Banking (prudential standard) determination No. 7 of 2024

Prudential Standard APS 116 Capital Adequacy: Market Risk

Banking Act 1959

I, Sean Carmody, a delegate of APRA:

(a) under subsection 11AF(3) of the *Banking Act 1959* (the Act) REVOKE Banking (prudential standard) determination No. 9 of 2022 including *Prudential Standard APS 116 Capital Adequacy: Market Risk* made under that determination; and

(b) under subsection 11AF(1) of the Act DETERMINE *Prudential Standard APS 116 Capital Adequacy: Market Risk* in the form set out in the schedule, which applies to all ADIs and authorised NOHCs to the extent provided in paragraphs 2 to 4 of the prudential standard.

This instrument commences on 1 January 2025.

Dated: 27 November 2024

Sean Carmody
Executive Director
Policy and Advice Division

Interpretation

In this instrument:

APRA means the Australian Prudential Regulation Authority.

ADI and ***authorised NOHC*** have their respective meanings given in section 5 of the Act.

Schedule

Prudential Standard APS 116 Capital Adequacy: Market Risk comprises the document commencing on the following page.

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Prudential Standard APS 116

Capital Adequacy: Market Risk

Objective and key requirements of this Prudential Standard

This Prudential Standard requires an authorised deposit-taking institution engaging in activities that give rise to risks associated with potential movements in market prices to adopt risk management practices and hold regulatory capital that is commensurate with the risks involved.

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

- have a framework to manage, measure and monitor market risk commensurate with the nature, scale and complexity of the institution's operations; and
- use the standard method or an APRA-approved internal model approach to determine the institution's capital requirement for market risk.

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Authority

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

Application

2. This Prudential Standard applies to all **authorised deposit-taking institutions** (**ADIs**), with the exception of:

   (a) **foreign ADIs**;

   (b) **purchased payment facility providers**; and

   (c) ADIs that:

      (i) do not conduct trading book activity and do not have any foreign exchange or commodity positions; and

      (ii) have included a statement to this effect in the **risk management strategy** required by *Prudential Standard CPS 220 Risk Management* (CPS 220); and that statement also outlines the arrangements in place to ensure that trading book activity does not take place.

3. A reference to an ADI in this Prudential Standard shall be taken as 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 the Prudential Standard applies is:

   (a) the holding company for a group of bodies corporate, 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 CPS 001 Defined terms* appear in bold the first time they are used in this Prudential Standard.

6. In this Prudential Standard, unless the contrary intention appears, a reference to an Act, Regulations, Prudential Standard or Reporting Standard is a reference to the Act, Regulations, Prudential Standard or Reporting Standard as in force from time to time.

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Scope

7. This Prudential Standard applies to all:

   (a) trading book positions; and

   (b) banking and trading book positions that give rise to foreign exchange or commodity risks.

   For the purposes of this Prudential Standard, no distinction is drawn, in principle, between risks arising from physical positions and from positions in derivative instruments.

8. The treatment of counterparty credit risk capital requirements is excluded from this Prudential Standard and must be determined in accordance with *Prudential Standards APS 112 Capital Adequacy: Standardised Approach to Credit Risk* (APS 112) or *APS 113 Capital Adequacy: Internal Ratings-based Approach to Credit Risk* (APS 113), as appropriate.

Definitions

9. The following definitions are used in this Prudential Standard:

   (a) credit-event payment - the amount that is payable by the credit protection provider to the credit protection buyer under the terms of the credit derivative contract following the occurrence of a credit event. The payment can be in the form of physical settlement (payment of par in exchange for physical delivery of a deliverable obligation of the reference entity) or cash settlement (either a payment determined on a par-less-recovery basis, i.e. determined using the par value of the reference obligation less that obligation's recovery value, or a fixed amount, or a fixed percentage of the par amount);

   (b) credit events - events affecting the reference entity that trigger a credit-event payment under the terms of the credit derivative contract;

   (c) deliverable obligation - any obligation of the reference entity that can be delivered, under the terms of the contract, if a credit event occurs. A deliverable obligation is relevant for credit derivatives that are to be physically settled;

   (d) general market risk - the risk of loss owing to changes in the general level of market prices or interest rates. It arises from positions in interest rate, equities, foreign exchange and commodities;

   (e) market risk - comprises general market risk and specific risk;

   (f) marking-to-model - any valuation that has to be benchmarked, extrapolated or otherwise calculated from a market input;

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(g) n^{th}-to-default credit derivative - a contract where the payoff is based on the n^{th} asset to default in a basket of underlying reference instruments. Once the n^{th} default occurs the transaction terminates and is settled;

(h) reference entity - the entity or entities whose obligations are used to determine whether a credit event has occurred under the terms of the credit derivative contract;

(i) reference obligation - the obligation used to calculate the amount payable when a credit event occurs under the terms of a credit derivative contract. A reference obligation is relevant for obligations that are to be cash settled (on a par-less-recovery basis);[1]

(j) specific risk - the risk that the value of a security will change due to issuer-specific factors. It applies to interest rate and equity positions related to a specific issuer;

(k) traded market risk, foreign exchange and commodities capital requirement (TFC capital requirement) - the **regulatory capital** that an ADI is required to hold against its exposure to market risk in accordance with this Prudential Standard; and

(l) underlying exposure - the exposure that is being protected by the credit derivative.

