HONG KONG MONETARY AUTHORITY
香 港 金 融 管 理 局

PROPOSALS FOR THE IMPLEMENTATION OF THE NEW BASEL CAPITAL ADEQUACY STANDARDS ("BASEL II") IN HONG KONG

AUGUST 2004

Proposals for the Implementation of the New Basel Capital Adequacy Standards (Basel II) in Hong Kong

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Section 1   Foreword

1.1   The Basel Committee on Banking Supervision ("Basel Committee"), the international standard-setter in the field of banking supervision, has recently finalised its revised framework on capital standards for banks (known variously as "Basel II' or "the New Capital Accord"). Getting to this stage has taken several years, as this new framework is extremely complicated, and there have had to be several rounds of painstaking consultation and continuous refinement of the framework to get it right.   But now the whole process moves into the implementation phase, with the world's top financial centres – Hong Kong included – aiming to get it put into place by the end of 2006. This might sound like plenty of time, but in fact it is not really much time given the very significant changes that will have to be made by the Hong Kong Monetary Authority (HKMA) and by banks themselves. Changes will also be required to the banking legislation, necessitating a Banking Amendment Ordinance: we recently briefed the LegCo Panel on Financial Affairs on this.

1.2   There are a number of reasons why implementation of Basel II is advantageous in terms of banking stability.

1.3   First, Basel II has a number of features that will help promote the safety and stability of the banking sector. Capital requirements for credit risk will be more "risk-sensitive", meaning that banks will be required to hold less capital against lending that is low-risk, and more against lending that is high risk. Furthermore, banks will, for the first time, be required to hold capital against "operational risk", the risk of loss from inadequate or failed internal processes, people and systems or from external events. And under the second of Basel II's three "pillars" banks will be required to assess the full range of "other risks" they run and determine how much capital to hold against them. Taking all these things together, capital requirements will be more

closely tailored to covering the particular risks each bank runs, which is important for banking stability reasons.

1.4   Secondly, a key feature of Basel II is to provide incentives to banks to adopt the latest advances in the field of risk management. Banks which adopt best practices in the management of risk will be "rewarded" with lower capital requirements. The extent to which each bank does this will be a matter for the bank itself to determine. Hence, banks will have more flexibility – and more responsibility – for ensuring their risk management is adequate, although they will not be left entirely to their own devices – the HKMA will still be looking over their shoulder to check on what they are doing.

1.5   Thirdly, Basel II will involve banks making greater public disclosure about their business. This is important as market discipline has a key role to play in reinforcing appropriate behaviour by market participants.

1.6   It is to be hoped, moreover, that by adopting more finely-tuned credit assessment processes, banks will be able to "risk-price" their lending better, meaning that better quality customers should be able to borrow at better rates. Improved credit assessment processes should also make banks better-placed to assess the risk on lending to borrowers such as SMEs, thereby opening up the possibility of greater access to finance for such companies. And more sophisticated risk management should enable banks to offer their customers, and use internally, more sophisticated products such as derivatives. The result of all these should be a financial system which is more efficient, and which facilitates effectively the financing of growth of the economy.

1.7   A lot of work has gone into developing the proposals set out in this paper, and they have already benefited from valuable advice from many quarters, including principally the banking industry. But there remains a lot of work to be done. We will continue to work closely with the banking industry, in full consultation with LegCo and the public in

general, to ensure that the benefits to Hong Kong are maximised – and at the minimum cost.   We of course greatly welcome any comments on these proposals.

Joseph Yam
Chief Executive, Hong Kong Monetary Authority

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Section 2   Application of the New Capital Requirements

Section 2.1   **Implementation Approach**

Purpose

2.1.1   This section outlines the current policy intentions of the HKMA in respect of the timetable and the choice of approaches available to authorised institutions (AIs)[1] for implementing Basel II in Hong Kong.

Implementation Timetable

2.1.2   In releasing the finalised Basel II on 26 June, the Basel Committee announced that the revised capital framework would generally be available for implementation in its member jurisdictions as of year-end 2006. However, to allow time for further impact analysis or parallel capital calculations under the existing and new rules, the Committee considers it necessary to defer implementation of the most advanced approaches (i.e. the Advanced IRB Approach for credit risk and the Advanced Measurement Approaches for operational risk) to year-end 2007.

2.1.3   In line with its policy of adhering closely to international best practices and standards, the HKMA will implement the requirements of Basel II in Hong Kong following the Basel timetable, i.e. implementing the simpler approaches at end-2006 and the most advanced approaches by end-2007 (see following paragraphs under "Choices of Approaches"). The revised capital regime based on Basel II will apply to all AIs. The HKMA aims to put in place the legal and regulatory framework for implementing Basel II in Hong Kong within 2006.

Choices of Approaches

2.1.4   As a general principle, the HKMA will not require or mandate any
particular AI or group of AIs to adopt any particular approach. AIs are
expected to choose which of the approaches they will adopt based on
their own detailed feasibility study and thorough analysis of costs and
benefits.   For the more advanced approaches such as the IRB
Approaches, as AIs will have more room to do their own estimation on
risk measures (e.g. probability of default), they will be required to meet
more stringent qualifying criteria and standards before they are
allowed to use the approaches (see Section 5).

2.1.5   Irrespective of the approach used, the HKMA expects every AI to
study carefully the more advanced risk management concepts and
practices embodied in Basel II and to consider adopting those relevant
to their operation for risk management purposes, even though they
may not use them for capital purposes. In particular, AIs starting on
the Standardised Approach may find the development of an IRB-like
internal rating system advantageous not only for credit risk
management purposes, but also for streamlining their migration to the
IRB Approach at a suitable time in future. In this respect, paragraphs
387 to 537 of the Basel II document will be a useful guide.

2.1.6   Considering the benefits of Basel II over the existing capital regime,
the HKMA is keen to ensure that the approaches it makes available
will accommodate all AIs, taking into account their risk profile, size and
complexity of operations, and the need for those intending to adopt the
IRB Approach to concentrate resources on system changes and data
validation process. To this end, the HKMA proposes that in addition to
the Standardised Approach and the IRB Approach, there will be a
"Basic Approach" for credit risk under the revised capital framework of
Hong Kong based on Basel II. The Basic Approach builds on the

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[1] For the purpose of this consultation document, the term refers to authorized institutions
incorporated in Hong Kong.

existing OECD framework for calculating capital charge for credit risk and is the simplest version of the revised capital regime. The Approach is intended for AIs where it is, in the opinion of the HKMA, not justifiable for them to adopt the more advanced approaches, as well as AIs that have a definite plan and are approved by the HKMA to adopt or transition to the IRB Approach by no later than end-2009. In the former case, only AIs with small, simple and straight-forward operations will be eligible. Section 2.2 explains in detail about the Basic Approach together with the eligibility criteria for using it.

2.1.7 For operational risk, the HKMA will only offer the two simpler approaches, viz., the Basic Indicator Approach (BIA) and the Standardised Approach (SA)[2] initially for AIs to choose in calculating their relevant capital charge. As the Advanced Measurement Approaches (AMA) are still evolving in terms of techniques for quantitative capital measurement, and AIs do not generally have the systems to accumulate operational loss data required for the Approaches, the HKMA considers that the time is not yet ripe to introduce the AMA in Hong Kong. Section 6 explains in further detail the HKMA's proposed implementation approach in respect of the operational risk.

2.1.8 The Pillar Two and Pillar Three standards, where relevant, will be applied to all AIs. These are explained in Sections 9 and 10.

New Capital Adequacy Return

2.1.9 A new Capital Adequacy Return will be introduced in due course for the reporting of the minimum capital requirements of AIs, and the first reporting date for the return will fall on 31 March 2007. The Return will comprise different parts to accommodate AIs using different approaches. There will be a parallel run for approved users of the IRB

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[2] This includes the Alternative Standardised Approach (ASA).

Approaches and the Standardised Approach users in respect of return reporting for credit risk capital requirement:

- Foundation IRB users will be required to provide parallel calculations of credit risk capital requirement based on the existing capital regime under Third Schedule and the Foundation IRB Approach in the year 2006, covering the reporting dates of 31 March, 30 June, 30 September and 31 December.

- Advanced IRB users will be required to start using the new return based on the Basic Approach starting 31 March 2007, and to provide parallel calculations of credit risk capital requirement based on the Basic Approach and the Advanced IRB Approach in the year 2007, covering the reporting dates of 31 March, 30 June, 30 September and 31 December.

- Standardised Approach users will be required to provide parallel calculations of credit risk capital requirement based on the existing capital regime under Third Schedule and the Standardised Approach in 2006 only for the positions as of 30 September and 31 December.

- Basic Approach users will be required to start using the new return based on the Basic Approach starting from the reporting date of 31 March 2007.

Section 2.2   The Basic Approach

Purpose

2.2.1   This section sets out the proposed criteria for allowing AIs to adopt a very simplified approach (i.e. the "Basic Approach") as an option other than the Standardised Approach and the IRB Approach for calculating credit risk capital requirements under the revised capital regime for Basel II in Hong Kong.

The need for a Basic Approach

2.2.2   In July 2003, the HKMA consulted The Hong Kong Association of Banks (HKAB) and The DTC Association (DTCA) on its proposals for implementing Basel II in Hong Kong, based on the third consultative paper issued by the Basel Committee. Among other comments, both industry associations requested flexibility in applying Basel II to their member institutions. Concerned about the costs and complexity of implementation of Basel II, the DTCA considered that apart from those members of larger banking groups, restricted licence banks (RLBs) and deposit-taking companies (DTCs) should have the option of participating or not. In order to minimise costs and resources, HKAB proposed that banks having a definite plan to adopt the IRB Approach for credit risk after 2007 be allowed to stay on the existing capital regime before moving straight on to these more advanced approaches when ready.

2.2.3   The HKMA considers that Basel II should apply to all AIs according to the Basel timetable. However, in response to the feedback mentioned above, it intends to allow certain AIs to adopt a simplified approach for credit risk under Pillar 1 (referred to as the "Basic Approach" hereafter) after end-2006, either permanently (e.g. for smaller AIs), or temporarily

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(e.g. for would-be IRB users). The Basic Approach basically constitutes a credit risk capital requirement calculated in accordance with the existing OECD-based framework, probably with some slight definitional adjustments to capital base and risk weighted exposures. AIs allowed to adopt the Basic Approach for credit risk will also be required to calculate a market risk capital charge based on the existing capital framework for market risk (i.e. unless exempted under the de minimis criteria), and an operational risk capital charge based on the BIA under Basel II. Pillars 2 and 3 of Basel II will also apply.

Proposed criteria

2.2.4   Where AIs can satisfy the following criteria and have the prior approval of the Monetary Authority (MA), they may use the Basic Approach in calculating their capital requirement for credit risk under the revised capital regime after end-2006:

(i)   AIs with a total asset size of not more than HK$10 bn (based on their year-end balance sheet and subject to MA's review annually) and with relatively simple and straight-forward operations (likewise subject to MA's on-going review);

(ii)   AIs that will adopt Advanced IRB Approach from 1 January 2008; or

(iii)   Other would-be IRB users able to satisfy the criteria for transition to IRB by not later than end-2009 and their subsidiary AIs.

2.2.5   In the case of 2.2.4 (ii) above, the AIs concerned will be allowed to stay on the Basic Approach for the year of 2007. In the case of 2.2.4 (iii), the AIs concerned will be allowed to stay on the Basic Approach for their non-IRB exposures during the transition period. All of their

non-IRB exposures at the end of the transition period must however migrate to the Standardised Approach.

2.2.6   Other AIs which are above HK$10 bn in total assets and their subsidiary AIs will be required to adopt the Standardised Approach. Exemption for these AIs will generally not be permitted except in exceptional circumstances (such as an impending revocation) which render the adoption of the Standardised Approach unjustifiable.

Impact analysis

2.2.7   Based on statistical figures from the banking returns, the size criterion will give nearly all RLBs and DTCs the flexibility to apply to the MA for using the Basic Approach. There are only a few RLBs above the line, but all of them are expected to follow their parent banks in adopting the more advanced approaches of the capital adequacy regime. There are also a few licensed banks that are below the line. However, the HKMA is given to understand on the basis of an earlier survey that they intend to adopt the Standardised Approach. Furthermore, a rough analysis on the impact of operational risk capital charge on the RLBs and DTCs based on banking return figures reveals that all of them are able to withstand an additional charge based on BIA (i.e. none of their adjusted CARs is below trigger). Overall, the Basic Approach requirements are not expected to cause significant system implications to or capital impact on AIs using the Approach.

Options under Pillar 1

2.2.8   Incorporating the proposed Basic Approach mentioned above, there will be three Pillar 1 options available to AIs for calculating minimum capital requirement when Basel II is implemented at end-December 2006:

(i) Default Option: The option requires AIs to calculate capital requirement for credit risk based on the Standardised Approach, unless they are approved by the MA to adopt either one of the other two options.

(ii) IRB Option: This option allows AIs, with MA's prior approval, to adopt or transition within a period of 3 years from end-2006 to the Foundation IRB Approach or to adopt the Advanced IRB from 1 January 2008. Section 5.1 sets out the relevant criteria that the MA will take into account when considering applications from AIs for the use of the IRB Approach.

(iii) Basic Option: The option allows AIs approved by the MA based on criteria described in the following paragraphs to adopt the Basic Approach for credit risk.

2.2.9 An illustration of the proposed capital regime for implementing Pillar 1 of Basel II in Hong Kong showing is given at Annex 2 – I.

Illustration of the Proposed Capital Regime for Pillar 1 in Hong Kong

Basic Option	**Default Option**	**IRB Option**
Basic Approach[1]	Standardised Approach	Foundation IRB (F-IRB) Approach[2] / Advanced IRB (A-IRB) Approach[3]

Approval Criteria ... *Approval Criteria*

Basic Option

Target users:

- DTC subsidiaries of non-banks

- RLB/DTC subsidiaries of foreign banks which are not required by their home supervisors to adopt the New Accord in 2007

- Smaller AIs (total assets < HK$10 bn) approved by the MA to use the Basic Approach

- AIs to be revoked within, say, one year

Default Option

Target users:

- All AIs which have no definite plan to adopt F-IRB before end-2009 or to adopt the A-IRB at Jan 2008 (except those approved by the MA to use the Basic Approach - see target users under the Basic Option)

IRB Option

Target users:

- AIs with a definite plan to phased-rollout onto IRB (by phase or in one go) before end-2009, including those which are subsidiaries of foreign banks

- AIs with a definite plan to adopt A-IRB from Jan 2008, including those which are subsidiaries of foreign banks

Notes:

(1) The Basic Approach requires AIs to calculate their minimum capital requirement for credit risk based on the existing OECD framework for credit risk (probably with some slight definitional adjustments to capital base and risk weighted exposures). These AIs will however also need to calculate a market risk capital charge based on the existing capital framework for market risk (unless exempted under the de minimis criteria), and an operational risk capital charge based on the Basic Indicator Approach ("BIA") under Basel II.

(2) F-IRB users, during transition period from end-2006 to end-2009, will be allowed to use either the Standardised Approach or the Basic Approach, or possibly a combination of both, in respect of their remaining non-IRB exposures. Any exposures exempt from IRB Approach which remain on the Basic Approach at the end of the transition period must migrate to the Standardised Approach at that time.

(3) A-IRB users will be allowed to use either the Standardised Approach or the Basic Approach, or possibly a combination of both, in the year 2007 and move straight to A-IRB from Jan 2008. Any exposures exempt from IRB Approach which remain on the Basic Approach at the end of 2009 must migrate to the Standardised Approach at that time

Section 2.3   The Application and Approval Process

Purpose

2.3.1   The proposed capital regime under Basel II described in Section 2.2 requires that MA's prior approval is necessary for AIs intending to adopt either the Basic Option or the IRB Option. For AIs intending to adopt the Standardised Option, no prior approval from the MA is required.   The following sets out the HKMA's proposals on the approval process in respect of the Basic Option and the IRB Option.

Basic Approach

2.3.2   AIs intending to use the Basic Approach from 1 January 2007 (other than the would-be IRB users making use of the Approach for transition purposes) are required to apply to the HKMA on or before 31 December 2004 for approval. Applications should be in writing and addressed to the Division Head of the Banking Supervision Department responsible for their supervision.

2.3.3   As mentioned in Section 2.2 of this paper, the HKMA will assess individual applications from AIs generally based on the size and/or complexity of their operations, or other exceptional circumstances (e.g. impending revocation) which will likewise render the adoption of more advanced approaches unjustifiable. In the latter case, the applications should be supported by full details of the nature of the exceptional circumstances warranting the use of the Approach. In assessing the applications, the HKMA will have regard to the statistical and other information gathered through its on-going supervision of the applicant AIs.

2.3.4   Though the approval is a one-off process, the HKMA will continue to monitor the operations of the approved AIs to ensure that the approval criteria are met by them on an on-going basis. The MA reserves the right to revoke its former approval in cases where, in his opinion, the approval criteria are no longer met. These include situations where the size and complexity of operations have increased substantially such that the Basic Approach no longer provides an adequate measure for the required regulatory capital.

2.3.5   AIs may write in to notify the HKMA and, where necessary, seek the approval of the MA when they intend to adopt the more advanced approaches any time afterwards. In general, the HKMA will then require AIs to perform parallel calculations of the Basic Approach and the more advanced Approach it intends to use for certain reporting periods in order to understand the potential capital impact of the migration. For those intending to migrate to the IRB Approach, they should refer to Section 5.1 and discuss such plan with the HKMA as early as possible.

IRB Approaches

2.3.6   AIs intending to use either the Foundation IRB Approach from 1 January 2007 or the Advanced IRB Approach from 1 January 2008 should discuss their plans with the HKMA as soon as possible, and inform the HKMA of such plans in writing no later than 31 December 2004. This will be followed by bilateral meetings whereby the HKMA will discuss with AIs in detail their implementation plans and state of readiness for adopting the relevant IRB Approach. Going forward, the HKMA will conduct on-site validation on AIs' internal rating systems and the corresponding risk estimates starting some time in 2005. After the validation process, the HKMA will give approval to AIs assessed to be ready for adopting the IRB Approaches before the implementation date of the approach.

2.3.7　In addition, the HKMA will provide the industry with more details regarding the application and approval / examination procedures for use of the IRB Approaches later in the year. Please refer to Section 5.1 for the HKMA's proposals on qualifying criteria for adoption of the IRB Approach.

Section 3   Scope of Application

Section 3.1   Consolidation Requirements

Introduction

3.1.1   Basel II generally requires all banks and their non-insurance financial subsidiaries to be consolidated for the purpose of capital adequacy to eliminate double gearing.   Where this is not done, the framework requires deductions of unconsolidated subsidiaries as well as all other significant investments from the capital base. This section sets out the HKMA's proposed policies on the consolidation requirements applicable to AIs and BHCs for the purpose of calculating CARs under the revised capital adequacy regime.

Existing consolidation arrangements

3.1.2   Under the existing capital adequacy regime in Hong Kong, locally incorporated AIs are required to observe the CAR requirements stipulated in section 98(1) of the BO. The MA may, under section 98(2) of the BO, require a locally incorporated AI with one or more subsidiaries to calculate its CAR on a consolidated basis instead of on an unconsolidated (i.e. solo) basis, or on both a consolidated and an unconsolidated basis. Under section 98(2A), the MA may specify, in written notice, which subsidiaries of the AI are to be included in the consolidation. In practice, the MA may also allow an AI to calculate its CAR on a solo consolidated basis, under which the AI may be permitted to consolidate certain subsidiaries, instead of deducting its investment in such subsidiaries when calculating its solo capital base. The relevant guideline for the application of the solo-consolidation treatment is set out in CR-L-1 of the Supervisory Policy Manual.

3.1.3 Notwithstanding the MA's power under the BO to specify any subsidiaries of an AI to be included in calculating the AI's consolidated CAR, it has been the HKMA's general policy to require only banking and financial subsidiaries of AIs be consolidated, and investments in unconsolidated subsidiaries and other entities to be deducted from capital base for capital adequacy purpose.

Proposed consolidation requirements

3.1.4 Under the revised capital adequacy framework based on Basel II, the statutory capital adequacy ratio requirement will be applied, on a consolidated basis, to each locally incorporated AI up to the level of its controllers who have been designated by the HKMA as BHCs (please refer to section 3.2 for discussions on BHCs). Each AI should also observe the new capital adequacy requirements on a solo basis. This means each AI should observe the new capital requirements on both a solo and consolidated basis whereas BHCs will only be required to calculate CAR on a consolidated basis. As an illustration, if a BHC designated by the HKMA owns a locally incorporated bank which in turn owns a restricted license bank (RLB) subsidiary, and both the bank and the RLB have other subsidiaries, the BHC will be subject to a consolidated CAR whereas the bank and RLB will both need to report their CARs on a solo and consolidated basis.

3.1.5 As regards subsidiaries to be consolidated, the HKMA intends to maintain the existing arrangements, i.e. to require banking and other financial subsidiaries of AIs and BHCs to be included in calculating consolidated CARs. Financial subsidiaries including securities and insurance subsidiaries which are subject to different regulations will continue to be excluded from consolidation.

3.1.6 As with the current capital adequacy regime, AIs may be permitted to consolidate certain subsidiaries when calculating their solo capital

adequacy ratio. The HKMA will discuss with AIs and BHCs which intend to adopt a solo consolidation arrangement their eligibility to do so and the subsidiaries to be included for solo consolidation.

Treatment of unconsolidated exposures

3.1.7 Investments in unconsolidated subsidiaries and other significant minority investments will generally be deducted from capital base. Please refer to section 3.3 for more detailed discussion on exposures to be deducted from capital base for capital adequacy purposes.

3.1.8 Minority interests may arise from the consolidation of less than wholly owned subsidiaries. Under our current capital adequacy regime, minority interests arising from consolidation are included in the capital base for capital adequacy purposes. However, Basel II provides that supervisors should assess the appropriateness of recognising in consolidated capital such minority interests and adjust the amount that may be included in capital in the event that capital from such minority interests is not readily available to other group entities. It is intended that the proposed Capital Rules will provide an explanation of factors to be taken into account by the HKMA in recognising minority interests in consolidated capital.

Section 3.2   Definition of BHC

Introduction

3.2.1   Basel II provides that its application should be extended to include, on a fully consolidated basis, any holding company that is the parent entity within a banking group to ensure that the risk of the whole banking group is captured. Banking groups are defined as groups that engage predominantly in banking activities.

3.2.2   Given the fact that the current capital regime in Hong Kong under the Banking Ordinance (BO) only extends to authorised institutions incorporated in Hong Kong but not to their holding companies, i.e. bank holding companies (BHCs), there is a need to amend the BO to provide for a capital framework for BHCs. To this end, this section sets out the scope of a proposed new part of the BO to provide for the definition of a BHC as well as the imposition and policing of relevant capital requirements on BHCs.

Definition of BHCs

3.2.3   Under the proposed new part of the BO, the MA will be empowered to designate the most proximate "lowest level" common controller (as defined in the BO) of all locally incorporated AIs in a group to be a BHC by reference to criteria listed in the Capital Rules to be issued by the HKMA (please refer to Section 11.1 for details of the proposed rule-making power of the MA), which include but are not limited to the following:

(i)   such controller is a body corporate;

(ii)   in the opinion of the MA, the business of such controller, together with its subsidiaries, comprise wholly or mainly "financial activities" set out in the Capital Rules (please refer to Annex 3 – I for a tentatively proposed list of "financial activities");

(iii)   such controller is not itself a locally incorporated AI;

(iv)   such controller is not, in the opinion of the MA, subject to adequate supervision by overseas banking supervisors; and

(v)   any locally incorporated AI is not the controller of all other locally incorporated AIs within the group.

3.2.4   If the most proximate "lowest level" common controller does not meet the criteria in (i) to (iv) above, the MA may designate any other controller or controllers of the AIs within the corporate group as BHCs if they meet these criteria. If the criterion in (v) is not met and an AI is the controller of all other AIs in the group, there will be no designation of a BHC and the capital adequacy regime for AIs, rather than that applicable to BHCs, will apply. Please refer to Annex 3 – II for an illustration of the identification process of BHCs.

3.2.5   It should be noted that it is not the intention of the HKMA to impose the capital requirement on all controllers of local AIs. Instead, the HKMA will discuss with individual AIs on the need to designate any of its controller or controllers to be a BHC. It is expected that the number of controllers which would be designated as BHCs would likely be very limited.

