potential price volatility for repo style transactions.

In specific, approach relies on giving the banks the option to use one of three methods to discount the value of the collateral: Supervisory specified haircuts, own estimate haircuts, and a Value at Risk (VaR) model available only for repo-style transactions at national discretion. The three methods are as follows:

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[1] Exposure amounts may vary where, for example, securities are being lent.

a. **Supervisory Supplied Haircuts**
Banks should follow the requirements described in Para 151 of the Basel II document subject to amendments and conditions prescribed by the Agency on Page 148.

b. **Own estimate haircuts**
This option allows the banks to develop their own haircuts to be applied to the collateral they have against loans.

This option would be available only to banks that satisfy minimum qualitative and quantitative standard described in the Basel II document from Para 154 to Para 177.

Some of the criteria include a 99 percentile one-tailed confidence interval as well as minimum data observations of one year.

c. **VAR modeling**
- VAR is an estimate of the maximum potential loss expected at a 1 percent confidence interval.
- VAR models aggregate several components of price risk into a single measure of the potential for loss.
- Banks must follow the requirements set in Para 178 to Para 181 of the Basle II document.

6.2 On balance sheet netting

Where banks have legally enforceable netting arrangements for loans and deposits they may calculate capital requirements on the basis of net credit exposures subject to the conditions in Basel II.

6.3 Guarantees and credit derivatives

Where guarantees or credit derivatives are direct, explicit, irrevocable and unconditional, and supervisors are satisfied that banks fulfill certain minimum operational conditions relating to risk management processes they may allow banks to take account of such credit protection in calculating capital requirements.

A range of guarantors and protection providers are recognized. As under the 1988 Accord, a substitution approach will be applied. Thus only guarantees issued by or protection provided by entities with a lower risk weight than the counterparty will lead to reduced capital charges since the protected portion of the counterparty exposure is assigned the risk weight of the guarantor or protection provider, whereas the uncovered portion retains the risk weight of the underlying counterparty.

Banks are permitted to recognize guarantees but not collateral obtained on an equity position wherein the capital requirement is determined through use of the market-based approach.
(Refer para 349, International Convergence of Capital Measurement and Capital Standards – June 2006).

In addition to the legal certainty requirements in in International Convergence of Capital Measurement and Capital Standards – June 2006 , paragraphs 117 and 118, in order for a guarantee to be recognized, the following conditions must be satisfied:

(a) On the qualifying default/non-payment of the counterparty, the bank may in a timely manner pursue the guarantor for any monies outstanding under the documentation governing the transaction. The guarantor may make one lump sum payment of all monies under such documentation to the bank, or the guarantor may assume the future payment obligations of the counterparty covered by the guarantee. The bank must have the right to receive any such payments from the guarantor without first having to take legal actions in order to pursue the counterparty for payment.

(b) The guarantee is an explicitly documented obligation assumed by the guarantor.

(c) Except as noted in the following sentence, the guarantee covers all types of payments the underlying obligor is expected to make under the documentation governing the transaction, for example notional amount, margin payments etc. where a guarantee covers payment of principal only, interests and other uncovered payments should be treated as an unsecured amount in accordance with BIS guidelines – in International Convergence of Capital Measurement and Capital Standards – June 2006, paragraph 198.
(Refer para 190, International Convergence of Capital Measurement and Capital Standards – June 2006)

For Credit derivatives and guarantees, materiality thresholds on payments below which no payment is made in the event of loss are equivalent to retained first loss positions and must be deducted in full from the capital of the bank purchasing the credit protection. (Refer para 197, International Convergence of Capital Measurement and Capital Standards – June 2006)

Where the bank transfers a portion of the risk of an exposure in one or more tranches to a protection seller or sellers and retains some level of risk of the loan and the risk transferred and the risk retained are of different seniority, banks may obtain credit protection for either the senior tranches (e.g. second loss portion) or the junior tranche (e.g. first loss portion). In this case the rules as set out in Section IV (Credit risk ─ securitization framework) will apply.
(Refer para 199, International Convergence of Capital Measurement and Capital Standards – June 2006)

Currency mismatches
Where the credit protection is denominated in a currency different from that in which the exposure is denominated — i.e. there is a currency mismatch — the amount of the exposure deemed to be protected will be reduced by the application of a haircut HFX, i.e.

GA = G x (1 – HFX)
where: G = nominal amount of the credit protection
HFX = haircut appropriate for currency mismatch between the credit protection and underlying obligation.

The appropriate haircut based on a 10-business day holding period (assuming daily marking-to- market) will be applied. If a bank uses the supervisory haircuts it will be 8%. The haircuts must be scaled up using the square root of time formula,

depending on the frequency of revaluation of the credit protection as described in paragraph 168, International Convergence of Capital Measurement and Capital Standards – June 2006
(Refer para 200, International Convergence of Capital Measurement and Capital Standards – June 2006).

6.3.1 Additional Capital Requirements for Credit Derivatives

In order for a credit derivative contract to be recognized, the following conditions must be satisfied:

(a) The credit events specified by the contracting parties must at a minimum cover:
- failure to pay the amounts due under terms of the underlying obligation that are in effect at the time of such failure (with a grace period that is closely in line with the grace period in the underlying obligation);
- bankruptcy, insolvency or inability of the obligor to pay its debts, or its failure or admission in writing of its inability generally to pay its debts as they become due, and analogous events; and
- restructuring of the underlying obligation involving forgiveness or postponement of principal, interest or fees that results in a credit loss event (i.e. charge-off, specific provision or other similar debit to the profit and loss account). When restructuring is not specified as a credit event, refer to paragraph 192, International Convergence of Capital Measurement and Capital Standards – June 2006

(b) If the credit derivative covers obligations that do not include the underlying obligation, section (g) below governs whether the asset mismatch is permissible.

