



Prudential Standard APS 113

Capital Adequacy: Internal Ratings-based Approach to Credit Risk

Objective and key requirements of this Prudential Standard

This Prudential Standard sets out the requirements that an authorised deposit-taking institution that has approval to use an internal ratings-based approach to credit risk must meet both at the time of initial implementation and on an ongoing basis for regulatory capital purposes.

The key requirements of this Prudential Standard are that an authorised deposit-taking institution must:

- quantify certain credit risk components to determine the capital requirement for a given credit exposure; and
- have approval from APRA to use an internal ratings-based approach to credit risk for determining the institution's credit risk capital requirement.

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Authority

1. This Prudential Standard is made under section 11AF of the *Banking Act 1959* (the **Banking Act**).

Application

2. This Prudential Standard applies to **authorised deposit-taking institutions (ADIs)** that are seeking, or have been given approval, to use an internal ratings-based approach to credit risk for the purpose of determining **Regulatory Capital**.
3. A reference to an ADI in this Prudential Standard, unless otherwise indicated, is a reference to:
 - (a) an ADI on a **Level 1** basis; and
 - (b) a **group** of which an ADI is a member on a **Level 2** basis.
4. If an ADI to which this Prudential Standard applies is:
 - (a) the holding company for a group, the ADI must ensure that the requirements in this Prudential Standard are met on a Level 2 basis, where applicable; or
 - (b) a subsidiary of an **authorised non-operating holding company (authorised NOHC)**, the authorised NOHC must ensure that the requirements in this Prudential Standard are met on a Level 2 basis, where applicable.

Interpretation

5. Terms that are defined in *Prudential Standard APS 001 Definitions* (APS 001) appear in bold the first time they are used in this Prudential Standard.

Scope

6. Subject to paragraphs 7 and 8, this Prudential Standard applies to all on-balance sheet assets held by an ADI and all its off-balance sheet exposures.
7. The following items are excluded from the scope of this Prudential Standard:
 - (a) assets or investments that are required to be deducted from **Tier 1 Capital** or **Tier 2 Capital** under *Prudential Standard APS 111 Capital Adequacy: Measurement of Capital* (APS 111);
 - (b) securitisation exposures which are subject to the requirements of *Prudential Standard APS 120 Securitisation* (APS 120); and
 - (c) liabilities of a covered bond special purpose vehicle to an issuing ADI as specified in *Prudential Standard APS 121 Covered Bonds* (APS 121).

8. Items subject to capital requirements under *Prudential Standard APS 116 Capital Adequacy: Market Risk (APS 116)* are excluded for the purpose of calculating risk-weighted assets for credit risk under this Prudential Standard, but not for the purpose of calculating counterparty credit risk capital requirements (refer to Attachment B).

Definitions

9. The following definitions are used in this Prudential Standard:
- a) central counterparty (CCP) – a clearing house that interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer. A CCP becomes counterparty to trades with market participants through novation, an open offer system or another legally binding arrangement. For the purposes of the capital framework, a CCP is a financial institution;
 - b) corporate credit exposure - a credit obligation of a corporation, partnership or proprietorship and any other credit exposure that does not meet the criteria of any other defined internal ratings-based (**IRB**) asset class;
 - c) credit obligation - a contractual agreement in which a borrower receives something of value now (usually cash) with the agreement to repay the ADI at some stated date;
 - d) dilution risk - the possibility that the total amount of purchased receivables is reduced through cash or non-cash credits to the receivables' obligors. Examples include offsets or allowances arising from returns of goods sold, disputes regarding product quality, possible debts of the obligor to obligors of the purchased receivables and any payment or promotional discounts offered by the obligor;
 - e) exposure at default (EAD) - the gross exposure under a facility (i.e. the amount that is legally owed to the ADI) upon default of an obligor;
 - f) IRB approval - the written approval from APRA for an ADI to adopt the IRB approach;
 - g) loss given default (LGD) - the ADI's economic loss upon the default of an obligor;
 - h) probability of default (PD) - the risk of obligor default;
 - i) purchased receivables - a pool of receivables that have been purchased by an ADI from another entity;
 - j) rating system - all of the methods, processes, controls, data collection and technology that support the assessment of credit risk, the assignment of internal credit risk ratings and the quantification of associated default, exposure and loss estimates;

- k) specific wrong-way risk - arises when the exposure to a particular counterparty is positively correlated with the probability of default of the counterparty due to the nature of the transactions with the counterparty; and
- l) subordinated claim - a facility that is expressly subordinated to another facility.

Key principles

10. An ADI that has received IRB approval from APRA may (subject to the relevant IRB approval) rely on its own internal estimates for some or all of the necessary credit risk components in determining the capital requirement for a given credit exposure. The credit risk components include measures of PD, LGD, EAD and maturity (M) and must satisfy the necessary requirements detailed in Attachment A. An ADI's rating system must play an integral role in the ADI's credit approval, risk management and internal capital allocation functions and meet the requirements detailed in Attachment A, including those relating to the Board of directors (**Board**) and senior management responsibilities.
11. With the exception of the exposures detailed in paragraph 16 of this Prudential Standard, the IRB approach to credit risk is based upon measures of unexpected losses (UL) and expected losses (EL). The IRB risk-weight functions detailed in this Prudential Standard produce the capital requirement for UL. For EL, the ADI must compare the sufficiency of eligible provisions (refer to paragraph 21 of this Prudential Standard) against EL amounts calculated according to paragraph 19 of this Prudential Standard. The comparison must be made in accordance with paragraph 23 of this Prudential Standard. Where a difference exists, paragraphs 24 to 25 of this Prudential Standard apply.
12. For the corporate, sovereign and bank IRB asset classes (defined in paragraphs 42 to 45 of this Prudential Standard), there are two IRB approaches to credit risk: the foundation IRB (**FIRB**) approach and the advanced IRB (**AIRB**) approach. Under the FIRB approach, an ADI must (subject to the relevant IRB approval) provide its own estimates of PD and M and rely on supervisory estimates for LGD and EAD. Under the AIRB approach, an ADI must (subject to the relevant IRB approval) provide its own estimates of all the credit risk components. Under both approaches, an ADI must use the relevant IRB risk-weight function, as detailed in Attachment B, for the purpose of deriving the capital requirement for UL for those IRB asset classes.
13. An IRB approval may provide that the FIRB or AIRB approach applies to an ADI's corporate IRB asset class except in relation to one or more of the specialised lending (SL) sub-asset classes detailed in paragraph 43 of this Prudential Standard. In that event, specific risk-weights associated with slotting categories must be used (refer to Attachment B) for the purpose of deriving Regulatory Capital for UL for the relevant exposures.
14. For the retail IRB asset class (defined in paragraphs 46 to 48 of this Prudential Standard), an ADI that has IRB approval must (subject to the relevant IRB

approval) provide its own estimates of PD, LGD and EAD. There is no explicit maturity adjustment for the retail IRB asset class nor is there a distinction between a FIRB approach and an AIRB approach. The ADI must use the risk-weight function for each retail sub-asset class as detailed in Attachment C for the purpose of deriving the capital requirement for UL for the retail IRB asset class.

15. The treatment of purchased receivables straddles two IRB asset classes: corporate and retail (refer to Attachment D). For both corporate and retail purchased receivables, an ADI will be required to hold Regulatory Capital for default risk and, where material, dilution risk.
16. The residual IRB asset class includes an ADI's cash items, fixed assets, certain unsettled and failed transactions and related-party exposures, margin lending and all other claims not otherwise defined in this Prudential Standard. For the residual IRB asset class and the equity IRB asset class (refer to paragraphs 49 to 52 of this Prudential Standard), the capital requirement is based on assigned risk-weights that reflect APRA's broad judgement about the credit risk associated with those exposures (refer to Attachment E). The risk-weights for these exposures are assumed to represent UL as EL is assumed to be zero.
17. For the purpose of this Prudential Standard, the risk-weighted asset amounts that are derived from the IRB risk-weight functions (refer to Attachments B and C) must be multiplied by a factor of 1.06. The ADI must sum the risk-weighted amounts for UL for all IRB asset classes (including the residual IRB asset class) to determine the total risk-weighted asset amount under the IRB approach.
18. An ADI that has IRB approval must consult APRA where there is doubt about how to determine the risk-weighted amount of an on-balance sheet or off-balance sheet asset or exposure.

Expected loss and eligible provisions

19. Other than for that portion of exposures covered by eligible guarantees or credit derivatives subject to the double default approach, an ADI that has IRB approval must separately calculate, for non-defaulted and defaulted exposures, total EL aggregated across the corporate, sovereign, bank and retail IRB asset classes.¹ Other than for SL exposures subject to the slotting approach, EL is calculated as follows:
 - (a) for non-defaulted exposures, the product of PD, LGD and EAD;
 - (b) for defaulted exposures under the AIRB approach and the IRB approach for retail exposures, the ADI's best estimate of EL given current economic circumstances and the facility's status (refer to paragraph 98 of Attachment A); and

¹ EL and relevant provisions associated with other IRB asset classes are excluded from the calculation of total EL and eligible provisions respectively.

- (c) for defaulted corporate, sovereign and bank exposures under the FIRB approach, the product of the relevant supervisory estimates of LGD and EAD.
20. EL for SL exposures subject to the slotting approach must be calculated as eight per cent of the risk-weighted asset amount.² The risk-weight to be used in this calculation is determined by the relevant slotting category to which the exposure has been mapped (refer to Table 1).

Table 1: Risk-weights for EL under the slotting approach

	Strong	Good	Satisfactory	Weak	Default
Specialised lending	5%	10%	35%	100%	625%

21. For exposures in the IRB asset classes detailed in paragraph 19 of this Prudential Standard (including, in all cases, SL), total eligible provisions associated with those exposures are:
- (a) credit related provisions (e.g. specific provisions and General Reserves for Credit Losses without deducting any deferred tax assets associated with those reserves (refer to *Prudential Standard APS 220 Credit Quality (APS 220)*);³
 - (b) partial write-offs; and
 - (c) discounts on defaulted assets (refer to paragraph 24 of Attachment B and paragraph 7 of Attachment C).
22. Where an ADI that has IRB approval uses the standardised approach to credit risk (refer to *Prudential Standard APS 112 Capital Adequacy: Standardised Approach to Credit Risk (APS 112)*) for a portion of its exposures, it must attribute total General Reserves for Credit Losses on a *pro rata* basis according to the proportion of risk-weighted assets subject to the standardised and IRB approaches. However, when the standardised approach to credit risk is used exclusively by an entity within the ADI consolidated banking group, all of the General Reserves for Credit Losses booked within that entity must be attributed to the standardised approach. Similarly, General Reserves for Credit Losses booked by entities within the Level 2 group that exclusively use an IRB approach to credit risk qualify as eligible provisions in terms of paragraph 21 of this Prudential Standard.
23. An ADI that has IRB approval must compare the total EL amount for:

² The risk-weighted asset amount consists of the total of the on-balance sheet component and the off-balance sheet equivalent multiplied by the relevant risk-weight in Table 1. For the on-balance sheet component, the amount that is multiplied by the relevant risk-weight is the book value of the exposure gross of any eligible provisions (refer paragraph 21 of APS 113). Off-balance sheet exposures are converted to on-balance sheet equivalents using the FIRB credit conversion factors detailed in Attachment B.

³ Any amount included in an ADI's General Reserve for Credit Losses may only be used as an eligible provision to offset EL for non-defaulted exposures.

- (a) defaulted IRB exposures; and
- (b) non-defaulted exposures

to total eligible provisions (refer to paragraph 21 of this Prudential Standard) associated with the relevant exposures.

- 24. In all cases detailed in paragraph 23 of this Prudential Standard, where the total EL amount is higher than total eligible provisions for the relevant exposures, the difference must be deducted from **Common Equity Tier 1 Capital** (refer to APS 111).
- 25. For non-defaulted exposures, where the total EL amount associated with such exposures is lower than eligible provisions associated with these exposures, that amount of the difference made up of the General Reserve for Credit Losses may be included in Tier 2 Capital up to a maximum of 0.6 per cent of total credit risk-weighted assets (refer to paragraph 17 of this Prudential Standard).

Approval process

- 26. An ADI may apply for written approval from APRA to use an IRB approach for capital adequacy purposes.
- 27. In its application, the ADI must, unless exempted in writing by APRA, seek approval to use:
 - (a) an advanced measurement approach to operational risk for the purpose of determining the ADI's Regulatory Capital for operational risk (refer to *Prudential Standard APS 115 Capital Adequacy: Advanced Measurement Approaches to Operational Risk*); and
 - (b) an internal risk measurement model for the purpose of determining the ADI's Regulatory Capital for interest rate risk in the banking book (refer to *Prudential Standard APS 117 Capital Adequacy: Interest Rate Risk in the Banking Book*)

unless APRA has previously approved the ADI's use of the approach or model.

- 28. APRA may, in writing, approve the use of an IRB approach by an ADI. The IRB approval may specify how the IRB approach is to apply in relation to the ADI, including approvals under other paragraphs of this Prudential Standard. Subsequent to obtaining IRB approval, an ADI must notify APRA if it intends to make changes to its rating systems that will result in a material change in the ADI's risk-weighted asset amount for a given type of exposure or if the ADI intends to make a significant change to its modelling assumptions. APRA may impose conditions on the IRB approval.
- 29. In order to obtain IRB approval, an ADI must demonstrate to APRA that it has been using, for the relevant IRB asset or sub-asset classes, rating systems that are broadly in line with the requirements of this Prudential Standard for at least three years prior to an IRB approval being given. In the case of the AIRB approach and the IRB approach for retail exposures, the ADI must demonstrate

to APRA that it has estimated and used LGD and EAD estimates in a manner that is broadly consistent with the relevant requirements of this Prudential Standard for at least three years prior to the IRB approval being given. Improvements to an ADI's rating system will not render it non-compliant with this three-year requirement.

30. Once an ADI has obtained IRB approval, it must continue to employ that IRB approach on an ongoing basis unless, or except to the extent that, the IRB approval is revoked or suspended for some or all of the ADI's operations. A return, at the ADI's request, to the standardised approach to credit risk (refer to APS 112) or the use of the FIRB approach where the ADI has approval to use the AIRB approach, will generally only be permitted in exceptional circumstances.
31. APRA may, at any time in writing to the ADI, vary or revoke an IRB approval, or impose additional conditions on the IRB approval if it determines that:
 - (a) the ADI does not comply with this Prudential Standard; or
 - (b) it is appropriate, having regard to the particular circumstances of the ADI, to impose the additional conditions or make the variation or revocation.
32. Where an IRB approval for an ADI has been varied or revoked, APRA may, in writing, require the ADI to revert to the standardised approach to credit risk for some or all of its operations, until it meets the conditions specified by APRA for returning to the IRB approach.
33. An ADI that has received IRB approval may become aware that it is not complying with a requirement of this Prudential Standard. Where this is the case, the ADI must notify APRA and provide the ADI's plan for the timely return to compliance. Failure to notify APRA, produce an acceptable plan, satisfactorily implement the plan or demonstrate that the non-compliance is immaterial will result in reconsideration by APRA of the ADI's eligibility to use the IRB approach. Furthermore, for the duration of any non-compliance, APRA may require the ADI to hold additional Regulatory Capital or take other supervisory action, as appropriate.
34. APRA may, in writing, require an ADI to reduce its level of credit risk or increase its capital if APRA considers that the ADI's capital for credit risk under the IRB approach is not commensurate with its credit risk profile.

Adoption of the IRB approach

35. APRA will generally require an ADI that has IRB approval to apply the IRB approach across all asset classes of the ADI, except to the ADI's exposures to central counterparties, for which an ADI must use the standardised approach to credit risk (refer to Attachment C of APS 112). APRA recognises, however, that for many ADIs it may not be practical to implement the IRB approach across all material IRB asset classes and business units at the same time. This may be the case, for instance, where an ADI moves from the standardised approach to credit risk (refer to APS 112) to the IRB approach, undertakes a new business

activity, has acquired a new business through merger or acquisition or has certain immaterial business activities (refer to paragraph 40 of this Prudential Standard). In such circumstances, APRA's approval of the IRB approach may permit the ADI to use a combination of the IRB approach and the standardised approach to credit risk. This approach is referred to as 'partial use'.

36. An ADI must provide APRA with appropriate written information, both at the time of the ADI's initial application for the IRB approach and subsequent to the ADI obtaining IRB approval, on any business activities for which the ADI proposes to use the standardised approach to credit risk.
37. Subject to approval by APRA, an ADI may adopt a phased roll-out of the IRB approach across the Level 2 group. Notwithstanding, when an ADI adopts the IRB approach for an IRB asset or sub-asset class within a particular business unit, it will be required to apply that IRB approach to all exposures in that IRB asset or sub-asset class within that business unit.
38. APRA's approval of a phased roll-out may provide for the ADI to use the slotting approach for one or more of the SL sub-asset classes and move to the FIRB or AIRB approach for other SL sub-asset classes.
39. An ADI that has received approval to adopt a phased roll-out of the IRB approach must have a written APRA-approved implementation plan in place that specifies the extent and timing of roll-out of the IRB approach across all significant asset or sub-asset classes and business units. During the roll-out period, no capital relief will be granted for intra-group transactions that reduce the ADI's aggregate capital requirement by transferring credit risk among entities on the standardised approach to credit risk, FIRB approach and AIRB approach. This includes, but is not limited to, asset sales and cross-guarantees.
40. Permanent partial use of the IRB approach will be approved only in exceptional circumstances and where the ADI is able to demonstrate that those business activities to which the IRB approach does not apply are immaterial in terms of size and perceived risk profile. The calculated credit risk capital requirement for such business activities, if considered necessary by APRA, may be subject to additional Regulatory Capital.

IRB asset classes

41. Under the IRB approach to credit risk, an ADI must categorise banking book exposures into six broad IRB asset classes and several sub-asset classes: corporate (which includes four sub-asset classes of SL), sovereign, bank, retail (which consists of three separate sub-asset classes), equity and a residual IRB asset class (refer to paragraph 16 of this Prudential Standard). The ADI may adopt a different system of classification in its internal risk management and measurement systems; however, it must apply the appropriate treatment (under this Prudential Standard and the terms of its IRB approval) to each credit exposure for the purpose of deriving its minimum capital requirement. The ADI must ensure that its methodology for assigning credit exposures to different IRB asset classes complies with this Prudential Standard and its IRB approval and is consistent over time.

Corporate IRB asset class

42. The corporate IRB asset class includes all corporate credit exposures. For Level 1 purposes, the corporate IRB asset class excludes exposures to entities that are wholly-owned or effectively controlled by the ADI and that are consolidated at Level 2 for capital adequacy purposes (refer to Attachment E).
43. The corporate IRB asset class includes, but is not limited to, four SL sub-asset classes: project finance, object finance, commodities finance and income-producing real estate. Credit exposures in each of the SL sub-asset classes possess all of the following characteristics, either in legal form or economic substance:
 - (a) the exposure is typically to an entity (often a special purpose vehicle) which was created specifically to finance and/or operate specific assets;
 - (b) apart from the income that it receives from the assets being financed, the borrowing entity has little or no other material assets or activities and therefore has little or no independent capacity to repay the obligation;
 - (c) the terms of the obligation give the ADI a substantial degree of control over the assets and the income that it generates; and
 - (d) as a result of the factors detailed in paragraphs 43(a) to 43(c) of this Prudential Standard, the primary source of repayment of the obligation is the income generated by the assets rather than the independent capacity of a broader commercial enterprise.