Imposition and Policing of Capital Requirements on BHCs

3.2.6   The proposed new part of the BO would also provide for the imposition and policing of minimum CAR requirements in respect of BHCs. The main areas to be covered by this new part include the following:

Capital adequacy ratios for BHCs

3.2.6.1   Since the revised capital regime will be extended to cover BHCs, the BO will provide, as is provided under section 98 for AIs, that a BHC shall not, at any time, have a CAR of less than 8 percent calculated on a consolidated basis in accordance with the provisions of the Capital Rules and that the MA will be able to require the CAR to be calculated on a consolidated basis only in respect of such subsidiaries of the BHC as he may specify.

3.2.6.2   Similarly, other provisions under sections 99, 100 and 101 applicable to AIs in Part XVII of the BO will also apply to BHCs (except that the cap for the minimum CAR applicable to a BHC would be fixed at 16 percent) and the FS may by notice in the Gazette, vary the 8% minimum CAR as well as the cap for the minimum CAR.

Appointment of Chief Executives and notification of appointment of and identities of directors of BHCs

3.2.6.3   To ensure effective enforcement of capital requirements in respect of BHCs, particularly the regular submission of relevant banking returns, the proposed new part of the BO will require all BHCs to appoint a Chief Executive (CE) who is an individual and notify the MA in writing of the identity and correspondence address of their CE and all of their directors to ensure effective enforcement of capital requirements for

the BHC. In case the CE of a BHC is unable to perform his function, an alternate CE shall be appointed. Contravention of this provision will render every director of the BHCs subject to penalty similar to contravention of section 74 of the BO by AIs.

3.2.6.4 BHCs shall ensure that their CEs attend, not less than once in each 12-month period, annual prudential meetings with the MA to discuss the BHC's CAR and financial condition.

Disclosure of information by BHCs for Pillar 1 and 2 purpose

3.2.6.5 For the purpose of monitoring a BHC's compliance with capital requirements under Pillar 1 and to conduct supervisory review of capital adequacy of the whole banking group effectively under Pillar 2 of Basel II, all BHCs will be required to satisfy the MA as to their financial condition by submitting returns to the MA from time to time. Failure to comply with such requirement will render every CE or director of a BHC subject to penalty similar to contravention of section 63(2) of the BO by AIs. Further, any persons signing any documents in connection with the submission of the required information, which they know or reasonably ought to know is false in a material particular, will commit an offence and be liable to similar penalty applicable to AIs under section 63(7).

Disclosure of information by BHCs for Pillar 3 purpose

3.2.6.6 A new section mirroring section 60A of the BO will be proposed to require publication and disclosure of information by BHCs. The section will enable the MA, in the Disclosure Rules, to require every BHC to publish or disclose information relating to their state of affairs, profit or loss, risk exposures and capital adequacy in such manner and at such

times as the MA may require. Every CE and every director of a BHC which contravenes the disclosure/publication requirements shall be liable to penalty similar to contravention of section 60A of the BO by AIs.

BHCs to provide the MA their addresses in Hong Kong

3.2.6.7   For the purpose of service of process, including service in respect of any prosecution under the BO, every BHC shall be required to provide to the MA an address in Hong Kong.

List of "Financial Activities"

i)   Ancillary banking services (including an undertaking the principal activity of which consists in owning and managing property, managing data processing services, or any other similar activity which is ancillary to the principal activity of an AI).

ii)   Lending (including, inter alia, consumer credit, mortgage credit, factoring with or without recourse, financing of commercial transactions (including forfaiting)).

iii)   Financial leasing.

iv)   Money transmission services.

v)   Issuing and administering means of payment (e.g. credit cards, travellers' cheques and bank drafts).

vi)   Guarantees and commitments.

vii)   Trading for own account or accounts of customers in:

- money market instruments (cheques, bills, CDs, etc.)
- foreign exchange;
- financial futures and options (excluding equity related);
- exchange and interest rate instruments; and
- marketable debt securities

viii)   Participation in securities issues and the provision of services relating to such issues.

ix)   Advice to undertakings on capital structure, industrial strategy and related questions and advice and services relating to mergers and the purchase of undertakings.

x)   Money broking.

xi)   Portfolio management and advice.

Annex 3 - II

BHC Identification Process
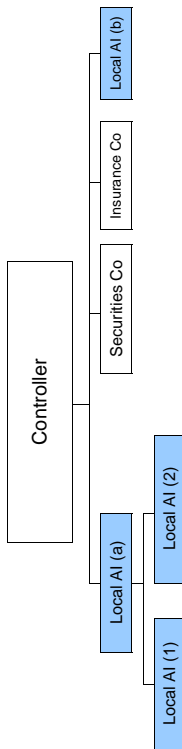
Scenario 1

The "Controller" is the most proximate "lowest level" common controller of a group of related AIs (i.e. Local AIs (a), (b), (1) and (2)). It will be regarded as a BHC if it fulfils the five criteria listed in para. 3.2.3. If it does not qualify as a BHC, the CAR requirement will be applied to Local AIs (a), (b), (1) and (2) respectively through s.98 of the BO.

Scenario 2

The "Controller" is the most proximate "lowest level" common controller of a group of related AIs (i.e. Local AIs (a), (1) and (2)). However, it does not qualify as a BHC under para. 3.2.3 (v) as "Local AI (a)" is "the controller of all the other locally incorporated AIs within the group". The CAR requirement will therefore only be applied to Local AIs (a), (1) and (2) through s.98 of the BO.
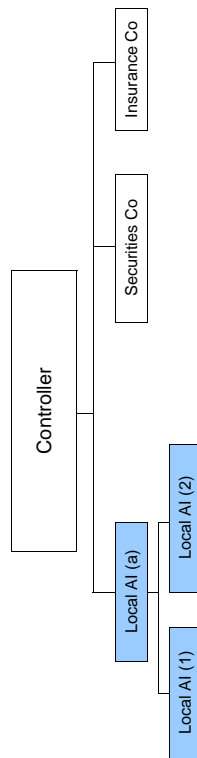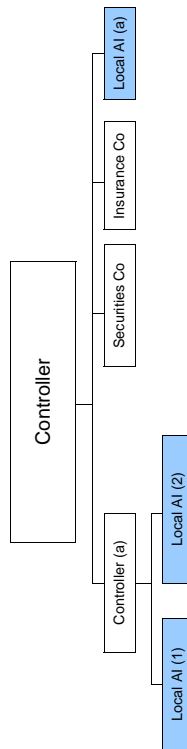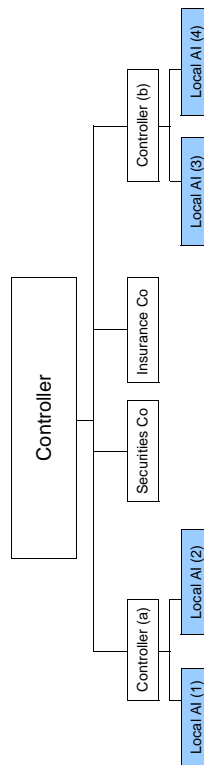
Scenario 3

The "Controller" is the most proximate "lowest level" common controller of a group of related AIs (i.e. Local AIs (a), (1), and (2)). It will be regarded as a BHC if the five criteria listed in para. 3.2.3 are fulfilled. If the "Controller" does not meet the criteria for a BHC, the HKMA may designate any other controller or controllers of the AIs within the corporate group as a BHC, provided that such controller meets the criteria listed in para. 3.2.3. In this scenario, "Controller (a)" (being the controller of Local AIs (1) and (2)) may be designated as BHC if the criteria listed in para. 3.2.3 are met. "Local AI (a)" will be subject to the CAR requirement on its own under s.98 of the BO.

Scenario 4

The "Controller" is the most proximate "lowest level" of common controller of a group of related AIs (i.e. Local AIs (1), (2), (3) and (4)). It will be regarded as a BHC if the five criteria listed in para. 3.2.3 are fulfilled. If the "Controller" does not meet the criteria for a BHC, the HKMA may designate any other controller or controllers of the AIs within the corporate group as a BHC, provided that such controller meets the criteria listed in para. 3.2.3. In this scenario, "Controller (a)" (being the controller of Local AIs (1) and (2)) and "Controller (b)" (being the controller of Local AIs (3) and (4)) may be designated as BHCs if the criteria listed in para. 3.2.3 are met.

Group Organisational Structures

Scenario 1

Scenario 2

Scenario 3

Scenario 4

Note: For the purpose of this Annex, the word "local" has the same meaning as "locally incorporated".

Section 3.3   Exposures to be Deducted from Capital Base

Introduction

3.3.1   This section sets out the HKMA's proposals in respect of deductions to be made to the capital base for the purpose of calculating CAR under the revised capital adequacy regime. While these proposals depict a general outline of the proposed deduction framework, AIs should be aware that there would be other deductions from and adjustments to capital base, in particular those arising from the adoption of different approaches for the purpose of calculating CAR under Basel II. The HKMA will issue more detailed rules and guidelines on these issues as the new capital adequacy regime for Hong Kong takes shape.

Proposed framework for deductions from capital base

3.3.2   In Hong Kong, the existing capital adequacy regime generally requires that AIs' investments in banking and financial subsidiaries should be consolidated, and that capital-like investments in any unconsolidated subsidiary, holding company, connected company and associated company should be deducted from capital base. Holdings of other banks' capital are also deducted unless the AI is able to satisfy the MA that such holding is not the subject of a cross-holding or arrangement in which two or more banks agree to hold each other's capital instruments, or is not otherwise a strategic investment. We believe that the present requirements for deduction (as set out under para. 3.3.5 (a), (b), (c) and (e) below) should be retained in the revised framework.

3.3.3   Basel II generally requires, among other exposures of a bank holding company or a bank, all non-insurance financial subsidiaries to be consolidated and all other significant equity investments to be deducted from capital. National supervisors may however require

banks to deconsolidate subsidiaries which are subject to different regulation providing sufficient information is obtained from the relevant local regulators to ensure that each of these deconsolidated subsidiaries meets regulatory capital requirements. In this context, the HKMA intends to retain the existing treatment that financial subsidiaries which are subject to different regulations (such as insurance and securities subsidiaries) should be deconsolidated. It also intends to follow the Basel II requirement that where any deconsolidated securities or insurance subsidiary of an AI or a BHC fails to meet its respective regulatory capital requirements, the amount of deficiency in capital of the subsidiary for the purpose of meeting its own minimum capital requirement shall be deducted from the capital base of the AI or BHC should the subsidiary fail to correct such deficiency in a timely manner. The HKMA will issue more detailed rules and guidelines on how these requirements shall be applied and on issues relating to supervisory co-ordination with relevant regulators.

3.3.4 Under Basel II, significant investments in commercial entities are also required to be deducted from capital if they are "material". The HKMA intends to follow the minimum materiality levels proposed by the Basel Committee for determining investments that require deduction, viz., 15% of the AI's capital for individual significant investment, and 60% for the aggregate of such investments.

3.3.5 In sum, taking into account our present framework in respect of treatment of investments in subsidiaries and significant investments, the HKMA's intention is to require the following items to be deducted from an AI's capital base for the purpose of its CAR calculation:

(a)   *Shareholdings in holding companies*

         Holdings of shares in any company which is a holding company of the AI or BHC.

(b)   ***Investments in subsidiaries and significant investments in non-subsidiary companies***

Shareholdings in, and holdings of other regulatory capital instruments[3] issued by any company which is a subsidiary of the AI or BHC or in which the AI or BHC is entitled to exercise, or control the exercise of, more than 20% of the voting power at general meeting of the company.

(c)   ***Investments in other banks***

Shares, stocks, or debt securities issued by any bank, unless the HKMA is satisfied that such holding is not the subject of an arrangement in which 2 or more persons agree to hold each other's capital or is not otherwise a strategic investment.

(d)   ***Other significant investments in shares***

In determining significant investments that require deduction (other than those mentioned in (a), (b) and (c) above), the HKMA proposes to apply the minimum materiality levels proposed by Basel II, i.e. 15% of the AI's or BHC's capital for individual significant investments and 60% of the AI's or BHC's capital for the aggregate of such investments. The amount to be deducted will be that portion of the investment that exceeds the materiality level.

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[3] "Other regulatory capital instrument" refers to:
  i) If the company is a locally incorporated AI, any subordinated debt issued by the company which is eligible for inclusion in supplementary capital under the Capital Rule; and
  ii) If the company is not a locally incorporated AI but subject to capital requirements imposed by other financial regulators, any capital instrument issued by the company which, in the opinion of the HKMA, is of similar nature of subordinated debt as mentioned under i).

(e) Exposures to connected companies

It is proposed that the existing framework be retained, which requires deduction of exposures[4] to connected companies[5] (other than those included under subparagraph (a), (b), (c) or (d) above) where, in the opinion of the HKMA, such exposures are incurred other than in the ordinary course of business.

3.3.6 Please refer to <u>Annex 3 - III</u> for a summary of the above-proposed framework for deduction from capital base.

Deduction of investments pursuant to the proposed deduction framework

3.3.7 As provided for under the Basel II and existing capital adequacy regime in Hong Kong, goodwill relating to entities subject to a deduction approach as mentioned above as well as goodwill relating to consolidated subsidiaries should be deducted from Tier 1 Capital.

3.3.8 For other investment items to be deducted from an AI or a BHC's capital, Basel II requires that 50% should be deducted from Tier 1 Capital and 50% from Tier 2 Capital. This is different from the requirement of the 1988 Capital Accord and the existing capital adequacy regime in Hong Kong where all non-consolidated investments (other than goodwill) are deducted from the aggregate of Tier 1 Capital and Tier 2 Capital. The HKMA proposes to follow this deduction principle of Basel II in its revised capital adequacy framework.

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[4] "Exposures" includes loans to; shares and debentures issued by; and guarantees of the liabilities of connected companies.

[5] A company shall be treated as a "connected company" of the AI or BHC if it is a subsidiary or the holding company of the AI or BHC, or falls within the definition under section 64(1)(b), (c), (d) or (e) of the Banking Ordinance.

3.3.9   The existing limits on Tier 2 Capital and on innovative Tier 1 Capital (up to 100% and 15% of Tier 1 Capital respectively) shall be retained as it is inline with the requirements under Basel II.   However, the amount of Tier 1 Capital based on which the limits are calculated shall be the amount of Tier 1 Capital after deduction of goodwill but before the deduction of investments arising from the deduction principle of Basel II mentioned above (i.e. 50% of investments items subject to deduction).

3.3.10 Annex 3 – IV summarises the calculation of capital base resulting from the above proposals.   It should be noted that the treatment of minority interests, as mentioned under para. 3.1.8 of section 3.1, is still under review.

Proposed Framework for Deductions from Capital Base

Deduction Items	**Types of Exposures**		
	Shares	Loans/Debentures/ Debt Securities	Guarantees
1 Holding companies	(a)	(e)	(e)
2 Investments in subsidiaries and significant investments in non-subsidiary companies	(b)	(e)	(e)
3 Investments in other banks (i.e. < = 20%)	(c)	(c) / (e)	(e)
4 Other significant investments			
(i) the book value of shareholdings >15% of the capital base of the AI /BHC, or			
(ii) the book value of shareholdings in aggregate exceed 60% threshold	(d)	(d)	(d)
5 Exposures to connected company (not covered in 1 to 4)	(e)	(e)	(e)

Note:
(a): Please refer to section 3.3.5 (a)
(b): Please refer to section 3.3.5 (b)
(c): Please refer to section 3.3.5 (c)
(d): Please refer to section 3.3.5 (d)
(e): Please refer to section 3.3.5 (e)

Definition of Capital Base

Part 1

Item   Nature of item

(A) Tier 1 Capital

(a)	Paid up ordinary share capital	X
(b)	Irredeemable non-cumulative preference shares [1]	X
(c)	Share premium	X
(d)	Reserves	X
(e)	Profit and loss account	X
(f)	Minority interests (in core capital) (under review)	X
		X
	Deduct: Goodwill [2]	(X)
	Core Capital	X
	Less: 50% of total deduction of investments **(C)**	(X)

Total Tier 1 Capital	*X*

(B) Tier 2 Capital

(g)	Reserves on revaluation of holding of land and interests in land		X
(ga)	Reserves on revaluation of holding of securities not held for trading purposes		X
(h)	Latent reserves on revaluation of long term holding of equity securities		X
(i)	General provisions for doubtful debts		X
(j)	Perpetual subordinated debt	X	
(k)	Irredeemable cumulative preference shares	X	
	Total hybrid capital instruments ((j) + (k))		X
(l)	Term subordinated debt	X	
(m)	Term preference shares	X	
	Total term subordinated debt instruments ((l) + (m))		X
	Eligible value of term subordinated debt instruments (limited to 50% of Core Capital)		X
(n)	Minority interests (in supplementary equity capital) (under review)		X
	Total gross value of supplementary capital		X
	Eligible value of supplementary capital [3]		X
	Less: 50% of total deduction of investments **(C)**		(X)

Total Tier 2 Capital	*X*

Total Capital Base (The aggregate of Tier 1 and Tier 2 capital)   **X**

Part 2

Breakdown of deduction of investments ((C) under Part 1)

(a)	Shareholdings in holding companies	(X)
(b)	Investments in subsidiaries and significant investments in non-subsidiary companies	(X)
(c)	Investments in other banks	(X)
(d)	Other significant investments in shares	(X)
(e)	Exposures to connected companies	(X)

Total deduction of investments [4]   **(X)**

Notes:

[1] Limited to 15% of Tier 1 Capital after deduction of goodwill but before deduction of investments.

[2] Comprising goodwill relating to entities subject to deduction and goodwill relating to consolidated subsidiaries.

[3] Limited to 100% of Tier 1 Capital after deduction of goodwill but before deduction of investments.

[4] To be deducted from Tier 1 and Tier 2 Capital Base on a 50%/50% basis.

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Section 4   The Standardised Approach to Credit Risk

Section 4.1   Risk Weighting of SME Lending under The Standardised Approach

Purpose

4.1.1   This section sets out the proposed qualifying criteria for applying the 75% preferential risk weight to the SME[6] lending of AIs under the Standardised Approach of Basel II. The assessment below takes into account the results of a recent survey conducted by the MA with a number of AIs on their SME lending.

Background

4.1.2   Under the Standardised Approach, claims that form part of the regulatory retail portfolio attract a preferential risk weight of 75%. Among others, the qualifying criteria (<u>Annex 4 – I</u>) state that the counterpart of such claims can be a "small business". No definition is however given for the term.

4.1.3   The MA has recently conducted a survey of a number of banks intending to adopt the Standardised Approach to see how the preferential treatment is applicable to their SME lending (or small business borrowers) based on the qualifying criteria. In particular, the survey aims to ascertain whether a common SME definition can be found among AIs, and the extent to which their SME exposures can meet the following as part of the qualifying criteria:

(i)   sufficiently diversified to a degree that reduces the risks in the portfolio ("granularity criterion"); and

(ii) individually not exceeding EURO1 Mn ("low value criterion")

Survey results and assessment

Definition of SME

4.1.4   The MA considers that a firm-size definition for SME is necessary for the Standardised Approach to ensure a degree of consistency in capital treatment among banks using the Approach.   The survey reveals that the definitions used internally by individual AIs vary, including different standards of business turnover and other factors such as shareholders' net worth, number of employees, facility amount and total assets.   However, it indicates that all surveyed AIs are able to identify SME accounts based on the common criterion of HKD50 Mn turnover used for Commercial Credit Reference Agency (CCRA) purposes.   The MA therefore considers the HKD50 Mn turnover as a feasible firm-size definition which AIs are already commonly familiar with and have systems in place to capture the relevant accounts information.

Diversification of exposures

4.1.5   The "granularity criterion" mentioned in 4.1.3(i) above suggests that one way to ensure diversification is to set a numerical limit that no aggregate exposure to one counterpart can exceed 0.2% of the overall regulatory retail portfolio.   Previous experience of the QIS 3 reveals however that the interaction of the 0.2% limit with the EURO1 Mn low value criterion is too complicated to be practical for AIs.   Another way to assess diversification of exposures is whether or not the retail loans of an AI are being managed on a portfolio basis (as commonly used for portfolios such as credit card receivables and other personal

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[6] Small and Medium-sized Enterprise(s)

lending characterised by a relatively large number of small homogeneous loans and using scorecards for credit approval and review). The survey reveals that such portfolio management approach is not widely practised among the surveyed AIs on their SME exposures.

4.1.6 Among the surveyed AIs, most of their SME borrowers with a HKD50 Mn business turnover have a credit facility of HKD10 Mn (rounded up from EURO1 Mn) or less. The MA has assessed how diversified a loan portfolio made up of loans to SME borrowers characterised by these two benchmarks (i.e. HKD50 Mn turnover and HKD10 Mn facility limit) will be based on the suggested 0.2% granularity level mentioned above. The result reveals that the ratios for seven of the 10 surveyed AIs are either very close to or below 0.2% (ranging from 0.05% to 0.25%). For the remaining three, the ratios range from 0.36% to 1.61% (for the one with the highest ratio, SME lending is presently not one of its main business focuses). Overall, these figures indicate that the two benchmarks combined would ensure a reasonable degree of diversification for qualified SME lending.

Proposed qualifying criteria for SME lending

4.1.7 Based on the above findings and observations, the MA proposes to adopt the following criteria for qualifying SME lending to carry the 75% preferential risk weight:

Quantitative criteria

- **The firm-size definition of HKD50 Mn business turnover currently adopted under the CCRA framework**[7];

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[7] Under the CCRA framework, an SME is either (a) an unlisted company with an annual turnover not exceeding HKD 50 Mn (unless the company belongs to a larger group whose

- **A maximum credit facility limit of HKD10 Mn as the aggregate retail exposure to one counterpart in line with the Basel requirement.**

Qualitative criteria

- In addition to the above criteria, the MA proposes to also subject AIs intending to make use of the preferential treatment for their SME lending to the standards and requirements of the SPM module IC-7 on *The Sharing and Use of Commercial Credit Data through a Commercial Credit Reference Agency*. **Eligible SMEs will be those which have given consent for disclosure of their credit data to the CCRA (as the shared data will enable banks to better manage credit exposures to these SMEs)**.

Impact analysis

4.1.8   Applying the 75% preferential risk weight to SME lending (based on the above criteria of HKD50 million business turnover and HKD10 Mn individual facility limit) on the CAR of the surveyed AIs is roughly estimated to result in an increase in the average CAR of the AIs by a maximum of 0.72 percentage point.

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annual turnover is larger than HKD 50 Mn) or (b) an unincorporated enterprise such as a partnership or sole proprietorship with an annual turnover not exceeding HKD 50 Mn.

Qualifying Criteria for Regulatory Retail Portfolio

To be included in the regulatory retail portfolio, claims must meet the following four criteria:

- Orientation criterion – The exposure is to an individual person or persons or to a small business;

- Product criterion – The exposure takes the form of any of the following: revolving credits and lines of credit (including credit cards and overdrafts), personal term loans and leases (e.g. instalment loans, auto loans and leases, student and educational loans, personal finance) and small business facilities and commitments. Mortgage loans are excluded to the extent that they qualify for treatment as claims secured by residential property.

- Granularity criterion – The supervisor must be satisfied that the regulatory retail portfolio is sufficiently diversified to a degree that reduces the risks in the portfolio, warranting the 75% risk weight. One way of achieving this may be to set a numerical limit that no aggregate exposure to one counterpart[8] can exceed 0.2% of the overall regulatory retail portfolio.

- Low value of individual exposures – The maximum aggregated retail exposure to one counterpart cannot exceed an absolute threshold of EUR 1 million.

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[8] Aggregated exposure means gross amount (i.e. not taking any credit risk mitigation into account) of all forms of debt exposures (e.g. loans or commitments) that individually satisfy the three other criteria. In addition, "to one counterpart" means one or several entities that may be considered as a single beneficiary (e.g. in the case of a small business that is affiliated to another small business, the limit would apply to the bank's aggregated exposure on both businesses).

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Section 4.2   Exercise of National Discretion under the Standardised Approach

The following summary table presents the current decisions / policy intentions of the HKMA in respect of each area of national discretion under the Standardised Approach for credit risk. Some revisions have been incorporated since the last consultation of July 2003 in the light of the industry's comments and further work on the part of the HKMA to make the risk-weighting framework of the Approach more attuned to the local circumstances. Major revisions are underlined for ease of reference. The decisions / policy intentions set out below are based on the latest sovereign ratings (long-term) of Hong Kong as follows:

	S&P	Moody's
Domestic Currency	AA-	Aa3
Foreign Currency	A+	A1

1.   Claims on sovereigns

Discretion	Decisions / Policy Intentions
(a) At national discretion, a lower risk weight may be applied to banks' exposures to their sovereign (or central bank) of incorporation denominated in domestic currency and funded in that currency. **(para 54)[9]** When the government paper (in the trading book) is denominated in the domestic currency and funded by the bank in the same currency, at national discretion a lower specific risk charge may be applied. **(para 711)**	(a) **EXERCISE** – As the latest domestic currency sovereign rating of Hong Kong is AA-, the risk weight of any claims on Hong Kong SAR Government (or the Exchange Fund) denominated in HKD will already qualify for a 0% risk weight under the Standardised Approach. Nevertheless, the exercise of this discretion will help preserve preferential risk-weighting for such claims in the event of any future changes in Hong Kong's sovereign rating.