(c) The credit derivative shall not terminate prior to expiration of any grace period required for a default on the underlying obligation to occur as a result of a failure to pay, subject to the provisions of paragraph 203, International Convergence of Capital Measurement and Capital Standards – June 2006

(d) Credit derivatives allowing for cash settlement are recognized for capital purposes insofar as a robust valuation process is in place in order to estimate loss reliably. There must be a clearly specified period for obtaining post-credit event valuations of the underlying obligation. If the reference obligation specified in the credit derivative for purposes of cash settlement is different than the underlying obligation, section (g) below governs whether the asset mismatch is permissible.

(e) If the protection purchaser's right/ability to transfer the underlying obligation to the protection provider is required for settlement, the terms of the underlying obligation must provide that any required consent to such transfer may not be unreasonably withheld.

(f) The identity of the parties responsible for determining whether a credit event has occurred must be clearly defined. This determination must not be the sole responsibility of the protection seller. The protection buyer must have the right/ability to inform the protection provider of the occurrence of a credit event.

(g) A mismatch between the underlying obligation and the reference obligation under the credit derivative (i.e. the obligation used for purposes of determining cash settlement value or the deliverable obligation) is permissible if (1) the reference obligation ranks pari passu with or is junior to the underlying obligation, and (2) the underlying obligation and reference obligation share the same obligor (i.e. the same legal entity) and legally enforceable cross-default or cross-acceleration clauses are in place.

(h) A mismatch between the underlying obligation and the obligation used for purposes of determining whether a credit event has occurred is permissible if (1) the latter obligation ranks pari passu with or is junior to the underlying obligation, and (2) the underlying obligation and reference obligation share the same obligor (i.e. the same legal entity) and legally enforceable cross-default or cross acceleration clauses are in place.

When the restructuring of the underlying obligation is not covered by the credit derivative, but the other requirements in paragraph 191 are met, partial recognition of the credit derivative will be allowed. If the amount of the credit derivative is less than or equal to the amount of the underlying obligation, 60% of the amount of the hedge can be recognized as covered. If the amount of the credit derivative is larger than that of the underlying obligation, then the amount of eligible hedge is capped at 60% of the amount of the underlying obligation.
Only credit default swaps and total return swaps that provide credit protection equivalent to guarantees will be eligible for recognition. The following exception applies.

Where a bank buys credit protection through a total return swap and records the net payments received on the swap as net income, but does not record offsetting deterioration in the value of the asset that is protected (either through reductions in fair value or by an addition to reserves), the credit protection will not be recognized. The treatment of first-to-default and second-to-default products is covered separately in paragraphs 207 to 210, International Convergence of Capital Measurement and Capital Standards – June 2006

Other types of credit derivatives will not be eligible for recognition at this time.

(Refer para 191-194, International Convergence of Capital Measurement and Capital Standards – June 2006)

6.4 Legal and Operational Certainty

All documentation used in collateralized transactions and for documenting, guarantees and credit derivatives must be binding on all parties and legally enforceable in all relevant jurisdictions. Banks must have conducted sufficient legal review to verify this and have a well-founded legal basis to reach this conclusion, and undertake such further review as necessary to ensure continuing enforceability.(Refer para 118, International Convergence of Capital Measurement and Capital Standards – June 2006)

In addition to the general requirements for legal certainty set out in paragraphs 117 and 118 of International Convergence of Capital Measurement and Capital Standards – June 2006, the legal mechanism by which collateral is pledged or

transferred must ensure that the bank has the right to liquidate or take legal possession of it, in a timely manner, in the event of the default, insolvency or bankruptcy (or one or more otherwise-defined credit events set out in the transaction documentation) of the counterparty (and, where applicable, of the custodian holding the collateral). Furthermore banks must take all steps necessary to fulfill these requirements under the law applicable to the bank's interest in the collateral for obtaining and maintaining an enforceable security interest, e.g. by registering it with a registrar, or for exercising a right to net or set off in relation to title transfer collateral. (Refer para 123, International Convergence of Capital Measurement and Capital Standards – June 2006)

In order for collateral to provide protection, the credit quality of the counterparty and the value of the collateral must not have a material positive correlation. For example, securities issued by the counterparty ─ or by any related group entity ─ would provide little protection and so would be ineligible. (Refer para 124, International Convergence of Capital Measurement and Capital Standards – June 2006)

Banks must have clear and robust procedures for the timely liquidation of collateral to ensure that any legal conditions required for declaring the default of the counterparty and liquidating the collateral are observed, and that collateral can be liquidated promptly. .(Refer para 125, International Convergence of Capital Measurement and Capital Standards – June 2006

Where the collateral is held by a custodian, banks must take reasonable steps to ensure that the custodian segregates the collateral from its own assets.
(Refer para 126, International Convergence of Capital Measurement and Capital Standards – June 2006)

6.4.1 **Repo Style Transaction**

Where a bank, acting as an agent, arranges a repo-style transaction (i.e. repurchase/reverse repurchase and securities lending/borrowing transactions) between a customer and a third party and provides a guarantee to the customer that the third party will perform on its obligations, then the risk to the bank is the same as if the bank had entered into the transaction as a principal. In such circumstances, a bank will be required to calculate capital requirements as if it were itself the principal.
(Refer para 128, International Convergence of Capital Measurement and Capital Standards – June 2006)

6.5   Maturity Mismatch

For the purposes of calculating risk-weighted assets, a maturity mismatch occurs when the residual maturity of a hedge is less than that of the underlying exposure.