Sovereign IRB asset class

44. The sovereign IRB asset class includes credit exposures to the counterparties detailed in paragraphs 2, 5, 6 and 7 of Attachment A of APS 112. Exposures to the institutions detailed in footnote 5 to paragraph 8 of that same Attachment of APS 112 are also included in the sovereign IRB asset class.

Bank IRB asset class

45. The bank IRB asset class includes credit exposures to the counterparties detailed in paragraphs 8, 9 and 10 of Attachment A of APS 112. For Level 1 purposes, the bank IRB asset class excludes exposures to entities that are wholly owned or effectively controlled by the ADI and that are consolidated at Level 2 for capital adequacy purposes (refer to Attachment E).

Retail IRB asset class

46. An exposure is categorised as a retail exposure if it is extended to an individual (that is, a natural person) or individuals and is part of a large pool of exposures that are managed by the ADI on a pooled basis and is not margin lending.
47. Small-business exposures, whether or not extended to an individual, may be treated as retail exposures if the ADI treats such exposures in its internal risk

management systems in the same manner as other retail exposures consistently over time. This requires that such exposures are originated in a similar manner to other retail exposures. Furthermore, the exposure must not be managed individually in a way that is comparable to an exposure in the corporate IRB asset class but rather as part of a portfolio segment or pool of exposures with similar risk characteristics for purposes of risk assessment and quantification. This does not preclude these exposures from being managed individually at some stages of the risk management process. To be regarded as a retail exposure, the total business-related exposure of the Level 2 group to a small-business obligor or group of connected small-business obligors must be less than \$1 million.⁴ An ADI must have policies detailing the criteria that connect small-business obligors for this purpose. Small-business loans extended through, or guaranteed by, an individual are subject to the same exposure threshold.

48. Within the retail IRB asset class, an ADI is required to identify three separate sub-asset classes of exposures:
- (a) exposures that are partly or fully secured by residential properties;
 - (b) qualifying revolving retail (QRR). The following criteria must be satisfied for a sub-portfolio to be included in the QRR sub-asset class:
 - (i) the exposures are revolving, unsecured and unconditionally cancellable (both contractually and in practice) by the ADI.⁵ In this context, revolving exposures are defined as those where customers' outstanding balances are permitted to fluctuate based on their decisions to borrow and repay, up to a limit established by the ADI;
 - (ii) the exposures are to individuals and not explicitly for business purposes;
 - (iii) the maximum exposure of an individual account in the sub-portfolio is \$100,000;
 - (iv) the ADI must demonstrate that the use of the QRR risk-weight function is limited to exposures that have exhibited, in comparison with other types of lending products, low loss rate volatility relative to the average level of loss rates (especially within low PD bands). APRA will review the relative volatility of loss rates across relevant QRR sub-portfolios, as well as the aggregate of the QRR sub-asset class. Data on loss rates for the relevant QRR sub-portfolios and the

⁴ An exception to this is for subsidiaries in jurisdictions where a different threshold is set by the national regulator for small-business retail exposures. That threshold may be used by the ADI for relevant exposures in relation to the calculation of its Level 2 capital requirement.

⁵ Exposures may be considered unconditionally cancellable if the terms of the contract permit the ADI to cancel at any time any existing credit lines or limits provided to a customer at the ADI's discretion, and demand immediate repayment for any outstanding balance to the full extent allowable under consumer protection and related legislation.

QRR sub-asset class must be retained by the ADI in order to allow analysis of the volatility of loss rates; and

- (v) the ADI is able to demonstrate to APRA that treatment of an exposure as a QRR exposure is consistent with the underlying risk characteristics of the sub-asset class; and
- (c) all other retail exposures.

Equity IRB asset class

49. Equity exposures include both direct and indirect ownership interests,⁶ whether voting or non-voting, in the assets and income of entities, including commercial enterprises and financial institutions. Equity exposures are defined on the basis of the economic substance of the instrument and include instruments that meet the following criteria:
 - (a) the instrument is irredeemable in that the return of invested funds can be achieved only by the sale of the investment, the sale of the rights to the investment or by the liquidation of the issuer; and
 - (b) the instrument does not embody an obligation of the issuer.
50. Debt obligations and other securities, units in trusts, derivatives or other instruments structured with the intent or effect of conveying the economic substance of equity ownership must be treated as equity exposures, including for IRB purposes.⁷ This includes options and warrants on equities and short positions in equity securities. In addition, if a debt instrument is convertible into equity at the option of an ADI, it should be deemed equity on conversion. If such an instrument is convertible at the option of the issuer or automatically by the terms of the instrument, it should be categorised by the ADI as equity from inception.
51. Instruments with a return directly linked to equities should be characterised as equity exposures. Subject to written approval by APRA, an ADI may exclude these instruments from the equity IRB asset class where they are directly hedged by an equity holding such that the position does not expose the ADI to material equity risk.
52. Equity instruments that are structured with the intent of conveying the economic substance of debt holdings are not required to be treated as equity exposures. Similarly, for the purposes of this Prudential Standard, equity exposures required to be deducted from capital pursuant to APS 111 may be excluded from the equity IRB asset class.

⁶ Indirect equity interests include holdings of derivative instruments tied to equity interests and holdings in corporations, partnerships, limited liability companies, trusts or other types of entities that issue ownership interests and are engaged principally in the business of investing in equity instruments.

⁷ Equities that are recorded as a loan but arise from a debt/equity swap made as part of the orderly realisation or restructuring of the debt must be included in the equity IRB asset class.

Attachment A

Governance and quantification requirements

1. The minimum requirements set out in this Attachment apply to all IRB asset classes and the FIRB and AIRB approaches, unless noted otherwise.
2. The principles underlying this Attachment are that an ADI's credit risk rating and associated risk estimation systems and processes provide for a meaningful assessment of obligor and transaction characteristics, a meaningful differentiation of risk and quantitative estimates of risk that are consistent, verifiable, relevant and soundly based. Furthermore, the internal ratings and quantitative risk estimates associated with those systems and processes must play an essential role in the ADI's risk management and decision-making processes.
3. An ADI that has obtained IRB approval must produce its own estimates of PD⁸ and in the case of corporate, sovereign and bank exposures, M, and adhere to the overall requirements for rating system design, operation, controls and governance as well as the requisite requirements for estimation and validation of PD and M estimates. An ADI that has approval to use the AIRB approach or the retail IRB approach must also meet the incremental minimum requirements relating to LGD and EAD as detailed in this Attachment.

Rating system design

4. Within each relevant IRB asset class, an ADI may utilise multiple rating methodologies or systems. If the ADI chooses to use multiple methodologies or systems, the rationale for assigning an obligor to a rating methodology or system must be documented and applied in a manner that best reflects the level of risk of the obligor. The ADI must not inappropriately allocate obligors across rating methodologies or systems to minimise its capital requirement. The ADI must demonstrate that each methodology or system used for IRB purposes is in compliance with the minimum requirements at the time of approval by APRA and on an ongoing basis.

Rating dimensions

Standards for the corporate, sovereign and bank IRB asset classes

5. An IRB rating system for exposures in the corporate, sovereign and bank IRB asset classes must have two separate and distinct dimensions.

⁸ An ADI is not required to produce its own estimates of PD for equity exposures and other assets and claims detailed in Attachment E and specialised lending exposures where the ADI uses the slotting approach.

6. The first dimension (the obligor grade) must be orientated to the risk of obligor default (that is, it must solely reflect PD). Separate exposures to the same obligor must be assigned the same obligor grade, irrespective of any differences in the nature of each specific transaction. There are two exceptions to this:
 - (a) in the case of country transfer risk, where an ADI may assign different obligor grades depending on whether the facility is denominated in domestic or foreign currency; and
 - (b) where the treatment of associated guarantees or credit derivatives to a facility is reflected in an adjustment to the obligor grade.

In each case, separate exposures to the same obligor may be assigned different obligor grades.

7. An obligor grade must represent an assessment of obligor risk on the basis of a specified and distinct set of rating criteria from which estimates of PD are derived. An ADI's credit policies must articulate the relationship between obligor grades in terms of the level of credit risk each grade implies. Perceived and measured credit risk must increase as credit quality declines from one grade to the next. The credit policies must articulate the credit risk of each grade in terms of both a description of the default risk typical for obligors assigned to the grade and the criteria used to distinguish that level of credit risk. Modifiers such as '+' or '-' to alpha or numeric obligor grades will only qualify as distinct grades if an ADI has developed complete rating descriptions and criteria for their assignment and separately quantifies PD estimates for those modified grades.
8. The second dimension (the facility grade) must reflect transaction-specific factors such as collateral, seniority and product type (that is, it must solely reflect LGD). Obligor characteristics may be included as LGD rating criteria to the extent that they are predictive of LGD. An exception to this is the FIRB approach where an ADI may satisfy this requirement by using a facility grade dimension that reflects both obligor and transaction-specific factors. Where a facility grade dimension reflects EL and does not separately quantify LGD, the supervisory estimates of LGD specified in Attachment B must be used.
9. An ADI that uses the slotting approach for one or more of the SL sub-asset classes is also exempt from the two-dimensional rating requirement for these exposures. Given the interdependence between obligor and transaction characteristics in SL, the ADI may have a single rating dimension that reflects EL by incorporating both PD and LGD considerations. This exemption does not apply to an ADI that has received approval from APRA to use either the general corporate FIRB or AIRB approach for one or more of the SL sub-asset classes.

Standards for the retail IRB asset class

10. Rating systems for retail exposures must be orientated to both obligor and transaction risks and must capture all relevant obligor and transaction characteristics. An ADI must assign each exposure that falls within the retail IRB asset class into a particular pool reflecting EL or particular pools separately

reflecting PD, LGD and EAD. The ADI must demonstrate that this process provides for a meaningful differentiation of risk, provides for a grouping of sufficiently homogenous exposures and allows for accurate and consistent estimation of PD, LGD and EAD at the pool level.

11. Different pools of retail exposures may share identical PD, LGD and EAD estimates.
12. At a minimum, an ADI must consider the following risk drivers when assigning retail exposures to a pool:
 - (a) obligor risk characteristics (e.g. obligor type, demographics such as age and occupation);
 - (b) transaction risk characteristics including product or collateral (e.g. loan to valuation measures, seasoning, guarantees or credit derivatives and seniority (first or second liens)). The ADI must explicitly address cross-collateral provisions where present; and
 - (c) delinquency of exposure. The ADI must identify separately non-defaulted and defaulted exposures.

Rating structure

Standards for the corporate, sovereign and bank IRB asset classes

13. An ADI must have a meaningful distribution of exposures across its credit risk rating grades with no excessive concentrations on either its obligor grades and, where relevant, its facility grades.
14. Subject to the exception noted in paragraph 16 of this Attachment, an ADI must have a minimum of seven obligor grades for non-defaulted obligors and one for defaulted obligors. An ADI with lending activities focused on a particular market segment may satisfy this requirement with the minimum number of grades whilst ensuring that there are a sufficient number of grades to avoid undue concentrations of obligors in particular grades. Significant concentrations within a single grade or grades must be supported by empirical evidence that the grade or grades cover reasonably narrow PD bands and that the default risk posed by obligors in each grade fall within the relevant band. An ADI that lends to obligors of diverse credit quality should have a greater number of obligor grades.
15. There is no minimum number of facility grades for an ADI using the AIRB approach for exposures in the corporate, sovereign and bank IRB asset classes. In this case, an ADI must have a sufficient number of facility grades to avoid grouping facilities with widely varying LGD estimates into a single grade. The criteria used to define facility grades must be grounded in empirical evidence.
16. An ADI using the slotting approach for one or more of the SL sub-asset classes must have at least four rating grades for non-defaulted obligors and one for defaulted obligors.

Standards for the retail IRB asset class

17. An ADI must be able to provide quantitative measures of PD, LGD and EAD for each identified pool of retail exposures. The level of differentiation for IRB purposes must 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 must also be a meaningful distribution of obligors and exposures across pools, with no single pool comprising an undue concentration of the ADI's total retail exposures.

Rating criteria

18. An ADI must have specific rating definitions, processes and criteria for assigning exposures to grades or pools within a rating system. The rating definitions and criteria must be both plausible and intuitive and result in a meaningful differentiation of risk.
19. An ADI's internal rating descriptions and criteria must be sufficiently detailed to allow officers to assign consistently the same rating to obligors and 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 obligors or facilities, the ADI must monitor for possible inconsistency and alter rating criteria to improve consistency where appropriate.
20. Written rating definitions must be clear and detailed so as to allow independent third parties, including APRA, to understand the assignment of ratings, replicate rating assignments and evaluate the appropriateness of the assignment of exposures to grades or pools. The criteria must also be consistent with the ADI's lending standards and its policies for managing obligors and facilities that have deteriorated in credit quality.
21. An ADI must use all relevant and material information in assigning obligors and facilities to grades or pools. Information must be current. The less information the ADI has, the more conservative it must be in assigning exposures to obligor and facility grades or pools. An external rating may be used as an input into the assignment process; however, the ADI must ensure that it considers all other relevant material information.

Specialised lending within the corporate IRB asset class

22. An ADI that uses the slotting approach for one or more of the SL sub-asset classes (refer to Attachment B) must comply with the minimum requirements detailed in this Attachment, with the exception of those relating to risk quantification. In relation to risk quantification, the ADI must assign its SL exposures to its internal rating grades based on its own criteria, systems and processes. The ADI must have a documented conservative and consistent process that maps those internal rating grades into the slotting categories of strong, good, satisfactory, weak and default. The ADI must ensure that overrides of its internal criteria do not render the mapping process ineffective.

Rating assignment horizon

23. Although the time horizon required for PD estimation is one year (refer to paragraph 71 of this Attachment), an ADI must use a longer time horizon when assigning obligor grades to exposures.
24. An obligor grade must represent an ADI's assessment of the obligor's ability and willingness to perform contractually despite adverse economic conditions or the occurrence of unexpected events.
25. Given the difficulties in forecasting future events and the influence they could have on a particular obligor's financial condition, an ADI must take a conservative view of projected information. Furthermore, where limited data are available, the ADI must adopt a conservative bias in its analysis.
26. An ADI's PD estimates for hedge funds, other highly leveraged financial institutions, or borrowers whose assets are predominantly traded assets, must reflect the performance of the underlying assets based on periods of stressed volatilities.

Use of statistical models in the rating process

27. The requirements in this section apply to statistical models and other mechanical methods used to assign obligor or facility grades and in the estimation of PD, LGD and EAD.
28. 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 under the IRB approach. However, judgement and oversight must also be used to ensure that all relevant and material information, including that which is outside the scope of any such model or other mechanical procedure, is also taken into consideration and that the model or other procedure is used appropriately. For the removal of doubt, purely statistical models and other mechanical methods used to assign obligor or facility grades are not acceptable. An ADI must have written guidance detailing how judgement and model results are combined.
29. Where an ADI uses a statistical model or other mechanical method in its rating process, the ADI must satisfy APRA that the model or procedure has good predictive power and that Regulatory Capital will not be distorted as a result of its use. The variables that are used in the model or procedure must form a reasonable set of predictors. On average, the model must be accurate across the range of obligors or facilities to which the ADI is exposed and there must be no known material biases.
30. An ADI must have in place a process for vetting data inputs into a statistical default or loss prediction model which includes an assessment of the accuracy, completeness and appropriateness of the data specific to the assignment of an obligor or facility grade.

31. An ADI must demonstrate that the data used to build its models are representative of the population of the ADI's actual obligors or facilities.
32. An ADI must have documented policies and procedures for review of model-based rating assignments. Such procedures should focus on finding and limiting errors associated with known model weaknesses and must include credible ongoing efforts to improve the model's performance.
33. An ADI must 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.

Documentation of rating system design

34. An ADI must document the design and operational details of its rating and quantification systems.
35. An ADI must document the rationale for its choice of internal rating criteria and must be able to provide analysis demonstrating that rating criteria and procedures are likely to result in ratings that meaningfully differentiate risk. These rating criteria and procedures must be periodically reviewed to determine whether they remain fully applicable to the current portfolio and to external conditions.
36. An ADI must document the history of major changes in its credit risk rating process and such documentation must support identification of changes made to the credit risk rating process. The organisation of rating assignment, including the internal control structure, must also be documented.
37. An ADI must document the specific definitions of default and loss that are used internally and demonstrate consistency with the reference definitions set out in this Prudential Standard.
38. Where an ADI employs statistical models in its rating process, it must document its methodologies. This documentation must include:
 - (a) a detailed outline of the theory, assumptions or mathematical and empirical basis of the assignment of estimates to grades, individual obligors, exposures or pools and the data sources used to estimate the model;
 - (b) detail of the statistical process (including out-of-time and out-of-sample performance tests) for validating the model; and
 - (c) any circumstances under which the model does not work effectively.
39. Use of a third-party vendor model that claims proprietary technology or information is not a justification for exemption from documentation or any other of the requirements for rating systems. The ADI must satisfy APRA as to the model's compliance with the requirements of this Attachment.

Rating coverage

40. For exposures in the corporate, sovereign and bank IRB asset classes, each obligor and eligible guarantor or credit protection provider (refer to Attachment B) must be assigned an obligor grade and each exposure must be associated with a facility grade as part of the loan approval process. Similarly, for the retail IRB asset class, each exposure must be assigned to a pool as part of the loan approval process.
41. Each separate legal entity to which an ADI is exposed must be separately rated. The ADI must have documented policies regarding the treatment of individual entities in a connected group, including the circumstances under which the same rating may or may not be assigned to some or all related entities. Those policies must include a process for the identification of specific wrong-way risk for each legal entity to which the ADI is exposed.

Integrity of the rating process

Standards for the corporate, sovereign and bank IRB asset classes

42. Unless otherwise approved in writing by APRA, rating assignments and periodic rating reviews must be completed or approved by a party that does not directly stand to benefit from the extension of credit. Independence of the rating assignment process may be achieved through a range of practices that will be reviewed by APRA. These operational practices must be documented in the ADI's policies and procedures manuals. Credit policies and underwriting procedures must reinforce and foster the independence of the rating process.
43. Obligor and facility grades must be refreshed on at least an annual basis. Certain exposures, especially higher risk obligors or problem exposures, must be subject to more frequent (than annually) rating review. In addition, an ADI must initiate a new rating review when material information on the obligor or facility comes to light.
44. An ADI must have an established process to obtain and update relevant and material information on the obligor's financial condition and other characteristics that affect assigned estimates of PD, LGD and EAD. Upon receipt, the ADI must have a procedure to update the obligor's ratings in a timely fashion.

Standards for the retail IRB asset class

45. An ADI must review the loss characteristics and delinquency status of each identified pool on at least an annual basis. This would include a review of the status of individual obligors within each pool as a means of ensuring that exposures continue to be assigned to the correct pool.

Overrides

46. For rating assignments based on expert judgement, an ADI must clearly document the situations in which officers may override the outputs of the rating process, including how and to what extent such overrides can be made and by whom.
47. For model-based ratings, an ADI must have guidelines and processes for monitoring cases where judgement has overridden the model's rating, variables that were excluded or inputs that were altered. Those guidelines must include identifying personnel who are responsible for approving such overrides.
48. An ADI must have systems that identify overrides and separately track their nature and performance.

Data maintenance

49. An ADI must collect and store data on key obligor and facility characteristics to support its internal credit risk measurement and management processes, enable the ADI to meet the requirements of this Prudential Standard and serve as a basis for regulatory reporting and the relevant disclosure requirements detailed in *Prudential Standard APS 330 Capital Adequacy: Public Disclosure of Prudential Information (APS 330)*.