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[9] Paragraph number of Basel II document

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Discretion	Decisions / Policy Intentions
(b) Where this discretion is exercised, other national supervisory authorities may also permit their banks to apply the same risk weight to domestic currency exposures to this sovereign (or central bank) funded in that currency. **(para 54)**	(b) **EXERCISE** – This is necessary to provide a level playing field for AIs having exposures to other sovereigns (or central banks). Such arrangement is similar to the current treatment in Hong Kong, under which a preferential risk weight of 0% is allowed for loans to, or loans guaranteed by, the central government or central bank of some countries, where they are denominated and funded in the currency of those countries.
(c) National authorities may extend the treatment under 1(a) to portions of claims guaranteed by the sovereign (or central bank), where the guarantee is denominated in the domestic currency and the exposure is funded in that currency. **(para 201)**	(c) **EXERCISE** – This too is consistent with the current framework under which preferential treatment is generally available if a claim guaranteed by the central government or the central bank of a country is denominated and funded in the currency of that country.
(d) For the purpose of risk-weighting claims on sovereigns, supervisors may recognise the country risk scores assigned by Export Credit Agencies (ECAs). To qualify, an ECA must publish its risk scores and subscribe to the OECD 1999 methodology. Banks may choose to use the risk scores published by individual ECAs that are recognised by their supervisor. **(para 55)**	(d) **NOT EXERCISE** – The OECD 1999 methodology is not transparent and unlike private external credit assessment institutions (ECAIs) (such as S&P and Moody's), there are few ECAs that are commonly known among the Asian economies. In any case, the major countries are already rated by ECAIs like S&P and Moody's. Those not rated by them are likely to be the ones to which AIs in Hong Kong do not have significant exposures.
(e) Subject to national discretion, claims on domestic PSEs may also be treated as claims on the sovereigns in whose jurisdictions the PSEs are established. Where this discretion is exercised, other national supervisors may allow their banks to risk-weight claims on such PSEs in the same manner.	(e) **NOT EXERCISE** – Claims on domestic PSEs will be treated as claims on banks. This is in line with the current treatment which, while giving the 20% preferential risk weight to claims on PSEs, recognises that such claims carry more risk than claims on sovereigns (which attract 0% risk weight) and therefore require a higher risk weight. Claims on foreign PSEs may however be

Discretion	Decisions / Policy Intentions
(para 58)	treated as claims on sovereigns if they are so regarded by their national supervisors.
(f) Claims on domestic PSEs will be risk-weighted at national discretion, according to either Option 1 or Option 2 for claims on banks. When Option 2 is selected, it is to be applied without the use of the preferential treatment for short-term claims. **(para 57)**	(f) **EXERCISE Option 1** – Though this sovereign-linked option is generally considered as less risk-sensitive than Option 2, it has the merit of obviating potential complications due to the application of different risk weights between rated and unrated PSEs (i.e. 20% vs 50% risk weight for local currency exposures) while the existing governmental support available to them continues.

2. Claims on banks

Discretion	Decisions / Policy Intentions
(a) There are two options for claims on banks. National supervisors will apply <u>one</u> option to all banks in their jurisdiction: • Under **Option 1**, all banks incorporated in a given country will be assigned a risk weight one category less favourable than that assigned to claims on the sovereign of that country. However, for claims on banks in countries with sovereigns rated BB+ to B- and to banks in unrated countries the risk weight will be capped at 100%. • Under **Option 2**, risk weighting will be based on the external credit assessment of the bank itself with claims on unrated banks being risk-weighted at 50%. Under this option, a preferential risk weight that is one category more favourable may be applied to claims with an original maturity of three	(a) **EXERCISE Option 2** – Option 2, which associates the risk weights of banks with their individual credit ratings, appears to provide a sounder basis for determining the risk weights.

Discretion	Decisions / Policy Intentions
months or less*, subject to a floor of 20%. This treatment will be available to both rated and unrated banks, but not to banks risk-weighted at 150%. *Claims with (contractual) original maturity under 3 months which are expected to be rolled over (i.e. where the effective maturity is longer than 3 months) do not qualify for this preferential treatment for capital adequacy purposes.* **(paras 60 – 62)**	
(b) When the national supervisor has chosen to apply the preferential treatment for claims on the sovereign as described in para 54 (see 1(b) above), it can also assign, under both Options 1 and 2, a risk weight that is one category less favourable than that assigned to claims on the sovereign, subject to a floor of 20%, to claims on banks of an original maturity of 3 months or less denominated and funded in the domestic currency. **(para 64)**	(b) **EXERCISE** – The credit ratings of all locally incorporated banks are currently above BB+ and thus will not benefit from this treatment (i.e. already subject to 20% risk weight for short-term local currency claims). However, adopting this discretion will help avoid potential rise in the risk weight of short-term local currency claims in the event of future changes in the ratings of the banks.
(c) Claims on securities firms may be treated as claims on banks provided these firms are subject to supervisory and regulatory arrangements comparable to those under the New Accord (including, in particular, risk-based capital requirements – defined in footnote 23 as those that are comparable to the requirements applied to banks in the New Accord. Implicit in the meaning of the word "comparable" is that the securities firm (but not necessary its parent) is subject to consolidated regulation and supervision with respect to any downstream affiliates).	(c) **EXERCISE** – The preferential treatment for all regulated securities firms is considered appropriate in general on account of the fact that they are subject to capital rules appropriate to the nature of business of these firms. <u>Securities firms include all licensed corporations that have registered with the SFC.</u> (Licensed corporations other than AIs are required at all times to comply with the capital requirements of the Securities and Futures (Financial Resources) Rules.) Claims on securities firms will be treated as claims on banks under Option 2.

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Discretion	Decisions / Policy Intentions
(para 65)	

3. Claims on corporates, regulatory retail portfolios, residential mortgage loans and other options

Discretion	Decisions / Policy Intentions
(a) Supervisory authorities should increase the standard risk weight for unrated claims where they judge that a higher risk weight is warranted by the overall default experience in their jurisdiction. As part of the supervisory review process, supervisors may also consider whether the credit quality of corporate claims held by individual banks should warrant a standard risk weight higher than 100%. **(para 67)**	(a) **RESERVE RIGHT TO EXERCISE** – This discretion will in future provide the flexibility for the HKMA to adjust, if necessary, the standard risk weights for such claims when the overall default experience changes. It will only be exercised on an exceptional basis where there are grounds to believe that the standard risk weights for claims on unrated corporates and retail portfolio as well as qualified residential mortgage lending are grossly insufficient to cover the overall default risk. <u>The HKMA will release further criteria and guidance to the industry when it considers the exercise of the discretion necessary.</u>
(b) National supervisory authorities should evaluate whether the 75% risk weight is considered too low for exposures in regulatory retail portfolio based on the default experience in their jurisdictions. Supervisors, therefore, may require banks to increase the risk weight as appropriate. **(para 71)**	(b) **RESERVE RIGHT TO EXERCISE** – <u>See 3(a) above.</u>
(c) National supervisory authorities should evaluate whether the 35% risk weight is considered too low for qualified residential mortgage lending based on the default experience in their jurisdictions. Supervisors, therefore, may require banks to increase these risk	(c) **RESERVE RIGHT TO EXERCISE** – <u>See 3(a) above.</u>

Discretion	Decisions / Policy Intentions
weights as appropriate. **(para 73)** (d) At national discretion, supervisory authorities may permit banks to risk-weight all corporate claims at 100% without regard to external ratings. Where this discretion is exercised by the supervisor, it must ensure that banks apply a single consistent approach, i.e. either to use ratings wherever available or not at all. To prevent "cherry-picking" of external ratings, banks should obtain supervisory approval before utilising this option to risk weight all corporate claims at 100%. **(para 68)** (e) In discussing the treatment of commercial real estate, the Basel Committee notes that a 50% preferential risk weight of certain exposures is warranted providing strict conditions are met. Any exposure beyond the specified limits (2nd bullet below) will receive a 100% risk weight. The conditions are: • Well-developed and long-established markets; • Preferential treatment limited only to the tranche of loan not exceeding the lower of 50% of the market value or 60% of the mortgage lending value of the secured commercial real estate ("eligible lending"); • Losses stemming from the above eligible lending must not exceed 0.3% of the outstanding loans in any given year;	(d) **NOT EXERCISE** – With the additional option of the Basic Approach available to smaller AIs to calculate credit risk capital charge under the revised capital regime, the HKMA sees little need to complicate the risk weighting framework by further carving out AIs under the Standardised Approach for the 100% corporate risk weight. (e) **NOT EXERCISE** – This national discretion has no immediate relevance to Hong Kong as, for instance, the required statistics to determine whether some of the qualifying conditions are satisfied are not yet available.

Discretion	Decisions / Policy Intentions
• Overall losses stemming from commercial real estate lending must not exceed 0.5% of the outstanding loans in any given year; • Public disclosure by countries that these and other additional conditions (that are available from the Basel Committee Secretariat) are met. **(footnote 25 of para 74)** (f) The unsecured portion of any loan (other than a qualifying residential mortgage loan) that is past due for more than 90 days, net of specific provisions, will be risk-weighted as follows: • 150% risk weight when specific provisions are less than 20% of the outstanding amount of the loan; • 100% risk weight when specific provisions are no less than 20% of the outstanding amount of the loan; • 100% risk weight when specific provisions are no less than 50% of the outstanding amount of the loan, but with supervisory discretion to reduce the risk weight to 50% Subject to national discretion, supervisors may permit banks to treat non-past due loans extended to counterparties subject to a 150% risk weight in the same way as past due loans described in paras 75 to 77. **(para 75, 76 and footnote 26)**	(f) **EXERCISE [with modifications]** – The HKMA agrees in principle that the treatment will encourage AIs to maintain a prudent provisioning policy. However, the proposed risk weights are to be associated with benchmark levels of specific provisions as a percentage of gross loan outstanding without regard to the existence of collateral. This treatment seems to be unfair and inconsistent with the provisioning practice of banks in Hong Kong where the potential loss of a past due loan (thus level of specific provision required) is assessed by first having regard to the value of any collateral. The HKMA will therefore need to further study the applicability of the Basel II scale and consult the industry where any modifications to the Basel treatment are considered necessary.

Discretion	Decisions / Policy Intentions
(g) For the purpose of defining the secured portion of the past due loans, eligible collateral and guarantees will be the same as for credit risk mitigation purposes. There will be a transitional period of three years during which a wider range of collateral may be recognised, subject to national discretion. **(footnote 27 of para 76)**	(g) **MAY EXERCISE [and perhaps with modifications]** – This will be considered in light of the result of the HKMA's review under item (f) above and item (h) below.
(h) In the case of qualifying residential mortgage loans, when such loans are past due for more than 90 days, they will be risk-weighted at 100%, net of specific provisions. If such loans are past due but specific provisions are no less than 20% of their outstanding amount, the risk weight applicable to the remainder of the loan can be reduced to 50% at national discretion. **(para 78)**	(h) **EXERCISE [with modifications]** – The HKMA may consult the industry on potential modifications to the Basel II treatment for similar reasons as item (f) above.
(i) National supervisors may decide to apply a 150% or higher risk weight reflecting the higher risks associated with some other assets, such as venture capital and private equity investments. **(para 80)**	(i) **EXERCISE** – The treatment will further enhance the risk sensitivity of the Standardised Approach in respect of exposures with higher risk and provide greater flexibility for the HKMA to adjust the capital requirements of banks, if necessary, through the supervisory review process under Pillar 2. The HKMA will in due course develop guidance for the identification of such higher risk assets.
(j) 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%. **(footnote 28 of para 81)**	(j) **EXERCISE** – This is consistent with the existing treatment.

4. Implementation considerations

Discretion	Decisions / Policy Intentions
(a) As a general rule, banks should use solicited ratings from eligible ECAIs. National supervisory authorities may, however, allow banks to use unsolicited ratings in the same way as solicited ratings. However, there may be the potential for ECAIs to use unsolicited ratings to put pressure on entities to obtain solicited ratings. Such behaviour, when identified, should cause supervisors to consider whether to continue recognising such ECAIs as eligible for capital adequacy purposes. **(para 108)**	(a) **NOT EXERCISE** – Previous consultation revealed that the industry was not in favour of using unsolicited ratings for determining capital charges.

5. Credit Risk Mitigation Techniques

Discretion	Decisions / Policy Intentions
(a) The comprehensive approach to the treatment of collateral entails the estimation of collateral haircuts. Supervisors may permit banks to calculate haircuts using their own internal estimates of market price volatility and foreign exchange volatility. Permission to do so will be conditional on the satisfaction of minimum qualitative and quantitative standards stated in paras 156 to 165. When debt securities are rated BBB-/A-3 or higher, supervisors may allow banks to calculate a volatility estimate for each category of security. **(para 154)**	(a) **NOT EXERCISE** – It is envisaged that most of the AIs adopting the comprehensive approach to the treatment of collateral will use standard supervisory haircuts instead of those based on their own internal estimates. As such, the HKMA proposes not to make available this option of allowing AIs to use their own internal estimates for calculating collateral haircuts. This will simplify the implementation of the comprehensive approach and reduce the complexity associated with it.

Discretion	Decisions / Policy Intentions
(b) As an alternative to the use of standard or own-estimate haircuts, banks may be permitted to use a VaR modelling approach to reflect the price volatility of the exposure and collateral for repo-style transactions, taking into account correlation effects between security positions. This approach would apply only to repo-style transactions covered by bilateral netting agreements on a counterparty-by-counterparty basis. In addition, other similar transactions (like prime brokerage) that meet the requirements for repo-style transactions are also eligible to use the VaR models approach. The VaR models approach is available to banks that have received supervisory recognition for an internal market risk model under the 1996 Market Risk Amendment. Banks which have not received supervisory recognition for use of models under the 1996 Market Risk Amendment can separately apply for supervisory recognition. **(para 178)**	(b) **EXERCISE** – Nevertheless, for reasons similar to 5(a), this will only be made available to AIs that have received supervisory recognition for an internal market risk model under the 1996 Market Risk Amendment.

Discretion	Decisions / Policy Intentions
(c) For repo-style transactions where conditions specified under para 141 are satisfied, and the counterparty is a core market participant, supervisors may choose not to apply the haircuts specified in the comprehensive approach and may instead apply a zero H. This carve-out will not be available for banks using the VaR modelling approach as described in paras 178 to 181. • sovereigns, central banks and PSEs; • banks and securities firms; • other financial companies (including insurance companies) eligible for a 20% risk weight; • regulated mutual funds that are subject to capital or leverage requirements; • regulated pension funds; and • recognised clearing organisations. **(paras 170 to 171)** (d) Where a supervisor applies a specific carve-out to repo-style transactions in securities issued by its domestic government, then other supervisors may choose to allow banks incorporated in their jurisdiction to adopt the same approach to the same transactions. **(para 172)**	(c) **EXERCISE** – This will contribute to the risk sensitivity of the Standardised Approach. Only the following four categories of entities will be recognised as core market participants: • sovereigns, central banks and PSEs; • banks and securities firms; • other financial companies (including insurance companies) eligible for a 20% risk weight; and • recognised clearing organisations. The preferential treatment is not extended to cover mutual funds and pension funds as, under local circumstances, it appears that the funds are not subject to regulatory capital requirements and the leverage limitations of them vary. (d) **EXERCISE** – This is necessary to provide a level playing field for AIs entering into such transactions involving securities issued by other sovereigns.

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Section 5   The Internal Ratings-based ("IRB") Approach to Credit Risk

Section 5.1   Implementation Proposals for the IRB Approach

Purpose

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

5.1.2   The proposals are based on Basel II and have incorporated where appropriate the industry's comments on earlier proposals issued by the HKMA. Some of the criteria set out herein (e.g. the minimum level of IRB coverage) represent the HKMA's preliminary thinking.   The HKMA will take into account the industry's views and comparable criteria adopted by other supervisors before finalising the criteria.

Implementation Approach

Availability and choice of approaches

5.1.3   The HKMA plans to offer various IRB Approaches applicable to different asset classes to AIs that are capable of meeting the relevant requirements. Consistent with the Basel timetable, the HKMA will aim to make available for adoption by AIs the Foundation Approach as from 1 January 2007 and the Advanced Approach as from 1 January 2008.

5.1.4   As a general principle, the HKMA will not require or mandate any particular AI, or any type or group of AIs, to adopt the IRB Approach. AIs 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 AIs that are building the IRB systems from scratch, 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 AIs 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 AIs concerned can satisfy the more stringent criteria, in particular the ability to measure LGD (loss given default).

Application / validation procedures

5.1.5   AIs wishing to adopt the IRB Approach should discuss their plans with the HKMA as soon as possible.   Whether they will be able to use the IRB Approach for capital adequacy purposes is subject to the prior approval of the HKMA and to their satisfying various qualitative and quantitative requirements relating to internal rating systems and the estimation of PD (probability of default) / LGD / EAD (exposure at default)[10], and the controls surrounding them.   The HKMA will conduct on-site validation exercises starting some time in 2005 to ensure that AIs' internal rating systems and the corresponding risk estimates meet the Basel requirements.   It should however be stressed that the <u>primary</u> responsibility for validating and ensuring the quality of an AI's internal rating systems lies with its management.

5.1.6   In order to allow sufficient time for the HKMA to carry out the necessary validations on their systems, AIs should inform the HKMA

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[10] See definitions of these risk estimates set out in subsection 1.1 of <u>Annex 5 – IV</u>.

no later than <u>31 December 2004</u> of such plans in writing if they want to use the Foundation Approach as from 1 January 2007 (or the Advanced IRB Approach as from 1 January 2008). This will be followed by bilateral meetings whereby the HKMA will discuss with the AIs in detail their implementation plans and state of readiness for adopting the IRB Approach.

5.1.7 In assessing the eligibility of AIs to adopt the IRB Approach, the HKMA will adopt the examination processes as outlined in <u>Annex 5 - I</u>. In the case of AIs that are subsidiaries of foreign banking groups, the HKMA will liaise with the home supervisor, particularly on the validation arrangements to assess the extent of reliance that it may place on the validation done by the home supervisor. This approach is consistent with the Basel Concordat and should help keep duplication of supervisory attention to a minimum.

5.1.8 The HKMA will provide the industry with more details regarding the application and approval/examination procedures for use of the IRB Approach in September 2004. Relevant self-assessment questionnaires will also be issued to AIs in due course.

<u>Proposed work programme and implementation timetable</u>

5.1.9 The HKMA will consult the industry on draft rules and guidance relating to the IRB Approach by phase. The first batch of rules and guidance, which is also the subject of consultation in this paper, covers 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 discretions, the HKMA consulted the industry on most of these areas in August 2003. <u>Annex 5 - III</u> is an updated list of national discretions based on Basel II (with new areas of discretion concerning the treatment of expected losses and recognition of provisions included) and the HKMA's latest proposals in

respect of each of them, which have incorporated the industry's comments received during the last consultation.

5.1.11 Other rules and guidance on the IRB Approach, including the risk-weighting framework and the revised capital adequacy return for users of this Approach, will be issued for industry consultation in late 2004 or early 2005. AIs may refer to the proposed Basel II work programme and implementation timetable shown in Section 11.3 for details.

Qualifying Criteria for Adoption of IRB Approach

5.1.12 In order for an AI to be eligible to use the IRB Approach for capital adequacy purposes, it 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.

Criteria for transition to the IRB Approach

Adoption of IRB Approach across the banking group

5.1.13 The HKMA would expect an AI to adopt the IRB Approach across its entire banking group, except for immaterial exposures that have been exempted by the HKMA[11]. The fundamental principle is that a clear critical mass of the AI's risk-weighted assets ("RWAs") (as recorded in the AI's solo and consolidated capital adequacy returns) would have to be on the IRB Approach before the AI could transition to that Approach for capital adequacy purposes.

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[11] 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 an AI's risk-weighted assets (see item 1(b)

5.1.14 The HKMA has not yet come to a firm view as to the minimum level of IRB coverage that should be achieved, as it would want to take into account comparable criteria set out by other supervisors and AIs' implementation plans. The HKMA's current thinking is that the ultimate level of IRB coverage should be at least 85% of an AI's RWAs[12], although the AI 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 AIs might not qualify to adopt IRB immediately (i.e. on 1 January 2007) but might have to wait until they have achieved the requisite level of coverage. This, the HKMA believes, is preferable to a situation in which AIs 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 Hong Kong is not well-established, a certain degree of caution is considered prudent, and the HKMA does not expect AIs to rush to adopting IRB when they are not fully ready.

Phased rollout and transition period

5.1.16 An AI 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 (to end-2009), subject to the HKMA being satisfied with its implementation plan. 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 agreed with the HKMA. In particular, the HKMA would need to be satisfied that the AI is not attempting to arbitrage between

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of Annex 5 - III). Exempt exposures will comply with the capital requirements under the Standardised Approach.

[12] Subject to the remaining exposures being exempt by the HKMA as immaterial exposures.

different capital treatments (e.g. by putting each asset class under whichever capital treatment produces the lowest capital charge for that particular class of asset, or using intragroup transactions for a similar purpose). Moreover, when an AI 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 AIs adopting phased rollout should have achieved a certain level of IRB coverage (say, at least 75% of their RWAs) before they could be allowed to use the Approach for capital calculation. By the end of the transition period (i.e. end-2009), all of their non-exempt exposures should have been migrated to the IRB Approach.

5.1.18 During the transition period, AIs would be allowed to use the Basic Approach, which is essentially the current Accord with some minor changes (see Section 2.2 for details), until they are ready to move to IRB, rather than being required to use the Standardised Approach in the meantime. This also applies to AIs that will adopt the Advanced IRB Approach on 1 January 2008.

Parallel run and capital floor

5.1.19 There will be a parallel run of Basel II with the current Accord[13] in 2006 in respect of AIs adopting the Foundation IRB Approach on 1 January 2007, covering the reporting dates of 31 March, 30 June, 30 September and 31 December 2006. For AIs adopting the Advanced IRB Approach on 1 January 2008, such parallel run would cover the reporting dates of 31 March, 30 June, 30 September and 31

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[13] The HKMA may, for the sake of simplifying legal drafting of the IRB capital rules, consider the feasibility of using the Basic Approach for credit risk (which is essentially the current Accord with some minor changes) as the basis for the parallel run during the transition period. This will obviate the need to reproduce the full version of the current Accord in the capital rules.

December 2007. AIs adopting the IRB Approach on other dates would also be expected to conduct a similar parallel run prior to qualification.

5.1.20 AIs 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, AIs are required to add 12.5 times the difference to RWAs. See <u>Annex 5 - II</u> 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 recognised in Tier 2 capital. The adjustment factor for AIs 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 AIs adopting the IRB Approach during the transition period, i.e. between 1 January 2007 and 31 December 2009. 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. The HKMA considers that its proposal will ensure a level-playing field for AIs that adopt the IRB Approach in different years within the transition period.

5.1.22 For AIs using the IRB Approach *after* end-2009, the floor will be based on calculations using the rules of the Standardised Approach for credit risk. The adjustment factor for AIs using the IRB Approach, whether Foundation or Advanced, for the first year is 90%. The adjustment factor for the second year is 80%, and for the third year is 70%[14].

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[14] Lower capital floors are used to take account of operational risk capital charges on both sides of the calculation.

Application of Adjustment Factors

Date of IRB implementation	1st year of implementation	2nd year of implementation	3rd year of implementation	Basis of comparison
<u>Within</u> transition period	95%	90%	80%	Current Accord[4]
<u>After</u> transition period	90%	80%	70%	Standardised Approach

5.1.23 In the years in which the floor applies, AIs 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 an AI uses the Standardised Approach for credit risk for any portion of its exposures, it also needs to exclude general provisions that may be recognised 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, the HKMA will seek to take appropriate measures to address them, and, in particular, will be prepared to keep the floors in place beyond the third year if necessary.

<u>Transition arrangements</u>

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[15].

5.1.26 The HKMA recognises that AIs 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, the HKMA proposes to apply the transition requirement of a minimum of <u>two years</u> of data at the time of adopting the IRB Approach to AIs that can implement such an approach <u>during the period from 1 January 2007 to 31 December 2009</u>.[16] This requirement will increase by one year for each of the three years after end-2009. The table below sets out the HKMA's proposed arrangements:

Item	Requirement	Transition Arrangement
Observation period for PD under Foundation IRB Approach for corporate, bank and sovereign exposures	At least 5 years	<u>2 years</u> if implementation is within the period from 1 Jan 2007 to end-2009, increasing by 1 year for each subsequent year after end-2009 (i.e. to reach 5 years by end-2012)
Observation period for PD under Advanced IRB Approach for corporate, bank and sovereign exposures	At least 5 years	No transition period
Observation period for	At least 7 years	No transition period

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[15] There are no transition arrangements for the Advanced IRB Approach and the Market-based Approach to equity.