Key principles

10. An ADI that wishes to operate a trading book must, in accordance with Attachment A, submit for APRA's approval a trading book policy statement that specifies those activities that belong in the trading book.

11. An ADI must allocate positions in financial instruments to its trading book if they are held with trading intent or in order to hedge other elements of the trading book. In allocating positions, an ADI must be guided by its trading book policy statement.

12. An ADI must maintain a framework for prudent valuation practices for trading book positions.

13. An ADI operating in the foreign exchange, commodities, interest rate or equities markets must ensure that appropriately robust risk measurement and management systems are in place.

14. An ADI must hold capital against:

(a) market risks arising from positions allocated to the trading book; and

(b) all foreign exchange and commodity risks.

[1] A reference obligation will typically also be a deliverable obligation unless otherwise excluded.

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The TFC capital requirement

15. An ADI must calculate the TFC capital requirement using one of the following methods:

    (a) the standard method described in Attachment B, under which the TFC capital requirement is the sum of the market risk charges calculated in accordance with that method;

    (b) the internal model approach described in Attachment C, under which the TFC capital requirement is the measure of market risk derived from applying that approach; or

    (c) a combination of the standard method and the internal model approach, in which case the TFC capital requirement is the sum of the market risk capital requirements determined under the two methodologies.

16. Unless required to do otherwise by APRA (and subject to the conditions in paragraph 2 of Attachment B and paragraph 6 of Attachment C being satisfied):

    (a) an ADI that has market-related activities in Australia and offshore branches (offshore Level 1 sites) and manages those market-related activities centrally may calculate its Level 1 TFC capital requirement allowing for netting and offsetting of short and long positions in exactly the same instrument that have been taken within the ADI, whether in Australia or an offshore Level 1 site; and

    (b) an ADI that has market-related activities in Australia and either offshore branches or offshore subsidiaries (offshore Level 2 sites), and manages those market-related activities centrally may calculate its Level 2 TFC capital requirement allowing for netting and offsetting of short and long positions in exactly the same instrument that have been taken within the group, comprising the entities in Australia and the offshore Level 2 sites.

    In each case the ADI may do so regardless of where the positions are booked (refer to paragraph 2 of Attachment B) and, if using the internal model approach, allowing for risk diversification between positions (refer to paragraph 6 of Attachment C).

The standard method

17. An ADI that does not have model approval must calculate its TFC capital requirement using the standard method as set out in Attachment B and, in relation to credit derivative instruments held in the trading book, Attachment D[2].

[2] Attachment D also contains certain requirements for ADIs transacting in credit derivatives irrespective of the method they use for calculating its traded market risk, foreign exchange and commodities capital requirement capital requirement.

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The internal model approach

18. An ADI may apply for **model approval** from APRA in relation to market risk.

19. An ADI's model approval may specify how the internal model is to apply, including approvals under Attachment C. APRA's prior written approval is required for any material changes to the market risk internal model. Prior notification to APRA is required for material changes to other components of the market risk management framework. APRA may impose conditions on the model approval.

20. Once an ADI has obtained model approval, it must continue to employ that internal model on an ongoing basis unless, or except to the extent that, the model approval is revoked or suspended in respect to some or all of the ADI's market risk exposures. A return, at the ADI's request, to the standard method to market risk will generally only be permitted in exceptional circumstances.

21. APRA may, at any time in writing to the ADI, vary or revoke a model approval, or impose additional conditions on the model 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.

22. Where an ADI's model approval has been varied or revoked, APRA may, in writing, require the ADI to revert to the standard method to measure market risk for some or all of its market risk exposures, until it meets the conditions specified by APRA for returning to the internal model approach.

23. An ADI that has received model approval from APRA may rely on its own internal estimate (based on the approved market risk measurement model) of market risk for determining its TFC capital requirement. That estimate must be fundamentally sound and consistent with the scope of market risk defined in paragraph 9(e) of this Prudential Standard.

24. APRA may, in writing, require an ADI to reduce its market risk or increase its capital if APRA considers that the ADI's capital for market risk is not commensurate with the ADI's market risk profile.