Definition of maturity
The maturity of the underlying exposure and the maturity of the hedge should both be defined conservatively. The effective maturity of the underlying should be gauged as the longest possible remaining time before the counterparty is scheduled to fulfill its obligation, taking into account any applicable grace period.

For the hedge, embedded options which may reduce the term of the hedge should be taken into account so that the shortest possible effective maturity is used.

Where a call is at the discretion of the protection seller, the maturity will always be at the first call date. If the call is at the discretion of the protection buying bank but the terms of the arrangement at origination of the hedge contain a positive incentive for the bank to call the transaction before contractual maturity, the remaining time to the first call date will be deemed to be the effective maturity. For example, where there is a step-up in cost in conjunction with a call feature or where the effective cost of cover increases over time even if credit quality remains the same or increases, the effective maturity will be the remaining time to the first call.

Risk weights for maturity mismatches
As outlined in paragraph 143 of the International Convergence of Capital Measurement and Capital Standards – June 2006, hedges with maturity mismatches are only recognized when their original maturities are greater than or equal to one year. As a result, the maturity of hedges for exposures with original maturities of less than one year must be matched to be recognized. In all cases, hedges with maturity mismatches will no longer be recognized when they have a residual maturity of three months or less.

When there is a maturity mismatch with recognized credit risk mitigants (collateral, on-balance sheet netting, guarantees and credit derivatives) the following adjustment will be applied.

$$Pa = P \times (t - 0.25) / (T - 0.25)$$

where:

Pa = value of the credit protection adjusted for maturity mismatch

P = credit protection (e.g. collateral amount, guarantee amount) adjusted for any haircuts

t = min (T, residual maturity of the credit protection arrangement) expressed in years

T = min (5, residual maturity of the exposure) expressed in years

(Refer para 202-205, International Convergence of Capital Measurement and Capital Standards – June 2006)

6.6 **Other Items related to CRM Techniques**

Treatment of pools of CRM techniques
In the case where a bank has multiple CRM techniques covering a single exposure (e.g. a bank has both collateral and guarantee partially covering an exposure), the bank will be required to subdivide the exposure into portions covered by each type of CRM technique (e.g. portion covered by collateral, portion covered by guarantee) and the risk-weighted assets of each portion must be calculated separately. When credit protection provided by a single protection provider has differing maturities, they must be subdivided into separate protection as well.

First-to-default credit derivatives
There are cases where a bank obtains credit protection for a basket of reference names and where the first default among the reference names triggers the credit protection and the credit event also terminates the contract. In this case, the bank may recognize regulatory capital relief for the asset within the basket with the lowest risk-weighted amount, but only if the notional amount is less than or equal to the notional amount of the credit derivative.

With regard to the bank providing credit protection through such an instrument, if the product has an external credit assessment from an eligible credit assessment institution, the risk weight in paragraph 567, International Convergence of Capital Measurement and Capital Standards – June 2006 applied to securitization tranches will be applied. If the product

Second-to-default credit derivatives
is not rated by an eligible external credit assessment institution, the risk weights of the assets included in the basket will be aggregated up to a maximum of 1250% and multiplied by the nominal amount of the protection provided by the credit derivative to obtain the risk-weighted asset amount.

In the case where the second default among the assets within the basket triggers the credit protection, the bank obtaining credit protection through such a product will only be able to recognize any capital relief if first-default-protection has also be obtained or when one of the assets within the basket has already defaulted.

For banks providing credit protection through such a product, the capital treatment is the same as in paragraph 208, International Convergence of Capital Measurement and Capital Standards – June 2006 with one exception. The exception is that, in aggregating the risk weights, the asset with the lowest risk weighted amount can be excluded from the calculation.

(Refer para 206-210, International Convergence of Capital Measurement and Capital Standards – June 2006)

CREDIT RISK MITIGANTS

A. HAIRCUTS TO COLLATERALS

.	*Debt Securities*	• *As per issuer, maturity, and rating from 0.5% up to 15%. (Para 151)*
		• *However, KSA Government bonds and bonds of Public Sector Entities (PSEs) eligible for sovereign treatment in local currency to be at 0% haircut.*

B. ADDITIONAL COLLATERALS

2nd mortgage-SIDF (Junior Lien)	*Residual value to be eligible CRM as per existing Basel II.*

7. BANKING BOOK EQUITY

7.1. Definition of equity exposures

[235] In general, equity exposures are distinguished from other types of exposures based on the economic substance of the exposure. Equity exposures would include both direct and indirect ownership interests, whether voting or non-voting, in the assets or income of a commercial enterprise or financial institution that are not consolidated or deducted for regulatory capital purposes. An instrument generally would be considered to be an equity exposure if it (1) qualifies as Tier 1 capital; (2) is irredeemable in the sense that the return of invested funds can be achieved only by the sale of the investment or sale of the rights to the investment or in the event of the liquidation of the issuer; (3) conveys a residual claim on the assets or income of the issuer; and (4) does not embody an obligation on the part of the issuer.