[16] The Basel Committee recommends that under these transition arrangements, banks be required to have a minimum of two years of data at the implementation of Basel II. This requirement will increase by one year for each of the three years of transition.

Item	Requirement	Transition Arrangement
LGD/EAD under Advanced IRB Approach for corporate, bank and sovereign exposures		
Observation period for PD/LGD/EAD for retail exposures	At least 5 years	2 years if implementation is within the period from 1 Jan 2007 to end-2009, increasing by 1 year for each subsequent year after end-2009 (i.e. to reach 5 years by end-2012)

5.1.27 As a two-year data observation period may not be enough to capture default data during a full credit cycle, the HKMA would expect AIs to exercise conservatism in the assignment of borrower ratings and estimation of risk characteristics. AIs would need to demonstrate and document how they have done this.

5.1.28 The HKMA will incorporate the above proposals into a guidance paper on the "Criteria for transition to the IRB Approach", after taking into account the industry's comments.

General

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

5.1.30 The minimum IRB requirements focus on an AI'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" (see the draft guidance paper at <u>Annex 5 - IV</u>). Other quantitative aspects covering risk quantification requirements and validation of internal estimates are prescribed in the "Minimum Requirements for Risk Quantification under IRB Approach" (see the draft guidance paper at <u>Annex 5 - V</u>). Apart from meeting the relevant minimum requirements, AIs' overall credit risk management practices should also be consistent with the guidelines and sound practices issued by the HKMA.

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. AIs 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 utilise 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 AIs to transition to IRB over time, the HKMA intends to provide some flexibility in applying the "use" test to a Basel II - compliant internal rating system.   AIs would only need to demonstrate that such a system has been used for two years (instead of three years required under the Basel II document) prior to qualification. If the internal rating systems of an AI, 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 two-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 subsidiary (see section 7 of Annex 5 - IV)   This, however, will not absolve local management from the responsibility to understand and ensure the effective operation of the IRB systems at the AI 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 a mildly stressed scenario chosen by an AI should resemble the economic recession in Hong Kong in the second half of 2001 and the first quarter of 2002 (see section 5 of Annex 5 - IV).

<u>Definition of default</u>

5.1.35   While the proposed definition of default (see subsection 4.2 of <u>Annex 5 - V</u>) is basically in line with the Basel definition, the HKMA would like to seek the industry's comments on the application of some elements of the definition in Hong Kong. One of these elements 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. The HKMA's preliminary intention is to apply the materiality level on a conservative basis (i.e. <u>5%</u> or more of the obligor's outstanding credit obligations), and AIs may set a lower threshold or 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. The HKMA proposes that a banking group should cover all entities within the group that are subject to the capital adequacy regime in Hong Kong.

5.1.37   The third element relates to the use of different default triggers in the definition. If an AI 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 AI should be able to satisfy the HKMA that such a difference in the definition of default will not result in any material impact on the default / loss estimates generated.
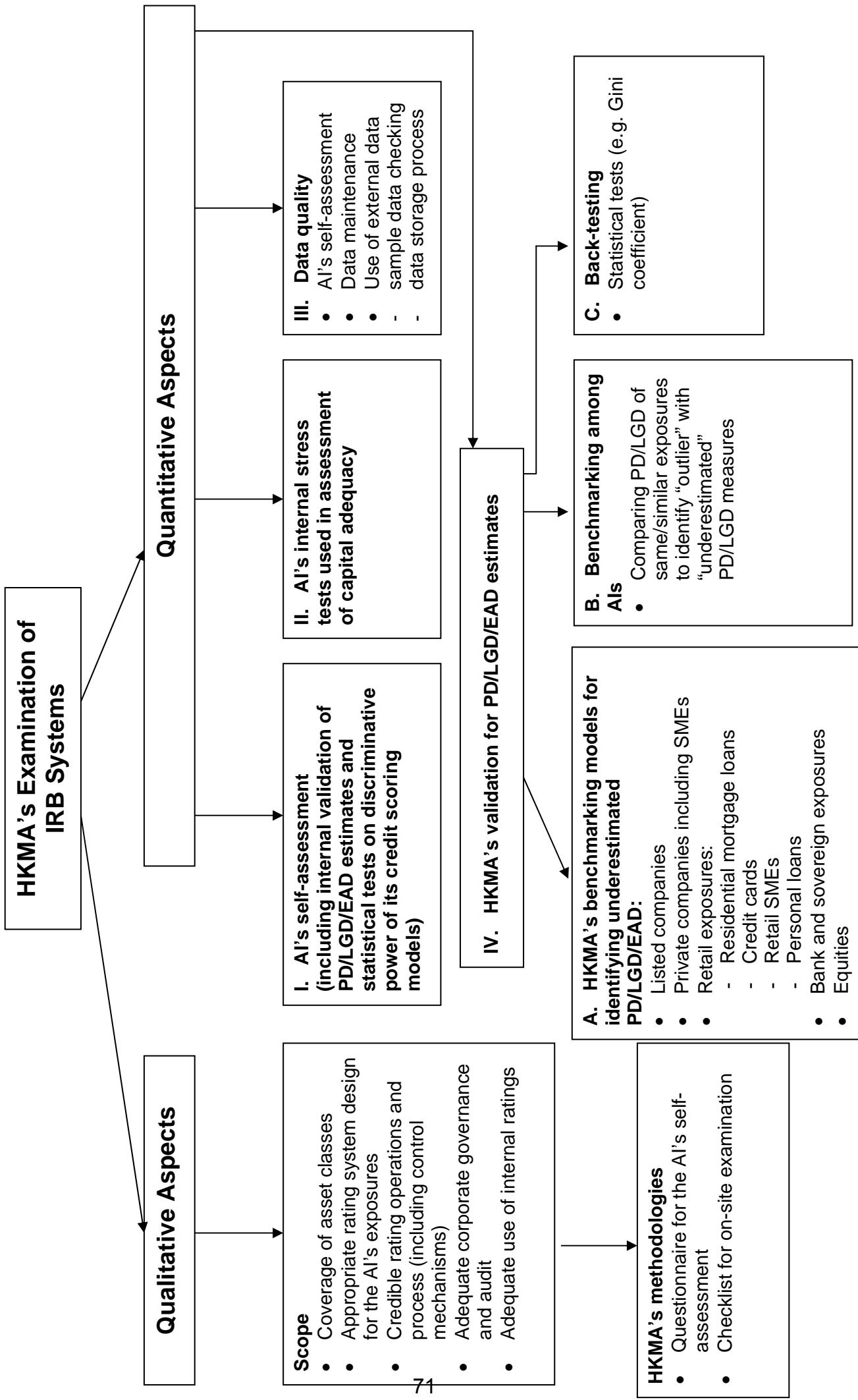
Internal validation of IRB Approach

5.1.38 With regard to AIs' internal validation of the IRB Approach, the HKMA considers that it should be an integral part of an AI's rating system architecture to provide reasonable assurances about its rating system. AIs 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 the HKMA that their internal validation process enables them to assess the performance of internal rating and risk estimation systems consistently and meaningfully. In the draft guidance paper, 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). (See section 5 of Annex 5 - V for details).

Way Forward

5.1.39 Given that implementation of the IRB Approach is a challenging task and demands significant time and resources, AIs planning to use the Approach on 1 January 2007 should already have completed detailed project evaluations, and their implementation plans should already be well advanced. They should be prepared to provide the HKMA with the full details of their implementation plan and demonstrate how they are monitoring the progress of their plan.

5.1.40 The HKMA will, in the meantime, carry on with the work of developing other relevant guidance (including the risk-weighting framework), the revised capital adequacy return and completion instructions as well as the approval / examination procedures for the IRB Approach for consulting the industry in due course.

HKMA's Examination of IRB Systems

Qualitative Aspects

Quantitative Aspects

Scope
- Coverage of asset classes
- Appropriate rating system design for the AI's exposures
- Credible rating operations and process (including control mechanisms)
- Adequate corporate governance and audit
- Adequate use of internal ratings

HKMA's methodologies
- Questionnaire for the AI's self-assessment
- Checklist for on-site examination

I. AI's self-assessment (including internal validation of PD/LGD/EAD estimates and statistical tests on discriminative power of its credit scoring models)

II. AI's internal stress tests used in assessment of capital adequacy

III. Data quality
- AI's self-assessment
- Data maintenance
- Use of external data
- sample data checking
- data storage process

IV. HKMA's validation for PD/LGD/EAD estimates

A. HKMA's 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 AIs
- Comparing PD/LGD of same/similar exposures to identify "outlier" with "underestimated" PD/LGD measures

C. Back-testing
- Statistical tests (e.g. Gini coefficient)

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Calculation of Capital Floor - Numerical Example

Assumptions and calculations

Current Accord

- RWAs of an AI under the current Accord = $ 100
- Tier 1 and Tier 2 capital deductions = $ 1
- General provision recognised in Tier 2 capital = $ 0.5

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

Basel II

- RWAs of the AI under Basel II (IRB Approach and Standardised Approach (if any)) = $ 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).

EXERCISE OF NATIONAL DISCRETION UNDER THE INTERNAL RATINGS-BASED ("IRB") APPROACH

1. General

Discretion	Decisions / Policy Intentions
(a) Supervisors may 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 (i.e. corporate, sovereign, bank, retail and equity) within the same business unit (or in the case of retail exposures across individual sub-classes such as residential mortgage loans and credit card receivables); (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, e.g. loss given default ("LGD"). **(para 257)**[1]	(a) **EXERCISE** – An AI may be allowed by the HKMA to adopt a phased rollout of the IRB Approach across its banking group within a transition period of three years (to end-2009), subject to producing an acceptable implementation plan and meeting other criteria specified by the HKMA. See paragraphs 5.1.16 to 5.1.18 of Section 5.1 for details.
(b) Subject to national discretion, banks may be exempt from being required to adopt IRB for some exposures in non-significant business units as well as asset classes (or sub-classes in the case of retail) that are immaterial in terms of size and perceived risk profile. **(para 259)**	(b) **EXERCISE** – The HKMA proposes the following thresholds in respect of the criteria for granting exemption for immaterial exposures in asset classes or business units: • a class of assets (or sub-classes in the case of retail) is considered to be immaterial if its aggregate exposure (after risk conversion) does not exceed 10% of an AI's Tier 1 plus Tier 2 capital. This is consistent with the treatment of equity exposures regarding materiality (**para 358**); and • exposures in a business unit are considered to be immaterial if such exposures in terms of risk-weighted assets under the Standardised Approach do not exceed 5% of the total banking book credit risk-weighted assets of the relevant

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[1] Paragraph number of Basel II document

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class of assets (or sub-classes in the case of retail). In addition, total exposures to be exempt under the two criteria mentioned above are limited to the extent that such exposures in terms of risk-weighted assets under the Standardised Approach do not exceed 15% of the total banking book credit risk-weighted assets of the AI concerned. The materiality criteria will be applied on a solo and consolidated basis to exposures in business units or asset classes of locally incorporated AIs that plan to adopt IRB in Hong Kong. Exposures meeting all the exemption criteria will generally be exempted, subject to vetting by the HKMA. The HKMA may however consider whether more capital should be held by the AI concerned for such exposures under Pillar Two. In principle, only exempt exposures which carry higher risk (e.g. risky equity investments) would be subject to capital adjustment under Pillar Two. The approach will be elaborated in the supervisory guidance to be issued under the Pillar Two framework.	(c) **NOT EXERCISE** – While this may be more prudent in terms of capital requirements, it will further complicate the implementation of the IRB Approach.	(d) **EXERCISE** – The HKMA recognises that AIs wishing to adopt the IRB Approach for capital adequacy purposes 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, the HKMA proposes to apply the
	(c) Supervisors may choose to employ a wider definition of subordination than this Framework. This might include economic subordination, such as cases where the facility is unsecured and the bulk of the borrower's assets are used to secure other exposures. **(para 288)**	(d) National supervisors may apply a transition period that will last for three years from the date of implementation of the New Accord. During the transition period, the following minimum requirements can be relaxed, subject to national discretion: • For corporate, sovereign, and bank exposures under the

transitional requirement of a minimum of two years of data at the time of adopting the IRB Approach to AIs that can implement such an approach during the period from 1 January 2007 to 31 December 2008. This requirement will increase by one year for each of the three years after year-end 2008. Furthermore, to encourage AIs to transition to IRB over time, the three-year minimum requirement of using a Basel II – compliant internal system prior to adoption of IRB is reduced to two years, regardless of the date of implementing such an approach.

There is however concern that the short data period allowed during the transition period may not be enough to capture the default data during a full credit cycle and will impose difficulties for the HKMA to validate AIs' estimates of the risk characteristics (PD/LGD/EAD). To address this concern, the HKMA would therefore need to require AIs to exercise conservatism in the assignment of borrower ratings and estimation of the risk characteristics. AIs would need to demonstrate and document how they have done this.

(e) **NOT APPLICABLE** – The practice of re-ageing facilities is not allowed by the HKMA.

Foundation Approach, the requirement that, regardless of the data source, banks must use at least five years of data to estimate the probability of default ("PD").

• For retail exposures, the requirement that, regardless of the data source, banks must use at least five years of data to estimate loss characteristics (exposure at default ("EAD"), and either expected loss ("EL") or PD and LGD).

• For corporate, sovereign, bank and retail exposures, the requirement that a bank must demonstrate it has been using a rating system that was broadly in line with the Basel requirements for at least three years prior to qualification.

• The above-mentioned transitional arrangements also apply to the PD/LGD Approach to equity. There are no transitional arrangements for the Market-based Approach to equity.

• Under these transitional arrangements, banks are required to have a minimum of two years of data at the implementation of the New Accord (1 January 2007 in the case of Hong Kong).

(paras 264 and 265)

(e) Banks 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 (a process by which banks adjust the delinquency status of loans, the terms of which have not been changed, based on subsequent good performance, even though not all arrears under the original repayment schedule have been paid off). A bank's re-ageing policy must include: (i) approval authorities and reporting

requirements; (ii) minimum age of a facility before it is eligible for re-ageing; (iii) delinquency levels of facilities that are eligible for re-ageing; (iv) maximum number of re-ageings per facility; and (v) 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.

(para 458)

(f) For banks using the Foundation Approach for corporate exposures, effective maturity will be 2.5 years except for repo-style transactions where the effective maturity will be 6 months. National supervisors may choose to require all banks (those using the Foundation and Advanced Approaches) to measure effective maturity explicitly for each facility using the definition provided in para 320.

(para 318)

(f) **NOT EXERCISE** – Explicit maturity adjustment will not be required under the Foundation Approach. This will simplify the implementation of the Foundation Approach as AIs will not need to calculate weighted maturities of amortising loans. However, AIs which have systems to calculate the adjusted maturities may be allowed to measure effective maturity for each facility.

(g) Banks using the Advanced IRB framework for corporate lending, as well as banks using the Foundation IRB Approach in a jurisdiction where the supervisor so decides, will be required to incorporate maturity adjustments. However, supervisors will have the option of exempting smaller domestic firms (defined as those with consolidated sales and consolidated assets of less than Euro 500 million) from the maturity framework. If the exemption is applied, all exposures to qualifying smaller domestic firms will be assumed to have an average maturity of 2.5 years, as under the Foundation IRB Approach.

(g) **NOT EXERCISE** – The HKMA will apply more stringent qualifying criteria and standards for use of the Advanced Approach than those for the Foundation Approach.

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(para 319)	
(h) Within the measurement framework for effective maturity, supervisors need to determine which exposures will apply for the carve-out from the one-year maturity floor. **(paras 321-323)**	(h) **EXERCISE** – The HKMA will adopt the criteria for short-term exposures as set out in paras 321 – 323 of the Basel II document. Such criteria will be elaborated when the relevant guideline is developed.
(i) National supervisors may require an external audit of the bank's rating assignment process and estimation of loss characteristics. **(para 443)**	(i) **EXERCISE** – Section 59(2) of the Banking Ordinance already provides the MA with the power to commission such audits where necessary.

2. Retail

Discretion	Decisions / Policy Intentions
(a) Elements of the definition of the exposure class: national supervisors may set a threshold for size and the number of retail exposures in a portfolio. **(paras 231 and 232)** In addition, for residential mortgages, supervisors may set a threshold on the maximum number of housing units per exposure. **(second bullet of para 231)**	(a) **NOT EXERCISE** – It will suffice for AIs to follow the general characteristics for defining retail exposures. The HKMA does not consider it appropriate to define rigid thresholds for them to follow. The basis of setting these could be extremely difficult and arbitrary. It will also complicate the implementation of the IRB Approach.
(b) Definition of default: supervisors may set the number of past-due dates (up to 180 days) to trigger default in retail obligations, as they consider appropriate to local conditions.	(b) **NOT EXERCISE** – The HKMA proposes to keep the default trigger at 90-day past due. This is consistent with the definition of default for corporate, bank and sovereign exposures.

Discretion	Decisions / Policy Intentions
(footnote 82 of para 452)	Extending the default trigger to 180 days for credit card receivables or residential mortgages may delay identification of deteriorating trends and understate the relevant capital requirements. Further guidance on the definition of default is set out in the "Minimum Requirements for Risk Quantification under IRB Approach".
(c) The Basel Committee recognises that seasoning can be quite material for some long-term retail exposures characterised by seasoning effects that peak several years after origination. (For example, significant growth in residential mortgage lending during a property market boom may lead to increases in PD estimates after a few years when the property market declines subsequently.) 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. 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. Within some jurisdictions, such adjustments might be made mandatory, subject to supervisory discretion. **(para 467)**	(c) **RESERVE RIGHT TO EXERCISE** – AIs should take such adjustment into account within their estimation of PD. If an AI does not take seasoning effects into account and its own estimates of PD are considered to be too low, the HKMA might need to require the AI to use higher values of PD for the calculation of capital charges.

3. Corporate, bank, sovereign

Discretion	Decisions / Policy Intentions
(a) In addition to commercial real estate and residential real estate, other physical collateral and receivables are recognised collateral, which attract a 40% and a 35% LGD respectively. National supervisors will determine which collateral types in their market meet the broad criteria established by the Basel Committee. **(para 521)**	(a) **EXERCISE** – The HKMA will specify the types of other physical collateral when it develops the relevant guideline. Such collateral may include cars, trade receivables, ships and planes.
(b) The Basel Committee recognises that in exceptional circumstances for well-developed and long-established markets, mortgages on office and/or multi-purpose commercial premises and/or multi-tenanted commercial premises may have the potential to receive alternative recognition as collateral in the corporate portfolio. Please refer to footnote 25 of para 74 for a discussion of the eligibility criteria that would apply. The LGD applied to the collateralised portion of such exposures, subject to the limitations set out in paras 119 to 181 of the Standardised Approach, will be set at 35%. The LGD applied to the remaining portion of this exposure will be set at 45%. In order to ensure consistency with the capital charges in the Standardised Approach (while providing a small capital incentive in the IRB Approach relative to the Standardised Approach), supervisors may apply a cap on the capital charge associated with such exposures so as to achieve comparable treatment in both approaches. **(footnote 69 of para 289)**	(b) **NOT EXERCISE** – Mortgages on office and commercial premises will <u>not</u> be recognised as eligible collateral. This national discretion has no immediate relevance to Hong Kong as, for instance, the required statistics to determine whether some of the qualifying conditions are satisfied are not yet available.
(c) For repo-style transactions where conditions in para 170 are satisfied, and the counterparty is a core market participant as specified in para 171, supervisors may choose not to apply the	(c) **EXERCISE** – This will be consistent with the treatment under the Standardised Approach.

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Discretion	Decisions / Policy Intentions
haircuts specified in the comprehensive approach and may instead apply a zero H. **(para 294)**	

4. Equity

Discretion	Decisions / Policy Intentions
(a) Debt obligations and other securities, partnerships, derivatives or other vehicles structured with the intent of conveying the economic substance of equity ownership are considered an equity holding. This includes liabilities from which the return is linked to that of equities. **(para 237)** Supervisors may decide not to require that such liabilities be included where they are directly hedged by an equity holding, such that the net position does not involve material risk. **(footnote 59 of para 237)**	(a) **EXERCISE** – In respect of the recognition of direct hedges of equity exposures, AIs would need to demonstrate that their VaR models can satisfy higher standards to capture residual risk due to hedges. The standards would involve accurate estimates of hedge parameters (such as delta, gamma and vega of derivatives) of the instruments which may have complex structures such as convertibility to underlying stocks. The following criteria would apply to the measurement of such parameters: • AIs' models should capture the non-linear price characteristics of positions, e.g. volatility risk and gamma risk; • AIs are expected to apply a full three-month price shock to positions; and • AIs' risk measurement system should have a set of risk factors that captures the volatilities of the underlying equity prices, i.e. vega risk. AIs should have detailed specifications of the relevant volatilities. This means that AIs should measure the volatilities broken down by different maturities.
(b) The national supervisor has the discretion to re-characterise AIs debt holdings as equities for regulatory purposes and to otherwise ensure the proper treatment of holdings under Pillar Two.	(b) **EXERCISE** – This will ensure that the equity exposures of AIs debt holdings are properly treated in terms of capital requirements and risk management. The HKMA would exercise the discretion on a case-by-case basis, depending on the nature of the debt

Discretion	Decisions / Policy Intentions
(para 238)	holding. AIs will be given a chance to demonstrate that the debt holding is more akin to debt rather than to equity before the HKMA exercises the discretion.
(c) Supervisors will decide which approach or approaches (Market-based or PD/LGD Approach) will be used, and in what circumstances. **(paras 341-343)**	(c) **NOT EXERCISE** – The HKMA will permit AIs to use either the Market-based or PD/LGD Approach, subject to meeting the relevant minimum requirements, to calculate risk-weighted assets for equity exposures in the trading book. Nevertheless, AIs should be able to demonstrate that their choices are appropriate for their equity portfolios and in particular not determined by regulatory arbitrage considerations.
(d) Supervisors may permit a bank to employ different market-based approaches (the simple risk weight method or the internal models method) to different portfolios based on appropriate considerations and where the bank itself uses different approach internally. **(para 348)**	(d) **EXERCISE** – The AI concerned should be able to demonstrate that the approaches employed are appropriate to its equity portfolios.
(e) Supervisors may exclude equity holdings in entities whose debt obligations qualify for a zero risk weight under the Standardised Approach. **(para 356)**	(e) **NOT EXERCISE** – Under the Standardised Approach, the 0% risk weight will only apply to sovereign exposures with external credit ratings of AAA to AA-. Exercising this discretion will mainly benefit PSEs (with the requisite ratings) that are treated as sovereigns. However, the HKMA does <u>not</u> intend to regard PSEs in Hong Kong as sovereigns.
(f) Supervisors may exclude equity holdings made under legislated programmes. This exclusion is limited to an aggregate of 10% of Tier 1 plus Tier 2 capital. Legislated programmes are designed to promote equity investment in specified sectors of domestic economies. **(para 357)**	(f) **NOT EXERCISE** – The HKMA proposes not to exercise this discretion as it would be difficult to define what legislated programmes are. There is currently no such programme in Hong Kong. However, if there were such programmes in Hong Kong in future, the HKMA would consider whether this discretion should be exercised on a case by case basis.

Discretion	Decisions / Policy Intentions
(g) Supervisors may exclude the equity exposures based on materiality. Equity exposures, excluding all legislated programmes mentioned in para 357, are material if their aggregate value exceeds, on average over the prior year, 10% of a bank's Tier 1 plus Tier 2 capital. This materiality threshold is lowered to 5% of a bank's Tier 1 plus Tier 2 capital if the equity portfolio consists of less than 10 individual holdings. National supervisors may use lower materiality thresholds. **(para 358)**	(g) **EXERCISE** – The proposed thresholds are considered adequate. The materiality threshold can effectively reduce the implementation time and costs for AIs that want to adopt the IRB Approach but have immaterial equity exposures.
(h) For a maximum of ten years, supervisors may exempt from the IRB treatment particular equity investments held at the time of the publication of this Framework. **(para 267)**	(h) **NOT EXERCISE** – It will not be practical to define what particular equity investments should be exempted from the IRB treatment.