Standards for the corporate, sovereign and bank IRB asset classes

50. An ADI must maintain rating histories on obligors and eligible guarantors or credit protection providers including the initial rating, the dates the ratings were assigned, the methodology and key data used to derive the rating and the officer responsible for the most recent rating.
51. In order to track the predictive power of the obligor rating system, an ADI must retain data on PD estimates, ratings migration and realised default rates associated with obligor grades.
52. An ADI using the AIRB approach must collect and store a history of data on the LGD and EAD estimates associated with each facility, the methodology and key data used to derive the estimate, the officer responsible for the most recent rating and the realised rates associated with each defaulted facility.
53. Where an ADI uses the AIRB approach and reflects the credit risk mitigating effects of guarantees or credit derivatives through its LGD estimates, it must retain data on the LGD of the facility before and after evaluation of the effects of the guarantee or credit derivative.
54. An ADI must retain the identity of obligors and facilities that default and information about the components of loss and recovery for each defaulted exposure including information relating to amounts and source of recoveries (e.g. collateral, liquidation proceeds and guarantees or credit derivatives), timing of cash flows and administrative costs.

55. An ADI using the slotting approach for one or more of the SL sub-asset classes is encouraged to retain data on realised losses for these exposures.

Standards for the retail IRB asset class

56. An ADI must retain data used in the process of allocating retail exposures to pools. This includes data on obligor and transaction risk characteristics used either directly, or through the use of a model, as well as data on delinquency.
57. An ADI must retain data on PD, LGD and EAD estimates associated with its pools of retail exposures.
58. For defaulted exposures, an ADI must retain data on the pools to which the retail exposure was assigned over the year prior to default and the realised outcomes on LGD and EAD.

Stress tests in the assessment of capital adequacy

59. An ADI must have in place sound stress testing processes for use in the assessment of its capital adequacy including the sufficiency of the IRB capital requirement. Stress testing must include identification of possible events or severe changes in economic conditions that would have unfavourable effects on the ADI's credit exposures and assessment of the ADI's ability to withstand such events or changes. Scenarios that could be used for this purpose are economic or industry downturns, market-risk events and liquidity conditions.
60. As part of its capital management planning and in addition to the more general tests described in paragraph 59 of this Attachment, an ADI must perform one or more credit risk stress tests to assess the effect of certain specific conditions on its IRB capital requirement. For this purpose, the objective is not to require the ADI to consider worst-case scenarios; however, it should at least consider the effect of mild recession scenarios. The tests to be employed would be chosen by the ADI, subject to review by APRA. The tests must be meaningful and reasonably conservative. Depending on its own circumstances, the ADI may develop different approaches to undertaking this stress test requirement.
61. As part of its stress testing process, an ADI that uses the double default approach for certain exposures must consider the impact of a deterioration in the credit quality of the relevant guarantors and credit protection providers and, in particular, the impact of these parties falling outside the eligibility criteria due to a change in their rating. The ADI must also consider the impact of the default of one, but not both, of the obligor and the guarantor or credit protection provider and the consequential increase in risk and its capital requirement at the time of that default.

Governance and oversight

62. All material aspects of an ADI's rating and estimation processes must be approved by the ADI's Board, or Board committee thereof, and senior management. Those parties must possess a general understanding of the ADI's

rating systems and a detailed understanding of the associated management reports. Senior management must notify the Board, or committee thereof, of material changes or exceptions from established policies that could have a material impact on the ADI's rating system.

63. Senior management must understand the design and operation of the ADI's rating systems and approve any material differences identified between established procedures and actual practice. Senior management must ensure that the rating system is operating as intended on an ongoing basis. Senior management and staff in the credit risk control function (refer to paragraphs 65 to 66 of this Attachment) must meet regularly to discuss the performance of the rating process, areas requiring improvement and the status of efforts to improve previously identified deficiencies.
64. Internal ratings must be an essential part of the reporting to the Board and senior management. Reporting must include risk profile by grade, migration across obligor grades, quantitative estimates of the relevant parameters for each obligor grade and where relevant, facility grade, and comparison of realised default rates (and realised LGD and EAD rates where relevant) against expectations. Reporting frequencies may vary with the significance and type of information and the level of the recipients.

Credit risk control

65. An ADI must have an independent credit risk control unit that is responsible for the design or selection, implementation and performance of the ADI's rating systems. The unit must be functionally independent of the personnel and management functions responsible for originating exposures. Areas of responsibility must include:
 - (a) testing and monitoring internal obligor and facility grades;
 - (b) production and analysis of summary reports from the ADI's rating system, including historical default data sorted by rating at the time of default and one year prior to default, migration analysis and monitoring of trends in key rating criteria;
 - (c) implementing procedures to verify that rating definitions are consistently applied across departments and geographic areas;
 - (d) reviewing and documenting any changes to the rating process, including the reasons for those changes; and
 - (e) reviewing the rating criteria to evaluate if they remain predictive of risk.
66. The credit risk control unit must actively participate in the development, selection, implementation and validation of rating models. It must assume oversight and supervision responsibilities for any models used in the rating process and have ultimate responsibility for the ongoing review of, and alterations to, the ADI's rating models.

Independent review

67. An ADI's rating system and its operations, including the operations of the credit risk control function and the estimation of PD and, where relevant, LGD and EAD, must be reviewed at least annually by an independent function. This review must include adherence to all applicable minimum requirements detailed in this Attachment. The findings of this review must be documented.

Use of internal ratings

68. Internal ratings, loss, default and exposure estimates must play an integral role in the credit approval, risk management, internal capital allocation and governance functions of the ADI. 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.
69. It is recognised that an ADI may not necessarily be using the same credit risk estimates for both Regulatory Capital and all internal purposes. In this case, data sources and methodologies utilised for the purposes of determining an ADI's internal credit risk estimates must be consistent with the estimates used to determine the IRB capital requirement. Where there are differences, the ADI must be able to justify, to APRA's satisfaction, the reasonableness of those differences.

General risk quantification requirements

Overall requirements for estimation

70. An ADI must estimate PD⁹ for each internal obligor grade for corporate, sovereign and bank exposures and for each pool of retail exposures.
71. PD estimates must be calibrated to a long-run average of one-year default rates (one-year PD) for obligors in each obligor grade, with the exception of retail exposures where the definition of default can be applied at the facility, rather than obligor, level. Additional requirements specific to PD estimation are detailed in paragraphs 83 to 88 of this Attachment.
72. An ADI must estimate an appropriate long-run default-weighted average LGD and EAD (as detailed in paragraphs 89 to 100 and 101 to 109 respectively of this Attachment) for each relevant corporate, sovereign and bank exposure where the ADI has approval from APRA to use the AIRB approach and each retail pool.
73. Internal estimates of PD, LGD and EAD must be reviewed on at least an annual basis and incorporate all relevant, material and available data and other information. In determining these estimates, an ADI may utilise internal data and relevant data from external sources (including pooled data).

⁹ An ADI is not required to produce its own estimates of PD for the SL sub-asset classes where the ADI uses the slotting approach for these exposures.

74. Estimates must be grounded in historical experience and empirical evidence and not based purely on subjective or judgmental considerations. Changes in an ADI's lending and collection practices over the observation period must be taken into account. The ADI's estimates must reflect the implications of new data and other information as it becomes available. Where industry estimation practices evolve and improve over time, the ADI should consider these developments in assessing its own practices. The ADI must review its estimates and estimation methodology on at least an annual basis.
75. In general, PD, LGD and EAD estimates are likely to involve unpredictable errors. In order to avoid over-optimism, an ADI must add a margin of conservatism to its estimates 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 must be larger.

Definition of default

76. A default is considered to have occurred with regard to a particular obligor when either or both of the two following events have taken place:
- (a) the ADI considers that the obligor is unlikely to pay its credit obligations to the Level 2 group in full, without recourse by the ADI to actions such as realising available security;
 - (b) the obligor is at least 90 days past due on a credit obligation to the Level 2 group.¹⁰
77. For the purposes of paragraph 76(a) of this Attachment, elements to be taken as indications of unlikeliness to pay include:
- (a) the factors set out in APS 220 relating to impairment irrespective of whether the ADI considers the credit obligations to be well secured;
 - (b) the ADI sells the credit obligation at a material credit-related economic loss. For the purpose of this element, the ADI must have a policy requiring:
 - (i) the maintenance of an internal register of credit obligations sold at a material credit-related economic loss;
 - (ii) data contained in the register to be considered by the ADI in its rating system design and validation processes. The subsequent inclusion in, or exclusion from, those processes of any data contained in the register must be justified by the ADI and must not result in lower LGD estimates; and

¹⁰ An exception to this is for subsidiaries in jurisdictions where a different number of days past due is set for retail exposures by the national regulator. That definition may be used by the ADI in relation to relevant PD, LGD and EAD estimates in the calculation of its Level 2 capital requirement.

- (iii) the creation and use of data contained in the register must be transparent to independent reviewers of the ADI's rating systems, such as the ADI's internal or external auditors and APRA.
78. For the purpose of paragraph 76(b) of this Attachment, the criteria for the recognition of 90 days past due are the same as those detailed in APS 220.
 79. An ADI must record actual defaults on IRB asset classes using the reference definition of default detailed in paragraph 76 of this Attachment. The ADI must also use the reference definition of default for its PD and, where relevant, LGD and EAD estimates (though this does not preclude the possibility of materiality considerations entering into the estimation process). In arriving at its estimates, the ADI may use external data that are not consistent with that definition provided it makes appropriate adjustments to the data to achieve broad equivalence with the reference definition of default. This same condition would apply to any internal data collected prior to 1 January 2008. Internal data (including that pooled by a number of ADIs) collected subsequent to 1 January 2008 must be consistent with the reference definition of default.
 80. If an ADI considers that a previously defaulted exposure's status is such that the triggers in the reference definition of default no longer apply, the ADI may re-rate the obligor grade and, where relevant, the facility grade, as they would for a non-defaulted exposure. Should the reference definition be subsequently triggered, a second default would be deemed to have occurred. In the case of a restructured item (refer to APS 220), that item may not be re-rated to a non-defaulted grade or rating until the restructured item has operated in accordance with non-concessional terms and conditions for a period of at least six months.

Re-aging

81. An ADI must have clearly documented policies in respect of the counting of days past due and, in particular, in respect of the re-aging of facilities and the granting of extensions, deferrals, renewals and rewrites to existing accounts. These policies must be consistent with the requirements for the use of internal ratings set out in paragraphs 68 to 69 of this Attachment in that where the ADI treats a re-aged exposure in a similar fashion to other exposures that are considered to be in default, that exposure must be recorded as defaulted for Regulatory Capital purposes.

Treatment of overdrafts and other revolving facilities

82. Non-authorized overdrafts are considered to have a zero limit for IRB purposes. An ADI must, therefore, treat days past due as commencing once any credit is granted to an unauthorized customer and if such credit is not repaid within 90 days, the exposure must be considered to be in default.

Risk quantification requirements specific to probability of default estimation

Standards for the corporate, sovereign and bank IRB asset classes

83. When estimating the average PD for each obligor grade, an ADI must use information and techniques that take appropriate account of long-run experience. The ADI may have a primary PD estimation technique and use others as a point of comparison and potential adjustment. The mechanical application of a technique without supporting analysis is not sufficient. An ADI must recognise the importance of judgmental considerations in combining the results of techniques and in making adjustments for limitations of techniques and information.
84. Irrespective of the technique an ADI uses for PD estimation, the length of the underlying historical observation period used must be at least five years from at least one source. If the available observation period spans a longer period from any source, and the data are relevant and material, this longer period must be used.

Standards for the retail IRB asset class

85. Since an ADI will have its own particular basis for assigning retail exposures to pools, the ADI must regard internal data as the primary source of information for estimating loss characteristics for retail exposures. The ADI may use other techniques for PD quantification provided a strong link can be demonstrated between:
 - (a) the ADI's process of assigning retail exposures to a pool and the process used by the other data source; and
 - (b) the ADI's internal risk profile and the composition of the other data.

In all cases, the ADI must use all relevant and material data sources as points of comparison.

86. One method for deriving long-run average estimates of PD (and default-weighted estimates of average LGD as defined in paragraph 94 of this Attachment) for retail exposures would be based on an estimate of the expected long-run average loss rate. An ADI may:
 - (a) use an appropriate PD estimate to infer the long-run default-weighted average LGD; or
 - (b) use a long-run default-weighted average LGD to infer the appropriate PD.

In either case, the LGD used for the IRB capital calculation must not be less than the long-run default-weighted average LGD and must be consistent with the requirements of paragraphs 92 to 93 of this Attachment.

87. Irrespective of the technique an ADI uses for the estimation of loss characteristics of retail exposures, the length of the underlying historical observation period used must be at least five years. If the available observations from any source span a longer period, and the data are relevant, this longer period must be used. The ADI need not give equal importance to historical data if it can demonstrate that the more recent data are a better predictor of loss rates.
88. An ADI must anticipate the implications of rapid exposure growth and take steps to ensure that its estimation techniques are accurate and that its current capital level, earnings and funding prospects are adequate to cover its future capital needs. In order to avoid excessive movement in its required capital position arising from short-term PD horizons, the ADI must adjust PD estimates upward for anticipated material seasoning effects that may peak several years after origination, provided such adjustments are applied in a consistent fashion over time.

Risk quantification requirements specific to loss given default estimation under the advanced IRB and retail IRB approaches

Definition of loss for loss given default estimates across all IRB asset classes

89. An ADI must take into account all relevant factors when measuring economic loss for LGD purposes. This includes material discount effects and material direct and indirect costs associated with collecting on an exposure.
90. For LGD estimation purposes, an ADI must not simply measure the loss recorded in its accounting records although it must be able to reconcile accounting and economic losses.
91. An ADI may make adjustments to its LGD estimates to reflect its own workout and collection expertise. Such adjustments must be conservative until such time as the ADI has sufficient internal empirical evidence of the impact of its expertise.

Standards for all IRB asset classes

92. An ADI must take into account the potential for LGD to be higher than the default-weighted average during a period when credit losses are substantially higher than average. That is, LGD estimates must reflect economic downturn conditions, where necessary, to capture relevant risks.
93. For certain exposures, there may be significant cyclical variability in loss severities and an ADI must incorporate this into its LGD estimates. For this purpose, an ADI may use averages of loss severities observed during periods of high credit losses, forecasts based on appropriately conservative assumptions or other similar methods. Estimates of LGD during periods of high credit losses may be made using either internal or external data. In its analysis, the ADI must consider the extent of any dependence between the risk of the obligor and that of the collateral or collateral provider. Cases where there is a significant degree of dependence must be addressed in a conservative manner.

94. Where loss severities do not exhibit cyclical variability and LGD estimates do not differ materially from the long-run default-weighted average, LGD estimates must not be less than the long-run default-weighted average loss given default calculated as the average economic loss (refer to paragraphs 89 to 91 of this Attachment) of all observed defaults within the data source for that type of facility.
95. Currency mismatches between the underlying obligation and the collateral must be considered and treated conservatively in an ADI's assessment of LGD.
96. LGD estimates must be grounded in historical recovery rates and, where applicable, must not be based solely on the estimated market value of collateral.
97. To the extent that LGD estimates take into account the existence of collateral, an ADI must establish internal requirements for collateral management, operational procedures, legal certainty and risk management processes that are generally consistent with those detailed in Attachment H of APS 112 and Attachment B of this Prudential Standard.
98. The LGD assigned to a defaulted asset must reflect the possibility that an ADI may have to recognise additional UL during the recovery period. For each defaulted asset, the ADI must also construct its best estimate of the EL on that asset based on current economic circumstances and the facility's status. The amount, if any, by which the LGD on a defaulted asset exceeds the ADI's best estimate of EL on the asset represents the capital requirement for that asset and should be set by the ADI on a risk-sensitive basis (refer to paragraph 78 of Attachment B and paragraph 38 of Attachment C). Instances where the best estimate of EL on a defaulted asset is less than the sum of specific provisions and partial write-offs on that asset must be justified to APRA by the ADI.

Additional standards for the corporate, sovereign and bank IRB asset classes

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

Additional standards for the retail IRB asset class

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

Risk quantification requirements specific to exposure at default estimation under the advanced IRB and retail IRB approaches

Standards for all IRB asset classes

101. An ADI must have procedures in place for the estimation of EAD for each type of off-balance sheet exposure, excluding those that expose the ADI to counterparty credit risk. Estimates of EAD should reflect the possibility of additional drawings by the obligor up to the time a default event is triggered. EAD estimates must also take into account additional drawings after the time of default if the ADI does not include the possibility of such drawings in its LGD estimates. Where estimates of EAD differ by facility type, the delineation of these facilities must be clear and unambiguous.
102. An ADI that has approval to use the AIRB approach must assign an estimate of EAD for each facility. EAD estimates must be an estimate of the long-run default-weighted average EAD for similar facilities and obligors over a sufficiently long period of time, with a margin of conservatism appropriate to the likely range of errors in the estimate. If a positive correlation can reasonably be expected between the default frequency and the magnitude of EAD, the EAD estimate must incorporate a larger margin of conservatism.
103. For exposures where EAD estimates are volatile over the economic cycle, an ADI must use EAD estimates that are appropriate for an economic downturn if these are more conservative than the long-run average. Where the ADI has developed its own EAD models, this could be achieved by considering the cyclical nature, if any, of the drivers of such models. Alternatively, the ADI may have sufficient internal data to examine the impact of previous recessions. In some cases, the ADI may only have the option of making conservative use of external data.
104. The criteria by which estimates of EAD are derived must be plausible and intuitive and represent what an ADI believes to be the material drivers of EAD. The criteria must be supported by credible internal analysis by the ADI. The ADI must be able to provide a breakdown of its EAD experience by the factors it sees as the drivers of EAD. The ADI must use all relevant and material information in its determination of EAD estimates.
105. An ADI must review assigned EAD estimates when material new information comes to light and, in any case, at least on an annual basis.
106. An ADI's EAD estimates must give due consideration to its policies and procedures in respect of account monitoring and payment processing. The ADI must consider its ability and willingness to prevent further drawings in circumstances short of payment default, such as covenant violations or other technical default events.
107. An ADI must have systems and procedures in place to monitor, on a daily basis, facility amounts, outstanding amounts against committed lines and changes in outstanding amounts for each obligor and obligor grade.

Additional standards for the corporate, sovereign and bank IRB asset classes

108. Estimates of EAD must be based on a time period that must ideally cover a complete economic cycle but, in any case, must be no shorter than seven years. If the available observation period spans a longer period from any source and the data are relevant and material, this longer period must be used.

Additional standards for the retail IRB asset class

109. The minimum data observation period for EAD estimates for retail exposures is five years. The less data an ADI has, the more conservative it must be in its estimation of EAD. The ADI need not give equal importance to historical data if it can demonstrate to APRA that more recent data are a better predictor of drawdowns.