[236] An instrument that embodies an obligation of the issuer is considered an equity exposure if the instrument meets any of the following conditions: (1) the issuer may defer indefinitely the settlement of the obligation; (2) the obligations requires, or permits at the issuer's discretion, settlement by issuance of a fixed number of the issuer's equity interests; (3) the obligation requires, or permits at the issuer's discretion, settlement by the issuance of a variable number of the issuer's equity interests, and all things being equal, any change in the value of the obligation is attributable to, and in the same direction as, the change in the value of a fixed number of the issuer's equity shares; or (4) the holder has the option to require that the obligation be settled by issuance of the issuer's equity interests.

[237] Debt obligations and other securities, derivatives, or other instruments structured with the intent of conveying the economic substance of equity ownership would be considered equity exposures. Equity instruments that are structured with the intent of conveying the economic substance of debt holdings would not be considered an equity exposure.

7.2. Market-based Approach (MBA) and PD/LGD Approach

[341] Supervisors may choose any of the two Approaches - MBA or a PD/LGD Approach - would be used by a Banks to calculate risk-weighted assets for equity exposures not held in the trading book. The PD/LGD Approach is designed to capture risks from credit-related losses only; this approach is more suited for use in cases where credit-related issues are seen as the main focus. The MBA is designed to capture a wide range of risks (e.g., interest rates, general market movements, etc), in addition to credit-related losses.

SAMA proposes that the MBA should be used for determining capital requirements for equity exposures in the banking book.

7.2.1 MBA based Approach

Under the market-based approach, institutions are permitted to calculate the minimum capital requirements for their banking book equity holdings using one or both of two separate and distinct methods: a simple risk weight method or an internal models method.

The method used should be consistent with the amount and complexity of the institution's equity holdings and commensurate with the overall size and sophistication of the institution.

Supervisors may require the use of either method based on the individual circumstances of an institution.
(Refer para 343, International Convergence of Capital Measurement and Capital Standards – June 2006)

- Under the simple risk weight method, a 300% risk weight to be applied to publically traded, and 400% for all others.

- If an internal model is used, minimum quantitative and qualitative requirements would have to be met on an ongoing basis, including a minimum capital charge be no less than the capital charge that would be calculated under the simple approach at a risk weight of 200% for publically traded, and 300% for other equities.

7.2.2 PD/LGD approach

The minimum requirements and methodology for the PD/LGD approach for equity exposures are the same as those for the IRB foundation approach for corporate exposures subject to some constraints. These include the bank's estimate of the PD of a corporate entity in which it holds an equity position must satisfy the same requirements as the bank estimate of the PD of a corporate entity where the bank holds debt. In practice, if there is both an equity exposure and an IRB credit exposure to the same counterparty, a default on the credit exposure would thus trigger a simultaneous default for regulatory purposes on the equity exposure. If a bank does not hold debt of the company in whose equity it has invested, and does not have sufficient information on the position of that company to be able to use the applicable definition of default in practice but meets the other standards, a 1.5 scaling factor will be applied to the risk weights derived from the corporate risk weight function, given the PD set by the bank. If, however, the bank's equity holding are material and it is permitted to use a PD/LGD approach for regulatory purposes but the bank has not yet met the relevant standards, the simple risk weight method under the market based approach apply.

7.3. **Exclusions to the MBA**

Nationally legislated programmes
[357] Supervisors may exclude from the IRB capital charge certain equity exposures made under legislated programs. These equity holdings can only be excluded from the IRB Approach up to an aggregate of 10 percent of Tier 1 plus Tier 2 capital.

In KSA, such investments made would not qualify for this exclusion.

Materiality

[358] Supervisors may exclude equity exposures of a banks from IRB treatment based on materiality. SAMA proposes that a Banks would not be required to use the IRB Approach if the aggregate carrying value, including holdings subject to exclusions and transitional provisions (see transitional arrangement), is less than or equal to 10 percent of Tier 1 and Tier 2 capital. A bank would risk weight at a 100 percent equity exposures that qualify for this exclusion.
SAMA require that a bank qualifying for this exemption would not be eligible.

8. Purchased Receivables

8.1 Definition of eligible purchased receivables

Eligible purchased receivables[1] are divided into retail and corporate receivables as defined below.

Retail receivables

Purchased retail receivables, provided the purchasing bank complies with the IRB rules for retail exposures, are eligible for the top-down approach as permitted within the existing standards for retail exposures (i.e. estimation of risk components on a pooled basis). The banks should also apply the minimum operational requirements as set out in Section 8.2 below and "Minimum Requirements for Risk Quantification under IRB Approach".

Corporate receivables

In general, for purchased corporate receivables, banks are expected to assess the default risk of individual obligors as specified in subsection 4.1 of the IRB approaches consistent with the treatment of other corporate exposures. Banks are not allowed to use the top-down approach.

8.2 Rules for purchased receivables

Risk-weighted assets for default risk
For receivables belonging unambiguously to one asset class, the risk weight for default risk is based on the risk-weight function applicable to that particular exposure type, as long as banks can meet the qualification standards for this particular risk-weight function. For example, if banks cannot comply with the standards for QRRE (defined in paragraph 2.5.7 of section 5.0 above), they should use the risk-weight function for other retail exposures. For hybrid pools containing a mixture of exposure types, if the purchasing bank cannot separate the exposures by type, the risk-weight function producing the highest capital requirements for the exposure types in the receivable pool applies.

Purchased retail receivables

For purchased retail receivables, the purchasing bank should meet the risk quantification standards for retail exposures but can utilize external and internal reference data to estimate the PDs and LGDs. The estimates for PD and LGD (orEL) should be calculated for the receivables on a stand-along basis; that is, without regard to any assumption of recourse or guarantees from the seller or other parties.