5. Public sector entities

Discretion	Decisions / Policy Intentions
(a) With regard to the definition of default, supervisors may set the number of past-due days (up to 180 days) to trigger default in PSE obligations, as they consider appropriate to local conditions. **(footnote 82 of para 452)**	(a) **NOT EXERCISE** – While this discretion is to eliminate cases involving technical defaults by PSEs, technical defaults that persist for over 90 days should be rare for PSEs in Hong Kong. In the event that an AI owned by a foreign banking group wants to adopt a different default trigger for PSEs (e.g. 180 days past due) set by its home supervisor, the AI would need to satisfy the HKMA that the potential impact of such a difference on the default/loss estimates is not material. Where necessary, the views of the home supervisor on the IRB models, if they are centrally developed and validated at the home country, will be sought.

6. Purchased receivables - corporate exposures

Discretion	Decisions / Policy Intentions
(a) The "top-down" approach may be used for the treatment of purchased corporate receivables, provided that the purchasing bank's programme for corporate receivables complies with both the criteria for eligible receivables and the minimum operational requirements of this approach. The use of the top-down purchased receivables treatment is limited to situations where it would be an undue burden on a bank to be subject to the minimum requirements for the IRB Approach to corporate exposures that would otherwise apply. Primarily, it is intended for receivables that are purchased for inclusion in asset-backed securitisation structures, but banks may also use this approach, with the approval of national supervisors, for appropriate on-balance sheet exposures that share the same features. Under the "top-down" approach, national supervisors must establish concentration limits above which capital charges must be calculated using the minimum requirements for the "bottom-up" approach for corporate exposures. **(paras 241 and 242)**	(a) **NOT EXERCISE** – As the minimum requirements specified for the "top-down" approach will complicate the implementation of the IRB Approach, the HKMA proposes <u>not</u> to allow AIs to use the "top down" approach. But the impact on AIs should be minimal.
(b) At national discretion, banks may recognise guarantors that are internally rated and associated with a PD equivalent to less than A- under the Foundation IRB Approach for purposes of determining capital requirements for dilution risk. Dilution refers to the possibility that the receivable amount is reduced through cash or non-cash credits to the receivables' obligor. **(footnote 78 of para 373)**	(b) **EXERCISE** – This is consistent with the framework of risk mitigation.

7. Specialised lending

Discretion	Decisions/Policy Intentions
(a) At national discretion, supervisors may allow banks to assign a preferential unexpected loss ("UL") risk weight of 50% to "strong" SL exposures (as opposed to 70% for such exposures), and a 70% UL risk weight to "good" SL exposures (as opposed to 90% for such exposures), provided the exposures have a remaining maturity of less than 2.5 years or the supervisor determines that banks' underwriting and other risk characteristics are substantially stronger than specified in the slotting criteria for the relevant supervisory risk category. **(para 277)** At national discretion, supervisors may allow banks to assign preferential expected loss ("EL") risk weights to other SL exposures falling into the "strong" and "good" supervisory categories as outlined in para 277, the corresponding EL risk weight is 0% for "strong" exposures, and 5% for "good" exposures. **(para 378)**	(a) **EXERCISE** – AIs will have lower UL and EL risk weights for short-term (say with a remaining maturity of less than 2.5 years) specialised lending.

8. High-volatility commercial real estate (CRE)

Discretion	Decisions / Policy Intentions
(a) The UL risk weights associated with each supervisory category (from "strong" to "default") for high-volatility CRE range from 95% to 0% while those for other specialised lending range from 70% to 0%. Where supervisors categorise certain types of commercial real estate as high-volatility CRE in their jurisdictions, they will be required to make public determinations.	(a) **NOT EXERCISE** – The slotting criteria on the supervisory categories set out in Annex 4 of the Basel II document are considered as sufficient for categorising different types of commercial real estate in Hong Kong. In addition, as a lot of quantitative data (e.g. on specific CRE projects) would need to be gathered and analysed to support the categorisation, it would not be practical to define what falls within high-volatility

Discretion	Decisions / Policy Intentions
(paras 227-228 and 280) At national discretion, supervisors may allow banks to assign preferential EL risk weights to high-volatility CRE 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. **(para 379)**	CRE.
(b) At national discretion, supervisors may allow banks to assign preferential risk weights of 70% to "strong" exposures, and 95% to "good" exposures, provided they have a remaining maturity of less than 2.5 years or the supervisor determines that banks' underwriting and other risk characteristics are substantially stronger than specified in the slotting criteria for the relevant supervisory risk category. **(para 282)**	**(b) NOT EXERCISE** – The HKMA proposes not to categorise certain types of commercial real estate as high-volatility CRE.
(c) At national discretion, banks meeting the requirements for high-volatility CRE exposures are able to use a foundation approach that is similar in all respects to the corporate approach, with the exception of a separate risk weight function as described in para 283. Otherwise, banks need to adhere to the supervisory slotting criteria approach. **(para 250)**	**(c) NOT EXERCISE** – The HKMA proposes not to categorise certain types of commercial real estate as high-volatility CRE.
(d) Banks that meet the requirements for the estimation of PD, LGD and EAD are able to use the Advanced Approach to corporate exposures to derive risk weights for all classes of SL exposures except high-volatility CRE. At national discretion,	**(d) NOT EXERCISE** – The HKMA proposes not to categorise certain types of commercial real estate as high-volatility CRE.

Discretion	Decisions / Policy Intentions
banks meeting these requirements for high-volatility CRE exposure are able to use an advanced approach that is similar in all respects to the corporate approach, with the exception of a separate risk weight function as described in para 283. **(para 251)**	

9. Small and medium-sized enterprises

Discretion	Decisions / Policy intentions
(a) Subject to national discretion, supervisors may allow banks, as a failsafe, to substitute total assets for total sales in calculating the SME threshold and the firm-size adjustment set out in para 273. Total assets should be used only when total sales are not a meaningful indicator of firm size. **(para 274)**	(a) **EXERCISE** – The HKMA may allow this for exceptional cases. However, it will ensure that AIs do not make use of this special treatment to obtain capital relief. Further guidance on the criteria and circumstances for allowing AIs to make such a substitution will be set out in the "Risk-weighting Framework for IRB Approach".

10. CRE and RRE as collateral

Discretion	Decisions / Policy Intentions
(a) The national supervisor may under special circumstances recognise mortgage on multifamily residential real estate[2] as eligible collateral for corporate exposures. **(footnote 85 of para 507)**	(a) **NOT EXERCISE** – Multifamily residential housing is a rare form of housing in Hong Kong.

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[2] Definition of multifamily residential housing units according to US Census Bureau: high-rise, garden, town house apartments and condominiums where each unit is not separated from its neighbours by a ground-to-roof wall.

11. Capital treatment for expected and unexpected credit losses

Discretion	Decisions / Policy Intentions
(a) Banks using the IRB Approach for other asset classes must compare (i) the amount of total eligible provisions, as defined in para 380, with (ii) the total expected losses amount as calculated within the IRB approach and defined in para 375. Where the total expected loss amount exceeds total eligible provisions, banks must deduct the difference. Deduction must be on the basis of 50% from Tier 1 and 50% from Tier 2. Where the total expected loss amount is less than total eligible provisions, banks may recognise the difference in Tier 2 capital up to a maximum of 0.6% of credit risk-weighted assets. At national discretion, a limit lower than 0.6% may be applied. Where the calculated expected loss amount is lower than the provisions of the bank, its supervisors must consider whether the expected loss 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. **(paras 43 and 385)**	(a) **RESERVE RIGHT TO EXERCISE** – The HKMA would generally follow the limit of 0.6% of risk-weighted assets. However, in determining whether additional limitations are warranted, the HKMA would need to assess carefully the potential impact of recognising "surplus" provisions (i.e. the amount of total eligible provision in excess of total expected loss) in AIs' Tier 2 capital when more information is available after AIs have put the IRB Systems in place. Initially, the HKMA intends to set a 70% cap on the "surplus" provisions which can be included in Tier 2 capital. The 70% cap is consistent with the 70% cap used for recognition of surplus on revaluation of land, interest in land and securities not held for trading purposes under Tier 2 capital. The HKMA will consult the industry on the appropriate level of limitations after AIs have implemented the IRB Approach (probably during the parallel run period in 2006).
(b) At national supervisory discretion, banks using the Standardised and IRB Approaches may rely on their internal methods for allocating general provisions for recognition in capital under either the Standardised or IRB Approach, subject to the conditions mentioned in paras 384 to 386. Where the internal allocation method is made available, the national supervisor will establish the standards surrounding their use. Banks will need to obtain prior approval from their supervisors to use an internal allocation method for this purpose. **(para 383)**	(b) **RESERVE RIGHT TO EXERCISE** – The HKMA would generally follow the Basel approach of adopting the proportional risk-weighted asset approach as described in para 382. However, it may, on a case-by-case basis, consider whether there are particular circumstances that justify an AI to use its internal allocation methodology.

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MINIMUM REQUIREMENTS

FOR INTERNAL RATING SYSTEMS

UNDER IRB APPROACH

Hong Kong Monetary Authority
August 2004

MINIMUM REQUIREMENTS FOR INTERNAL RATING SYSTEMS UNDER IRB APPROACH

CONTENTS

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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, AIs provide their own estimates of PD and use supervisory estimates of LGD and EAD, and, unless otherwise specified by the HKMA, are not required to take into account the effective maturity of credit facilities.

- "**Advanced IRB Approach**" means that, in applying the IRB framework, AIs 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 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.

- 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

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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 summarised 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 AIs which use or intend to use the IRB Approach to measure capital charges for credit risk.

1.2.2 In the case of AIs that are subsidiaries 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, the HKMA will consider the extent to which reliance can be placed on the work done at the group level. Where necessary, the HKMA 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 subsidiaries in Hong Kong. The HKMA will also assess whether the relevant systems or models can adequately reflect the specific risk characteristics of the AIs' 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 AIs' internally generated inputs to the calculation of capital. To minimise variation in the way in which the IRB Approach is carried out and to ensure significant comparability across AIs, the HKMA considers it necessary to establish minimum qualifying criteria regarding the comprehensiveness and integrity of the internal rating systems of AIs adopting the IRB Approach. The HKMA will employ these criteria for assessing their eligibility to use the IRB Approach.

1.3.2 This paper:

- prescribes the minimum requirements that an AI's 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 the HKMA's supervisory approach to circumstances where an AI 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.

1.3.4   The minimum requirements for internal rating systems of equity exposures under the PD/LGD Approach (including the equity of companies under the retail asset class) 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 AIs 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 an AI'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;

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[1] Under the IRB Approach, assets are broadly categorised into five classes: (i) corporate (with specialised lending as a sub-class); (ii) sovereign; (iii) bank; (iv) retail; and (v) equity. Definitions of these asset classes are detailed in the "Risk-weighting Framework for IRB Approach" (to be issued).

(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".

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. AIs 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 utilise 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 AI's daily credit risk measurement and management process.

2.1.5   Generally, all AIs adopting the IRB Approach should produce their own estimates of PD[2] 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. AIs 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.

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

3. Compliance with minimum requirements

3.1 Ongoing compliance

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

3.2 Supervisory approach to non-compliance

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

3.2.2 Failure to demonstrate immateriality or to produce and satisfactorily implement an acceptable plan will lead the HKMA to reconsider the AI's eligibility for the IRB Approach. During the period of non-compliance, the HKMA will consider the need for the AI 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

Corporate, sovereign and bank exposures

4.1.1 AIs 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.

<u>Borrower rating</u>

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.[3] AIs 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). AIs 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 to an AI (or the banking group[4] of which it is a part), all of its facilities with that AI (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[5], an AI 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.

4.1.5   In assigning a borrower to a borrower grade, AIs should assess the risk of borrower default over a period of at least one year. However, this does not mean that AIs 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

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[3] 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 AI'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.

[4] The banking group covers all entities within the group that are subject to the capital adequacy regime in Hong Kong.

[5] 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.

type, etc.) that affect the loss severity in the case of borrower default.

4.1.7 For AIs 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 AIs should use the supervisory estimates of LGD.

4.1.8 For AIs using the **Advanced IRB Approach**, facility ratings should reflect exclusively LGD. These ratings should cover any and 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[6]. AIs may alter the factors that influence facility grades across segments of the portfolio as long as they can satisfy the HKMA that it improves the relevance and precision of their estimates.

4.1.9 AIs using the supervisory slotting criteria for the specialised lending ("SL") exposures need not apply this two-dimensional requirement to these exposures. Given the interdependence between borrower and transaction characteristics in SL, AIs 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. AIs should assign each retail exposure to a particular pool. For each pool, AIs should estimate PD, LGD and EAD. Multiple pools may share identical PD, LGD and EAD estimates.

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[6] For example, the credit quality of property developers and asset values in the property market are interdependent.

4.1.11 AIs 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 AIs should have specific criteria for slotting an exposure into a pool. These should cover all factors relevant to the risk analysis. At a minimum, AIs 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, instalment 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[7], guarantees and seniority (first vs. second lien). AIs should explicitly address cross-collateral provisions, where present;

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

4.2 Rating structure

Corporate, sovereign and bank exposures

4.2.1 AIs 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.

Borrower rating

4.2.2 Rating systems should have a minimum of seven borrower grades for non-defaulted borrowers and one

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

for defaulted borrowers [8].   While AIs with lending activities focused on a particular market segment may satisfy this requirement with the minimum number of grades, AIs 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 AI has developed complete rating descriptions and criteria for their assignment, and separately quantifies PDs for these modified grades.

4.2.4   AIs 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 [9]. 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 AIs 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. AIs 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.

Retail exposures

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

[9] 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.

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 an AI's retail exposures in particular pools.

4.3   Multiple rating methodologies/systems

4.3.1   An AI'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, an AI 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 minimise 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, AIs 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, AIs 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. the HKMA, internal or external audit) to

understand the rating assignments, replicate them and evaluate their appropriateness.

- The criteria should be consistent with an AI's internal lending standards and its policies for handling troubled borrowers and facilities.

4.4.2   AIs should take into account all relevant and material information that are available to them when assigning ratings to borrowers and facilities.[10] Information should be current. The less information an AI has, the more conservative should be its rating assignments. An external rating can be the primary factor determining an internal rating assignment. However, the AI should ensure that other relevant information is also taken into account. AIs 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   AIs 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 in the "Risk-weighting Framework for IRB Approach".

4.4.4   AIs 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. AIs 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, AIs are expected to apply a longer time horizon in assigning ratings. A borrower rating should represent

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[10] 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, AIs 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. Formalising 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.

the AI'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 AI's assessment should not be confined to risk factors that may occur in the next 12 months.

4.5.2   AIs 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, AIs should take a conservative view of projected information. Where limited data are available, AIs should adopt a conservative bias to their analysis.

4.5.4   AIs 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 an AI 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 judgement of credit officers[11].

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 judgement and oversight is necessary to ensure that all relevant and material information is taken into consideration and that the model is used appropriately.

Requirements for using models

4.6.3   AIs 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:

- AIs 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.

- AIs 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 AI's actual borrowers or facilities.

- When model results are combined with human judgement, the judgement should take into account all relevant information not considered by the model. AIs should have written guidance describing how human judgement and model results are to be combined.

- AIs should have procedures for human review of model-based rating assignments. Such procedures should focus on finding and limiting errors associated with model weaknesses.

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[11] In practice, the distinction between the two is not precise. In many model-based processes, personal experience and subjective judgement 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 judgement-based processes.

- AIs 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 AIs 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 an AI's 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:

- the organisation 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[12]; and

- the rationale for assigning borrowers to a particular rating system if multiple rating systems are used.

4.7.5 In respect of the internal control structure, the documentation should cover the following:

- the organisation 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 AIs 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

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[12] The supervisory review could be a review conducted by either the HKMA or the home supervisor of the AI concerned (in the case of a foreign bank subsidiary).

borrowers, exposures, or pools, and the data sources used to estimate the model;

- the guidance describing how human judgement and model results are to be combined;

- the procedures for human review of model-based rating assessments;

- a rigorous statistical process (including out-of-time and out-of-sample performance tests) 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 AI to satisfy the HKMA.

5. Rating system operations

5.1 Coverage of ratings

5.1.1 For corporate, sovereign and bank exposures, each borrower and all recognised 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 an AI is exposed should be separately rated. An AI should demonstrate to the HKMA 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 AIs 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. AIs should follow the requirements set out in CR-G-2 "Credit Approval, Review and Records" relating to credit approval and review. Credit policies and approval/review procedures should reinforce and foster the independence of the rating process.

5.2.2   Borrower and facility ratings should be reviewed and updated at least annually. Higher risk borrowers or problem exposures should be subject to more frequent review.

5.2.3   In addition, borrower and facility ratings should be refreshed whenever material information on the borrower or facility comes to light. [13] AIs 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   AIs 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.

5.3   Overrides

5.3.1   AIs should clearly articulate the situations where human judgement 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, AIs should have guidelines and processes for monitoring cases where human judgement 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 judgement, AIs 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   AIs should collect and store data on key borrower and facility characteristics to support their internal credit risk

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

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 AIs' 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, AIs should collect and retain data relating to their internal ratings as required under *[the disclosure rules]*.

Corporate, sovereign and bank exposures

5.4.4   AIs should maintain complete rating histories on borrowers and recognised 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 realised default rates associated with rating grades and rating migration.

5.4.5   AIs 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 realised 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 AIs utilising 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 realised losses for SL exposures where supervisory slotting criteria are applied.

Retail exposures

5.4.7 AIs 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 realised outcomes on LGD and EAD.

5.5 Stress tests

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

5.5.2 Highlighted below are some common risk factors that are relevant to credit risk stress tests:

- counterparty risk characterised by the increase in PDs (e.g. the rise in delinquencies and charge-offs) and worsening of credit spreads. AIs 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. AIs 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 AIs 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, AIs 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 The HKMA will consider the results of stress tests conducted by an AI and how these results relate to its capital plans according to the principles set out under *[the rules on supervisory review]*. The use of stress tests for risk management purposes and the HKMA's approach to evaluating the appropriateness and effectiveness of stress tests conducted by AIs are set out in IC-5 "Stress-testing".

5.5.5 In addition to the general stress tests described above, AIs should conduct a regular (at least quarterly) credit risk stress test to assess the effect of certain specific conditions on their total regulatory capital requirements for credit risk. The test would be one chosen by the AI, subject to supervisory review by the HKMA. The test should be meaningful and reasonably conservative. For this purpose, AIs should at least consider the effect of mild recession scenarios on their PDs, LGDs and EADs. Where an AI operates in several markets, it

need not conduct such a stress test in all of those markets, but it should stress portfolios containing the vast majority of its total exposures.

5.5.6 At a minimum, a mildly stressed scenario chosen by an AI should resemble the economic recession in Hong Kong in the second half of 2001 and the first quarter of 2002. Hong Kong recorded three consecutive quarters of negative GDP growth of -0.46%, -1.12% and -0.62% in September 2001, December 2001, and March 2002 respectively.[14] AIs 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 AIs may use either a static or dynamic test to calculate the impact of the stress scenario.[15] Whatever method is used, the AI should include a consideration of the following sources of information:

- the AI's own data should allow for estimation of the migration in ratings of its exposures;

- the AI should evaluate the evidence of migration in external ratings. This would include the AI broadly matching its internal grades to external rating categories.

5.5.8 Where the results of an AI'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)[16], the HKMA will discuss the concern with the AI's management. Depending on the circumstances of each case, the HKMA will require the AI 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-

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[14] During this period, the quality of personal lending worsened as a result of the rising unemployment rate (5.2% in September 2001, 6.2% in December 2001 and 7% in March 2002) and significant increase in personal bankruptcies.

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

[16] The results of the stress test may, on the other hand, indicate no difference in the capital calculated based on the IRB Approach if the AI already uses a rating approach that takes into account stress-testing (see subsection 4.5 above).

looking basis, thereby reducing the impact of rising capital requirements during an economic downturn.

6. Corporate governance and oversight

6.1 Corporate governance

6.1.1 Effective oversight by an AI's Board of Directors and senior management is critical for sound risk rating system operations. See CG-1 "Corporate Governance of Locally Incorporated Authorized Institutions" and IC-1 "General Risk Management Controls" for details of their risk management responsibilities. Many of the requirements and practices cited have a general application.

6.1.2 The Board (or an appropriate delegated committee) and senior management should approve key elements of the risk rating and estimation processes. These parties should possess a general understanding of the AI'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 AI's 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 AI'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 realised 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   AIs 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 analysing summary reports from the AI's 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 the HKMA 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 an AI'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 AI to disclose information in relation to its rating processes and controls surrounding these processes, which is required under *[the disclosure rules]*.

6.3.3 The HKMA may commission an external audit under section 59(2) of the Banking Ordinance of an AI's rating assignment process and estimation of loss characteristics 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, parties 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 AIs 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 recognised that AIs 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, AIs should document their justifications.

7.2   Credible track record

7.2.1   An AI should have a credible track record in the use of information generated by its internal rating system. The AI should demonstrate that it has been using a rating system that was broadly in line with the requirements of this paper for at least <u>two years</u> prior to qualification. Improvements to an AI's rating system will not render the AI non-compliant with this requirement.

7.2.2   If the internal rating systems of an AI, which is owned by a foreign banking group, have been developed and used at the group level for an extended period of time, the AI is still required to meet the "use" test locally. Nevertheless, there may be scope for the HKMA 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 subsidiary.

7.2.3   AIs 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, the HKMA will regard the rating system as having met the "use" test if that system has already fulfilled the two-year 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, AIs should meet the requirements set out in ***[the disclosure rules]***. Failure to meet the disclosure requirements will render an AI ineligible to use the relevant IRB Approach.

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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 AIs
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 AIs 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 realised default rates with estimated PDs	***Disclosure of key internal ratings information:*** • disclosure of items of information as stated under ***[the disclosure rules]***.

Annex A : Assessment factors in assigning ratings

A1   Borrower ratings

A1.1   The following are the relevant factors that AIs 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   AIs 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, AIs should be convinced that the third party is committed to ongoing support of the borrower. AIs should establish specific rules for third-party support;

- the maturity of the transaction. It is recognised 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 recognised collateral. This factor can have a major impact on the final facility rating because of its significant effect on the LGD of a facility. AIs 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 realisable value or forced-sale value where necessary).

Annex B : Rating approaches

B1   Background

B1.1   In choosing the architecture of its rating system, an AI 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 AI's 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   An AI 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 AI'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 riskiness 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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MINIMUM REQUIREMENTS

FOR RISK QUANTIFICATION

UNDER IRB APPROACH

Hong Kong Monetary Authority
August 2004

MINIMUM REQUIREMENTS FOR RISK QUANTIFICATION 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 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, AIs provide their own estimates of PD and use supervisory estimates of LGD and EAD, and, unless otherwise specified by the HKMA, are not required to take into account the effective maturity of credit facilities;

- "**Advanced IRB Approach**" means that, in applying the IRB framework, AIs 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 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;

- 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

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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 AIs which use or intend to use the IRB Approach to measure capital changes for credit risk.

1.2.2 In the case of AIs that are subsidiaries 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, the HKMA will consider the extent to which reliance can be placed on the work done at the group level. Where necessary, the HKMA 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 subsidiaries in Hong Kong. The HKMA will also assess whether the relevant systems or models can adequately reflect the specific risk characteristics of the AIs' 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 AIs' internally generated inputs to the calculation of capital. To minimise the variation in the way in which the IRB Approach is carried out and to ensure significant comparability across AIs, the HKMA considers it necessary to establish minimum qualifying criteria concerning the comprehensiveness and integrity of the internal rating systems of AIs adopting the IRB Approach. The HKMA 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 an AI 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

- set out the HKMA's supervisory approach to circumstances where an AI 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.

1.3.4 The minimum requirements for risk quantification of equity exposures under the PD/LGD Approach (including the equity of companies under the retail asset class) 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". The minimum requirements for adopting the internal models approach to calculation of capital charges for equity exposures are set out in section 8 below.

1.3.5 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 an AI'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

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[1] Under the IRB Approach, assets are broadly categorised into five classes: (i) corporate (with specialised 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. Definitions of these asset classes are detailed in the "Risk-weighting Framework for IRB Approach" (to be issued).

(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. AIs 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 utilise 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 AI's daily credit risk measurement and management process.

2.1.5   Generally, all AIs adopting the IRB Approach should produce their own estimates of PD2 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. AIs 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, an AI should demonstrate to the HKMA that it meets all minimum requirements at the outset and on an ongoing basis. Furthermore, the AI's overall credit risk management

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

practices should be consistent with the guidelines and sound practices issued by the HKMA.

3.2 Supervisory approach to non-compliance

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

3.2.2 Failure to demonstrate immateriality or to produce and satisfactorily implement an acceptable plan will lead the HKMA to reconsider the AI's eligibility for the IRB Approach. During the period of non-compliance, the HKMA will consider the need for the AI 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. Risk quantification

4.1 Overall requirements for estimation

General

4.1.1 This section addresses the broad standards for an AI's own estimates of PD, LGD, and EAD. Except for certain equity and specialised lending exposures, all AIs 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 AIs 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 AIs 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. Standards for the use of such estimates are set out in section 6.