Validation of internal estimates

110. An ADI must have a robust and documented system in place to validate the accuracy and consistency of rating systems and processes and the estimation of all relevant credit risk components. The ADI must be able to demonstrate to APRA that the internal validation process enables it to assess the performance of its internal rating and credit risk estimation systems in a meaningful and consistent manner.
111. An ADI must regularly compare realised default rates with PD estimates for each obligor grade and be able to demonstrate that the realised default rates are within the expected range for each grade. An ADI using its own LGD and EAD estimates must also complete such analysis for those estimates. Comparisons must make use of historical data over as long a time period as possible. The methods and data used in these comparisons must be clearly documented. This analysis and documentation must be updated at least annually.
112. An ADI must also use other quantitative validation tools and comparisons with relevant external data sources. The analysis must be based on data that are appropriate to the portfolio, are updated regularly and cover a relevant observation period. The ADI's internal assessment of the performance of its rating system must be based on long data histories covering a range of economic conditions and, ideally, one or more complete business cycles.
113. An ADI must demonstrate that quantitative testing methods and other validation methods do not vary systematically with the economic cycle. Changes in methods and data (both data sources and periods covered) must be clearly and thoroughly documented.
114. An ADI must have documented internal standards for situations where deviations from expectations in realised PD rates and, where applicable, LGD and EAD rates, become significant enough to call the validity of the estimates into question. These standards must take account of business cycles and similar systematic variability in default experience. Where realised values continue to be higher than expected values, the ADI must revise its estimates upward to reflect its actual default and loss experience.

115. An ADI that uses supervisory, rather than internal, estimates of credit risk parameters must compare realised LGD and EAD rates to those set by APRA and use this information in its internal assessment of capital adequacy.

Disclosure requirements

116. An ADI with IRB approval must meet the relevant disclosure requirements detailed in APS 330.

Attachment B

Corporate, sovereign and bank IRB asset classes

Probability of default estimates

1. The minimum requirements for the derivation of the PD estimates associated with each internal obligor grade are detailed in Attachment A.
2. For exposures in the corporate and bank IRB asset classes, PD is the greater of the one-year PD (refer to paragraph 71 of Attachment A) associated with the internal obligor grade to which an exposure is assigned and 0.03 per cent. For exposures in the sovereign IRB asset class, PD is the one-year PD associated with the internal obligor grade to which an exposure is assigned.
3. A 100 per cent PD must be assigned to default grades (refer to paragraph 76 of Attachment A).

Loss given default estimates

Foundation IRB approach

4. Where an ADI's IRB approval requires the use of the FIRB approach for the corporate, sovereign or bank IRB asset classes (or for certain exposures within those IRB asset classes), the ADI must use supervisory estimates for the LGD credit risk component as summarised in Table 2.

Table 2: Supervisory estimates for LGD

	Minimum LGD (%)	Level of collateralisation required for full recognition of collateral (C**) ¹¹ (%)	Minimum level of collateralisation required for partial recognition of collateral (C*) ¹² (%)
Senior unsecured claims	45		

¹¹ Refer to paragraphs 14 and 17 of this Attachment for the methodology for the recognition of commercial real estate, residential real estate and eligible financial receivables collateral.

¹² Refer to paragraph 8 of this Attachment for the methodology for the recognition of eligible financial collateral.

	Minimum LGD (%)	Level of collateralisation required for full recognition of collateral (C**) ¹¹ (%)	Minimum level of collateralisation required for partial recognition of collateral (C*) ¹² (%)
Subordinated claims	75		
Eligible financial collateral	0		0
Commercial or residential real estate	35	140	30
Eligible financial receivables	35	125	0

Senior unsecured claims

- Senior claims that are not secured by eligible collateral must be assigned a 45 per cent LGD.

Subordinated claims

- With the exception of junior liens over commercial real estate (CRE) and residential real estate (RRE) (refer to paragraph 13(d) of this Attachment) subordinated claims must be assigned a 75 per cent LGD.

Claims secured by eligible financial collateral

- Eligible financial collateral is limited to the eligible collateral detailed in paragraphs 5 and 25 of Attachment H of APS 112. Recognition of eligible financial collateral is subject to the minimum conditions detailed in that same Attachment.

8. The effective loss given default (LGD*) applicable to a transaction secured by eligible financial collateral is determined as follows:

$$LGD^* = LGD \times \frac{E^*}{E}$$

where:

LGD = a senior unsecured exposure before recognition of collateral (i.e. 45 per cent);

E = the current value of the exposure (i.e. cash or securities lent or posted); and

E* = the exposure value after credit risk mitigation (CRM) as determined under the comprehensive approach to the recognition of collateral as detailed in Attachment H of APS 112.

9. The methodology detailed in paragraph 8 of this Attachment may only be used to calculate LGD*. An ADI must determine EAD without taking into account the effect of collateral.
10. Where repurchase, reverse repurchase and securities borrowing or lending transactions are subject to a master netting agreement, an ADI may recognise netting subject to satisfying the criteria in Attachment J of APS 112. In this case, the ADI must calculate E* as set out in paragraphs 38 to 42 of that Attachment and use this as the estimate of EAD. The LGD estimate must not include the impact of collateral.

Claims secured by commercial or residential real estate

11. CRE and RRE collateral for exposures in the corporate, sovereign and bank IRB asset classes is limited to:
- (a) collateral where the risk of the obligor defaulting is not materially dependent upon the performance or cash flow of the underlying property or project but rather on the underlying capacity of the obligor to repay the debt from other sources; and
 - (b) collateral where the value of such collateral is not materially dependent upon the performance of the obligor. This requirement is not intended to preclude situations where purely macro-economic factors affect both the value of the collateral and the performance of the obligor.
12. Under the FIRB approach, income-producing real estate that falls under the SL sub-asset class is excluded from recognition as eligible collateral for exposures in the corporate IRB asset class.
13. Subject to paragraph 11 of this Attachment, CRE and RRE are eligible for recognition as collateral when the following requirements are met:

- (a) claims on collateral are legally enforceable in all relevant jurisdictions and legal requirements for establishing the ADI's claim are fulfilled. The collateral agreement and the legal process underpinning the transaction must allow the ADI to realise the value of the collateral within a reasonable timeframe;
 - (b) the collateral is valued at no more than the current fair value under which it could be sold under contract between a willing seller and an independent buyer on the date of valuation;
 - (c) the ADI monitors the value of the collateral on at least an annual basis. More frequent monitoring is required where the market is subject to significant changes in value;
 - (d) junior liens may be taken into account where there is no doubt that the claim for collateral is legally enforceable and constitutes an effective credit risk mitigant. Junior liens are to be treated using the C^*/C^{**} threshold set out in Table 2. In such cases, C^* and C^{**} are calculated by taking into account the sum of amounts secured by the junior lien and all senior liens;
 - (e) the ADI's lending policies clearly document the types of CRE and RRE collateral that are acceptable to the ADI. Exceptions to the ADI's policy will not be recognised as eligible CRE and RRE under the FIRB approach;
 - (f) the ADI ensures that the property taken as collateral is adequately insured;
 - (g) the ADI monitors and takes into account prior claims (e.g. taxation liabilities) on the property; and
 - (h) the ADI monitors the risk of environmental liability arising in respect of the collateral.
14. Where an ADI has taken CRE or RRE as collateral, the methodology for determining LGD* is as follows:
- (a) where the level of collateralisation (C) exceeds the threshold level of C^{**} detailed in Table 2, LGD* is 35 per cent;
 - (b) where the level of collateralisation is between the threshold levels C^{**} and C^* detailed in Table 2, the exposure is divided into fully collateralised and uncollateralised portions. That part of the exposure considered to be fully collateralised (C/C^{**}) is assigned a supervisory LGD estimate of 35 per cent. The remaining part of the exposure is regarded as unsecured and is assigned an LGD of 45 per cent. That is:

$$LGD^* = \left(\frac{C}{C^{**}} \right) \times 35\% + \left(1 - \frac{C}{C^{**}} \right) \times 45\% ; \text{ and}$$

- (c) where the level of collateralisation is below the threshold level of C* detailed in Table 2, the collateral is not recognised, i.e. LGD* is 45 per cent.

Claims secured by eligible financial receivables

15. Eligible financial receivables are limited to claims with an original maturity of one year or less where repayment occurs through the commercial or financial flows related to the obligor's underlying business operations. This includes:
- (a) self-liquidating debt arising from the sale of goods or services linked to a commercial transaction; and
 - (b) general amounts owed by buyers, suppliers, renters, national and local government authorities or other non-affiliated parties that are not related to the sale of goods or services linked to a commercial transaction.

Receivables from affiliates of the obligor (including subsidiaries and employees) and receivables associated with securitisations, sub-participations and credit derivatives will not be recognised as eligible financial receivables under the FIRB approach.

16. Subject to paragraph 15 of this Attachment, financial receivables are eligible for recognition as collateral only where the ADI has a first priority claim and when the following operational requirements are met:
- (a) claims on collateral are legally enforceable in all relevant jurisdictions and legal requirements for establishing the ADI's claim are fulfilled. The ADI must be able to realise the collateral within a reasonable timeframe. The ADI's procedures must 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 ADI must have the legal authority to sell or assign the receivables to other parties without the consent of the receivables' obligors;
 - (b) the ADI assesses the credit risk of the financial receivables taken as collateral. The margin between the amount of the exposure and the value of the receivables must reflect the cost of collection and the concentration within the receivables pool and across the ADI's total exposures;
 - (c) the ADI maintains a continuous monitoring process over the financial receivables taken as collateral;
 - (d) the ADI has concentration limits that it monitors; and
 - (e) the ADI has a documented process for collecting cash remittances from the receivables' obligor in the event of the obligor's distress or

bankruptcy. The requisite facilities for collection should be in place, even though the ADI would normally look to the obligor for collections.

17. The methodology for determining LGD* for exposures secured by eligible financial receivables under the FIRB approach is the same as that detailed in paragraph 14 of this Attachment.

Pools of collateral under the foundation IRB approach

18. In the case where an ADI has multiple forms of eligible collateral for an exposure, the exposure must be divided into portions fully covered by eligible financial collateral, eligible financial receivables and a residual portion (which may be fully or partly secured by CRE and RRE). The risk-weights for each portion must be calculated separately. In the case of the residual portion, where the ratio of the sum of the value of CRE and RRE to the residual exposure is below the associated level of C* detailed in Table 2, the exposure must be assigned an LGD value of 45 per cent.

Advanced IRB approach

19. Where an ADI's IRB approval allows the use of the AIRB approach for the corporate, sovereign or bank IRB asset classes (or for certain exposures within those IRB asset classes), the ADI may use its own estimates of LGD. These estimates must meet the requirements detailed in Attachment A. Notwithstanding, a minimum LGD of 10 per cent must be applied to exposures to the extent they are secured by RRE. Where considered appropriate, APRA may, in writing, require an ADI to meet a higher minimum LGD for such exposures.
20. Where repurchase, reverse repurchase and securities borrowing or lending transactions are subject to a master netting agreement, an ADI may recognise netting subject to satisfying the criteria in Attachment J of APS 112. In this case, the ADI must calculate E* as detailed in paragraphs 38 to 42 of that same Attachment and use this as the estimate of EAD. The ADI may use its own LGD estimate for the unsecured equivalent amount (i.e. E*).
21. LGD estimates must be measured as a percentage of EAD.

Exposure at default estimates

22. EAD in respect of each exposure (both on-balance sheet and off-balance sheet) is measured without deducting any specific provisions and partial write-offs.

Exposure measurement for on-balance sheet exposures

23. Subject to paragraph 25 of this Attachment, the EAD estimate of a drawn amount (i.e. an on-balance sheet exposure) must not be less than the current contractual amount owed by the obligor nor should it be less than the sum of:
 - (a) the amount by which the ADI's Common Equity Tier 1 Capital (refer to APS 111) would be reduced if the exposure were fully written-off; and

- (b) any associated specific provisions and partial write-offs.
24. When the difference between the EAD estimate and the sum of paragraphs 23(a) and 23(b) of this Attachment is positive, this amount is termed a discount. An ADI must not take into account such discounts when calculating risk-weighted assets. As detailed in paragraph 21 of this Prudential Standard, such discounts may be included in the measurement of eligible provisions for the purpose of offsetting EL in calculating the ADI's capital requirement.
 25. An ADI may recognise on-balance sheet netting of loans and deposits subject to satisfying the criteria detailed Attachment J of APS 112. Where there is a currency or maturity mismatch between the relevant loans and deposits, adjustments must be made in the same manner as those detailed in the comprehensive approach to the recognition of collateral as detailed in Attachment H of APS 112.

Exposure measurement for off-balance sheet exposures except those that expose the ADI to counterparty credit risk

26. For off-balance sheet exposures, EAD is calculated as the notional amount of the exposure multiplied by a credit conversion factor (CCF) or, in the case of an undrawn commitment, the undrawn amount multiplied by a CCF. There are two approaches for the estimation of CCFs: a FIRB approach and an AIRB approach.

Foundation IRB approach

27. Where an ADI's IRB approval requires the use of the FIRB approach for the corporate, sovereign or bank IRB asset classes (or for certain exposures within those IRB asset classes), the ADI must use the CCFs for off-balance sheet exposures detailed in Attachment B of APS 112. The exception to this is that a 100 per cent CCF must be applied to commitments, note issuance facilities and underwriting facilities regardless of the maturity of the underlying facility. In the case of commitments that are provided to obligors that have access to debt securities markets in their own name (i.e. not solely through securitisation transactions), the ADI may apply a 75 per cent CCF.
28. In order for an ADI to apply a zero per cent CCF for unconditionally cancellable commitments, the ADI must be able to demonstrate that it actively monitors the financial condition of the obligor and that its internal control system is such that upon evidence of a material deterioration in the credit quality of the obligor, the ADI can, and usually would, cancel the facility.
29. CCFs may be applied to the lower of the value of the unused committed credit line and the value of any other constraining factor on the availability of the facility, such as the existence of a ceiling on the potential lending amount that is related to an obligor's reported cash flow or its external credit rating. If the lower value is used, the ADI must have sufficient line monitoring and management procedures to support using the lower value for Regulatory Capital purposes.

30. Where the ADI has given a commitment to provide an off-balance sheet exposure, it may apply the lower of the CCFs applicable to the commitment and the off-balance sheet exposure.

Advanced IRB approach

31. Where an ADI's IRB approval allows the use of the AIRB approach for the corporate, sovereign or bank IRB asset classes (or for certain exposures within those IRB asset classes), the ADI may use its own CCF estimates. These estimates must meet the requirements detailed in Attachment A. The exception to this is for those exposures subject to a CCF of 100 per cent under the standardised approach to credit risk (refer to APS 112).

Exposure measurement for off-balance sheet exposures that expose the ADI to counterparty credit risk

32. Under both the FIRB and AIRB approaches, an ADI must determine EAD¹³ for those off-balance sheet exposures (including OTC derivatives, exchange-traded derivatives and securities financing transactions (SFTs)) that expose the ADI to counterparty credit risk according to the methods detailed in Attachment C to APS 112. For the purpose of calculating the CVA risk capital formula weights, as detailed in Attachment C to APS 112, an ADI must have a documented conservative and consistent process that maps each of its internal ratings for counterparties without an external rating grade into the equivalent long-term credit rating grade.

Maturity

33. For exposures in the corporate, sovereign and bank IRB asset classes, the ADI must measure M for each facility. Except as noted in paragraph 35 of this Attachment, M is the greater of one year and the remaining maturity in years as defined in paragraph 34 of this Attachment. In all cases, M is no greater than five years.
34. For an exposure subject to a specified cash flow schedule, M is defined as:

$$M = \frac{\sum_t t \times CF_t}{\sum_t CF_t}$$

where:

CF_t denotes the cash flows contractually payable by the obligor in period t and t is expressed in years (e.g. where a payment is due to be received in 18 months, t = 1.5).

13 EAD is calculated according to the methodology to compute CEA in APS 112.

35. An ADI that is not able to calculate M for the contracted payments as set out in paragraph 34 of this Attachment, may use a more conservative measure that is not less than the maximum remaining time (in years) that the obligor is permitted to take to fully discharge its contractual obligations under the terms of the facility agreement (up to a maximum of five years).
36. Where amounts have been drawn by an obligor under a committed facility and the maturity of the drawn amount is less than the maturity of the facility, the maturity of the facility (up to a maximum of five years) must be used for determining the capital requirement.
37. When determining the maturity estimate for over-the-counter derivatives that are subject to a master netting agreement, the ADI must use the weighted-average maturity of the derivatives. In this case, the notional amount of each derivative transaction should be used for the purpose of determining the weighted-average maturity.

Exemptions from the one-year maturity floor

38. For certain short-term exposures, the one-year floor for maturity that is set out in paragraph 33 of this Attachment may be replaced by a one-day floor. The maturity of such transactions must be calculated as the greater of one day and the maturity as detailed in paragraph 34 of this Attachment.
39. Over-the-counter derivative transactions, repurchase agreements, reverse repurchase agreements and securities lending and borrowing transactions are exempt from the one-year maturity floor where they have an original maturity of less than one year and the relevant documentation contains daily remargining clauses. The relevant documentation must also require daily revaluation and include provisions that allow for the prompt liquidation or setoff of collateral in the event of default or failure to remargin. Where these transactions are subject to a master netting agreement, the weighted-average maturity of the transactions should be used when determining the maturity estimate. In this case, the floor for over-the-counter derivatives is 10 business days and for repurchase agreements, reverse repurchase agreements and securities lending and borrowing transactions, it is five business days. The notional amount of each transaction must be used in determining the weighted-average maturity.
40. Letters of credit (both issued as well as confirmed) used for the purposes of trade financing that have a maturity below one-year and are self-liquidating are also exempt from the one-year maturity floor.¹⁴
41. In addition to the transactions detailed in paragraph 39 and 40 of this Attachment, other short-term transactions with an original maturity of less than one year that are not part of an ADI's ongoing financing of an obligor may be exempt from the one-year maturity floor. This would include unsettled

¹⁴ Other forms of trade financing which meet both the maturity and self-liquidating criteria may also be exempted from the one-year maturity floor, subject to APRA's written approval.

transactions that are required to be treated as an exposure as detailed in Attachment E. An ADI must have policies that are approved in writing by APRA detailing the transactions where the one-day maturity floor is appropriate.

Recognition of guarantees and credit derivatives

42. There are three approaches for the recognition of CRM in the form of guarantees and credit derivatives under the IRB approach: a FIRB substitution approach where an ADI uses supervisory estimates of LGD, an AIRB substitution approach where the ADI has approval from APRA to use its own estimates of LGD and, for certain exposures, a double default approach. An ADI may decide, separately for each eligible exposure, to apply either the relevant substitution approach or the double default approach.
43. Under either of the two substitution approaches, CRM in the form of a guarantee or a credit derivative must not result in an adjusted risk-weight that is less than that of a comparable, direct exposure to the guarantor or credit protection provider.
44. Where there is partial coverage of an exposure by a guarantee or credit derivative and there is a difference in seniority between the covered and uncovered portions of the exposure, the arrangement is considered to be a synthetic securitisation and is subject to APS 120.
45. An ADI must have documented criteria for adjusting PD and, where relevant, LGD estimates to reflect the impact of guarantees and credit derivatives under the substitution approaches. These criteria must be consistent with the requirements for assigning exposures to obligor grades as set out in paragraphs 18 to 21 of Attachment A and must follow the minimum requirements for assigning obligor or facility grades set out in that Attachment. The ADI's adjustment criteria must be plausible and intuitive and address the guarantor or credit protection provider's ability and willingness to perform under the guarantee or credit derivative. The adjustment criteria must also address the likely timing of any payments and the degree to which the guarantor or credit protection provider's ability to perform under the guarantee or credit derivative is correlated with the obligor's ability to repay. An ADI's adjustment criteria must also consider the extent to which residual risks remain. In adjusting PD and, where relevant, LGD estimates an ADI must take all relevant material information into account.
46. Where there is a currency mismatch between the underlying obligation and the credit protection provided by a guarantee or credit derivative, the amount of the exposure covered by the guarantee or credit derivative must be adjusted according to the requirements detailed in paragraphs 10 to 12 of Attachment G of APS 112 (in the case of guarantees) and paragraphs 33 to 35 of Attachment I of APS 112 (in the case of credit derivatives).
47. An ADI may choose not to recognise credit protection if doing so would result in a higher capital requirement.