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[1] Such receivables include both self-liquidating debit arising from the sale of goods or services linked to a commercial transaction and general amounts owned by buyers, suppliers, renters, governmental authorities, or other non-affiliated parties not related to the sale of goods or services linked to a commercial transaction. Eligible receivables do not include those associated with securitizations.

Foundation IRB Treatment (FIRB)

If the purchasing bank is unable to decompose EL into its PD and LGD components in a reliable manner, the risk weight is determined from the corporate risk-weight function using the following specifications: if the bank can demonstrate that the exposures are exclusively senior claims to corporate borrowers, an LGD of 45% can be used. PD will be calculated by dividing the EL using this LGD. EAD will be calculated as the outstanding amount minus the capital charge for dilution prior to credit risk mitigation ($K_{Dilution}$). Otherwise, PD is the bank's estimate of EL; LGD will be 100%; and EAD is the amount outstanding minus $K_{Dilution}$. EAD for a revolving purchase facility is the sum of the current amount of receivables purchased plus 75% of any undrawn purchase commitments minus $K_{Dilution}$. If the purchasing bank is able to estimate PD in a reliable manner, the risk weight is determined from the corporate risk-weight functions according to the specifications for LGD, M and the treatment of guarantees under the foundation approach as given in paragraphs 287 to 296, 299, 300 to 305, and 318, International Convergence of Capital Measurement and Capital Standards – June 2006.

(Refer para 366, International Convergence of Capital Measurement and Capital Standards – June 2006)

Advance IRB Treatment (AIRB)

If the purchasing bank can estimate either the pool's default-weighted average loss rates given default (as defined in paragraph 468) or average PD in a reliable manner, the bank may estimate the other parameter based on an estimate of the expected long-run loss rate. The bank may (i) use an appropriate PD estimate to infer the long-run default-weighted average loss rate given default, or (ii) use a long-run default-weighted average loss rate given default to infer the appropriate PD. In either case, it is important to recognize that the LGD used for the IRB capital calculation for purchased receivables cannot be less than the long-run default-weighted average loss rate given default and must be consistent with the concepts defined in paragraph 468. The risk weight for the purchased receivables will be determined using the bank's estimated PD and LGD as inputs to the corporate risk-weight function. Similar to the foundation IRB treatment, EAD will be the amount outstanding minus $K_{Dilution}$. EAD for a revolving purchase facility will be the sum of the current amount of receivables purchased plus 75% of any undrawn purchase commitments minus $K_{Dilution}$ (thus, banks using the advanced IRB approach will not be permitted to use their internal EAD estimates for undrawn purchase commitments).

(Refer para 367, International Convergence of Capital Measurement and Capital Standards – June 2006)

For drawn amounts, M will equal the pool's exposure-weighted average effective maturity (as defined in paragraphs 320 to 324, International Convergence of Capital Measurement and Capital Standards – June 2006). This same value of M will also be used for undrawn amounts under a committed purchase facility provided the facility contains effective covenants, early amortization triggers, or other features that protect the purchasing bank against a significant deterioration in the quality of the future receivables it is required to purchase over the facility's term. Absent such effective protections, the M for undrawn amounts will be calculated as the sum of (a) the longest-dated potential receivable under the purchase agreement and (b) the remaining maturity of the purchase facility.

(Refer para 368, International Convergence of Capital Measurement and Capital Standards – June 2006)

Purchased corporate receivables

For purchased corporate receivables, the purchasing bank should apply the risk quantification standards for corporate exposures under the bottom-up approach.

Dilution risk and treatment of purchase price discounts.

For the treatment of dilution risk and purchase price discounts under Basel II, please refer to Sections 369 to 372 to Basel II document of June, 2004.

9. **Shariah Compliant Banking**

SAMA is a member of the Islamic Financial Services Board and its Working Group that prepared the "Capital Adequacy Standard for Institutions Offering Only Islamic Financial Services". In this regard, this IFSB Standard is intended to be applied to non-insurance institutions offering only Islamic financial products and services. Supervisors may also choose to apply these to 'Islamic Window' operations in their jurisdictions. The Capital Adequacy Standard (CAS) is not intended to be applied at the consolidated level to a group or a sub-group that consists of entities other than IIFS.

The CAS provides for Capital Adequacy calculations for seven (7) Shariah compliant financing and investment instruments as follows:

- Murabaha
- Salam
- Istisna
- Ijarah and Ijarah Muntahia Bitlamleek
- Musharaka and Diminishing Musharaka
- Mudarabah
- Sukuk

Also the CAS separately sets out the requirements for Operational Risk and the treatment of Profit Sharing Investment Accounts (PSIA). The CAS proposes a Capital adequacy framework for IIFS that compares with the Standardized Approach for credit risk and the Basic Indicator approach for operational risk under the Basel II Capital Adequacy Standard.

As the CAS applies to banks that 'only' offer Islamic financial products and services, currently this is relevant to a few banks in Saudi Arabia. These banks would be largely compliant to IFSB CAS, if they apply the Basel II Standardized Approach for credit risk and the Basic Indicator approach for operational risk.

Banks that only provide Islamic Financial services are encouraged to compute their Capital Adequacy according to IFSB Standard using the proposed method for assigning risk to their shariah compliant assets. The calculation under the CAS could then permit comparison between the capital requirements under CAS and Basel II. At that stage, SAMA will discuss with the banks the relevance of the two methodologies and make a decision on the banks' final choice of the Capital Adequacy framework. Banks choosing to proceed under IFSB CAS, should discuss their plans and approaches with SAMA to decide on an appropriate time table.