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 AIs' 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 AIs may utilise internal data and data from external sources (including pooled data) in their own estimation. Where such data are used, AIs 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 an AI's exposures and standards. The AI should also demonstrate that economic or market conditions underlying the data are relevant to current and foreseeable conditions.

4.1.11 For estimates of LGD and EAD, AIs 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 an AI with confidence in the accuracy and robustness of its estimates. The estimation technique should perform well in out-of-sample tests.

4.1.12 The HKMA may allow some flexibility in the application of required standards for data that are collected prior to an AI's adoption of the IRB Approach. However, in such cases the AI should demonstrate to the HKMA that appropriate adjustments have been made to achieve broad equivalence with the data without such flexibility. Data collected beyond the date of adoption should conform to the minimum standards unless otherwise stated.

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. AIs 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.

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, AIs 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 AIs should subject all aspects of the quantification process, including design and implementation, to an appropriate degree of <u>independent review and validation</u>. 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:

- an AI considers that the obligor is unlikely to pay in full its credit obligations to the AI (or the banking group[3] of which it is a part), without recourse by the AI to actions such as realising security (if held);

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[3] The banking group covers all entities within the group that are subject to the capital adequacy regime in Hong Kong.

- the obligor is past due for more than 90 days[4] on any material portion of its credit obligations to the AI (or the banking group of which it is a part). Past due credit obligations are regarded as material if they represent <u>5%</u> or more of the obligor's outstanding credit obligations. AIs 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 Appendix 2.1 of the Completion Instructions of the "Return of Loans and Advances and Provisions - MA(BS)2A" ("Loans and Advances Return").

4.2.2 The elements to be taken as indicators of unlikeliness to pay include:

- an AI 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 section 3 of <u>CR-G-6</u> "Interest Recognition";

- an AI makes a charge-off or account-specific provision resulting from a significant perceived decline in asset quality subsequent to the AI taking on the exposure[5];

- an AI sells the credit obligation at a material credit-related economic loss;

- an AI 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. [6] The criteria for determining rescheduled assets and those for uplifting the "rescheduled" status are set out in Appendix 2.1 of the

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[4] In the event that an AI 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 AI will need to satisfy the HKMA 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.

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

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

Completion Instructions of the Loans and Advances Return[7];

- an AI has filed for the obligor's bankruptcy or a similar order in respect of the obligor's credit obligation to the AI;

- 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 AI.

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 an AI to treat all other obligations of the customer to the AI (or its banking group) as defaulted.

4.2.4 AIs 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, AIs 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, AIs should demonstrate to the HKMA 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 an AI adopts the IRB Approach. Larger discrepancies require larger adjustments for the sake of conservatism. Internal data (including those pooled by AIs) used in such estimates beyond the date of adoption of the IRB Approach should be consistent with the reference definition.

4.2.6 If an AI considers that the status of a previously defaulted exposure is such that the trigger of the reference definition no longer applies, the AI 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.

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[7] Also see "Rescheduled Loans", *HKMA Quarterly Bulletin* (December 2003), which provides interpretative guidance on the definition of "rescheduled loans".

Treatment of overdrafts

4.2.7 Overdraft facilities authorized by an AI 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. AIs 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 HKMA does not allow the practice of re-ageing facilities.

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 AIs should not simply measure the loss recorded in accounting records. They should be able to compare accounting and economic losses (some AIs may also adopt the concept of economic loss in their accounting records). AIs' 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 an AI 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 an AI 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 should be at least five years for at least one source. If the available observation period spans a longer period for any source, and the data are

relevant and material, this longer period should be used. An AI need not give equal importance to historical data if it can convince the HKMA that more recent data are a better predictor of default rates.

4.4.2 The HKMA 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 to AIs that can implement such approaches 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.

Corporate, sovereign, and bank exposures

4.4.3 AIs 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, AIs 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 AIs may have a primary technique and use others as a point of comparison and potential adjustment. The HKMA will not be satisfied by mechanical application of a technique without supporting analysis. AIs should recognise the importance of judgmental considerations in combining results of techniques and in making adjustments for limitations of techniques and information.

4.4.5 AIs 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, AIs should add a greater margin of conservatism in their estimate of PD. The use of pooled data across AIs may also be recognised. An AI should demonstrate that the internal rating systems and criteria of other AIs in the pool are comparable with its own.

4.4.6 AIs 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 AI'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. An AI's analysis should include a comparison of the default definitions used, subject to the requirements in subsection 4.2 above. The AI should document the basis for the mapping.

4.4.8 AIs 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. An AI 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 AI should at least compare the results of both methods.

4.4.9 AIs' 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 AI-specific basis of assigning exposures to pools, AIs should regard internal data as the primary source of information for estimating loss characteristics. AIs are permitted to use external data or statistical models for quantification provided a strong link can be demonstrated between:(i) the AI's process of assigning exposures to a pool and the process used by the external data source; and (ii) the AI's internal risk profile and the composition of the external data. In all cases AIs 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. An AI 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 recognise 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 characterised by seasoning effects that peak several years after origination. AIs 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, AIs 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 an AI does not take seasoning effects into account and its own estimates of PD are considered to be too low, the HKMA may require the AI to use higher values of PD for the calculation of capital charges.

4.5 Requirements specific to own-LGD estimates

4.5.1 AIs 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, an AI 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.

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 AIs will need to incorporate it into their LGD estimates. For this purpose, AIs 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. The HKMA will continue to monitor and encourage the development of appropriate approaches to this issue.

4.5.3   In its analysis, an AI 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 AI'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 recognises the potential inability of AIs to gain both control of their collateral and liquidate it expeditiously.   To the extent, that LGD estimates take into account the existence of collateral, AIs should establish internal requirements for collateral management, operational   procedures,   legal   certainty   and   risk management process that are generally consistent with those required for the **Standardised Approach** for calculating credit risk capital changes.

4.5.5   Recognising the principle that realised losses can at times systematically exceed expected levels, the LGD assigned to a defaulted asset should reflect the possibility that the AI would have to recognise additional, unexpected losses during the recovery period. For each defaulted asset, the AI 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 AI's best estimate of expected loss on the asset represents the capital requirement for that asset, and should be set by the AI 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 AI.

4.5.6   Estimation of LGD may involve mapping facility-specific data elements in an AI'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 AI's portfolio. The AI 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   AIs 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 AIs

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 <u>seven years</u> 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 <u>five years</u>. The less data an AI has, the more conservative it should be in its estimation. An AI need not give equal importance to historical data if it can demonstrate to the HKMA that more recent data are a better predictor of loss rates.

4.5.10 The HKMA applies the transitional requirement of a minimum of <u>two years</u> of data at the time of adopting the IRB Approach for retail exposures to AIs 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.

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, AIs should estimate EAD at no less than the current drawn amount, subject to recognising 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). AIs 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. AIs' 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   AIs 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, AIs 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 AIs 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 AIs may have sufficient internal data to examine the impact of previous recessions. However, some AIs 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 AIs believe to be the material drivers of EAD. The choices should be supported by AIs' credible internal analysis. AIs should be able to provide a breakdown of their EAD experience by the factors they see as the drivers of EAD. AIs should use all relevant and material information in their derivation of EAD estimates. Across facility types, AIs 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 should be paid by AIs to their specific policies and strategies adopted in respect of account monitoring and payment processing. AIs should also consider their ability and willingness to prevent further drawings in circumstances short of payment default, such as covenant violations or other technical default events. AIs should also have adequate systems and procedures in place to monitor facility amounts, current outstandings against committed lines and changes in outstandings per borrower and per grade. AIs should be able to monitor outstanding balances on a daily basis.

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 an AI has, the more conservative it should be in its estimation. An AI need not give equal importance to historical data if it can demonstrate to HKMA that more recent data are a better predictor of drawdowns.

4.6.10 The HKMA applies the transitional requirement of a minimum of two years of data at the time of adopting the IRB Approach for retail exposures to AIs 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.

4.7 Minimum requirements for assessing the effect of guarantees and credit derivatives

4.7.1 The standards set out in paragraphs 4.7.2 to 4.7.12 are applicable to corporate, sovereign, and bank exposures under the **Advanced IRB Approach** where own estimates of LGD are used and to retail exposures.

Guarantees

4.7.2 When an AI uses its own estimate of LGD, it may reflect the risk mitigating effect of guarantees through an adjustment to PD or LGD estimates. The option to adjust LGDs is available only to those AIs that have been approved to use their own internal estimates of LGD. For retail exposures, where guarantees exist, either in support of an individual obligation or a pool of exposures, an AI may reflect the risk reducing effect either through its estimate of PD or LGD, provided this is done consistently. In adopting one or the other technique, an AI should adopt a consistent approach, both across types of guarantees and over time.

4.7.3 In all cases, both the borrower and all recognised guarantors should be assigned a borrower rating at the outset and on an ongoing basis. An AI should follow all the minimum requirements for assigning borrower ratings set out in the "Minimum Requirements for Internal Rating Systems under IRB Approach" and this paper, including the regular monitoring of the guarantor's condition and the ability and willingness to honour its obligations. Consistent with the requirements in paragraph 5.4.4 of the "Minimum Requirements for Internal Rating Systems under IRB Approach", an AI should retain all relevant information on the borrower 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.

4.7.4 In no case can an AI assign the guaranteed exposure an adjusted PD or LGD such that the adjusted risk weight would be lower than that of a comparable, direct exposure to the guarantor. Neither criteria nor rating processes are permitted to consider possible favourable effects of imperfect expected correlation between default events for the borrower and the guarantor for the purposes of regulatory capital requirements. As such, the adjusted risk weight should not reflect the risk mitigation of "double default".

Eligible guarantors and guarantees

4.7.5 There are no restrictions on the types of eligible guarantors. AIs should have clearly specified criteria for the types of guarantors they will recognise for regulatory capital purposes. The acceptance criteria for guarantors and guarantees set out in CR-G-7 "Collateral and Guarantees" are applicable for the purpose of recognition of credit risk mitigation.

4.7.6 The guarantee should 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 IRB Approach** to corporate, bank, and sovereign exposures, guarantees prescribing conditions under which the guarantor may not be obliged to perform (conditional guarantees) may be recognised under certain conditions. Specifically, the onus is on the AI to demonstrate that the assignment criteria adequately address any potential reduction in the risk mitigation effect.

Adjustment criteria

4.7.7 AIs should have clearly specified criteria for adjusting borrower grades or LGD estimates (or in the case of retail and eligible purchased receivables, the process of allocating exposures to pools) to reflect the impact of guarantees for regulatory capital purposes. These criteria should be as detailed as those for assigning exposures to grades consistent with paragraphs 4.4.1 to 4.4.2 of the "Minimum Requirements for Internal Rating Systems under IRB Approach", and should follow all the minimum requirements for assigning borrower or facility ratings set out in this paper.

4.7.8 The criteria should be plausible and intuitive, and should address the guarantor's ability and willingness to perform under the guarantee. The criteria should also address the likely timing of any payments and the degree to which the guarantor's ability to perform under the guarantee is correlated with the borrower's ability to repay. AIs' criteria should also consider the extent to which residual risk to the borrower remains, for example a currency mismatch between the guarantee and the underlying exposure.

4.7.9 In adjusting borrower grades or LGD estimates (or in the case of retail and eligible purchased receivables, the process of allocating exposures to pools), AIs should take all relevant available information into account.

Credit derivatives

4.7.10 The minimum requirements for guarantees are relevant also for single-name credit derivatives. The general criteria set out in <u>CR-G-12</u> "Credit Derivatives" are applicable for the purpose of recognition of credit risk mitigation.

4.7.11 Additional considerations arise in respect of asset mismatches. The criteria used for assigning adjusted borrower grades or LGD estimates (or pools) for exposures hedged with credit derivatives should require that the asset on which the protection is based (i.e. the reference asset) cannot be different from the underlying asset, unless the conditions outlined in the **Foundation IRB Approach** are met (see the "Risk-Weighting Framework for IRB Approach").

4.7.12 In addition, the criteria should address the payout structure of the credit derivative and conservatively assess the impact this has on the level and timing of recoveries. AIs should also consider the extent to which other forms of residual risk remain.

For AIs using supervisory LGD estimates

4.7.13 The minimum requirements outlined in paragraphs. 4.7.2 to 4.7.12 are also applicable to AIs using the foundation LGD estimates except for the following:

- the AI is not able to use an "LGD-adjustment" option; and

- the range of eligible guarantees and guarantors is limited to those outlined in the "Risk-weighting Framework for IRB Approach".

4.8 Minimum requirements for estimating PD and LGD (or EL) for purchased receivables

4.8.1 This subsection sets out the minimum requirements for quantifying the risk of eligible purchased receivables (corporate or retail) making use of IRB treatment of dilution risk.

4.8.2 The purchasing AI is required to group the receivables into sufficiently homogeneous pools so that accurate and consistent estimates of PD and LGD (or EL) for default losses and EL estimates of dilution losses can be determined.

4.8.3 In general, the risk bucketing process will reflect the seller's underwriting practices and the heterogeneity of its customers. In addition, methods and data for estimating PD, LGD, and EL should comply with the existing risk quantification standards for retail exposures. In particular, quantification should reflect all information available to the purchasing AI regarding the quality of the underlying receivables, including data for similar pools provided by the seller, by the purchasing AI, or by external sources. The purchasing AI should determine whether the data provided by the seller are consistent with expectations agreed upon by both parties concerning, for example, the type, volume and on-going quality of receivables purchased. Where this is not the case, the purchasing AI is expected to obtain and rely upon more relevant data.

5. Validation of internal estimates

5.1 General requirements

5.1.1 Validation is an integral part of an AI's rating system architecture to provide reasonable assurances about its rating system. AIs 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 the HKMA 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 AIs should regularly compare realised default rates with estimated PDs for each grade and be able to demonstrate that the realised 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 AIs should be clearly documented. This analysis and documentation should be updated at least annually.

5.1.4 Similarly, AIs 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 AIs 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. AIs' 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 AIs 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 AIs should demonstrate that quantitative testing and other validation methods do not vary systematically with the economic cycle. Changes in methods and data (both data sources and periods covered) should be clearly and thoroughly 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 AIs should have well-articulated internal standards for situations where deviations in realised 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 realised values continue to be higher than expected values, AIs 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 an AI's rating system is review of rating system developments, in particular analysing 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 AI makes a change to its rating system. As the rating system is likely to change over time as the AI 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 maximise 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 an AI uses scoring systems for assigning credit ratings, it should demonstrate that those systems have adequate discriminating power.

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 an AI'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.[8] The minimum requirements for verification of ratings assigned by individuals are:

- a transparent rating process;

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[8] The specific steps will depend on how much the process incorporates specific guidelines and how much the exercise of judgment is allowed. As the dependence on specific guidelines increases, other individuals can more easily confirm that guidelines were followed by reference to sufficient documentation. As the dependence on judgment rises, the rating review function will have to be staffed increasingly by experts with appropriate skills and knowledge about the rating policies of the AI.

- 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, AIs 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.

5.3.6 AIs 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. AIs can look for consistency in ranking or consistency in the values of rating characteristics for similarly rated credits. Examples of such benchmarking activities include:

- analysing 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 an AI's portfolio and comparing it to historical transition matrices from publicly available ratings or

external data pools.

5.3.7 If benchmarking evidence suggests a pattern of rating differences, it should lead the AI 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, AIs should:

- develop their own statistical tests to back-test their rating systems[9];

- 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, AIs should rely more heavily on review of rating system developments, process verification, and benchmarking to assure themselves and other interested parties that their rating systems are likely to be accurate. Validation in its early stages should also depend on an AI's management exercising informed judgment about the likelihood of the rating system working — not simply on empirical tests.

5.4.4 Where AIs rely on supervisory, rather than internal, estimates of risk parameters, they are encouraged to compare realised LGDs and EADs to those set by the HKMA. The information on realised LGDs and EADs should form part of an AI's assessment of economic capital.

6 Supervisory LGD and EAD estimates

6.1 Overall requirements

6.1.1 The requirements in this section apply to AIs under the **Foundation IRB approach**.

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[9] At this time, there is no generally agreed upon statistical test of the accuracy of IRB systems.

6.1.2 For the recognition of eligible financial collateral, AIs should first meet the minimum requirements described in the **Standardised Approach** for calculating credit risk capital changes.

6.1.3 AIs should meet the additional minimum requirements set out in this section in order to receive recognition for other collateral types. AIs are also required to comply with the relevant requirements set out in CR-G-7 "Collateral and Guarantees".

6.2 Requirements for recognition of eligible commercial real estate ("CRE") and residential real estate ("RRE") collateral

Definition of eligible CRE and RRE

6.2.1 Eligible CRE and RRE collateral for corporate, sovereign and bank exposures are defined as:

- collateral where the risk of the borrower is not materially dependent upon the performance of the underlying property or project, but rather on the underlying capacity of the borrower to repay the debt from other sources. As such, repayment of the facility is not materially dependent on any cash flow generated by the underlying CRE/RRE serving as collateral; and

- the value of the collateral pledged should not be materially dependent on the performance of the borrower. This requirement is not intended to preclude situations where purely macroeconomic factors affect both the value of the collateral and the performance of the borrower.

6.2.2 In the light of the generic description above and the definition of corporate exposures, income producing real estate that falls under the specialised lending asset class is specifically excluded from recognition as collateral for corporate exposures.

Operational requirements

6.2.3 Apart from meeting the definition above, CRE and RRE will be eligible for recognition as collateral for corporate claims only if all of the following operational requirements are met.

6.2.4 **Legal enforceability**: any claim on a collateral taken should be legally enforceable in all relevant jurisdictions, and any claim on collateral should be properly filed on a timely basis. Collateral interests should reflect a perfected lien (i.e. all legal requirements for establishing the claim have been fulfilled). Furthermore, the collateral agreement and the legal process underpinning it should

be such that they provide for the AI to realise value of the collateral within a reasonable timeframe.

6.2.5 **Objective market value of collateral**: the collateral should be valued at or less than the current fair value under which the property could be sold under private contract between a willing seller and an arm's length buyer on the date of valuation.

6.2.6 **Frequent revaluation**: an AI is expected to monitor the value of the collateral on a frequent basis and at a minimum once every year. More frequent monitoring is suggested where the market is subject to significant changes in conditions. Statistical methods of evaluation (e.g. reference to house price indices, sampling etc.) may be used to update estimates or to identify collateral that may have declined in value and that may need re-appraisal. A qualified professional should evaluate the property when information indicates that the value of the collateral may have declined materially relative to general market prices or when a credit event, such as default, occurs.

6.2.7 **Priority in claim**: Only first liens on, or charges over, collateral are permissible. As such, AIs should ensure that there is no prior claim, or claim of equal ranking, by another party on the collateral[10].

Collateral management requirements

6.2.8 In addition to the operational requirements, AIs should comply with the following collateral management requirements:

- the types of CRE and RRE collateral accepted by the AI and lending policies (e.g. loan-to-value ratios) when this type of collateral is taken should be clearly documented;

- the AI should take steps to ensure that the property taken as collateral is adequately insured against damage or deterioration;

- the AI should monitor on an ongoing basis the extent of any permissible prior claims (e.g. tax) on the property;

- the AI should appropriately monitor the risk of environmental liability arising in respect of the

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[10] Prior or equal claims on the collateral referred to here do not include the prior right of preferential creditors, such as outstanding tax claims and employees' wages.

collateral, such as the presence of toxic material on a property.

6.3 Requirements for recognition of financial receivables

Definition of eligible financial receivables

6.3.1 Eligible financial receivables are claims with an original maturity of less than or equal to one year where repayment will occur through the commercial or financial flows related to the underlying assets of the borrower.

6.3.2 Such receivables include both self-liquidating debt arising from the sale of goods or services linked to a commercial transaction and general amounts owed 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 securitisations, sub-participations or credit derivatives.

Operational requirements

6.3.3 The legal mechanism by which collateral is given should be robust and ensure that the lending AI has clear rights over the proceeds from the collateral.

6.3.4 AIs should take all steps necessary to fulfil local requirements in respect of the enforceability of security interest, e.g. by registering a security interest with the Company's Registry. There should be a framework that allows the potential lender to have a perfected first priority claim over the collateral.

6.3.5 All documentation used in collateralised transactions should be binding on all parties and legally enforceable in all relevant jurisdictions. AIs should 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.

6.3.6 The collateral arrangements should be properly documented, with a clear and robust procedure for the timely collection of collateral proceeds. AIs' procedures should ensure that any legal conditions required for declaring the default of the customer and timely collection of collateral are observed. In the event of the obligor's financial distress or default, the AI should have legal authority to sell or assign the receivables to other parties without the consent of the receivables' obligors.

Risk management requirements

6.3.7   AIs should have a sound process for determining the credit risk in the receivables.   Such a process should include, among other things, analyses of the borrower's business and industry (e.g. effects of the business cycle) and the types of customers with whom the borrower does business.   Where an AI relies on the borrower to ascertain the credit risk of the customers, the AI should review the borrower's credit policy to ascertain its soundness and credibility.

6.3.8   The margin between the amount of the exposure and the value of the receivables should reflect all appropriate factors, including the cost of collection, concentration within the receivables pool pledged by an individual borrower, and potential concentration risk within an AI's total exposures.

6.3.9   AIs should maintain a continuous monitoring process that is appropriate for the specific exposures (either immediate or contingent) attributable to the collateral to be utilised as a risk mitigant.   This process may include, as appropriate and relevant, ageing reports, control of trade documents, borrowing base certificates, frequent audits of collateral, confirmation of accounts, control of the proceeds of accounts paid, analyses of dilution (credits given by the borrower to the issuers of the receivables) and regular financial analysis of both the borrower and the issuers, especially in the case when a small number of large-sized receivables are taken as collateral.

6.3.10   Observance of an AI's overall concentration limits should be monitored.   Additionally, compliance with loan covenants, environmental restrictions, and other legal requirements should be reviewed on a regular basis.

6.3.11   The receivables pledged by a borrower should be diversified and not be unduly correlated with the borrower.   Where the correlation is high, e.g. where some issuers of the receivables are reliant on the borrower for their viability or the borrower and the issuers belong to a common industry, the attendant risks should be taken into account in the setting of margins for the collateral pool as a whole.   Receivables from affiliates of the borrower (including subsidiaries and employees) will not be recognised as risk mitigants.

6.3.12   An AIs should have a documented process for collecting receivable payments in distressed situations. The requisite facilities for collection should be in place, even when the AI normally looks to the borrower for collections.

6.4   Requirements for recognition of other collateral

6.4.1 The HKMA may allow for recognition of the credit risk mitigating effect of certain other physical collateral. Basically, the HKMA will use the following two standards in determining if any collateral type could be recognised:

- existence of liquid markets for disposal of collateral in an expeditious and economically efficient manner;

- existence of well established, publicly available market prices for the collateral. AIs need to ensure that the amount they receive when the collateral is realised does not deviate significantly from these market prices.

6.4.2 In order for a given AI to receive recognition for additional physical collateral, it should meet all the standards set out in subsection 6.2 above, subject to the following modifications:

- The loan agreement should include detailed descriptions of the collateral plus detailed specifications of the manner and frequency of revaluation.

- The types of physical collateral accepted by the AI and policies and practices in respect of the appropriate amount of each type of collateral relative to the exposure amount should be clearly documented in internal credit policies and procedures and available for examination and/or audit review.

- The AI's credit policies with regard to the transaction structure should address appropriate collateral requirements relative to the exposure amount, the ability to liquidate the collateral readily, the ability to establish objectively a price or market value, the frequency with which the value can readily be obtained (including a professional appraisal or valuation), and the volatility of the value of the collateral. The periodic revaluation process should pay particular attention to "fashion-sensitive" collateral to ensure that valuations are appropriately adjusted downward of fashion, or model year, obsolescence as well as physical obsolescence or deterioration.

- In cases of inventories (e.g. raw materials, work-in-process, finished goods, dealers' inventories of autos) and equipment, the periodic revaluation process should include physical inspection of the collateral.

7 Requirements for recognition of leasing

7.1 Minimum standards

7.1.1 Leases other than those that expose an AI to residual value risk (see paragraph 7.2.1 below) should be accorded the same treatment as exposures collateralised by the same type of collateral. The minimum requirements for recognition of the collateral type (CRE/RRE or other collateral) should be met. In addition, the AI should meet the following standards:

- robust risk management on the part of the lessor with respect to the location of the asset, the use to which it is put, its age, and planned obsolescence;

- a robust legal framework establishing the lessor's legal ownership of the asset and its ability to exercise its rights as owner in a timely fashion; and

- the difference between the rate of depreciation of the physical asset and the rate of amortisation of the lease payments should not be so large as to overstate the credit risk mitigation attributed to the leased assets.