48. In calculating the capital requirement for a covered exposure (or that portion thereof), the maturity estimate must be the same as the maturity of the exposure as if it were not covered.
49. Under the FIRB and AIRB substitution approaches, an ADI must use the same PD, LGD and EAD estimates for calculating EL for exposures (or that portion thereof) covered by eligible guarantees and credit derivatives as it uses for calculating the capital requirement for UL. EL for the covered portion of eligible exposures subject to the double default approach is zero.

Foundation IRB substitution approach

50. To receive recognition of guarantees and credit derivatives under the FIRB substitution approach, the operational and other requirements detailed in paragraph 6 of Attachment G of APS 112 (in the case of guarantees) and paragraph 22 of Attachment I of APS 112 (in the case of credit derivatives) must be met.
51. The range of eligible guarantors and credit protection providers under the FIRB substitution approach is the same as that detailed in paragraph 3 of Attachment G of APS 112, except that corporate counterparties that are internally rated may also be recognised.
52. Eligible guarantees and credit derivatives are recognised under the FIRB substitution approach as follows:
 - (a) for the covered portion of the exposure, a risk-weight may be derived by using the PD appropriate to the guarantor or credit protection provider's obligor grade (subject to the floor detailed in paragraph 2 of this Attachment) or some grade between that of the underlying obligor and the guarantor or credit protection provider if the ADI deems that full substitution is not warranted. In this case, the capital requirement will be based on the risk-weight function appropriate to the guarantor or credit protection provider. The ADI may, in respect of the covered portion, replace the LGD of the underlying transaction with the LGD applicable to the guarantee or credit derivative taking into account its seniority and any eligible collateral; and
 - (b) the uncovered portion of the exposure is assigned a risk-weight that is calculated in the same manner as a direct exposure to the underlying obligor.
53. Where the guarantee or credit derivative provides for a materiality threshold on payments below which no payment will be made in the event of loss, this is equivalent to a retained first loss position and must be deducted from the Common Equity Tier 1 Capital of the ADI obtaining credit protection. The deduction will be capped at the amount of capital the ADI would be required to hold against the full value of the underlying exposure.
54. Where there is partial coverage of an exposure by a guarantee or credit derivative and the covered and uncovered portions are of equal seniority (i.e. the

ADI and the guarantor or credit protection provider share losses on a *pro rata basis*), capital relief will be afforded on a proportional basis. This means that the covered portion of the exposure will receive the treatment applicable to eligible guarantees or credit derivatives with the remainder treated as uncovered.

Additional minimum requirements for assessing the effect of guarantees under the foundation IRB substitution approach

55. Guarantees that prescribe conditions under which the guarantor may not be obliged to perform (conditional guarantees) may not be recognised under the FIRB substitution approach.

Additional minimum requirements for assessing the effect of credit derivatives under the foundation IRB substitution approach

56. The following credit derivatives may be recognised under the FIRB substitution approach:

- (a) credit-default swaps;
- (b) total-return swaps where the ADI records any deterioration in the value of the underlying exposure in addition to recording the net payments received on the swap as net income;
- (c) first-to-default basket products. In this case, the ADI may only recognise credit protection against the asset within the basket with the lowest risk-weighted amount; and
- (d) second-to-default basket products. In this case, the protection obtained is only eligible if first-to-default protection has also been obtained or after a first-to-default credit event has occurred on one of the entities within the basket. Credit protection may then be recognised against the lowest risk-weighted amount.

57. An ADI must ensure that there is sufficient credit risk transfer under each credit derivative contract. At a minimum, sufficient credit risk transfer requires that credit events under the terms of the credit derivative contract cover:

- (a) failure to pay an amount due under the terms of the underlying exposure that is in effect at the time of such failure;¹⁵
- (b) the bankruptcy, insolvency or inability of the obligor of the underlying exposure to pay its debts, or its failure or admission in writing of its inability generally to pay its debts as those debts become due, or analogous events; and
- (c) subject to paragraph 58 of this Attachment, the restructuring of the underlying exposure. For this purpose, restructuring involves any

¹⁵ The grace period of the credit derivative contract must align closely with the grace period of the underlying exposure.

forgiveness or postponement of principal, interest or fees that results in the charge-off, specific provision or other similar debit to the profit and loss account of the ADI and restructured items where facilities are rendered non-commercial because of concessional contractual changes related to financial difficulties of the customer as defined in APS 220.

58. When restructuring of the underlying exposure is not included within the terms of the credit derivative contract, but the requirements of paragraphs 57(a) and 57(b) of this Attachment are met, an ADI may recognise, for capital adequacy purposes, 60 per cent of the amount of the credit protection purchased where the amount of credit protection purchased is less than or equal to the amount of the underlying exposure. If the amount of credit protection purchased exceeds that of the underlying exposure, then the amount of eligible credit protection is capped at 60 per cent of the amount of the underlying exposure.
59. An asset mismatch exists where an ADI has purchased credit protection using a credit derivative and the underlying exposure that is protected by the credit derivative is different to either:
 - (a) the deliverable obligation or the reference obligation (as the case may be); or
 - (b) the obligation specified in the credit derivative contract for the purpose of determining whether a credit event has occurred.
60. An asset mismatch for CRM purposes is allowed provided both:
 - (a) the deliverable obligation, the reference obligation or the obligation specified in the credit derivative contract for the purpose of determining whether a credit event has occurred (as the case may be) ranks *pari passu* or more junior, in seniority of claim, relative to the underlying exposure; and
 - (b) the underlying exposure and the deliverable obligation, reference obligation or the obligation specified in the credit derivative contract for the purpose of determining whether a credit event has occurred are obligations of the same legal entity or the underlying exposure is an obligation of an entity that is unconditionally and irrevocably guaranteed by the reference entity to the credit derivative contract, and legally enforceable cross-default or cross-acceleration clauses are in place.

Advanced IRB substitution approach

61. There are no in-principle restrictions to the types of guarantors or credit protection providers that an ADI may recognise under the AIRB substitution approach. The ADI must, however, have clearly documented criteria for the types of guarantors and credit protection providers it will recognise for Regulatory Capital purposes.
62. Under the AIRB substitution approach, guarantees and credit derivatives must be:

- (a) in writing and non-cancellable on the part of the guarantor or credit protection provider;
 - (b) in force until the debt is satisfied in full (to the extent of the amount and tenor of the guarantee or credit derivative); and
 - (c) legally enforceable against the guarantor or credit protection provider in a jurisdiction where that party has assets to attach and enforce a judgement.
63. An ADI using the AIRB substitution approach may reflect the risk-mitigating effect of guarantees and credit derivatives by either adjusting PD or LGD estimates. Whether adjustments are made through PD or LGD, they must be made in a consistent manner for a given type of guarantee or credit derivative. Where adjustments are made to PD estimates, the approach to determining Regulatory Capital for the covered and uncovered portions, as detailed in paragraph 52 of this Attachment, must be applied.

Additional minimum requirements for assessing the effect of guarantees under the advanced IRB substitution approach

64. Guarantees prescribing conditions under which the guarantor may not be obliged to perform (conditional guarantees) may be recognised where the ADI can demonstrate to APRA that its criteria for assigning adjusted PD or LGD estimates adequately address any potential reduction in the CRM effect.

Additional minimum requirements for assessing the effect of credit derivatives under the advanced IRB substitution approach

65. The criteria used for assigning adjusted PD or LGD estimates for exposures covered by credit derivatives must require that the asset on which the protection is based (the reference asset) not be different from the underlying asset unless the conditions detailed in paragraph 60 of this Attachment are met. Where a credit derivative does not cover the restructuring of the underlying asset, partial recognition is allowed as detailed in paragraph 58 of this Attachment.
66. The criteria used for assigning adjusted PD or LGD estimates must address the payout structure of the credit derivative and conservatively assess the impact this has on the level and timing of recoveries.
67. An ADI must consider the extent to which other forms of residual risk remain.

Double default approach

68. Subject to meeting the operational criteria detailed in paragraph 70 of this Attachment, an ADI may use the double default approach in determining the capital requirement for certain covered exposures.
69. The following guarantees and credit derivatives are, subject to the operational criteria detailed in paragraph 70 of this Attachment, eligible for recognition under the double default approach:

- (a) single-name, unfunded credit derivatives and single-name guarantees;
 - (b) first-to-default basket products. In this case, the double default approach is applied to the asset within the basket with the lowest risk-weighted amount; and
 - (c) n^{th} -to-default basket products. In this case, the protection obtained is only eligible if $(n-1)^{\text{th}}$ default protection has also been obtained or where $(n-1)$ of the assets within the basket have defaulted. The double default approach may then be applied to the asset within the basket with the lowest risk-weighted amount.
70. An ADI may use the double default approach for an exposure covered by a guarantee or credit derivative where the following operational criteria are met:
- (a) the risk-weight that is associated with the exposure prior to the application of the double default approach does not reflect any aspect of the credit protection provided by the guarantee or credit derivative;
 - (b) the entity providing the credit protection is an ADI or overseas bank (as defined in paragraphs 9 and 10 of Attachment A of APS 112), investment firm or insurance company.¹⁶ These counterparties are collectively referred to as financial firms and must:
 - (i) be subject to the same prudential requirements as ADIs (including capital adequacy, supervisory oversight and disclosure requirements) or alternatively, subject to satisfying paragraph 70(b)(ii) of this Attachment, have a credit rating grade of three or lower¹⁷ provided by an external credit assessment institution;
 - (ii) in order to initially qualify as an eligible guarantor or credit protection provider, have an internal rating that is equivalent to a credit rating grade of two or lower;¹⁸ and
 - (iii) subsequent to initial recognition as an eligible guarantor or credit protection provider, not have an internal rating that is equivalent to a credit rating grade of four or higher;¹⁹
 - (c) the underlying exposure that is covered by the guarantee or credit derivative is:
 - (i) with the exception of exposures that are subject to the slotting approach, an exposure in the corporate IRB asset class; or

¹⁶ To be recognised as an eligible credit protection provider, the insurance company must be in the business of providing credit protection. This would include insurance companies whose sole business line is providing credit protection, reinsurers and commercial export credit agencies (that is, export credit agencies that do not benefit from any direct or indirect sovereign support).

¹⁷ Refer to Attachment A of APS 112

¹⁸ Refer to footnote 17.

¹⁹ Refer to footnote 17.

- (ii) a claim on a commercial public sector entity or an entity defined in paragraph 7 of Attachment A of APS 112;
 - (d) the underlying obligor is not a financial firm or a member of the same group as the guarantor or credit protection provider;
 - (e) the credit protection provided by the guarantee or credit derivative meets the minimum operational requirements detailed in paragraph 6 of Attachment G of APS 112 (in the case of guarantees), paragraph 22 of Attachment I of APS 112 (in the case of credit derivatives) and paragraphs 57 to 58 of this Attachment;
 - (f) the ADI has the right to receive payment from the guarantor or credit protection provider without having to take legal action in order to pursue the counterparty for payment;
 - (g) the credit protection provided by the guarantee or credit derivative absorbs all credit losses incurred on the covered portion of the exposure that arise due to the credit events detailed in the contract between the parties;
 - (h) if the payout structure of the credit protection provides for physical settlement, the ADI has legal certainty with respect to the deliverability of a loan, bond or contingent liability. If the ADI intends to deliver an obligation other than the underlying exposure, it must ensure that the deliverable obligation is sufficiently liquid so that the ADI has the ability to purchase it for delivery in accordance with the contract;
 - (i) the terms and conditions of the credit protection contract are legally confirmed in writing by both the guarantor or credit protection provider and the ADI;
 - (j) in the case of credit protection against dilution risk for purchased receivables (refer to Attachment D), the seller of the purchased receivables is not a member of the same group as the guarantor or credit protection provider; and
 - (k) there is no excessive correlation between the creditworthiness of the guarantor or credit protection provider and the obligor of the underlying exposure due to their performance being dependent on common factors beyond the systematic risk factor. The ADI must have procedures in place to detect such excessive correlation.
71. The calculation of risk-weighted assets for a covered exposure under the double default approach is determined by the risk-weight function detailed in paragraphs 85 to 88 of this Attachment.

Treatment of maturity mismatches

72. Maturity mismatches between the residual maturity of the term of lodgement of collateral and the maturity of the exposure covered by the collateral are defined and adjusted according to the requirements detailed in paragraphs 43 to 47 of Attachment H of APS 112.

73. Under the substitution and double default approaches, maturity mismatches between the residual maturity of a guarantee and the maturity of the exposure covered by the guarantee are defined and adjusted according to the requirements detailed in paragraphs 13 to 18 of Attachment G of APS 112.
74. Under the substitution and double default approaches, maturity mismatches between the residual maturity of a purchased credit derivative contract and the maturity of the exposure covered by the credit derivative are defined and adjusted according to the requirements detailed in paragraphs 16 to 18 and 29 to 32 of Attachment I of APS 112.

Risk-weighted assets for the corporate, sovereign and bank IRB asset classes

Risk-weight function

75. Except where (and to the extent that) the slotting approach applies to SL exposures, the derivation of risk-weighted assets in respect of UL for exposures in the corporate, sovereign and bank IRB asset classes is dependent on the assigned estimates of PD, LGD,²⁰ EAD and M for a given exposure.
76. In calculating risk-weighted assets, PD and LGD are expressed as decimals (e.g. one per cent = 0.01) and EAD is expressed in Australian dollars.
77. Except where (and to the extent that) the double default approach applies, for non-defaulted exposures in the corporate, sovereign and bank IRB asset classes, the risk-weight function is:^{21, 22}

$$\text{Correlation (R)} = \text{AVCM} \left(0.12 \left(\frac{1 - e^{-50PD}}{1 - e^{-50}} \right) + 0.24 \left[1 - \left(\frac{1 - e^{-50PD}}{1 - e^{-50}} \right) \right] \right)$$

$$\text{Maturity adjustment (b)} = [0.11852 - 0.05478 \times \ln(PD)]^2$$

Capital requirement²³ (K)

$$= \left[\text{LGD} \times N \left(\frac{G(PD) + \sqrt{R} \times G(0.999)}{\sqrt{1 - R}} \right) - PD \times \text{LGD} \right] \times \left(\frac{1 + (M - 2.5) \times b}{1 - 1.5 \times b} \right)$$

²⁰ In the case of eligible collateral under the FIRB approach, effective LGD (LGD*) as detailed in paragraphs 8, 14 and 17 of this Attachment, is the LGD estimate that must be used in the risk-weight function in paragraph 77 of this Attachment.

²¹ ln denotes the natural logarithm.

²² N(x) denotes the cumulative distribution function for a standard normal random variable (i.e. the probability that a normal random variable with mean zero and variance of one is less than or equal to x). G(z) denotes the inverse cumulative distribution function for a standard normal random variable (i.e. the value of x such that N(x) = z).

²³ If this calculation results in a negative capital charge for a sovereign exposure, an ADI must apply a zero capital charge for that exposure.

An ADI must set the asset value correlation multiplier (AVCM) equal to 1, except where the exposure is to a financial institution meeting either of the following criteria, in which case an ADI must set AVCM equal to 1.25:

- (a) where the exposure is to a regulated financial institutions whose total assets are greater than or equal to AUD 100 billion according to the most recent audited financial statement of the parent company and consolidated subsidiaries. For the purpose of this paragraph, a regulated financial institution is defined as a parent and its subsidiaries where any substantial legal entity in the consolidated group is supervised by a regulator that imposes prudential requirements consistent with international practices that include, but are not limited to, prudentially regulated insurance companies, broker-dealers, banks, thrifts and futures commission merchants;
 - (b) where the exposure is to an unregulated financial institution, regardless of size. Unregulated financial institutions are, for the purposes of this paragraph, legal entities whose main business includes: the management of financial assets, lending, factoring, leasing, provision of credit enhancements, securitisation, investments, financial custody, central counterparty services, proprietary trading or as otherwise determined by APRA or other regulator.
78. The capital requirement (K) in respect of UL for defaulted exposures under the AIRB approach is equal to the greater of zero and the amount by which the product of the ADI's own estimates of LGD²⁴ (expressed in percentage terms) and EAD (expressed in dollar terms) exceeds its best estimate of EL given current economic circumstances and the facility's status²⁵.
79. The capital requirement (K) in respect of UL for defaulted exposures under the FIRB approach is zero.
80. For both non-defaulted and defaulted exposures, risk-weighted assets for UL are calculated as $K \times 12.5 \times EAD$.

Firm-size adjustment

81. Where obligors form part of a corporate group that has reported consolidated annual sales of less than \$50 million, an adjustment may be made to the corporate risk-weight function by substituting the following correlation formula for that in paragraph 77 of this Attachment:

²⁴ Refer to paragraphs 92 to 94 of Attachment A.

²⁵ Refer to paragraph 98 of Attachment A.

Correlation (R)

$$= 0.12 \times \left(\frac{1 - e^{-50PD}}{1 - e^{-50}} \right) + 0.24 \times \left[1 - \left(\frac{1 - e^{-50PD}}{1 - e^{-50}} \right) \right] - 0.04 \times \left(1 - \frac{S - 5}{45} \right)$$

where:

S is expressed as total annual sales between \$5 million and \$50 million. For obligors with reported sales of less than \$5 million, S has a minimum value of \$5 million.

82. As a failsafe, an ADI may substitute total assets of the consolidated corporate group for total sales in calculating the firm-size adjustment. Total assets should be used only when the total sales figure is not a meaningful indicator of firm size and the ADI has policies that have been approved in writing by APRA detailing the circumstances where this is appropriate.

Slotting approach for specialised lending exposures

83. Where an ADI's IRB approval provides for the slotting approach to apply to one or all of the SL sub-asset classes, the ADI must map its internal rating grades for those exposures to the five slotting categories of strong, good, satisfactory, weak and default. The slotting criteria on which this mapping must be based are provided in Attachment F. Each slotting category is associated with a specific risk-weight for UL that broadly corresponds to a range of external credit assessments as detailed in Table 3 below.

Table 3: Risk-weights for UL under the slotting approach

Supervisory category	Strong	Good	Satisfactory	Weak	Default
Risk-weight	70%	90%	115%	250%	0%
External rating equivalent	BBB- or better	BB+ or BB	BB- or B+	B to C	N/A

84. For each SL exposure the ADI must calculate the credit risk-weighted asset amount. For the on-balance sheet component, the amount that is multiplied by the relevant risk-weight is the book value of the exposure measured without deducting any specific provisions. Off-balance sheet exposures are converted to on-balance sheet equivalents using the FIRB credit conversion factors detailed in this Attachment. The total amount of the on-balance sheet exposure and on-balance sheet equivalent of any off-balance sheet exposure is multiplied by the relevant risk-weight to determine the credit risk-weighted asset amount.