Combination of the internal model approach and the standard method

25. An ADI may, subject to APRA's written approval, use a combination of the internal model approach and the standard method. In doing so, the ADI must comply with the requirements detailed in Attachment C.

26. An ADI must not use a combination of the two methodologies within a particular risk category (e.g. interest rates, foreign exchange, equities and commodities) and within the same regional centre without prior written approval from APRA.

27. APRA may require an ADI that has model approval that does not cover all risk categories to extend the internal model to cover other market risk categories.

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Previous exercise of discretion

28. An ADI must contact APRA if it seeks to place reliance, for the purposes of complying with this Prudential Standard, on a previous exemption or other exercise of discretion by APRA under a previous version of this Prudential Standard.

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Attachment A

Governance and the trading book policy statement and prudent valuation practices

Board and senior management responsibilities

1. An ADI's Board of directors (**Board**) is responsible for approving strategies and policies with respect to market risk and ensuring that senior management takes the steps necessary to monitor and control these risks.

2. In particular, the Board, or a Board committee, must ensure that the ADI has in place adequate systems to identify, measure and manage market risk, including identifying responsibilities, providing adequate separation of duties and avoiding conflicts of interest. An ADI must inform APRA of all significant changes in these systems and in its market risk profile and must ensure that market risk capital requirements are met on a continuous basis and that intra-day exposures are not excessive.

The trading book

3. An ADI must allocate to the trading book positions in financial instruments, including derivative products and other off-balance sheet instruments, that are held either with trading intent or to hedge other elements of the trading book. Positions held with trading intent are those which:

   (a) are held for short-term resale; or

   (b) are taken on by the ADI with the intention of benefiting in the short-term from actual and/or expected differences between their buying and selling prices, or from other price or interest rate variations; or

   (c) arise from broking and market-making.

4. For a position to be eligible to receive trading book capital treatment, an ADI must have:

   (a) a clearly documented trading strategy for the position/instrument or portfolios that has been approved by senior management (which must include the expected holding horizon); and

   (b) clearly defined policies and procedures for the active management of positions such that:

      (i) positions are managed on a trading desk;

      (ii) position limits are set and monitored for appropriateness;

      (iii) dealers have the autonomy to enter into and manage positions within agreed limits and according to the agreed strategy;

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(iv) positions are marked-to-market daily and when marking-to-model the parameters are assessed on a daily basis;

(v) positions are reported to senior management as an integral part of the institution's risk management process; and

(vi) positions are actively monitored with reference to market information sources and assessments are made of the market liquidity or the ability to hedge positions or the portfolio risk profile; this includes assessments of the quality and availability of market inputs to the valuation process, level of market turnover and sizes of positions traded in the market.

5. To obtain an accurate and fair measure of market risk, an ADI may, subject to prior written approval from APRA, include within its market risk measure certain non-trading instruments which hedge trading activities. Such instruments will be subject to the credit risk capital requirements (refer to APS 112 or APS 113 as appropriate) but not to specific risk capital charges.

6. An ADI that raises funds by the issue of instruments may only include these positions in the trading book if the instrument meets the trading book definition.

7. A banking book exposure hedged using a credit derivative booked in the trading book cannot be treated as hedged for regulatory capital purposes unless an ADI purchases a credit derivative that meets the requirements for recognition for credit risk mitigation purposes from an eligible third-party credit protection seller (refer to Attachment J to APS 112 or Attachment B of APS 113 as appropriate). Where third-party protection is recognised as hedging a banking book exposure for regulatory capital purposes, neither the internal nor external credit derivative hedge can be included in the trading book for regulatory capital purposes.

8. An ADI may only include term trading-related repo-style transactions that it accounts for in its banking book as part of its trading book for regulatory capital purposes if all such repo-style transactions are included. For this purpose, trading-related repo-style transactions are limited to those that meet the requirements of paragraphs 3 and 4 in this Attachment and both legs are in the form of either cash or securities that can be included in the trading book. All repo-style transactions are subject to a banking book counterparty credit risk charge regardless of where they are booked.

9. For transactions dealt internally within an ADI, the ADI:

(a) must either:

(i) eliminate all internal transactions between portfolios within the trading book before measuring positions exposed to market risk; or

(ii) include any or all internal deals in their position measurement provided this is done on a consistent basis; and

(b) must include internal transactions dealt between the trading book and the banking book in the measurement of trading book positions.

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10. An ADI must ensure that a clear audit trail is created at the time transactions are entered into, to facilitate monitoring of compliance with the criteria by which items are allocated to the trading or banking book.