7.2 Residual value risk

7.2.1 Residual value risk is an AI's exposure to potential loss due to the fair value of the equipment declining below its residual estimate at lease inception. Leases that expose the AI to residual value risk should be treated in the following manner:

- the discounted lease payment stream receives a risk weight appropriate for the lessee's financial strength (PD) and supervisory or own-estimate of LGD, whichever is appropriate;

- the residual value is risk-weighted at 100%.

8 Calculation of capital charges for equity exposures – internal models approach

8.1 Capital charge and risk quantification

8.1.1 To be eligible for the internal models market-based approach AIs should demonstrate to the HKMA that they meet certain quantitative and qualitative minimum requirements at the outset and on an ongoing basis. Any AI that fails to demonstrate continued compliance with the minimum requirements should develop a plan for rapid return to compliance, obtain the HKMA's approval of the plan, and implement that plan in a timely fashion. In the interim, AIs would be expected to compute capital charges using the simple risk weight method set out in the "Risk-weighting Framework for IRB Approach".

8.1.2 AIs should meet the minimum quantitative standards set out in this subsection for the purpose of calculating

minimum capital charges under the internal models approach.

General quantitative standards

8.1.3 The capital charge is equivalent to the potential loss on an AI's equity portfolio arising from an assumed instantaneous shock equivalent to the <u>99th percentile</u>, one-tailed confidence interval of the difference between <u>quarterly returns</u> and an appropriate risk-free rate computed over a long-term sample period. AIs may use risk measures calculated according to shorter holding periods scaled up to a quarter by the square root of time (for the treatment of instruments with values which are non-linear in nature, see paragraph 8.1.12 below).

8.1.4 The estimate of potential loss should be robust to adverse market movements relevant to the long-term risk profile of the AI's specific holdings. The data used to represent return distributions should

- reflect the longest sample period for which data are available and meaningful in representing the risk profile of the AI's specific equity holdings; and

- be sufficient to provide conservative, statistically reliable and robust loss estimates that are not based purely on subjective or judgmental considerations.

8.1.5 AIs should demonstrate to the HKMA that the shock employed provides a conservative estimate of potential losses over a relevant long-term market or business cycle. AIs should combine empirical analysis of available data with adjustments based on a variety of factors in order to attain model outputs that achieve appropriate realism and conservatism.

8.1.6 When market data are used in AIs' models, they should update their data sets at least once quarterly and should also reassess them whenever market prices are subject to material changes.

Value-at-risk models

8.1.7 In constructing VaR models estimating potential quarterly losses, AIs may use quarterly data or convert shorter horizon period data to a quarterly equivalent using an analytically appropriate method supported by empirical evidence. Such adjustments should be based on a well-developed and well-documented thought process and analysis, and be applied conservatively and consistently over time. Where only limited relevant data are available, AIs should add appropriate margins of conservatism in order to avoid over-optimism.

8.1.8 The choice of historical observation period for calculating VaR should be constrained to a minimum length of one year. For AIs that use a weighting scheme or other methods for the historical observation period, the effective observation period should be at least one year, i.e. the weighted average time lag of the individual observations cannot be less than six months. The HKMA may also require an AI to estimate volatility using a shorter observation period if, in the judgment of the HKMA, this is justified by a significant upsurge in price volatility. AIs should update their data sets whenever market prices are subject to material changes.

8.1.9 No particular type of VaR model is prescribed. AIs will be free to use models based, for example, on variance-covariance matrices, historical simulation or Monte Carlo simulation as long as the models capture all material risks run by the AIs.

8.1.10 The internal model used should be able to capture adequately all of an material risks embodied in equity returns including both the general market risk and specific risk exposure of an AI's equity portfolio.[11] The model should adequately explain historical price variation, capture both the magnitude and changes in the composition of potential concentrations, and be robust to adverse market environments. The population of risk exposures represented in the data used for estimation should be closely matched to or at least comparable with those of the AI's equity exposures.

Other modelling techniques

8.1.11 AIs may also use modelling techniques such as historical scenario analysis to determine minimum capital requirements for banking book equity holdings. The use of such models is conditioned upon the AI demonstrating to the HKMA that the methodology and its output can be quantified in the form of the loss percentile specified under paragraph 8.1.3 above.

8.1.12 AIs should use an internal model that is appropriate for the risk profile and complexity of their equity portfolio. Where an AI has material holdings with values that are highly non-linear in nature (e.g. equity derivatives,

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[11] "General market risk" of the portfolio captures the risk of loss arising from changes in general risk factors corresponding to each of the equity markets such as the Hang Seng Index. "Specific risk" of each banking book position in equity related instruments captures the risk of adverse movements in the prices of these instruments owing to factors related to individual issuers.

convertibles), the model should be designed to capture appropriately the risks associated with such instruments. The following criteria apply to the measurement of such risks:

- AIs should use models that capture the non-linear price characteristics of options and derivatives positions, e.g. volatility risk and gamma risk;

- AIs are expected to move ultimately towards the application of a full quarterly price shock to options positions or positions that display option-like characteristics. In the interim, the HKMA may require AIs to adjust their capital measure for options risk through other methods, e.g. stress-testing; and

- AIs' risk measurement systems should have a set of risk factors that captures the volatilities of the rates and prices underlying option positions, i.e. vega risk. AIs with relatively large or complex options portfolios should have detailed specifications of the relevant volatilities. This means that AIs should measure the volatilities of options positions broken down by different maturities.

8.1.13 Equity portfolio correlations can be integrated into an AI's internal risk measures. The use of explicit correlations (e.g. utilisation of a variance-covariance VaR model) should be fully documented and supported using empirical analysis. The appropriateness of implicit correlation assumptions should be evaluated by the HKMA in its review of model documentation and estimation techniques.

8.1.14 Mapping of individual positions to proxies, market indices, and risk factors should be plausible, intuitive, and conceptually sound. Mapping techniques and processes should be demonstrated with both theoretical and empirical evidence to be appropriate for the specific equity holdings. Where professional judgment is combined with quantitative techniques in estimating a holding's return volatility, the judgment should take into account the relevant and material information not considered by the other techniques used.

8.1.15 Where factor models are used, AIs should demonstrate through empirical analyses the appropriateness of risk

factors, including their ability to cover both general and specific risk.[12]

8.1.16 Estimates of the return volatility of equity investments should incorporate relevant and material available data, information, and methods. Independently reviewed internal data or data from external sources (including pooled data) should be used. The number of risk exposures in the sample, and the data period used for quantification should be sufficient to provide AIs with confidence in the accuracy and robustness of their estimates. AIs should take appropriate measures to limit the potential of both sampling bias and survivorship bias in estimating return volatilities.

8.1.17 Regarding general market risk, at a minimum, there should be a risk factor that is designed to capture market-wide movements in equity prices (e.g. a market index). Positions in individual securities or in sector indices can be expressed in "beta equivalents" relative to this market-wide index.

Modelling specific risk

8.1.18 The criteria for applying modelled estimates of specific risk require that an AI's model:

- explains the historical price variation in the portfolio[13];

- demonstrably captures concentration (magnitude and changes in composition)[14];

- be robust to an adverse environment[15]; and

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[12] Either single or multi-factor models are acceptable depending upon the nature of an AI's equity holdings. AIs are expected to ensure that the factors are sufficient to capture the risks inherent in the equity portfolio. Risk factors should correspond to the appropriate equity market characteristics (for example, public, private, market capitalisation industry sectors and sub-sectors, operational characteristics) in which the AI holds significant positions.

[13] The key ex-ante measures of model quality are "goodness-of-fit" measures which address the question of how much of the historical variation in price value is explained by the model. One measure of this type which can often be used is an R-squared measure from regression methodology. If this measure is to be used, an AI's model would be expected to be able to explain a high percentage, such as 90%, of the historical price variation or to include explicitly estimates of the residual variability not captured in the factors included in this regression. For some types of models, it may not be feasible to calculate a goodness-of-fit measure. In such cases the AI is expected to work with the HKMA to define an acceptable alternative measure which would meet this regulatory objective.

[14] AIs would be expected to demonstrate that the model is sensitive to changes in portfolio construction and that higher capital charges are required for portfolios that have increasing concentration.

[15] The AI should be able to demonstrate that the model will signal rising risk in an adverse environment. This could be achieved by incorporating in the historical estimation period of the model at least one full business cycle and ensuring that the model would not have been inaccurate in the downward

- be validated through back-testing aimed at assessing whether specific risk is being captured accurately (see paragraph 8.3.2 below).

8.1.19 The most thorough approach to covering both general and specific risk would be to have risk factors corresponding to the volatility of individual equity issues.

Stress-testing

8.1.20 A rigorous and comprehensive stress-testing programme should be in place for both public and private equities. AIs should follow the relevant requirements on stress-testing set out in section 10 of CA-G-3 "Use of Internal Models to Measure Market Risk". At a minimum, stress tests should be employed to provide information about the effect of tail events beyond the level of confidence assumed in the internal models approach.

8.2 Risk management process and controls

8.2.1 AIs' overall risk management practices used to manage their banking book equity investments should be consistent with the sound business practices recognised by the HKMA. With regard to the development and use of internal models for capital purposes, AIs should establish policies, procedures, and controls to ensure the integrity of the model and modelling process used to derive regulatory capital standards.

8.2.2 Internal models should be fully integrated into an AI's risk management infrastructure including use in:

- establishing the investment management process based on model output;

- measuring and assessing equity portfolio performance (including the risk-adjusted performance);

- allocating economic capital to equity holdings, if applicable; and

- evaluating overall capital adequacy as required under the supervisory review process.

8.2.3 AIs should establish management systems, procedures, and control functions for ensuring the periodic and independent review of all elements of the internal modelling process, including approval of model revisions,

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portion of the cycle. Another approach for demonstrating this is through simulation of historical or plausible worst-case environments.

vetting of model inputs, and review of model results, such as direct verification of risk computations. In particular, internal models and procedures should be reviewed at least annually to determine whether they remain fully applicable to the current portfolio and to external conditions. Proxy and mapping techniques and other critical model components should receive special attention.

8.2.4 These reviews should assess the accuracy, completeness, and appropriateness of model inputs and results and focus on both finding and limiting potential errors associated with known weaknesses and identifying unknown model weaknesses. Such reviews should be conducted by an internal independent unit (e.g. internal audit or independent risk control unit), or by an independent external third party (e.g. external audit).

8.2.5 AIs should have adequate systems and procedures for monitoring investment limits and the risk exposures of equity investments.

8.2.6 The units responsible for the design and application of the model should be functionally independent from the units responsible for managing individual investments.

8.2.7 Parties responsible for any aspect of the modelling process should be adequately qualified. Management should allocate sufficient skilled and competent resources to the modelling function.

8.3 Validation of equity internal models

8.3.1 AIs should have a robust system in place to validate the accuracy and consistency of their internal models and modelling processes. An AI should demonstrate to the HKMA that the internal validation process enables it to assess the performance of its internal model and processes consistently and meaningfully.

8.3.2 To facilitate model validation through back-testing on an ongoing basis, AIs using the internal models approach should construct and maintain appropriate databases on the actual quarterly performance (computed using realised and unrealised gains and losses) of their equity investments as well on the estimates derived using their internal models. AIs should also back-test the volatility estimates used within their internal models and the appropriateness of the proxies used in the model. The HKMA would ask AIs to scale their quarterly forecasts to a different, in particular shorter, time horizon, store performance data for this time horizon and perform back-tests on this basis.

8.3.3 AIs should conduct regular analyses (at least annually) based on back-testing of actual return performance

against modelled estimates, and be able to demonstrate that such returns are within the expected range for the portfolio and individual holdings. Such analyses should make use of historical data that are over as long a period as possible. The methods and data used in such analyses should be clearly documented by AIs.

8.3.4 AIs should make use of other quantitative validation tools (e.g. statistical tests for validating the selection of risk factors or explanatory variables) and comparisons with external data sources. The analysis should be based on data that are appropriate to the portfolio, are updated at least quarterly, and cover a relevant observation period. AIs' internal assessments of the performance of their own model should be based on long data histories, covering a range of economic conditions, and ideally one or more complete business cycles.

8.3.5 AIs should demonstrate that quantitative validation methods and data are consistent through time. Changes in estimation methods and data (both data sources and periods covered) should be clearly and thoroughly documented.

8.3.6 Evaluation of actual performance to expected performance over time provides a basis for AIs to refine and adjust internal models on an ongoing basis. AIs using internal models should thus have established well-articulated model review standards. These standards are especially important for situations where actual results significantly deviate from expectations and where the validity of the internal model is called into question. These standards should take account of business cycles and similar systematic variability in equity returns.

8.4 Documentation

8.4.1 AIs should fully document all material elements of their internal models and modelling process. The modelling process itself as well as the systems used to validate internal models including all supporting documentation, validation results, and the findings of internal and external reviews are subject to oversight and review by the HKMA.

8.4.2 The burden is on the AI to satisfy the HKMA that a model has good predictive power and that regulatory capital requirements should not be distorted as a result of its use. Accordingly, all critical elements of an internal model and the modelling process should be fully and adequately documented, including:

- internal model's design and operational details;

- compliance with the minimum quantitative and qualitative standards;

- application of the model to different segments of the portfolio;

- estimation methodologies and rationale for the choice of the internal modelling methodology;

- analyses demonstrating that the model and modelling procedures are likely to result in estimates that meaningfully identify the risk of the AI's equity holdings;

- a detailed outline of the theory, assumptions and/or mathematical and empirical basis of the parameters, variables, and data source(s) used in the model;

- a rigorous statistical process (including out-of-time and out-of-sample performance tests) for validating the selection of explanatory variables;

- circumstances under which the model does not work effectively;

- responsibilities of parties involved in the modelling; and

- model approval and model review processes.

8.4.3 AIs should document a history of major changes in the model over time and changes made to the modelling process subsequent to the last review of the HKMA. If changes have been made in response to an AI's internal review standards, the AI should document that these changes are consistent with its internal model review standards.

8.4.4 Where proxies and mapping are employed, the documentation should show the relevant and material factors used in mapping individual investments into proxies. In summary, AIs should demonstrate that the proxies and mappings employed:

- are adequately comparable to the underlying holding or portfolio;

- are derived using historical economic and market conditions that are relevant and material to the underlying holdings or, where not, that an appropriate adjustment has been made; and

- are robust estimates of the potential risk of the underlying holding.

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Section 6   Operational risk

Introduction

6.1   Basel II introduces an explicit capital charge for a bank's operational risk, i.e. the risk of losses caused by inadequate or failed internal processes, people and systems or by external events, such as natural disasters. Similar to the range of options provided for assessing exposures to credit risk, Basel II incorporates three approaches for AIs measuring their exposures to operational risk, reflecting different levels of quality and sophistication of measurement.

6.2   The three approaches, in order of increasing sophistication, are (i) the Basic Indicator Approach (BIA); (ii) the Standardised Approach (SA); and (iii) the Advanced Measurement Approaches (AMA). Basel II specifically requires that banks adopting the more advanced approaches should meet certain qualifying criteria which represent key elements of adequate corporate governance and risk management systems for operational risk.

6.3   In order to allow one further year of impact analysis and parallel calculations under the existing and new rules, the Basel Committee has decided that the implementation date for AMA (as well as the AIRB approach for credit risk) will be pushed back to year-end 2007.

HKMA's proposed approach to operational risk

6.4   For implementing the Pillar 1 capital requirement on operational risk, the HKMA will offer the first two approaches, i.e. the BIA and the SA (including the Alternative Standardised Approach) on 1 January 2007 to all AIs. The AMA will not be available to AIs according to the Basel timetable, in view of the fact that the techniques for quantitative

measurement of operational risk under AMA are still evolving and the development of AMA techniques in Hong Kong is at a preliminary stage. Most AIs have indicated their preference to use either the BIA or SA for calculation of operational risk capital charge, even those planning to adopt IRB approaches to credit risk. Therefore, the implementation of AMA in Hong Kong is not a priority for the time being.

6.5 In the case where some international banks may want to extend the application of AMA to their subsidiary AIs in Hong Kong, the HKMA may consider the feasibility of allowing those foreign bank subsidiaries to use AMA on a case by case basis. As stated in Basel II (para 656), a bank adopting the AMA may, with approval of its host supervisors and the support of its home supervisor, use an allocation mechanism for the purpose of determining the regulatory capital requirement of the subsidiaries that are not deemed to be significant relative to the overall banking group. Supervisory approval would be conditional on the bank demonstrating to the satisfaction of the relevant supervisors that the allocation mechanism for these subsidiaries is appropriate and can be supported empirically. The HKMA will consider carefully how this treatment can be included in the revised capital adequacy regime. In order to keep the framework simple, the HKMA may recognise the operational risk measure of an AI derived from AMA under Pillar 2 while still requiring the AI to use either BIA or SA for Pillar 1.

6.6 While the HKMA will monitor the development of AMA with a view to implementation in Hong Kong at some future time, we will encourage the development of data systems capable of being used for AMA purposes in due course. AIs wishing to adopt the SA should ensure that their internal systems will enable the necessary mapping of income streams or products to specified business lines. They should also be able to demonstrate the reasons behind their mapping.

6.7 Regardless of the approach used, AIs are expected to have in place internal operational risk management systems that are commensurate

with the nature and complexity of their business activities. In this connection, AIs are expected to follow the principles laid down in the Basel paper on Sound Practices for the Management and Supervision of Operational Risk (available on the Basel website at http://www.bis.org). This paper sets out relevant standards on how operational risk in banks can be identified, assessed, monitored and mitigated/ controlled, and will form part of the qualitative criteria for the adoption of the more advanced approaches for measuring operational risk capital requirements under the revised capital adequacy framework.

6.8   To facilitate AIs to implement the standards in the Basel paper, the HKMA is developing a supervisory guideline on the risk management of operational risk. It is currently proposed that a draft of this guideline will be issued for industry consultation later this year.

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Section 7   Asset Securitisation

7.1   The current Accord contains little guidance on the capital treatment for securitisation transactions. Basel II puts forward a more robust and elaborate approach for exposures arising from both traditional and synthetic securitisations. The capital treatment for such exposures will be determined on the basis of their economic substance rather than legal form.

7.2   The HKMA will offer both the Standardised and IRB Approaches (including the Ratings-based Approach, Internal Assessment Approach and the Supervisory Formula Approach) for the calculation of capital requirements under the securitisation framework. AIs that are approved to use the IRB Approach for the type of underlying exposures securitised (e.g. corporate or retail portfolio) should use the IRB Approach for securitisations. In addition, AIs should meet the operational requirements for the recognition of risk transference that are applicable to both the Standardised and IRB Approaches of the securitisation framework.

7.3   The HKMA is aiming to issue for industry consultation rules and guidance on the securitisation framework in the second half of 2005.

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Section 8   Market Risk

8.1   The 1996 Market Risk Amendment to the Capital Accord will remain largely unchanged. The HKMA will adopt the guidance given by the Basel Committee on defining the trading book and prudent valuation of trading book positions, and revise the trading book capital treatment for specific risk such that it will be consistent with the banking book capital treatment under Basel II. Apart from incorporating these changes, the HKMA will need to recast the existing market risk capital regime and bring it within the revised capital adequacy framework.   The supervisory guideline on "Credit Derivatives" (CR-G-12) will also be amended to incorporate the capital treatment set out in Basel II.

8.2   Regarding the use of internal models to calculate regulatory capital requirements, the approval given to AIs currently using internal models for market risk will be grandfathered when Basel II is implemented.

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Section 9　　Pillar 2 – Supervisory Review Process

Section 9.1　　Implementation Approach for Pillar 2 (Supervisory Review)

Purpose

9.1.1　This section outlines the approach that the HKMA intends to adopt in implementing the Pillar 2 framework in Hong Kong, including a description of:

(i)　the possible areas of enhancement of the existing supervisory approach in order to closely align with the key principles of Pillar 2;

(ii)　the major factors that will be considered in developing the Pillar 2 assessment framework (including the process for reviewing AIs' internal capital adequacy assessment); and

(iii)　the approximate timetable for consulting the industry on the Pillar 2 requirements.

The Pillar 2 principles

9.1.2　Pillar 2 is a critical and integral part of Basel II.　Its main objectives are to:

(i)　ensure that banks have adequate capital to support the risks in their businesses;

(ii)　encourage banks to develop and use better risk management techniques for monitoring and controlling the risks; and

(iii)　foster an active dialogue between banks and supervisors regarding the fulfilment of capital adequacy and risk management standards.

9.1.3 To achieve the above objectives, four key principles of supervisory review are laid down in the Basel II Framework, with focus on the following aspects:

(i)   banks should have an internal process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining the required level of capital;

(ii)   supervisors should have the capability to review banks' internal capital adequacy assessments and determine whether the resultant capital position is adequate;

(iii)   supervisors should expect banks to operate above the minimum regulatory capital ratios and have the ability to require banks to hold capital in excess of the minimum; and

(iv)   supervisors should seek to intervene at an early stage to prevent banks' capital from falling below prudent levels.

Proposed implementation approach

9.1.4 The main elements of Pillar 2 are already embedded in the existing supervisory approach, which provides a good basis for the conduct of the supervisory review process. Implementation of Pillar 2 in Hong Kong will, therefore, be more of the nature of an elaboration and refinement rather than a radical change of existing practices.

9.1.5 Consistent with the existing approach, all locally incorporated AIs, including those that will be on the Basic Approach for credit risk, will be subject to Pillar 2 on both a solo and consolidated basis. The scope of assessment and requirements, e.g. in relation to the internal capital adequacy assessment process (CAAP), will however be commensurate with the nature, size and complexity of business of individual AIs. Where applicable, Pillar 2 will also be extended to AIs' holding companies that will be captured under the new capital requirements.

9.1.6 At present, the MA is empowered under the Banking Ordinance to increase the minimum capital ratio of licensed banks from 8% to up to 12%, and of RLBs and DTCs to up to 16%. The MA has exercised this power to set an individual minimum capital adequacy ratio (CAR) of at least 10% for each locally incorporated AI (largely by reference to the AI's CAMEL rating). The use of trigger ratios set at a level above the minimum ratio also provides an additional safeguard to ensure early supervisory intervention if capital ratios are declining.

9.1.7 The HKMA does not anticipate major changes to the existing framework (including the ceiling of 12% and 16% for the minimum ratio) when the supervisory review process is implemented. Nevertheless, further enhancements will be made in respect of the following:

(i)   developing a more transparent and systematic approach for evaluating the capital adequacy of individual AIs, including the determination of their minimum CAR. The feasibility of developing a "scorecard" for this purpose is being explored;

(ii)   establishing an approach for assessing AIs' CAAP, the results of which will be taken into account in determining their minimum CAR; and

(iii)   refinement of the HKMA's risk-based supervisory framework to ensure that all requisite Pillar 2 factors are covered.

Paragraphs 9.1.9 to 9.1.21 below provide more details on the above points.

9.1.8 With the implementation of Pillar 2, there will be more supervisory focus on the quality of risk management standards in AIs rather than just setting capital against risks. In particular, AIs will be encouraged to broaden their emphasis on other non-credit risks. This is seen as a natural development of the move towards risk-based supervision over the past few years. In this regard, the HKMA has already developed

supervisory guidance on risk management standards in key Pillar 2 areas such as interest rate risk in the banking book and stress-testing (see <u>Annex 9 - I</u> for more details) to promote the adoption of international best practices within the banking sector.

Supervisory review process

9.1.9   A bank's CAAP and the supervisor's evaluation of its capital adequacy are two main elements of the supervisory review process.   While expressed as separate processes, these two elements are in practice closely intertwined, especially for the larger and more sophisticated banks.   The interaction between the two processes will generate an important and necessary dialogue, and feedback mechanism, through which the supervisor can:

(i)   gain deeper insights into the bank's overall control and risk management framework;

(ii)   establish a closer understanding of how individual banks approach the measurement of risks and the amount of internal capital allocated to them; and

(iii)   assess the extent to which the bank's CAAP may be relied upon as an input into the supervisor's evaluation of the adequacy of its capital held against all material risks.

9.1.10   After Pillar 2 is implemented in Hong Kong, all locally incorporated AIs will be expected to have systems in place for conducting CAAP.   The HKMA will review AIs' CAAP as part of the risk-based supervisory process.   In addition, there will be an ongoing evaluation of AIs' capital adequacy, which, among other things, will have regard to their CAAP capabilities.   As a matter of principle, the more effective is an AI's CAAP, the more it will be possible for the HKMA to rely on this for setting the minimum CAR in due course.