10. __OPERATIONAL RISK__

10.1 __Introduction__

10.1.1 Scope and application
This section sets out the framework for measuring capital requirements for operational risk of banks. It describes the framework in terms of the availability and choice of measurement approaches; the qualifying criteria for adoption of the more advanced approaches; and the measurement methodologies under each of the available approaches.

10.1.2 Four approaches are being made available by SAMA for measuring capital charge for operational risk.

- The Basic Indicator Approach (BIA);
- The Standardized Approach (STA); and
- The Alternative Standardized Approach (ASA)
- The Advanced Management Approaches (AMA)

10.1.3 A bank is expected to use the BIA unless it has prior approval of SAMA to adopt a more advanced approach. Banks proposing to apply the BIA approach must have internal operational risk management systems in compliance with the requirements set out in the paper issued by the Basel committee in 2003 entitled "Sound Practices for the Management and Supervision of Operational Risk".

10.1.4 Banks proposing to use the STA, ASA or AMA must satisfy SAMA that they meet the minimum qualifying criteria set out in section 2 below.

10.1.5 The risk-weighted exposure for operational risk of a bank will be summed together with the risk-weighted exposures for credit and market risk to yield the total risk-weighted exposures which will then be used to calculate the Capital Adequacy Ratio (CAR).

10.2. __Qualifying Criteria for the Standardized Approach (STA), Alternative Standardized Approach (ASA), and Advance Management Approaches (AMA).__

10.2.1 Subject to meeting the minimum qualifying requirements, banks may seek SAMA's approval to use either the STA, or ASA or AMA approaches.

10.2.2 To use the STA, ASA or AMA which are more advanced approaches for measuring the capital charge for operational risk, a bank must have in place adequate internal operational risk management systems that are commensurate with the nature, volume and complexity of its business activities. In particular, it should meet the criteria set out in Basel II document.

1.   Standardized Approach
In order to qualify for the Standardized Approach or the Alternative Standardized Approach a bank must satisfy SAMA that the conditions described in Para's 660 to 663 of Basel II Document have been fully met or complied with.

2.   Advance Management Approaches (AMA)
In order to qualify for the AMA, banks must satisfy SAMA that the requirements under Para's 664 to Para 679 of Basel II Document are satisfied.

10.3. <u>Measurement methodologies</u>

10.3.1 <u>BIA, STA or AMA.</u>

Gross income is used as a broad indicator for the scale of a bank's operational risk exposure. The capital charge is calculated by multiplying gross income by a factor (denoted as alpha or beta). The factor serves as a proxy for the relationship between operational losses and the gross income of a bank. In the BIA gross income is measured on an aggregate basis, whereas in the STA or ASA gross income is measured for each business line, not the whole bank. The detailed measurement methodologies for each of the approaches are described in Basel II document from Para 645 to 659.

10.3.2 <u>Advance Measurement Approach (AMA)</u>

While the AMA as an approach incorporates extensive and sophisticated data assembly and models, the Agency has permitted its use as an option. Consequently, banks planning to implement the AMA should refer to the measurement methodology relative to data and models and other minimum measurement standards described in the Basel document from Para 664 to Para 679.Further guidance in this area would be made available in due course by SAMA.

10.4. **Partial Use**

[680-683] The new Basel framework permits a Basic Indicator Approach, a Standardized Approach and an Advanced Management Approach (AMA). SAMA initially expects banks to move to the Basic Indicator or the Standardized Approach and thereafter to the more advanced AMA approach supervisor. However, the new Basel framework also permits banks to use an AMA for some parts of its operations and the Basic Indicator Approach or Standardized Approach for the balance ("partial use"), on both a transitional and permanent basis, subject to certain conditions.

These conditions include:

- All operational risks of the bank's global, consolidated operations are captured;
- All of the bank's operations that are covered by the AMA meet the qualitative criteria for using an AMA, while those parts of its operations that are using one of the simpler approaches meet the qualifying criteria for that approach;
- On implementation date, a significant part of the Banks operational risk should be captured by the AMA, and;
- The Bank must provide a timetable outlining how it intends to roll out the AMA across all but on immaterial part of its operations. A Bank may determine which parts of its operations would use an AMA based on a business line, legal entity, geographical or other internally determined basis.
(Refer para 680-683, International Convergence of Capital Measurement and Capital Standards – June 2006)

10.4.1 Basis for determining partial use

Banks generally tend to manage operational risk on a business line basis. The business line management approach lends itself to a business line approach for partial use purposes. However, there may be valid reasons, such as the cost associated with implementing an AMA relative to the materiality of the risk, to exclude a legal entity that engages in the banks business lines but represents only a small part of each business line. Therefore, SAMA proposes to permit domestic banks to determine partial use on a business line or legal entity basis, or a combination of the two. Any activity that is excluded from the AMA calculation could not be included in the determination of group-wide diversification benefits within the AMA. For simplicity and ease of implementation, SAMA does not propose to make available other bases for determining partial use.

10.4.2 Definition of "significance" and "material" for partial use purposes
The operational risk section of the new Basel framework does not define the terms significant and material. It is left to national supervisory authorities to define these terms for their Banks.