Risk-weighted assets for covered exposures under the double default approach

85. The risk-weight function in respect of UL for the covered portion of non-defaulted eligible exposures subject to the double default approach is:^{26, 27, 28}

$$K_{DD} = K_o \times (0.15 + 160PD_g)$$

$$K_o = \left[LGD_{DD} \times N \left(\frac{G(PD_o) + \sqrt{\rho_{os}} \times G(0.999)}{\sqrt{1 - \rho_{os}}} \right) - PD_o \times LGD_{DD} \right] \times \left(\frac{1 + (M - 2.5) \times b}{1 - 1.5 \times b} \right)$$

where:

K_{DD} = capital requirement for a covered exposure subject to the double default approach

PD_g = PD of the guarantor or credit protection provider (subject to the floor detailed in paragraph 2 of this Attachment)

PD_o = PD of the obligor (subject to the floor detailed in paragraph 2 of this Attachment)

M = the maturity of the credit protection (subject in all cases to a floor of one year)

LGD_{DD} = the LGD associated with an unhedged facility to the guarantor/credit protection provider or the unhedged facility of the obligor, depending upon whether, in the event both the guarantor/credit protection provider and obligor default during the life of the hedged transaction, available evidence and the structure of the guarantee or credit derivative indicate that the amount recovered would depend upon the financial condition of the guarantor/credit protection provider or obligor, respectively. In estimating the relevant LGD, the ADI may recognise collateral against the exposure or credit protection in a manner consistent with the general FIRB or AIRB approach as appropriate. There must be no consideration of double recovery in the LGD estimate.²⁹

²⁶ In calculating risk-weighted assets, PD and LGD are expressed in decimals (e.g. one per cent = 0.01) and EAD is expressed in Australian dollars.

²⁷ The capital requirement for the uncovered portion of the exposure is determined as per the corporate IRB risk-weight function detailed in this Attachment or in the case of small-business exposures included in the retail IRB asset class, the other retail IRB risk-weight function detailed in Attachment C.

²⁸ $G(z)$ denotes the inverse cumulative distribution function for a standard normal random variable.

²⁹ Use of supervisory or own-estimates of LGD will depend upon an ADI's use of the foundation or advanced IRB approach for its corporate exposures.

86. Correlation (ρ_{os} in the risk-weight function in paragraph 85 of this Attachment) is calculated according to the formula for correlation (R) set out in paragraph 77 of this Attachment or, in the case where the exposure is to an obligor that forms part of a corporate group that has reported consolidated annual sales of less than \$50 million, as per the formula in paragraph 81 of this Attachment. In this case, PD is that of the obligor.
87. The maturity adjustment coefficient (b in the risk-weight function in paragraph 85 of this Attachment) is calculated according to the formula for the maturity adjustment (b) in paragraph 77 of this Attachment, with PD being the lesser of the PD assigned to the obligor or the guarantor/credit protection provider.
88. Risk-weighted assets for UL are calculated as $K_{DD} \times 12.5 \times EAD$. In this case, EAD must be set equal to the protection amount of the guarantee or credit derivative (adjusted for any maturity or currency mismatch).

Attachment C

Retail IRB asset class

Probability of default and loss given default estimates

1. The minimum requirements for the derivation of PD and LGD estimates associated with each identified pool of retail exposures are detailed in Attachment A.
2. The PD assigned to each pool of retail exposures is the greater of the one-year PD (refer to paragraph 71 of Attachment A) associated with the internal obligor grade to which the pool of retail exposures is assigned and 0.03 per cent.
3. A 100 per cent PD must be assigned to default grades (refer to paragraph 76 of Attachment A) and a minimum LGD of 10 per cent must be applied to exposures in the residential mortgage sub-asset class. Where considered appropriate, APRA may require an ADI to meet a higher minimum LGD for exposures in the residential mortgage sub-asset class.
4. LGD estimates must be measured as a percentage of EAD.

Exposure at default estimates

5. The EAD in respect of each exposure (both on-balance sheet and off-balance sheet) is measured without deducting any specific provisions and partial write-offs.

Exposure measurement for on-balance sheet exposures

6. Subject to paragraph 8 of this Attachment, the EAD estimate of a drawn amount (i.e. an on-balance sheet exposure) must not be less than the current contractual amount that would be owed by the obligor, nor should it be less than the sum of:
 - (a) the amount by which the ADI's Common Equity Tier 1 Capital (refer to APS 111) would be reduced if the exposure were fully written-off; and
 - (b) any associated specific provisions and partial write-offs.
7. When the difference between the EAD estimate and the sum of paragraphs 6(a) and 6(b) of this Attachment is positive, this amount is termed a discount. An ADI must not take into account such discounts when calculating risk-weighted assets. As detailed in paragraph 21 of this Prudential Standard, such discounts may be included in the measurement of eligible provisions for the purpose of offsetting EL in calculating the ADI's capital requirement.
8. On-balance sheet netting of loans and deposits for retail customers is permitted subject to the conditions detailed in Attachment J of APS 112.

Exposure measurement for off-balance sheet exposures except those that expose the ADI to counterparty credit risk

9. For off-balance sheet exposures, EAD is calculated as the notional amount of the exposure multiplied by a CCF or, in the case of an undrawn commitment, the undrawn amount multiplied by a CCF.
10. Subject to the minimum requirements detailed in paragraphs 101 to 107 and 109 of Attachment A, an ADI may use its own internal estimates of CCFs for exposures in the retail IRB asset class.
11. For retail exposures with uncertain future drawdown such as credit cards, an ADI must take into account its history and expectation of additional drawings prior to default in the overall calibration of its loss estimates. Where the ADI does not reflect the likelihood of additional drawings in undrawn lines prior to default in its CCF estimates, and hence EAD estimates, it must do so in its LGD estimates.
12. Where an ADI securitises the drawn balances, and only the drawn balances, of exposures in the retail IRB asset class, it must ensure that it continues to hold Regulatory Capital against its share (i.e. the seller's interest) of undrawn balances related to the securitised exposures. For such facilities, the ADI must reflect the impact of CCFs in its EAD estimates rather than in its LGD estimates. For determining EAD associated with the seller's interest in the undrawn lines, the undrawn balances of securitised exposures are allocated between the seller's and investors' interests on a *pro rata* basis, based on the proportions of the seller's and investors' interests in the securitised drawn balances. The investors' share of undrawn balances related to the securitised exposures is subject to the treatment detailed in APS 120.

Exposure measurement for off-balance sheet exposures that expose the ADI to counterparty credit risk

13. An ADI must determine EAD³⁰ for those off-balance sheet exposures (including OTC derivatives, exchanged-traded derivatives and SFTs) that expose the ADI to counterparty credit risk according to the methods detailed in Attachment C in APS 112.

Recognition of guarantees and credit derivatives

14. There are two approaches for the recognition of CRM in the form of guarantees and credit derivatives under the retail IRB approach: a substitution approach and, for certain exposures, a double default approach. An ADI may decide separately for each eligible exposure to apply either the substitution approach or the double default approach.
15. Where there is partial coverage of an exposure by a guarantee or credit derivative and there is a difference in seniority between the covered and

³⁰ Refer to footnote 13.

uncovered portions of the exposure, the arrangement is considered to be a synthetic securitisation and is subject to APS 120.

16. Where there is a currency mismatch between the underlying obligation and the credit protection provided by a guarantee or credit derivative, the amount of the exposure covered by the guarantee or credit derivative must be adjusted according to the requirements detailed in paragraphs 10 to 12 of Attachment G of APS 112 (in the case of guarantees) and paragraphs 33 to 35 of Attachment I of APS 112 (in the case of credit derivatives).
17. An ADI may choose not to recognise credit protection if doing so would result in a higher capital requirement.
18. Under the substitution approach, an ADI must use the same PD, LGD and EAD estimates for calculating EL for exposures (or that portion thereof) covered by eligible guarantees and credit derivatives as it uses for calculating the capital requirement for UL. EL for the covered portion of eligible exposures subject to the double default approach is zero.

Substitution approach

19. Under the substitution approach, CRM in the form of guarantees and credit derivatives must not result in an adjusted risk-weight that is less than that of a comparable, direct exposure to the guarantor or credit protection provider.
20. Guarantees and credit derivatives must be:
 - (a) in writing and non-cancellable on the part of the guarantor or credit protection provider;
 - (b) in force until the debt is satisfied in full (to the extent of the amount and tenor of the guarantee or credit derivative); and
 - (c) legally enforceable against the guarantor or credit protection provider in a jurisdiction where that party has assets to attach and enforce a judgement.
21. An ADI must have documented criteria for the process of allocating exposures to pools to reflect the impact of guarantees and credit derivatives under the substitution approach. These criteria must meet the minimum requirements for assigning exposures to pools as set out in Attachment A. The ADI's criteria for allocating exposures to pools must be plausible and intuitive and address the guarantor or credit protection provider's ability and willingness to perform under the guarantee or credit derivative. The criteria must also address the likely timing of any payments and the degree to which the guarantor or credit protection provider's ability to perform under the guarantee or credit derivative is correlated with the obligor's ability to repay. An ADI's adjustment criteria must also consider the extent to which residual risks remain. In allocating exposures to pools an ADI must take all relevant material information into account.

22. There are no in-principle restrictions to the types of guarantors or credit protection providers that an ADI may recognise under the substitution approach. The ADI must, however, have clearly documented criteria for the types of guarantors and credit protection providers it will recognise for Regulatory Capital purposes.
23. Where guarantees or credit derivatives exist either in support of an individual obligation or a pool of exposures, an ADI may reflect the risk-mitigating effect of such guarantees or credit derivatives through either PD or LGD estimates. In adopting one or the other technique, an ADI must adopt a consistent approach over time.
24. An ADI must retain all relevant information on the assignment of an exposure to a pool and the estimation of PD and LGD independently of the assessed effect of the guarantor.

Additional minimum requirements for assessing the effect of credit derivatives under the substitution approach

25. The criteria used for assigning exposures to pools covered by credit derivatives must require that the asset on which the protection is based (the reference asset) cannot be different from the underlying asset unless the conditions detailed in paragraph 60 of Attachment B are met. Where a credit derivative does not cover the restructuring of the underlying asset, partial recognition is allowed as detailed in paragraph 58 of that same Attachment.
26. The criteria used for assigning adjusted PD or LGD estimates must address the payout structure of the credit derivative and conservatively assess the impact this has on the level and timing of recoveries.
27. An ADI must consider the extent to which other forms of residual risk remain.

Double default approach

28. For small-business exposures included in the retail IRB asset class (refer to paragraph 47 of this Prudential Standard), an ADI may, subject to meeting the operational requirements detailed in Attachment B, use the double default approach in determining the appropriate capital requirement for a covered exposure.
29. The guarantees and credit derivatives detailed in paragraph 69 of Attachment B are, subject to the operational requirements detailed in that Attachment, eligible for recognition under the double default approach.
30. The calculation of risk-weighted assets under the double default approach is detailed in paragraphs 85 to 88 of Attachment B.

Treatment of maturity mismatches

31. Maturity mismatches between the residual maturity of the term of lodgement of collateral and the maturity of the exposure covered by the collateral are defined

and adjusted according to the requirements detailed in paragraphs 43 to 47 of Attachment H of APS 112.

32. Under the substitution and double default approaches, maturity mismatches between the residual maturity of a guarantee and the maturity of the exposure covered by the guarantee are defined and adjusted according to the requirements detailed in paragraphs 13 to 18 of Attachment G of APS 112.
33. Under the substitution and double default approaches, maturity mismatches between the residual maturity of a purchased credit derivative contract and the maturity of the exposure covered by the credit derivative are defined and adjusted according to the requirements detailed in paragraphs 16 to 18 and 29 to 32 of Attachment I of APS 112.

Risk-weighted assets for the retail IRB asset class

34. There are separate IRB risk-weight functions for the three retail sub-asset classes, i.e. the residential mortgage sub-asset class, the qualifying revolving retail sub-asset class and the other retail sub-asset class (refer to paragraph 48 of this Prudential Standard). Throughout this section, PD and LGD are measured as decimals and EAD is measured in Australian dollars. In all cases detailed in paragraphs 35 to 37 of this Attachment, risk-weighted assets is calculated as $K \times 12.5 \times EAD$.

Residential mortgage sub-asset class

35. For non-defaulted exposures that are fully or partly secured³¹ by residential properties, the risk-weight function is:³²

Correlation (R) = 0.15

$$\text{Capital requirement (K)} = \left[LGD \times N \left(\frac{G(PD) + \sqrt{R} \times G(0.999)}{\sqrt{1-R}} \right) - PD \times LGD \right]$$

Qualifying revolving retail sub-asset class

36. For non-defaulted QRR exposures as defined in paragraph 48(b) of this Prudential Standard, the risk-weight function is:³³

Correlation (R) = 0.04

³¹ This means that the residential mortgage risk-weight function also applies to the unsecured portion of such residential mortgages.

³² N (x) denotes the cumulative distribution function for a standard normal random variable (i.e. the probability that a normal random variable with mean zero and variance of one is less than or equal to x). G (z) denotes the inverse cumulative distribution function for a standard normal random variable (i.e. the value of x such that N(x) = z).

³³ Refer to footnote 32.

$$\text{Capital requirement (K)} = \left[LGD \times N \left(\frac{G(PD) + \sqrt{R} \times G(0.999)}{\sqrt{1-R}} \right) - PD \times LGD \right]$$

Other retail sub-asset class

37. Except where (and to the extent that) the double default approach applies, for all other non-defaulted retail exposures, the risk-weight function is:³⁴

$$\text{Correlation (R)} = 0.03 \times \left(\frac{1 - e^{-35PD}}{1 - e^{-35}} \right) + 0.16 \times \left[1 - \left(\frac{1 - e^{-35PD}}{1 - e^{-35}} \right) \right]$$

$$\text{Capital requirement (K)} = \left[LGD \times N \left(\frac{G(PD) + \sqrt{R} \times G(0.999)}{\sqrt{1-R}} \right) - PD \times LGD \right]$$

Capital requirement for defaulted retail exposures

38. The capital requirement (K) in respect of UL for defaulted retail exposures is equal to the greater of zero and the amount by which the product of an ADI's own estimates of LGD³⁵ (expressed in percentage terms) and EAD (expressed in dollar terms) exceeds its best estimate of EL given current economic circumstances and the facility's status³⁶. Risk-weighted assets for UL for defaulted assets is calculated as $K \times 12.5 \times EAD$.

³⁴ Refer to footnote 32.

³⁵ Refer to paragraphs 92 to 98 of Attachment A.

³⁶ Refer to paragraph 98 of Attachment A.

Attachment D

Purchased receivables

1. The treatment of purchased receivables straddles two IRB asset classes:
 - (a) purchased receivables that fall within the retail IRB asset class refer to pools of receivables that have been purchased by an ADI where the underlying receivables meet the definition of retail exposures in paragraphs 46 to 48 of this Prudential Standard; and
 - (b) purchased receivables that fall within the corporate IRB asset class refer to pools of receivables that have been purchased by an ADI where the underlying receivables meet the definition of corporate exposures in paragraph 42 to 43 of this Prudential Standard.

Default risk for purchased retail receivables

2. The calculation of the capital requirement for default risk for purchased retail receivables is the same as that for the general retail IRB asset class as detailed in Attachment C.
3. When estimating PD and LGD for purchased retail receivables, an ADI may utilise internal or external reference data. However, for each of the homogeneous risk buckets into which a pool is segmented (refer to paragraphs 24 to 25 of this Attachment), these estimates must be determined on a stand-alone basis without regard to any assumption of recourse or guarantees from the seller or other parties.
4. For purchased receivables belonging to a particular retail sub-asset class (refer to paragraph 48 of this Prudential Standard), the risk-weight for default risk is based on the risk-weight function applicable to that sub-asset class (refer to Attachment C). An ADI must ensure that it meets the qualification criteria for the use of the relevant risk-weight function.
5. For hybrid pools containing receivables belonging to more than one retail sub-asset class, if the purchasing ADI cannot separate the exposures by type of retail sub-asset class, the risk-weight function that produces the highest capital requirement at each PD level must be applied.

Default risk for purchased corporate receivables

6. Consistent with the general IRB treatment for corporate exposures, for purchased corporate receivables, an ADI must assess the default risk of individual corporate obligors within each pool of purchased corporate receivables as detailed in Attachment A. A top-down approach may be used by an ADI in certain limited circumstances, provided the particular purchased corporate receivables comply with the criteria for eligible receivables detailed in paragraph 8 of this Attachment and the minimum operational requirements

detailed in paragraph 33 of this Attachment are met.

7. The use of the top-down approach is subject to written approval from APRA.
8. To be eligible for the top-down approach, purchased corporate receivables must satisfy the following conditions:
 - (a) the corporate receivables are purchased from unrelated, third-party sellers (i.e. the ADI has not been directly or indirectly involved in originating the receivables);
 - (b) the receivables have been generated on an arms-length basis between the seller and the obligors. Inter-company accounts receivable and receivables subject to contra-accounts between firms that buy and sell amongst each other are ineligible;³⁷
 - (c) the purchasing ADI has a claim on all proceeds from the pool of corporate receivables or a *pro rata* interest in the proceeds³⁸ commensurate with its exposure to the pool; and
 - (d) the maximum size of an individual exposure in the pool of purchased corporate receivables is less than \$100,000.
9. The existence of full or partial recourse to the seller does not automatically disqualify an ADI from adopting a top-down approach provided the cash flows from the purchased corporate receivables are the primary source of ultimate repayment.

Top-down approach for default risk for purchased corporate receivables

10. There are generally two top-down approaches for determining the capital requirement for default risk for purchased corporate receivables: a foundation approach and an advanced approach.
11. The advanced approach is not available for an ADI that uses the FIRB approach for its general corporate IRB asset class (refer to Attachment B).
12. Under both the foundation and advanced approaches, the risk-weight for default risk is determined using the risk-weight function for corporate exposures as detailed in Attachment B.³⁹ Under both approaches, the ADI must segment pools of purchased corporate receivables into homogenous buckets (refer to paragraphs 24 to 25 of this Attachment).

³⁷ Contra-accounts involve a customer buying from and selling to the same firm. The risk is that debts may be settled through payments in kind rather than cash. Invoices between the companies may be offset against each other instead of being paid. This practice may defeat a security interest when challenged in court.

³⁸ Claims on tranches of the proceeds (e.g. first or second loss positions) fall under APS 120.

³⁹ The firm-size adjustment, as defined in paragraphs 81 to 82 of Attachment B, is the weighted average of individual exposures in the pool of purchased corporate receivables. If an ADI does not have the information to calculate the average size of the pool, the firm-size adjustment does not apply.

Foundation approach

13. Where an ADI is able to reliably estimate PD for the segmented pools of purchased corporate receivables, it may, subject to APRA's written approval, use the FIRB approach for determining default risk (refer to Attachment B).
14. Where an ADI is unable to reliably estimate PD for the segmented pools of purchased corporate receivables, it must estimate the expected long-run average loss rate for each of those homogeneous segmented pools.⁴⁰ In this case, the risk-weight for default risk is determined as follows:
 - (a) where the ADI can demonstrate that the segmented pools are exclusively senior claims on corporate borrowers, an LGD of 45 per cent may be used. The PD estimate is determined by dividing the expected long-run average loss rate by 45 per cent;
 - (b) where the ADI is not able to demonstrate that the segmented pools are exclusively senior claims to corporate obligors, the PD estimate is the ADI's estimate of the expected long-run average loss rate. In this case, LGD will be 100 per cent;
 - (c) EAD is the amount outstanding for each segmented pool less the capital charge for dilution risk for each segmented pool (refer to paragraphs 18 to 22 of this Attachment) prior to CRM or, for a revolving purchase facility, the sum of the current amount of receivables purchased plus 100 per cent of any undrawn purchase commitments less the capital charge for dilution risk prior to CRM; and
 - (d) M for drawn amounts will equal the segmented pools' exposure-weighted average maturity (as defined in Attachment B). This same value of M will also be used for any undrawn amounts to which the ADI is committed under a purchased receivables facility, provided that the facility contains covenants, early amortisation triggers or other features that protect the purchasing ADI against a significant deterioration in the quality of the future receivables it is required to purchase over the facility's term. In the absence of such protection, the M for undrawn amounts will be calculated as the sum of:
 - (i) the longest-dated potential receivable under the purchase agreement; and
 - (ii) the remaining maturity of the purchase facility.