Capital adequacy assessment process

9.1.11 The CAAP is a comprehensive process that an AI should put in place for identifying and measuring the risks in its business and for assessing how much capital is needed to support these risks. The fundamental elements of a sound capital assessment process should include:

(i)   policies and procedures to identify, measure and report the risks inherent in the AI's activities;

(ii)   a process to relate the AI's internal capital to its risks;

(iii)   a process to state the AI's capital adequacy goals in relation to risk, taking into account its strategic focus and business plan; and

(iv)   a process of internal controls, review and audit to ensure the integrity of the overall management process.

9.1.12 The CAAP should capture all material risks of the AI, including at least the eight specific risks (credit, interest rate, market, liquidity, operational, legal, reputation and strategic) covered under the HKMA's risk-based supervisory framework. The overall environment within which the CAAP should operate is also important. Adequate corporate governance and proper risk management / internal control arrangements constitute the foundation of an effective CAAP.

9.1.13 Each AI should establish the CAAP to fit its own circumstances and needs, having regard to the risk profile and level of sophistication of its operations. The HKMA expects the CAAP to be a risk-based process and to form an integral part of the management process and decision-making culture of an AI. In assessing capital adequacy, the AI's management needs to be mindful of the particular stage of the business cycle in which the AI is operating. The AI should apply rigorous and forward-looking stress tests to assess the impact of possible adverse events or scenarios on its capital. It should also be

able to explain and demonstrate how the CAAP meets supervisory requirements, how the internal capital targets are chosen, and how these targets are consistent with its overall risk profile and current operating environment.

9.1.14 Recognising that only the largest banks currently conduct economic capital allocation, it is envisaged that most AIs, in particular the smaller ones, will need more time to develop their capital planning and assessment capabilities. The HKMA will, at least initially, conduct its own assessment and set the minimum CAR for individual AIs (although the results of their CAAP will also be taken into account).

Supervisory evaluation of capital adequacy

9.1.15 The HKMA aims to make use of this process to:

(i)   review and evaluate an AI's exposure to risks (i.e. risk profile);

(ii)   review and evaluate the adequacy and reliability of the AI's CAAP;

(iii)   review and evaluate the adequacy of the AI's internal capital and funding capacity in relation to the assessment of its overall risk profile;

(iv)   monitor on an ongoing basis the AI's compliance with various minimum standards and conditions required for regulatory capital purposes; and

(v)   identify any weakness or inadequacies and necessary prudential measures.

9.1.16 The evaluation process will cover all activities of an AI, whether operating locally or overseas. The HKMA may use stress and scenario tests to help in forming its own judgement on what constitutes an adequate level of the AI's capital in relation to its risk and control profile or in establishing the need for early intervention. The evaluation will be forward-looking to the extent that it will consider, based on information

known at the time, whether the AI's risk profile is likely to change over the forthcoming period.

9.1.17 The HKMA will carry out the evaluation process regularly (say, at least annually), but the depth and frequency of evaluation may vary depending on the nature and complexity of individual AIs and the overall assessment of the quality of their corporate governance, CAAP and systems and controls, etc. The HKMA will assess an AI's risk profile through a variety of sources (e.g. banking returns, off-site reviews, on-site examinations, prudential interviews and routine supervisory contacts) as part of its risk-based prudential supervision. As the evaluation will involve the exercise of supervisory judgement and discretion, the HKMA will ensure that the process is transparent to the AI concerned.

__Determination of minimum CAR__

9.1.18 To enhance its approach to evaluating AIs' capital adequacy, the HKMA is in the process of developing a more refined and transparent framework for setting the minimum CAR of individual AIs. The HKMA is also considering the extent to which a "scorecard" can be developed to facilitate the process, but obviously judgement will still be an important factor in the overall assessment.

9.1.19 The HKMA will refine the risk-based supervisory process to ensure that it explicitly covers all the requisite Pillar 2 factors for determining the minimum CAR, which may include the following:

(i)   the risks of an AI which are not directly or fully captured under Pillar 1 (e.g. credit concentration risk, interest rate risk in the banking book, liquidity risk, residual operational risk and other material risks such as strategic and reputation risks);

(ii) the AI's risk management systems and internal controls, including the infrastructure for meeting business needs and other support systems;

(iii) the AI's CAAP and capability to withstand business cycles and adverse events, in addition to the quality of capital and access to additional capital;

(iv) the AI's corporate governance arrangements; and

(v) other relevant factors specific to the AI concerned.

9.1.20 The HKMA is inclined to give clear incentives to AIs to improve their risk management. For example, if an AI can demonstrate its proficiency in managing credit or operational risk by having systems comparable to the more advanced approaches under Basel II (although the systems may not be used for capital purposes), the HKMA may reduce its minimum CAR to reflect the risk mitigating effect of such systems.

9.1.21 In the case of foreign bank subsidiaries, the HKMA will continue to exercise its legal duty under the Banking Ordinance, through the setting of minimum CAR, to ensure that they maintain adequate capital in Hong Kong. The evaluation of their capital adequacy will however take into account the strength and availability of parental support as well as other relevant input from the home supervisor.

Consultation timetable

9.1.22 The HKMA will continue to issue relevant supervisory guidance on the risk management standards expected of AIs (e.g. in relation to operational risk). It will also aim to issue for industry consultation in the first half of 2005 detailed requirements and guidelines on the Pillar 2 framework, including the criteria and framework for assessing AIs' capital adequacy and the effectiveness of their CAAP.

Supervisory Guidance on Risk Management Practices applicable to the Supervisory Review Process

Background

1. An important aspect of Pillar 2 lies in its emphasis on the comprehensive recognition of risk (i.e. not just on credit risk) in a bank's capital planning and management process. Apart from requiring banks to maintain adequate capital to support the risks they undertake, Pillar 2 encourages them to develop and use better risk management techniques for monitoring and controlling these risks.

2. Pillar 2 thus provides the impetus for banks to improve their ability to manage a wider range of risks. These include specific risks not directly or fully addressed under Pillar 1 (e.g. interest rate risk in the banking book, liquidity risk, residual operational risk and other material risks such as strategic and reputation risks). There will also be an increasing focus on the use of stress-testing for assessing the capital impact arising from business cycles and adverse events.

Relevant risk management guidance

3. In line with the above developments, the HKMA has already issued a number of supervisory guidelines, in the form of modules of the Supervisory Policy Manual (SPM), to assist AIs in enhancing their risk management capabilities and to enable them to be better prepared for compliance with the relevant requirements under Pillar 2. Some of the SPM modules, a brief description of which is given below, are of particular relevance to the supervisory review process by providing guidance on risk management standards in key Pillar 2 areas. The SPM

modules are available for on-line access under the icon of "Supervisory Policy Manual" in the HKMA's public website (www.hkma.gov.hk).

Stress-testing (IC-5)

4. Stress-testing plays a key role in the assessment of capital adequacy under Pillar 2. In the case of AIs wishing to adopt the IRB Approach, there is a specific qualifying criterion that they should ensure that they have sufficient capital to meet the Pillar 1 requirements after taking account of the results of a credit risk stress test, covering at least the effect of mild recession scenarios (e.g. two consecutive quarters of zero growth).

5. The SPM module on "Stress-testing" helps to promote the development of sound stress-testing practices among AIs and prepare them for complying with stress-testing requirements under Pillar 2 in due course. This module provides guidance to AIs on the use of stress tests for risk management purposes and sets out the HKMA's approach to evaluating the appropriateness and effectiveness of the stress tests conducted by AIs.

Interest Rate Risk Management (IR-1)

6. Interest rate risk in the banking book is a risk explicitly covered under Pillar 2. If supervisors determine that a bank is not holding capital commensurate with the level of interest rate risk, they should require the bank to reduce its risk, to hold a specific additional amount of capital, or to combine the two remedies. Particular attention will be paid to "outlier banks" whose economic value declines by more than 20% of the sum of Tie 1 and Tier 2 capital as a result of applying a standardised interest rate shock of 200 basis points to the bank's interest rate risk exposures.

7. The SPM module on "Interest Rate Risk Management" provides guidance to AIs on the principles and sound practices of interest rate risk

management as well as the HKMA's approach to applying the 20% benchmark mentioned above. It also helps AIs evaluate the adequacy and effectiveness of their interest rate risk management.

Liquidity Risk Management (LM-1)

8. Liquidity risk is one of the risk areas not specifically addressed under Pillar 1. To enhance the existing supervisory approach to liquidity risk and incorporate international standards and best practices where appropriate, the HKMA has recently consulted the banking industry on a new SPM module on "Liquidity Risk Management", which sets out the revised supervisory approach and provides guidance to AIs on the key elements of effective liquidity risk management.   Under the revised liquidity regime, more supervisory emphasis will be placed on AIs' liquidity risk management systems and controls, including their ability to adequately manage cash flow positions and conduct scenario analysis.

Foreign Exchange Risk Management (TA-2)

9. Foreign exchange risk is one of the risks covered under the market risk capital adequacy regime.   In order to provide more comprehensive guidance to AIs on how such risk should be managed and to enhance the existing supervisory approach to monitoring foreign exchange risk, the HKMA has recently consulted the banking industry on a new SPM module on "Foreign Exchange Risk Management". This module, among other things, sets out the processes for effective management of foreign exchange risk, including the monitoring and control of foreign exchange settlement risk and the exposures of borrowers to exchange rate risk. In developing this module, the HKMA has taken into account international standards and best practices as well as the experience of the 1997-98 Asian Crisis.

10. The HKMA will continue to issue other relevant supervisory guidance on the risk management standards expected of AIs (e.g. in relation to

operational risk) to facilitate their upgrading of existing systems and implementation of Basel II requirements.

Section 10   Pillar 3 – Market Discipline

Purpose

10.1   The purpose of this Pillar is to complement Pillars 1 and 2 by encouraging market discipline through the public disclosure of key information on risk exposures and capital adequacy.

Approach

10.2   Disclosures are required to be made at BHC and AI level, or, if no BHC is designated by the HKMA, at AI level only.   The level and content of Pillar 3 disclosures required vary according to the measurement and calculation approaches adopted by a relevant AI for credit risk and operational risk under Pillar 1 and whether the relevant AI has a BHC designated by the HKMA.

10.3   The HKMA may partially or completely exempt BHCs/AIs, or any class of BHCs/AIs or any individual BHC/AI, from publishing or disclosing information in accordance with criteria for exemptions to be specified in guidelines.

10.4   Pillar 3 disclosures are to be made on a semi-annual basis, except for (i) certain qualitative disclosures on risk management objectives and policies to be published on an annual basis; and (ii) Tier 1 and total capital adequacy ratios, and their components, to be disclosed on a quarterly basis, where quarterly disclosure statements are produced by the AI. The quarterly disclosure of capital information is not mandatory but encouraged.

Going Forward

10.5   A Working Party on Financial Disclosure that was formed to look into matters relating to disclosure by AIs will be reconvened to consider the detailed disclosure requirements and the approach recommended above in due course.

10.6   The HKMA will continue to monitor the development of quarterly disclosures in Hong Kong and in the international community and recommend changes as appropriate.

Section 11   Work Programme

Section 11.1   Legislation in Respect of Capital Requirements

Background

11.1.1   In Hong Kong, the current framework for measuring AIs' CARs is embodied in Part XVII and the Third Schedule to the BO. These are supplemented by supervisory guidelines and technical notes issued by the MA from time to time. As all the detailed requirements for computing CARs are set out in the BO, the legal backing for the existing capital adequacy framework is strong.

11.1.2   Given the fact that the method of calculating CARs under Basel II is considerably more complex than that currently in the Third Schedule, legislating for the revised regime through the existing approach, i.e. by incorporating all the detailed calculations in the Third Schedule is considered to be neither practical nor cost-effective. Moreover, to keep pace with both developments in the industry which impact on CARs and international practices which will evolve over time, there will be a need on a continuing basis to revise and keep up-to-date the CAR regime in Hong Kong. These necessitate streamlining of the existing process for legislating for the revised capital regime in Hong Kong.

Rule-making power of the HKMA under the Banking Ordinance

11.1.3   In light of the above, it is proposed that a rule-making approach be adopted, under which the BO will be amended to provide for the introduction of a revised capital framework which will operate in accordance with rules promulgated by the MA. These rules will, it is

anticipated, likely have the status of subsidiary legislation and will be subject to negative vetting by the Legislative Council (LegCo). It is not our intention to seek a general rule-making power, and the power sought will largely be confined to the provisions of Basel II.

11.1.4   The proposed rule-making approach is comparable to that in relation to the Securities and Futures Ordinance (SFO), under which the Securities and Futures Commission is empowered to make rules, which are subsidiary legislation, on general and specific issues relating to the SFO subject to certain procedures laid down therein. Similarly, the Deposit Protection Scheme Ordinance contains provisions that give the Deposit Protection Scheme Board and the MA the power to make rules on various operational aspects of the Scheme.

11.1.5   A major benefit of the rule-making approach is that it offers a significant degree of practicality in terms of legislative procedure. Given its likely subsidiary legislation status, the rules would not need to go through the legislative process as is the case with main legislation, yet it will remain legally binding. This may significantly reduce the time and resources for putting through future amendments. In addition, the approach would allow the MA the flexibility to revise relevant rules swiftly in response to changing market practices and to keep up with international capital standards.

11.1.6   While the rule-making approach differs from the existing legislative approach to the extent that the power of the Financial Secretary to determine and amend the capital requirements under the Third Schedule is passed onto the MA in the form of his power to make rules under the BO, the MA will be obliged, subject to the provisions of the BO, to issue a draft of the proposed rules to, and invite comments from relevant parties. This will include, but not be limited to, HKAB, the DTCA, the Banking Advisory Committee (BAC) and the Deposit Taking Companies Advisory Committee (DTCAC).

However, this consultation requirement would not apply in urgent cases (i.e. where the MA was of the view that any delay in promulgating Rules (or amendments to Rules) would not be in the interests of depositors or the public interest) or in case of minor, insubstantive amendments where the MA was of the view that consultation would serve no useful purpose. The MA would also consult with the Financial Secretary before issuing the Rules (or any proposed future amendments to such Rules).

Legislative changes for rule-making approach

11.1.7   It is proposed that a new part be inserted into the BO to provide for the MA's power to promulgate the following two types of rules:

Capital Rules - for the purpose of implementing Pillar 1 and Pillar 2 of Basel II, to specify the manner in which the CARs applicable to local AIs and BHCs are to be calculated. The Capital Rules will replace the entire existing Third Schedule to the BO. Among other matters related to the calculation of CARs, the Capital Rules will mainly set out:

i)   the criteria to be applied and the factors to be taken into account by the MA in giving approval for the adoption of various calculation approaches;

ii)   the criteria to be applied and the factors to be taken into account by the MA in deciding whether to designate an entity as a BHC (please refer to Section 3.2 of this paper for details of the BHCs designation process);

iii)   the criteria to be applied and the factors to be taken into account by the MA in determining the minimum CAR applicable to a given AI and a given BHC; and

iv)   the manner in which the MA will conduct the supervisory review process under Pillar 2 of Basel II.

Disclosure Rules – for the purpose of implementing Pillar 3 of Basel II, to specify the requirements on disclosure by AIs and BHCs of information relating to their state of affairs, profit and loss, risk exposure and capital adequacy as well as manner and timing of such disclosure.

11.1.8   The MA will also be authorized under the BO to issue guidelines and notices published in the Gazette for the guidance of AIs and BHCs in relation to the interpretation and operation of these Rules.   However, such guidelines and notices will not have the status of subsidiary legislation.

Compliance with Rules by AIs and BHCs

11.1.9   The MA will take compliance with the Capital Rules and Disclosure Rules into account in the context of the continuing authorization criteria for AIs under the Seventh Schedule to the BO, such that:

(i)   failure by a BHC to comply with the Capital Rules or Disclosure Rules will be taken into account by the MA in considering whether the BHC is "fit and proper" to be a controller of the AI under paragraph 4 of the Seventh Schedule to the BO;

(ii) failure by an AI to comply with the Capital Rules and Disclosure Rules will be taken into account by the MA in the context of the continuing authorization criteria for AIs on maintenance of adequacy financial resources set out in paragraph 6 of the

Seventh Schedule to the BO, in particular paragraph 6(d) of the Seventh Schedule to the BO; and

(iii) failure by an AI to comply with the Disclosure Rules will be taken into account by the MA in the context of the continuing authorization criterion for AIs on adequacy of disclosure of information under paragraph 11 of the Seventh Schedule to the BO (paragraph 11(a) of the Seventh Schedule would be amended to refer to the state of affairs, profit and loss, risk exposures and capital adequacy of an AI).

Legislative framework in relation to capital requirements for BHCs

11.1.10   Given that the current capital regime in Hong Kong under the BO only extends to authorised institutions incorporated in Hong Kong but not to their holding companies, i.e. BHCs, the BO should also be amended to provide for a capital framework for BHCs, especially for setting out the definition of BHC and the imposition and policing of relevant capital requirements.   Please refer to Section 3.2 of this paper for more detailed discussions.

Work plan

11.1.11   It is intended that a Banking Amendment Bill comprising, among other things, provisions relating to the MA's rule-making power and the legal framework for capital requirements for BHCs (mentioned in Section 3.2) be submitted to LegCo in early 2005.   Further consultations with the two industry associations as well as the BAC and DTCAC on detailed drafting of the amendments to the BO will be conducted before submission to LegCo.

11.1.12 Meanwhile, the HKMA will begin with the drafting process of the Capital Rules and Disclosure Rules with a view to tabling the Rules for vetting by LegCo in the first half of 2006.

Section 11.2   Major Issues under Review

Introduction

11.2.1   In addition to the proposals covered in the previous sections, there are a number of areas which the HKMA is currently in the process of reviewing. The HKMA will consult the industry about its proposals on these areas by stages in accordance with the Work Programme set out in Section 11.3. Outlined below are some of the key areas the HKMA is focusing on at present.

Credit Risk Mitigation Techniques

11.2.2   As compared to the current Accord, Basel II recognises a broader range of CRM techniques for the reduction of risk weighted exposures. For risk-weighting collateralised transactions, other than the current substitution method (termed "simple approach" in Basel II)[17], there is a more sophisticated "comprehensive approach" which allows AIs with the necessary system capabilities to benefit from a larger reduction in risk-weighted exposure in collateralised transactions.   Treatment for netting arrangements is also specifically spelled out for various types of transactions (i.e. repo-style transactions, on-balance sheet exposures such as loans and deposits, OTC derivative contracts).

11.2.3   The HKMA is presently studying the technical details of the possible approaches for incorporating the above in the revised capital regime, having regard to the current local banking practices as well as the guidance issued formerly which may consequentially need to be revised / replaced.   Treatment of the CRM techniques forms an

integral part of the risk-weighting framework under the Standardised and the IRB Approaches. The HKMA aims to complete by stages its supervisory guidance on these approaches and release them for industry consultation starting some time in late 2004 / early 2005.

Treatment of RML under the Standardised Approach

11.2.4   Basel II lowers the preferential risk weight for qualifying RML under the Standardised Approach to 35% (from the existing 50%) and introduces a 75% risk weight for retail exposures, covering unqualified RML that are performing in general.

11.2.5   The HKMA is taking this opportunity to review its existing risk weighting framework for RML and consider the extent to which it should be modified to incorporate the revised risk weights under Basel II, having regard to the increased risk sensitivity embedded in the range of revised standard risk weights, and the characteristics of the local RML market. An important area for consideration is how "qualifying RML" should be defined for the purpose of applying the preferential treatment. The HKMA will shortly seek the views of the industry on its proposals before finalising them for incorporation into the Standardised Approach for Hong Kong.

Provisioning Treatment of Past Due Exposures under the Standardised Approach

11.2.6   The treatment for past due exposures (as described in paragraphs 75 – 78 of the Basel II document) under the Standardised Approach associates a number of standard risk weights with certain benchmark levels of specific provisions for these exposures, which

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[17] The simple approach allows the risk weight of the borrower to be substituted by that of the

are expressed as a percentage of gross loan outstanding (i.e. without regard to the existence of collateral whether it is eligible or not under the CRM framework).

11.2.7   The HKMA agrees in principle that giving capital recognition to specific provisions will encourage AIs to maintain a prudent provisioning policy. However, it appears that the treatment is not entirely consistent with the provisioning practice of banks in Hong Kong, where the potential loss of a past due loan (thus level of specific provision required) is assessed by first having regard to the value of collateral, if any. The HKMA is currently studying the applicability of the Basel treatment in general and will likewise consult the industry where modifications to the treatment are considered appropriate to better reflect the provisioning practice of banks.

Recognition of External Credit Assessment Institutions (ECAIs)

11.2.8   Basel II requires that for the purpose of implementing the external credit assessment-based risk-weighting framework of the Standardised Approach, a supervisory authority should decide which ECAI ratings may be used within its jurisdiction. In order for its ratings to be recognised, an ECAI must satisfy the six eligibility criteria of objectivity, independence, international access / transparency, disclosure, resources and credibility (see paragraph 91 of the Basel II document). The supervisor will also need to make public its process for recognising ECAIs and map different ratings used by recognised ECAIs into the risk weights of the Standardised Approach.

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collateral for the secured portion of an exposure.

11.2.9 The HKMA is considering the relevant issues of the above and aims to consult the industry about the relevant policy requirements some time in early 2005. It is currently envisaged that the process for recognising ECAIs will commence some time in 2005.

Accounting Issues

11.2.10 In the light of the implementation of certain international financial reporting standards (IFRS), the Basel Committee has also been considering the potential impact these may have on the existing capital adequacy framework. These include, in particular, IAS 39 and 40 on the application of fair value accounting on relevant exposures (i.e. financial assets / liabilities and investment properties) of companies. Other IFRS which could lead to adjustment of the regulatory capital include: definition of trading book, equity / liability classification, intangible assets (including goodwill), deferred tax assets, pension costs, stock option costs, and leasing.

11.2.11 The current focus of the HKMA in respect of the above is on the potential impact of the adoption of the fair value accounting on AIs' capital adequacy. The HKMA will take into consideration the industry's view and the relevant international developments in formulating its policies on capital treatment in this regard.

Section 11.3   Work Programme

2004

- Finalise implementation approach after taking into account industry's comments (Q4)

- Release application and approval/examination procedures for adopting the IRB Approach (September)

- AIs to inform the HKMA in writing their plans to adopt the Foundation IRB Approach from 1 January 2007 (or the Advanced IRB Approach from 1 January 2008) (by end-December)

- AIs to apply to the HKMA for adoption of the Basic Approach from 1 January 2007 (by end-December)

Consultation to be conducted:

- Risk-weighting treatment of RML and past due exposures (September/October)

- Draft rules and guidance relating to the Standardised Approach (including relevant parts of the revised CAR return and completion instructions) (Q4)

- Draft rules and guidance relating to the framework for calculation of capital base (including relevant parts of the revised CAR return and completion instructions) (Q4)

- Draft rules and guidance relating to BIA, SA and ASA of Operational Risk (including relevant parts of the revised CAR return and completion instructions) (Q4)

- Supervisory guidance on sound practices for operational risk management (Q4)

- Draft rules and guidance relating to the IRB Approach (H2 2004)

2005

- Start bilateral discussions of implementation plans with AIs that wish to adopt the IRB Approach (Early 2005)

- Approve AIs for adoption of the Basic Approach from 1 January 2007 (Q1)

- Recognition criteria for ECAIs, the vetting procedures for recognition and the mapping of ECAIs' assessments to risk-weighting framework (Q1 2005)

- Process applications for ECAIs (Q2 2005 – 2006)

- Conduct validations of AIs intending to adopt the Foundation IRB Approach from 1 January 2007 (2005 to early 2006)

Consultation to be conducted:

- Revised capital adequacy return for users of the IRB Approach (H1 2005)

- Revised market risk regime with relevant parts of the revised CAR return and completion instructions (H1 2005)

- Draft rules and guidance relating to the Securitisation Framework (including relevant parts of the revised CAR return and completion instructions) (H2 2005)

- Draft rules and guidance relating to the supervisory review process under Pillar Two (2005)

- Disclosure requirements under Pillar Three (2005)

2006

- Parallel run:

  - AIs adopting the Foundation IRB Approach to submit returns for both the current Accord and Foundation IRB Approach for the reporting dates of 31 March, 30 June, 30 September and 31 December (2006)

  - AIs adopting the Standardised Approach to submit returns for both the current Accord and the Standardised Approach for the reporting dates of 30 September and 31 December (H2 2006)

- Conduct validations of AIs intending to adopt the Advanced IRB Approach from 1 January 2008 (Mid-2006 to early 2007)

2007

- New capital standards based on Basel II take effect in Hong Kong (1 January)

- Parallel run - AIs adopting the Advanced IRB Approach to submit returns for both the current Accord and Advanced IRB Approach for the reporting dates of 31 March, 30 June, 30 September and 31 December (2007)