SAMA defines "significant" as that part of a bank on operations that represents 75 percent of the Banks operational risk and "material" as that part representing 90 percent. It is proposed that a Banks should have five years from its implementation of an AMA to reach the 90 percent threshold and that it should demonstrate progress in moving from 75 percent to 90 percent during that period. A banks operational risk and these thresholds would be measured in terms of the minimum regulatory capital calculated using the Standardized Approach. This would require an AMA Bank to continue calculating capital using the Standardized Approach for up to 5 years post-implementation. SAMA accepts this proposal as both a practical and reasonable approach to the definition of "significant" and "material" for this section of the new Basel framework.

10.4.3 Partial use for banks using the Standardized Approach

The new Basel framework permits the partial use of operational risk approaches only for banks implementing an AMA. However, the BCBS recognizes that there may be instances where a bank that chooses to adopt the Standardized Approach for its global, consolidated operations is required to implement an AMA for a branch operating in another jurisdiction. In these cases, a bank would be permitted to incorporate that AMA capital amount in its global consolidated capital calculation, with supervisory approval. SAMA proposes to make this flexibility available to its domestic banks, subject to any conditions laid out in the new Basel framework.

Apart from these instances, SAMA requires to permit a banks using the Standardized approach to use Basic Indicator Approach for parts of its operations on a transitional basis only, for a period not exceeding 3 years. SAMA would permit partial use only where the Bank can demonstrate that it is not being implemented for capital arbitrage purposes.

10.4.4 Available approaches for partial use

The new Basel framework allows a bank to adopt partial use between an AMA and the Standardized Approach or an AMA and the Basic Indicator Approach. However, SAMA proposes to permit a bank to choose either the Basic Indicator Approach or the Standardized Approach for a given part of the Bank not using the AMA, and would not restrict a Bank to only one of these approaches. This would be subject to the condition that the Bank is able to demonstrate that this partial use is not intended for capital arbitrage.

The new Basel framework does not specify whether the Alternative Standardized Approach can be used for partial use purposes. For greater clarity, SAMA does propose to allow banks operating in Saudi Arabia to use the Alternative Standardized Approach for any part of its operations in calculating its global, consolidated operational risk capital requirements.

10.4.5 **AMA specific issues**

10.4.6 Recognition of insurance

[677-679] Consistent with the new Basel framework, SAMA proposes to permit banks using an AMA to recognize the risk mitigating impacts of insurance against operational risk. This amount is limited to 20 percent of the total AMA operational risk capital charge. A bank should meet the conditions stated in the new Basel framework to be eligible to use insurance as a risk mitigant.

10.4.7 **Recognition of internally determined correlations**

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

(a) Any internal operational risk measurement system must be consistent with the scope of operational risk defined by the Committee in paragraph 644, International Convergence of Capital Measurement and Capital Standards – June 2006, and the loss event types defined in Annex 9, International Convergence of Capital Measurement and Capital Standards – June 2006

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

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

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

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

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

(Refer para 669, International Convergence of Capital Measurement and Capital Standards – June 2006)

10.4.8 **Other operational risk national discretion issues**

SAMA has provided guidance in this area.

NATIONAL DISCRETION ITEMS

OPERATIONAL RISK

Reference to Basel-II Document	Areas of National Discretion	SAMA's Position
652 (FN 97)	Op. Risk: allow a bank to use the ASA.	Yes
654 (FN 98)	Op. Risk: Treatment of negative gross income.	Yes
663 (FN 101)	Op. Risk: Impose criteria in Para 663 on non-internationally active banks using SA or ASA.	Yes
663 (C)	Reporting format and frequency of Op risk, OP losses, etc., as per banks judgment ensuring completeness and integrity	Yes
669 (b)	Op. Risk: Calculate regulatory capital requirement as the sum of EL and UL.	Yes
669 (d)	Op Risk: Use internally determined correlations across individual estimates.	Yes
673	Op. Risk: Appropriate de minimum gross loss threshold for internal loss data collection, for example 10,000 SR.	Yes
673	Op. Risk: Boundary Issue-definition of operational risk losses that have historically been included in the banks' credit databases and that will continue to be treated as credit.	Yes
661	Standardized Approach – Initial Monitoring period	Yes 2 years
673	Threshold for operational risk data collection – banks discretion	Yes
650	Intra group fees received from outsourcing be include or excluded	Yes
664	AMA - Model validation criteria – Refer to Paras 654 to 679.	Yes

11. Pillar 2

11.1 Supervisory Review Process

The underlying intent of the Supervisory Review Process in Pillar 2 of the new Basel Framework is to promote and support a more rigorous process in banks for determining the adequacy of the actual capital held and to make this process subject to a somewhat more focused supervisory review. Pillar 2 requires SAMA to satisfy itself as to the appropriateness of banks capital adequacy assessment processes and the adequacy of capital and to intervene, if appropriate, under the authority of the Banking Control Law. Where SAMA determine there are weaknesses in the banks' internal capital adequacy assessment processes and strategies, SAMA will require that they be remedied. SAMA will not necessarily require additional capital; however, increased capital might be used as a measure including other measures to improve the banks' position.

Pillar 1 defines the minimum capital requirements for Banks operating Saudi Arabia. Banks face risks not explicitly included under Pillar 1 and many banks' choose to operate at capital levels above those implied by Pillar 1 minimums. Pillar 2 thus expresses an expectation that all banks should operate above the Pillar 1 minimum.