⁴⁰ The expected long-run average loss rate must be an ADI's estimate of the segmented pools' long-run average annual loss rate for default risk where the loss rate is expressed as a percentage of the exposure amount (i.e. the total EAD owed to the ADI by all obligors in the segmented pool of receivables). The expected long-run average loss rate must be calculated for the receivables on a stand-alone basis (i.e. without regard to any assumption of recourse or guarantee from the seller or other parties). The treatment of recourse or guarantees covering default risk is detailed in paragraphs 28 to 32 of this Attachment.

Advanced approach

15. Under the advanced approach, an ADI must estimate PD and LGD for each of the homogeneous segmented pools of purchased corporate receivables.
16. Where an ADI can only reliably estimate one of either the default-weighted average PD or LGD for each segmented pool, the ADI may estimate the other required credit risk component based on its estimate of the expected long-run average loss rate⁴¹ of the segmented pool. In either case, the LGD may not be less than the long-run default-weighted average LGD and must be consistent with the concepts detailed in paragraphs 92 to 93 of Attachment A.
17. EAD and M estimates under the advanced approach for purchased corporate receivables are the same as those in the foundation approach detailed in paragraphs 14(c) and 14(d) of this Attachment.

Dilution risk

18. Unless a purchasing ADI can demonstrate to APRA that dilution risk is immaterial, a capital requirement for dilution risk is required for purchased corporate and retail receivables.
19. For the purposes of calculating the capital requirement for dilution risk for either segmented pools or individual receivables making up a pool, a purchasing ADI must estimate the expected long-run average annual loss rate for dilution risk.⁴²
20. An ADI may utilise internal or external reference data to estimate an expected long-run average annual loss rate for dilution risk. However, these estimates must be calculated on a stand-alone basis without regard to any assumption of recourse or guarantees from the seller or other parties.
21. For the purpose of calculating the capital requirement for dilution risk, the corporate IRB risk-weight function detailed in Attachment B must be used, with PD set equal to the estimate of the expected long-run average annual loss rate and LGD set to 100 per cent.
22. An appropriate maturity must be used when determining the capital requirement for dilution risk. If the ADI can demonstrate to APRA that dilution risk is appropriately monitored and managed so as to be resolved within one year of acquisition of the purchased receivables, APRA may grant an approval in writing allowing the ADI to base its calculations on a one-year maturity assumption.

⁴¹ Refer to footnote 40.

⁴² The expected long-run average loss rate is expressed as a percentage of the exposure amount, i.e. the total EAD owed to the ADI by all obligors in the relevant pool of receivables.

Requirements specific to estimating probability of default and loss given default (or expected losses) for purchased corporate and retail receivables

23. The following minimum requirements for risk quantification must be satisfied in order to apply the top-down approach for:
 - (a) default risk (in relation to purchased corporate receivables); or
 - (b) dilution risk (in relation to purchased corporate or retail receivables).
24. The ADI is required to group purchased receivables into sufficiently homogeneous segmented pools so that accurate and consistent estimates of PD and LGD (or expected long-run average loss rates) for default risk and expected long-run average loss rates for dilution risk can be determined.
25. The risk-bucketing process should reflect the seller's underwriting practices and heterogeneity of its customers. Methods and data for estimating PD, LGD and expected long-run average loss rates must comply with the risk quantification standards for retail exposures detailed in Attachment A. In particular, quantification should reflect all information available to the ADI regarding the quality of the underlying receivables, including data relating to similar pools provided by the seller, the ADI or external sources. The ADI must determine whether the data provided by the seller are consistent with expectations agreed by both parties concerning, for example, the type, volume and ongoing quality of the purchased receivables. Where this is not the case, the ADI must obtain and rely upon more relevant data.

Purchase price discounts and first loss protection

26. Where a portion of any purchase price discount is refundable to the seller, the refundable amount must be treated as first loss protection under APS 120. Non-refundable purchase price discounts for purchased receivables do not affect the Regulatory Capital calculation.
27. When collateral or partial guarantees obtained on purchased receivables provide first loss protection covering default losses, dilution losses, or both, they must be recognised as first loss protection under APS 120.

Recognition of guarantees

28. Guarantees for purchased receivables are recognised in the same manner as other guarantees under the IRB approach (refer to Attachments B and C). The IRB rules for guarantees may be applied to guarantees provided by the seller or a third party regardless of whether the guarantee covers default risk, dilution risk or both.
29. If the guarantee covers a pool's default risk and dilution risk, the ADI may substitute the risk-weight for an exposure to the guarantor in place of the relevant pool's total risk-weight for default and dilution risks.
30. If the guarantee covers only one of either default risk or dilution risk, the ADI

may substitute the risk-weight for an exposure to the guarantor in place of the relevant pool's risk-weight for the corresponding risk component. The capital requirement for the non-guaranteed component must then be added.

31. If a guarantee covers only a portion of the default or dilution risk of a relevant pool, the uncovered portion must be treated using the rules for proportional or tranching cover detailed in Attachment B.
32. If the guarantee provides protection against dilution risk and the conditions and operational criteria detailed in paragraphs 69 to 70 of Attachment B are satisfied, the double default framework may be used by the ADI for the calculation of the risk-weighted asset amount for dilution risk. In this case, the capital charge is the same as that detailed in paragraphs 85 to 88 of Attachment B of this Prudential Standard with PD_o being equal to the ADI's estimated EL, LGD_{DD} being equal to 100 per cent and maturity determined in accordance with paragraph 22 of this Attachment.

Minimum operational requirements

33. To qualify for the top-down approach for default risk for purchased corporate and retail receivables, the pools of receivables and overall lending relationship must be closely monitored and controlled by the ADI. Specifically, the ADI must demonstrate the following:
 - (a) legal certainty - the structure of the facility under which the receivables are purchased must ensure that under all foreseeable circumstances, the ADI has effective ownership and control of the cash remittances from the receivables, including incidences of seller or servicer distress and bankruptcy. When obligors make payments directly to a seller or servicer, the ADI must verify regularly that all payments are forwarded to it within the contractually agreed terms. Ownership over the receivables and cash receipts should be protected against bankruptcy stays or legal challenges that could materially delay the ADI's ability to liquidate or assign the receivables or retain control over cash remittances;
 - (b) monitoring systems - the ADI must be able to monitor both the quality of the receivables and the financial condition of the seller and servicer. In particular:
 - (i) the ADI must assess the correlation between the quality of the receivables and the financial condition of both the seller and servicer. The ADI must have in place internal policies and procedures that provide adequate safeguards to protect against such contingencies, including the assignment of an internal risk rating for each seller and servicer;
 - (ii) the ADI must have clear and effective policies and procedures for determining seller and servicer eligibility. The ADI or its agent must conduct periodic reviews of sellers and servicers in order to verify the accuracy of reports from the seller or servicer, detect fraud or operational weaknesses and verify the quality of the seller's credit

policies and the servicer's collection policies and procedures. The findings of these reviews must be documented;

- (iii) the ADI must have the ability to assess the characteristics of the pools of receivables, including over-advances, history of the seller's arrears, bad debts and bad debt allowances, payment terms and potential contra-accounts;
 - (iv) the ADI must have effective policies and procedures for monitoring, on an aggregate basis, single-obligor concentrations both within and across pools of receivables; and
 - (v) the ADI must receive timely and sufficiently detailed reports of the aging of receivables and dilution to ensure compliance with the ADI's eligibility criteria and underwriting policies governing purchased receivables and provide an effective means with which to monitor and confirm the seller's terms of sale (e.g. invoice date aging) and dilution;
- (c) effective work out systems - the ADI must have policies and procedures for the early detection and control of a deterioration in the seller's financial condition and the quality of the receivables;
- (d) effective systems for controlling collateral, credit availability and cash - the ADI must have policies and procedures governing the control of receivables, credit and cash;
- (f) compliance with the ADI's internal policies and procedures - given the reliance on monitoring and control systems to limit credit risk, the ADI must have an internal process for assessing compliance with all critical policies and procedures; and
- (g) the ADI's internal process for assessing compliance with critical policies and procedures must include evaluations of back office operations with particular focus on its independence, qualifications, experience, staffing levels and supporting systems.

Attachment E

Other assets, claims and exposures

Equity exposures

1. The measure of an equity exposure on which Regulatory Capital is based is the current book value, including revaluations, net of specific provisions.
2. A 300 per cent risk-weight applies to exposures that fall within the equity IRB asset class that are not deducted from capital⁴³ and that are listed on a recognised exchange.
3. A 400 per cent risk-weight applies to exposures that fall within the equity IRB asset class that are not deducted from capital⁴⁴ and that are not listed on a recognised exchange.
4. Short positions held in the banking book are permitted to offset long positions in the same individual equities provided that these instruments have been explicitly designated as hedges of specific equity holdings and that they have remaining maturities of at least one year. Other short positions are to be treated as if they are long positions with the relevant risk-weight applied to the absolute value of each position. In the case of maturity mismatched positions, the methodology detailed in paragraphs 43 to 47 of Attachment H of APS 112 must be applied.

Leases

5. Leases, other than those that expose an ADI to residual value risk (refer to paragraph 6 of this Attachment), may be treated in the same manner as exposures secured by the relevant collateral.^{45,46} In addition, the following standards must be met by the ADI:
 - (a) robust risk management practices with respect to the location of the leased asset, its use, age and planned obsolescence;
 - (b) a robust legal framework establishing the ADI's legal ownership of the leased asset and its ability to exercise its rights as owner in a timely manner; and
 - (c) the difference between the rate of depreciation of the leased asset and the rate of amortisation of the lease payments must not be so large as to overstate the CRM effect of the leased asset.

⁴³ Refer to APS 111.

⁴⁴ Refer to footnote 43.

⁴⁵ An ADI may use its own estimates of LGD and EAD if it uses the AIRB approach for exposures in the corporate IRB asset class; otherwise it must use supervisory estimates.

⁴⁶ Where the ADI uses the FIRB approach for its corporate exposures, the minimum requirements for the collateral type must be met (refer to Attachment B).

6. For leases that expose the ADI to residual value risk,⁴⁷ the discounted lease payment stream must be risk-weighted according to the PD and LGD⁴⁸ the ADI assigns to the lessee and the residual value must be risk-weighted at 100 per cent.

Cash items

7. The risk-weight for notes, coins, and gold bullion held in the ADI's own vaults or on an allocated basis by another party to the extent that it is backed by gold bullion liabilities is zero per cent.
8. The risk-weight for cash items in the process of collection (e.g. cheques, drafts and other items drawn on other ADIs or overseas banks that are payable immediately upon presentation and that are in the process of collection) is 20 per cent.

Unsettled and failed transactions

9. The IRB capital requirement for unsettled and failed transactions is the same as that detailed in APS 112. Where a non-delivery-versus-payment transaction is required to be treated as an exposure under APS 112 and the ADI has no other banking book exposure to the counterparty, it may assign a PD based on the counterparty's external rating (where available). Where the ADI uses the AIRB approach for its general corporate, sovereign or bank exposures, it may use a 45 per cent LGD estimate for a free delivery transaction that is treated as an exposure provided that it is applied to all such exposures. Alternatively, the ADI may risk-weight such exposures according to the risk-weights detailed in APS 112 or apply a 100 per cent risk-weight provided that all such exposures are risk-weighted in the same manner.
10. In the case of a system-wide failure of a settlement or clearing system, the failure of a counterparty to settle a trade need not be deemed a default for the purpose of this Prudential Standard.

Related-party exposures

11. For Level 1 purposes, exposures (other than exposures included in the equity IRB asset class) to entities that are wholly owned or effectively controlled by the ADI and that are consolidated at Level 2 for capital adequacy purposes must be risk-weighted according to the relevant risk-weights detailed in Attachment A to APS 112. The measure of such exposures on which Regulatory Capital is based is the current book value, including accrued interest and net of specific provisions.

Margin lending

12. The risk-weight for margin lending against listed instruments on recognised

⁴⁷ Residual value risk is the risk that an ADI is exposed to potential loss due to the fair value of a leased asset declining below its residual estimate at the inception of the lease.

⁴⁸ Refer to footnote 45.

exchanges is 20 per cent, unless subject to deduction as required under APS 111. Where the underlying instruments are unlisted, the ADI must treat the exposure as a secured loan and determine the capital requirement according to the provisions of APS 112, unless subject to deduction as required under APS 111. The measure of such exposures on which Regulatory Capital is based is the current book value net of specific provisions.

Fixed assets and all other claims

13. The risk-weight for investments in premises, plant and equipment and all other fixed assets, including all other claims not otherwise defined in this Prudential Standard, is 100 per cent. The measure of such exposures on which Regulatory Capital is based is the current book value, including revaluations, net of specific provisions or associated depreciation.

Attachment F

Supervisory slotting criteria for specialised lending exposures

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
Financial strength				
Market conditions	There are few competing suppliers or there is a substantial and durable advantage in location, cost or technology. Demand is strong and growing.	There are few competing suppliers or there is a better than average location, cost or technology but this situation may not last. Demand is strong and stable.	The project has no advantage in location, cost or technology. Demand is adequate and stable.	The project has worse than average location, cost or technology. Demand is weak and declining.
Financial ratios (e.g. debt service coverage ratio (DSCR), loan life coverage ratio (LLCR), project life coverage ratio (PLCR) and debt-to-equity ratio)	The project has strong financial ratios considering the level of project risk and very robust economic assumptions.	The project has strong to acceptable financial ratios considering the level of project risk and robust project economic assumptions.	The project has standard financial ratios considering the level of project risk.	The project has aggressive financial ratios considering the level of project risk.

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
Stress analysis	The project can meet its financial obligations under sustained severely stressed economic or sectoral conditions.	The project can meet its financial obligations under stressed economic or sectoral conditions. The project is only likely to default under severe economic conditions.	The project is vulnerable to stresses that are not uncommon through an economic cycle and may default in a normal downturn.	The project is likely to default unless conditions improve soon.
Financial structure				
<i>Duration of the exposure compared to the duration of the project</i>	The useful life of the project significantly exceeds the tenor of the loan.	The useful life of the project exceeds the tenor of the loan.	The useful life of the project exceeds the tenor of the loan.	The useful life of the project may not exceed the tenor of the loan.
<i>Amortisation schedule</i>	Amortising debt.	Amortising debt.	Amortising debt repayments with limited balloon payment.	Bullet payment or amortising debt with high balloon repayment.
Political and legal environment				
Political risk, including transfer risk, considering project type and mitigants	The project has very low exposure; there are strong mitigation instruments, if needed.	The project has low exposure; there are satisfactory mitigation instruments, if needed.	The project has moderate exposure; there are fair mitigation instruments.	The project has high exposure; the mitigation instruments are weak or there are none.

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
Force majeure risk (war, civil unrest, etc)	Low exposure.	Acceptable exposure.	Standard protection.	There are significant risks which are not fully mitigated.
Government support and project's importance for the country over the long term	The project is of strategic importance for the country (preferably export-oriented). It has strong support from the government.	The project is considered important for the country. It has a good level of support from the government.	The project may not be strategic but brings unquestionable benefits for the country. Government support may not be explicit.	The project is not key to the country. The support from the government, if any, is weak.
Stability of legal and regulatory environment (risk of change in law)	The regulatory environment is favourable and stable over the long term.	The regulatory environment is favourable and stable over the medium term.	Regulatory changes can be predicted with a fair level of certainty.	Current or future regulatory issues may affect the project.
Acquisition of all necessary supports and approvals for such relief from local content laws	Strong.	Satisfactory.	Fair.	Weak.
Enforceability of contracts, collateral and security	Contracts, collateral and security are enforceable.	Contracts, collateral and security are enforceable.	Contracts, collateral and security are considered enforceable even if certain non-key issues exist.	There are unresolved key issues in respect of actual enforcement of contracts, collateral and security.

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
Transaction characteristics				
Design and technology risk	The project has fully proven technology and design.	The project has fully proven technology and design.	The project has proven technology and design; start-up issues are mitigated by a strong completion package.	The project has unproven technology and design; technology issues exist and/or complex design.
Construction risk <i>Permitting and siting</i>	All permits have been obtained.	Some permits are still outstanding but their receipt is considered very likely.	Some permits are still outstanding but the permitting process is well defined and they are considered routine.	Key permits still need to be obtained and are not considered routine. Significant conditions may be attached.
<i>Type of construction contract</i>	Fixed-price date-certain turnkey construction engineering and procurement contract (EPC).	Fixed-price date-certain turnkey construction EPC.	Fixed-price date-certain turnkey construction contract with one or several contractors.	No or partial fixed-price turnkey contract and/or interfacing issues with multiple contractors.

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
Completion guarantees	The liquidated damages are substantial and are supported by financial substance and/or strong completion guarantee from sponsors with excellent financial standing.	The liquidated damages are significant and are supported by financial substance and/or completion guarantee from sponsors with good financial standing.	The liquidated damages are adequate and are supported by financial substance and/or completion guarantee from sponsors with good financial standing.	The liquidated damages are inadequate or not supported by financial substance or weak completion guarantees.
Track record and financial strength of contractor in constructing similar projects	Strong.	Good.	Satisfactory.	Weak.
<p>Operating risk</p> <p><i>Scope and nature of operations and maintenance (O&M) contracts</i></p> <p><i>Operator's expertise, track record and financial strength</i></p>	<p>There is a strong long-term O&M contract, preferably with contractual performance incentives and/or O&M reserve accounts.</p> <p>Very strong or committed technical assistance of the sponsors.</p>	<p>There is a long-term O&M contract and/or O&M reserve accounts.</p> <p>Strong.</p>	<p>There is a limited O&M contract or O&M reserve account.</p> <p>Acceptable.</p>	<p>There is no O&M contract. There is a risk of high operational cost overruns beyond mitigants.</p> <p>Limited/weak or local operator dependent on local authorities.</p>

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
<p>Off-take risk</p> <p><i>If there is a take-or-pay or fixed-price off-take contract</i></p>	<p>The off-taker has excellent creditworthiness. There are strong termination clauses. The tenor of the contract comfortably exceeds the maturity of the debt.</p>	<p>The off-taker has good creditworthiness. There are strong termination clauses. The tenor of the contract exceeds the maturity of the debt.</p>	<p>The off-taker's financial standing is acceptable. There are normal termination clauses. The tenor of the contract generally matches the maturity of the debt.</p>	<p>The off-taker is considered weak and there are weak termination clauses. The tenor of the contract does not exceed the maturity of the debt.</p>
<p><i>If there is no take-pay or fixed-price off-take contract</i></p>	<p>The project produces essential services or a commodity sold widely on a world market. Output can readily be absorbed at projected prices even at lower than historic market growth rates.</p>	<p>The project produces essential services or a commodity sold widely on a regional market that will absorb it at projected prices at historical growth rates.</p>	<p>The commodity is sold on a limited market that may absorb it only at lower than projected prices.</p>	<p>The project output is demanded by only one or a few buyers or is not generally sold on an organised market.</p>

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
<p>Supply risk</p> <p><i>Price, volume and transportation risk of feed-stocks; supplier's track record and financial strength</i></p> <p><i>Reserve risks (e.g. natural resource development)</i></p>	<p>There is a long-term supply contract with a supplier of excellent financial standing.</p> <p>Reserves are independently audited, proven and developed and are well in excess of requirements over lifetime of the project.</p>	<p>There is a long-term supply contract with a supplier of good financial standing.</p> <p>Reserves are independently audited, proven and developed and are in excess of requirements over lifetime of the project.</p>	<p>There is a long-term supply contract with a supplier of good financial standing – a degree of price risk may remain.</p> <p>Reserves are proven and can supply the project adequately through the maturity of the debt.</p>	<p>There is a short-term supply contract or long-term contract with a financially weak supplier –price risk definitely remains.</p> <p>The project relies to some extent on potential and undeveloped reserves.</p>
Strength of sponsor				
Sponsor's track record, financial strength and country/sector experience	The sponsor is strong with an excellent track record and high financial standing.	The sponsor is good with a satisfactory track record and good financial standing.	The sponsor is adequate with an adequate track record and good financial standing.	The sponsor is weak with a questionable/no track record and/or financial weaknesses.
Sponsor support, as evidenced by equity, ownership clause and incentive to inject additional cash if necessary	Strong. The project is highly strategic for the sponsor (core business – long-term strategy).	Good. The project is strategic for the sponsor (core business – long-term strategy).	Acceptable. The project is considered important for the sponsor (core business).	Limited. The project is not key to the sponsor's long-term strategy or core business.

Table 4: Slotting criteria for project finance exposures

	Strong	Good	Satisfactory	Weak
Security package				
Assignment of contracts and accounts	Fully comprehensive.	Comprehensive.	Acceptable.	Weak.
Pledge of assets, taking into account quality, value and liquidity of assets	First perfected security interest in all project assets, contracts, permits and accounts necessary to run the project.	Perfected security interest in all project assets, contracts, permits and accounts necessary to run the project.	Acceptable security interest in all project assets, contracts, permits and accounts necessary to run the project.	Little security or collateral for lenders; weak negative pledge clause.
Lender's control over cash flow (e.g. cash sweeps, independent escrow accounts)	Strong.	Satisfactory.	Fair.	Weak.
Strength of the covenant package (mandatory prepayments, payment deferrals, payment cascade, dividend restrictions, etc)	The covenant package is strong for this type of project. The project may issue no additional debt.	The covenant package is satisfactory for this type of project. The project may issue extremely limited additional debt.	The covenant package is fair for this type of project. The project may issue limited additional debt.	The covenant package is insufficient for this type of project. The project may issue unlimited additional debt.
Reserve funds (debt service, O&M, renewal and replacement, unforeseen events, etc)	There is a longer than average coverage period, all reserve funds are fully funded in cash or letters of credit from highly rated banks.	There is an average coverage period and all reserve funds fully funded.	There is an average coverage period and all reserve funds fully funded.	The coverage period is shorter than average and reserve funds are funded from operating cash flows.

Table 5: Slotting criteria for income-producing real estate exposures

	Strong	Good	Satisfactory	Weak
Financial strength				
Market conditions	The supply and demand for the project’s type and location are currently in equilibrium. The number of competitive properties coming to market is equal or lower than forecasted demand.	The supply and demand for the project’s type and location are currently in equilibrium. The number of competitive properties coming to market is roughly equal to forecasted demand.	Market conditions are roughly in equilibrium. Competitive properties are coming on the market and others are in the planning stages. The project’s design and capabilities may not be state of the art compared to new projects.	Market conditions are weak. It is uncertain when conditions will improve and return to equilibrium. The project is losing tenants at lease expiration. New lease terms are less favourable compared to those expiring.
Financial ratios and advance rate	The property’s DSCR is considered strong (DSCR is not relevant for the construction phase) and its loan-to-valuation ratio (LVR) is considered low given its property type. Where a secondary market exists, the transaction is underwritten to market standards.	The DSCR (not relevant for development real estate) and LVR are satisfactory. Where a secondary market exists, the transaction is underwritten to market standards.	The property’s DSCR has deteriorated and its value has fallen, increasing its LVR.	The property’s DSCR has deteriorated significantly and its LVR is well above underwriting standards for new loans.

Table 5: Slotting criteria for income-producing real estate exposures

	Strong	Good	Satisfactory	Weak
Stress analysis	The property's resources, contingencies and liability structure allow it to meet its financial obligations during a period of severe financial stress (e.g. increase in interest rates, downturn in economic growth).	The property can meet its financial obligations under a sustained period of financial stress (e.g. increase in interest rates, downturn in economic growth). The property is likely to default only under severe economic conditions.	During an economic downturn, the property would suffer a decline in revenue that would limit its ability to fund capital expenditures and significantly increase the risk of default.	The property's financial condition is strained and is likely to default unless conditions improve in the near term.

Table 5: Slotting criteria for income-producing real estate exposures

	Strong	Good	Satisfactory	Weak
<p>Cash-flow predictability</p> <p><i>For complete and stabilised property</i></p>	<p>The property’s leases are long-term with creditworthy tenants and their maturity dates are scattered. The property has a track record of tenant retention upon lease expiration. Its vacancy rate is low. Expenses (maintenance, insurance, security and property taxes) are predictable.</p>	<p>Most of the property’s leases are long-term, with tenants that range in creditworthiness. The property experiences a normal level of tenant turnover upon lease expiration. Its vacancy rate is low. Expenses are predictable.</p>	<p>Most of the property’s leases are medium-term rather than long-term with tenants that range in creditworthiness. The property experiences a moderate level of tenant turnover upon lease expiration. Its vacancy rate is moderate. Expenses are relatively predictable but vary in relation to revenue.</p>	<p>The property’s leases are of various terms with tenants that range in creditworthiness. The property experiences a very high level of tenant turnover upon lease expiration. Its vacancy rate is high. Significant expenses are incurred preparing space for new tenants.</p>
<p><i>For complete but not stabilised property</i></p>	<p>Leasing activity meets or exceeds projections. The project should achieve stabilisation in the near future.</p>	<p>Leasing activity meets or exceeds projections. The project should achieve stabilisation in the near future.</p>	<p>Most leasing activity is within projections however, stabilisation will not occur for some time.</p>	<p>Market rents do not meet expectations. Despite achieving target occupancy rate, cash flow coverage is tight due to disappointing revenue.</p>

Table 5: Slotting criteria for income-producing real estate exposures

	Strong	Good	Satisfactory	Weak
<i>For construction phase</i>	The property is entirely pre-leased through the tenor of the loan or pre-sold to an investment grade tenant or buyer or the ADI has a binding commitment for take-out financing from an investment grade lender.	The property is entirely pre-leased or pre-sold to a creditworthy tenant or buyer or the ADI has a binding commitment for permanent financing from a creditworthy lender.	Leasing activity is within projections but the building may not be pre-leased and take-out financing may not exist. The ADI may be the permanent lender.	The property is deteriorating due to cost overruns, market deterioration, tenant cancellations or other factors. There may be a dispute with the party providing the permanent financing.
Asset characteristics				
Location	The property is located in a highly desirable location that is convenient to services that tenants desire.	The property is located in a desirable location that is convenient to services that tenants desire.	The property location lacks a competitive advantage.	The property's location, configuration, design and maintenance have contributed to the property's difficulties.
Design and condition	The property is favoured due to its design, configuration and maintenance and is highly competitive with new properties.	The property is appropriate in terms of its design, configuration and maintenance. The property's design and capabilities are competitive with new properties.	The property is adequate in terms of its configuration, design and maintenance.	Weaknesses exist in the property's configuration, design or maintenance.

Table 5: Slotting criteria for income-producing real estate exposures

	Strong	Good	Satisfactory	Weak
Property is under construction	The construction budget is conservative and technical hazards are limited. Contractors are highly qualified.	The construction budget is conservative and technical hazards are limited. Contractors are highly qualified.	The construction budget is adequate and contractors are ordinarily qualified.	The project is over budget or unrealistic given its technical hazards. Contractors may be under qualified.
Strength of sponsor/developer				
Financial capacity and willingness to support the property	The sponsor/developer made a substantial cash contribution to the construction or purchase of the property. The sponsor/developer has substantial resources and limited direct and contingent liabilities. The sponsor/developer's properties are diversified geographically and by property type.	The sponsor/developer made a material cash contribution to the construction or purchase of the property. The sponsor/developer's financial condition allows it to support the property in the event of a cash flow shortfall. The sponsor/developer's properties are located in several geographic regions.	The sponsor/developer's contribution may be immaterial or non-cash. The sponsor/developer is average to below average in financial resources.	The sponsor/developer lacks capacity or willingness to support the property.

Table 5: Slotting criteria for income-producing real estate exposures

	Strong	Good	Satisfactory	Weak
Reputation and track record with similar properties	Management are experienced and the sponsor's quality is high. Strong reputation, lengthy and successful record with similar properties.	Appropriate management and sponsor's quality. The sponsor or management has a successful record with similar properties.	Moderate management and sponsor's quality. The management or sponsor track record does not raise serious concerns.	Ineffective management and sub-standard sponsor's quality. The management and sponsor difficulties have contributed to difficulties in managing properties in the past.
Relationships with relevant real estate agents	Strong relationships with leading agents such as leasing agents.	Proven relationships with leading agents such as leasing agents.	Adequate relationships with leasing agents and other parties providing important real estate services.	Poor relationships with leasing agents and/or other parties providing important real estate services.
Security package				
Nature of lien	Perfected first lien. ⁴⁹	Perfected first lien. ⁵⁰	Perfected first lien. ⁵¹	Ability of lender to foreclose is constrained.

⁴⁹ Lenders in some markets extensively use loan structures that include junior liens. Junior liens may be indicative of this level of risk if the total LVR inclusive of all senior positions does not exceed a typical first loan LVR.

⁵⁰ Refer to footnote 47.

⁵¹ Refer to footnote 47.

Table 5: Slotting criteria for income-producing real estate exposures

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

Table 6: Slotting criteria for object finance exposures

	Strong	Good	Satisfactory	Weak
Financial strength				
Market conditions	Demand is strong and growing. There are strong entry barriers and low sensitivity to changes in technology and economic outlook.	Demand is strong and stable. There are some entry barriers and some sensitivity to changes in technology and economic outlook.	Demand is adequate and the entry barriers are limited and stable. There is significant sensitivity to changes in technology and economic outlook.	Demand is weak and declining, vulnerable to changes in technology and economic outlook and a highly uncertain environment.
Financial ratios (debt service coverage ratio and LVR)	The financial ratios are strong considering the type of asset. Very robust economic assumptions.	The financial ratios are strong/acceptable considering the type of asset. Robust project economic assumptions.	The financial ratios are standard for the asset type.	The financial ratios are aggressive considering the type of asset.
Stress analysis	Long-term revenues are stable and capable of withstanding severely stressed conditions through an economic cycle.	Short-term revenues are satisfactory. The loan can withstand some financial adversity. Default is only likely under severe economic conditions.	Short-term revenues are uncertain. Cash flows are vulnerable to stresses that are not uncommon through an economic cycle. The loan may default in a normal downturn.	Revenues are subject to strong uncertainties. Even in normal economic conditions the asset may default, unless conditions improve.

Table 6: Slotting criteria for object finance exposures

	Strong	Good	Satisfactory	Weak
Market liquidity	The market is structured on a worldwide basis. Assets are highly liquid.	The market is worldwide or regional. Assets are relatively liquid.	The market is regional with limited prospects in the short term, implying lower liquidity.	The market is local and/or has poor visibility. There is low or no liquidity, particularly in niche markets.
Political and legal environment				
Political risk, including transfer risk	Very low. There are strong mitigation instruments, if needed.	Low. There are satisfactory mitigation instruments, if needed.	Moderate. There are fair mitigation instruments.	High. The mitigation instruments, if any, are weak.
Legal and regulatory risks	The jurisdiction is favourable to repossession and enforcement of contracts.	The jurisdiction is favourable to repossession and enforcement of contracts.	The jurisdiction is generally favourable to repossession and enforcement of contracts, even if repossession might be long and/or difficult.	The legal and regulatory environment is poor and/or unstable. The jurisdiction may make repossession and enforcement of contracts lengthy or impossible.
Transaction characteristics				
Financing term compared to the economic life of the asset	Full payout profile/minimum balloon. No grace period.	Balloon more significant, but still at satisfactory levels.	Important balloon with potential grace periods.	Repayment in fine or high balloon.

Table 6: Slotting criteria for object finance exposures

	Strong	Good	Satisfactory	Weak
Operating risk				
Permits/licensing	All permits have been obtained; the asset meets current and foreseeable safety regulations.	All permits have been obtained or are in the process of being obtained; the asset meets current and foreseeable safety regulations.	Most permits have been obtained or are in the process of being obtained; outstanding ones are considered routine; the asset meets current safety regulations.	There are problems in obtaining all required permits; part of the planned configuration and/or planned operations might need to be revised.
Scope and nature of O&M contracts	There is a strong long-term O&M contract, preferably with contractual performance incentives and/or O&M reserve accounts (if needed).	There is a long-term O&M contract and/or O&M reserve accounts (if needed).	There is a limited O&M contract or O&M reserve account (if needed).	There is no O&M contract and a risk of high operational cost overruns beyond mitigants.
Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease	Excellent track record and strong re-marketing capability.	Satisfactory track record and re-marketing capability.	Weak or short track record and uncertain re-marketing capability.	No or unknown track record and inability to re-market the asset.

Table 6: Slotting criteria for object finance exposures

	Strong	Good	Satisfactory	Weak
Asset characteristics				
Configuration, size, design and maintenance (i.e. age, size for a plane) compared to other assets on the same market	There is a strong advantage in design and maintenance. Configuration is standard such that the object meets a liquid market.	The design and maintenance is above average. Standard configuration, possibly with very limited exceptions, such that the object meets a liquid market.	The design and maintenance is average. Configuration is somewhat specific and thus might cause a narrower market for the object.	The design and maintenance is below average. The asset is near the end of its economic life. Configuration is very specific. The market for the object is very narrow.
Resale value	The current resale value is well above debt value.	The resale value is moderately above debt value.	The resale value is slightly above debt value.	The resale value is below debt value.
Sensitivity of the asset value and liquidity to economic cycles	The asset value and liquidity are relatively insensitive to economic cycles.	The asset value and liquidity are sensitive to economic cycles.	The asset value and liquidity are quite sensitive to economic cycles.	The asset value and liquidity are highly sensitive to economic cycles.
Strength of sponsor				
Operator's financial strength, track record in managing the asset type and capability to re-market asset when it comes off-lease	Excellent track record and strong re-marketing capability.	Satisfactory track record and re-marketing capability.	Weak or short track record and uncertain re-marketing capability.	No or unknown track record and inability to re-market the asset.

Table 6: Slotting criteria for object finance exposures

	Strong	Good	Satisfactory	Weak
Sponsor's track record and financial strength	The sponsors have an excellent track record and high financial standing.	The sponsors have a good track record and good financial standing.	The sponsors have an adequate track record and good financial standing.	The sponsors have a questionable/no track record and/or financial weaknesses.
Security package				
Asset control	Legal documentation provides the lender effective control (e.g. a first perfected security interest or a leasing structure including such security) on the asset or on the company owning it.	Legal documentation provides the lender effective control (e.g. a perfected security interest or a leasing structure including such security) on the asset or on the company owning it.	Legal documentation provides the lender effective control (e.g. a perfected security interest or a leasing structure including such security) on the asset, or on the company owning it.	The contract provides little security to the lender and leaves room to some risk of losing control on the asset.
Rights and means at the lender's disposal to monitor the location and condition of the asset	The lender is able to monitor the location and condition of the asset at any time and place (regular reports, possibility to lead inspections).	The lender is able to monitor the location and condition of the asset almost at any time and place.	The lender is able to monitor the location and condition of the asset almost at any time and place.	The lender has a limited ability to monitor the location and condition of the asset.

Table 6: Slotting criteria for object finance exposures

	Strong	Good	Satisfactory	Weak
Insurance against damages	There is strong insurance coverage including collateral damages with top quality insurance companies.	The insurance coverage is satisfactory (not including collateral damages) with good quality insurance companies.	The insurance coverage is fair (not including collateral damages) with acceptable quality insurance companies.	The insurance coverage is weak (not including collateral damages) or with weak quality insurance companies.

Table 7: Slotting criteria for commodities finance exposures

	Strong	Good	Satisfactory	Weak
Financial strength				
Degree of over-collateralisation of trade	Strong.	Good.	Satisfactory.	Weak.
Political and legal environment				
Country risk	No country risk.	There is limited exposure to country risk (in particular, offshore	There is some exposure to country risk (in particular, offshore location of	There is strong exposure to country risk (in particular, inland reserves in an

Table 7: Slotting criteria for commodities finance exposures

	Strong	Good	Satisfactory	Weak
		location of reserves in an emerging country).	reserves in an emerging country).	emerging country).
Mitigation of country risks	Very strong mitigation. Strong offshore mechanisms. Strategic commodity. Excellent buyer.	Strong mitigation. Offshore mechanisms. Strategic commodity. Strong buyer.	Acceptable mitigation. Offshore mechanisms. Less strategic commodity. Acceptable buyer.	Only partial mitigation. No offshore mechanisms. Non-strategic commodity. Weak buyer.
Asset characteristics				
Liquidity and susceptibility to damage	The commodity is quoted and can be hedged through futures or over-the-counter (OTC) instruments. The commodity is not susceptible to damage.	The commodity is quoted and can be hedged through OTC instruments. The commodity is not susceptible to damage.	The commodity is not quoted but is liquid. There is uncertainty about the possibility of hedging. The commodity is not susceptible to damage.	The commodity is not quoted. Liquidity is limited given the size and depth of the market. There are no appropriate hedging instruments. The commodity is susceptible to damage.
Strength of sponsor				
Financial strength of trader	Very strong, relative to trading philosophy and risks.	Strong relative to trading philosophy and risks.	Adequate relative to trading philosophy and risks.	Weak relative to trading philosophy and risks.
Track record, including ability to manage the logistic process	Extensive experience with the type of transaction in question.	Sufficient experience with the type of transaction in question.	Limited experience with the type of transaction in question. Average record	Limited or uncertain track record in general. Volatile costs and profits.

Table 7: Slotting criteria for commodities finance exposures

	Strong	Good	Satisfactory	Weak
	Strong record of operating success and cost efficiency.	Above average record of operating success and cost efficiency.	of operating success and cost efficiency.	
Trading controls and hedging policies	Strong standards for counterparty selection, hedging and monitoring.	Adequate standards for counterparty selection, hedging and monitoring.	Adequate standards for counterparty selection, hedging and monitoring. Past deals have experienced no or minor problems.	Weak standards for counterparty selection, hedging and monitoring. Trader has experienced significant losses on past deals.
Quality of financial disclosure	Excellent.	Good.	Satisfactory.	Financial disclosure contains some uncertainties or is insufficient.
Security package				
Asset control	First perfected security interest provides the lender legal control of the assets at any time if needed.	First perfected security interest provides the lender legal control of the assets at any time if needed.	At some point in the process, there is a rupture in the control of the assets by the lender. The rupture is mitigated by knowledge of the trade process or a third party undertaking as the case may be.	Contract leaves room for some risk of losing control over the assets. Recovery could be jeopardised.

Table 7: Slotting criteria for commodities finance exposures

	Strong	Good	Satisfactory	Weak
Insurance against damages	Insurance coverage is strong, including collateral damages with top quality insurance companies.	Insurance coverage is satisfactory (not including collateral damages) with good quality insurance companies.	Insurance coverage is fair (not including collateral damages) with acceptable quality insurance companies.	Insurance coverage is weak (not including collateral damages) or with weak quality insurance companies.