11.2 Banks Internal Targets

Saudi banks are expected to conduct their own internal capital adequacy assessment process and establish their own internal target capital levels taking account of their risk profile and capital strategy. SAMA supervisory staff will assess whether such capital adequacy assessment processes and internal target capital levels are commensurate with the banks' risk profiles. There is no single correct approach to a capital adequacy assessment process; the expectation is that a bank conducts its assessment in a comprehensive, well thought out manner. An economic capital model is not required; however, it is one option available to help more complex banks' develop their judgment in support of their capital adequacy assessment process. Judgment continues to be important in this process and banks' are expected to ensure that its use is adequately recorded and documented. While the approaches may vary from bank to bank, it is expected that all material risks to the bank and its subsidiaries would be considered and that the approach would have integrity. SAMA anticipates initially that internal banks' practices, procedures and systems to establish an internal target would vary depending on the complexity and range of business. It is expected banks would use appropriate stress and scenario testing to determine for them the level of capital necessary to mitigate the risk. While a bank may employ an economic capital model to set its own internal target, SAMA does not expect to employ an explicit model approval process under Pillar 2.

The level of sophistication in internal assessments of target capital levels for *small* domestic banks should be commensurate with the more focused and less complex nature of their business. Many of these banks' will likely continue to be constrained by the assets-to-capital multiple. Therefore, their internal capital assessments may be materially simpler although they will need to demonstrate that they have analyzed the risks not covered by Pillar 1 and those risks are adequately covered by a reasonable cushion above the minimum.

A foreign banks' branch may be able to employ the methodology used by its parent bank. However, the foreign banks' branch would be responsible for explaining how the data and methodology have been modified to reflect its business strategy and the risks to which it is exposed in Saudi Arabia.

11.3 Substantial compliance with Pillar 2

SAMA expects all Saudi Banks to identify, quantify, manage and monitor the relevant risks not covered under Pillar 1. Banks are expected to have a view on the importance of these risks and related risk mitigants in the context of their businesses and their operations. Also banks should be prepared to allocate appropriate capital for these risks. SAMA will examine the processes in the banks to manage Pillar II risks, compare these with its own assessment and agree on a suitable level of capital to be held for such risks. These risks include but are not limited to the following;

- Interest Rate
- Commission Rate
- Liquidity
- Reputation
- Strategic
- Concentration
- Underwriting
- Settlements
- Macroeconomic
- External Shocks

SAMA expects all banks to attain a risk-based tier 1 capital ratio in excess of the international minimums of 4 percent and 8 percent respectively. For some banks, however, higher target levels will be appropriate from time to time. Upon initial implementation of the advanced approaches to credit and operational risk, SAMA expects system-wide target risk ratios to remain at the high level.

11.4 Assessment criteria for capital

The capital ratio itself is an important factor in the SAMA's assessment of capital, but it is not the only factor. Assessment criteria include, for example: the quality of capital; the adequacy of capital to support the bank business plans and risk profile; the ability to access capital at reasonable rates to meet projected needs; and the strength of the bank's capital management processes. Trends and the outlook regarding a company's capital and earnings are also relevant in assessing the adequacy of a company's current capital position. The various factors should all be considered in the context of the nature, scope, complexity and risk profile of the particular bank.

SAMA expects banks' capital processes to encompass all major Pillar 1 and Pillar 2 risks and related risk mitigants to estimate a target capital level or range. It is expected that all banks will take a view on the level of additional capital to be provided for Pillar 1 risks beyond the Basel II calculations. The banks are expected to demonstrate the adequacy of the process and the methodology to SAMA. SAMA will make an independent assessment to arrive at additional capital for each bank.

SAMA will also consider information from a bank's own internal assessments of risk or individual risks in its assessment of target capital levels; and evaluate how relevant and comprehensive a bank internal stress testing is, based on the nature of its risk taking activities. SAMA expects the rating criteria will not become a formula-driven process of add-ons. Expert judgment will continue to be necessary for operationalizing the assessment criteria and integrate those results into the overall assessment.

12. __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.

12.1 __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.

12.2 *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

12.3 **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 standardized 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 amortization credit conversion factor, thus, increasing the bank's capital requirements.

12.4 **Other aspects related to stress testing.**

12.4.1 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.

12.4.2 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.

12.4.3 As a minimum banks should carryout stress tests at least on an annual basis.

SAMA's Requirements of IRB Systems

Qualitative Aspects

Quantitative Aspects

Scope

- Coverage of asset classes
- Appropriate rating system design for the banks exposures
- Credible rating operations and process (including control mechanisms)
- Adequate corporate governance and audit
- Adequate use of internal ratings

I. Banks self-assessment (including Internal validation of PD/LGD/EAD estimates and statistical tests on discriminative power of its credit scoring models)

II. Banks Internal stress tests used in assessment of capital adequacy

III. Data quality
- Banks self-assessment
- Data maintenance
- Use of external data
- sample data checking
- Data storage process

IV. SAMA's validation for PD/LGD/EAD estimates

SAMA's methodologies

- Questionnaire for the banks self-assessment
- Checklist for on-site examination

A. SAMAs benchmarking models for identifying underestimated PD/LGD/EAD:
- Listed companies
- Private companies including SMEs
- Retail exposures:
   - Residential mortgage loans
   - Credit cards
   - Retail SMEs
   - Personal loans
- Bank and sovereign exposures
- Equities

B. Benchmarking among banks
- Comparing PD/LGD of same/similar exposures to identify "outlier" with "underestimated" PD/LGD measures

C. Back-testing
- Statistical tests

FIGURE - 1

SAMA's Validation of IRB Systems

SAMA's methodologies
- Questionnaire for the banks self- assessment.
- Checklist for on-site

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