The trading book policy statement

11. An ADI's trading book policy statement must detail:

    (a) whether the ADI intends to operate a trading book and whether it has relevant positions in interest rates, equities, foreign exchange or commodities;

    (b) who can approve or modify the trading book policy statement;

    (c) the activities the ADI considers to be trading and as constituting part of the trading book for the purposes of calculating capital;

    (d) the valuation methodology to be adopted for trading book exposures, including:

        (i) the extent to which an exposure can be marked-to-market daily by reference to an active, liquid two-way market;

        (ii) for exposures that are marked-to-model, the extent to which the ADI can:

            (A) identify the material risks of the exposure;

            (B) hedge the material risks of the exposure with instruments for which there is an active, liquid two-way market; and

            (C) derive reliable estimates for the key assumptions and parameters used in the model; and

        (iii) the extent to which the ADI can and is required to generate valuations for the exposure that can be validated externally in a consistent manner;

    (e) whether there are any structural foreign exchange positions. Where appropriate, the operational definition of positions to be excluded from the calculation of an ADI's foreign exchange exposure must be outlined (refer to paragraphs 14 to 17 of this Attachment). A description of the policies covering the identification and management of structural foreign exchange positions, to ensure that trading activities are not classified as structural, must also be included;

    (f) when and how the statement will be subject to regular review;

    (g) the extent to which legal restrictions or other operational requirements would impede the ADI's ability to effect an immediate liquidation or hedge of an exposure in the trading book; and

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(h) the extent to which the ADI is required to, and can, actively risk manage an exposure within its trading operations.

12. An ADI must immediately notify APRA of any material changes to its trading book policy statement.

13. The trading book policy statement must be incorporated in the ADI's risk management strategy required by CPS 220.

Measuring currency exposure

14. For the purpose of calculating its TFC capital requirement, an ADI must include in its measurement of exposure to each currency the following:

(a) the net spot position, i.e. all asset items less all liability items, including accrued interest and other accrued income and accrued expenses, denominated in the currency in question;

(b) the net forward position, i.e. all amounts to be received less all amounts to be paid under forward foreign exchange transactions, including currency futures, the principal on currency swaps not included in the spot position, and interest rate transactions such as futures and swaps denominated in a foreign currency;

(c) guarantees (and similar instruments) that are certain to be called and likely to be irrecoverable; and

(d) any other item representing a profit or loss in foreign currencies.

15. An ADI may also include in its measurement of currency exposure unearned but expected future interest and anticipated expenses if the amounts are certain and the ADI has hedged them. If an ADI includes future income/expenses, it must not select only expected future flows which reduce its position but must treat all on a consistent basis.

16. If an ADI has deliberately taken a position to either partially or totally hedge against the adverse effect of the exchange rate on its capital ratio, it may exclude the position from the measurement of exposure if:

(a) the position is of a 'structural' (refer to paragraph 17 of this Attachment) or non-trading nature;

(b) the 'structural' position does no more than protect the ADI's capital adequacy ratio;

(c) the position cannot be manipulated for speculative or profit-driven purposes; and

(d) any exclusion of the position is applied consistently, with the treatment of the hedge remaining the same for the life of the assets or other items.

17. A structural position includes:

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(a) any position arising from an instrument which qualifies as capital of the ADI under *Prudential Standard APS 111 Capital Adequacy: Measurement of Capital* (APS 111); or

(b) any position entered into in relation to the net investment in a self-sustaining subsidiary, the accounting consequence of which is to reduce or eliminate what would otherwise be a movement in the foreign currency translation reserve; or

(c) investments in overseas subsidiaries or associates that are fully deducted from an institution's capital for capital adequacy purposes under APS 111.

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Attachment B

The standard method

1. The standard method comprises a range of alternative methodologies an ADI may use to calculate the market risks arising from its trading activities. The capital requirement under the standard method is the sum of the capital charges calculated in accordance with this Attachment and, for credit derivatives, Attachment D.

2. Unless required to do otherwise by APRA:

   (a) an ADI that has market-related activities in Australia and offshore branches (offshore Level 1 sites) and manages those market-related activities centrally may, for the purposes of calculating its Level 1 TFC capital requirement, report short and long positions in exactly the same instrument within any of those sites on a net basis, regardless of where they are booked; and

   (b) an ADI that has market-related activities in Australia and offshore Level 2 sites (offshore branches or offshore subsidiaries) and manages those market-related activities centrally may, for the purposes of calculating its Level 2 TFC capital requirement, report short and long positions in exactly the same instrument within any of those sites on a net basis, regardless of where they are booked;

   subject to the following conditions:

   (c) positions taken in an offshore site may only be netted or offset against positions taken in Australia or in other offshore sites if the position-taking of that offshore site is monitored by the ADI's Australian office on a daily basis;

   (d) positions taken in an offshore site must not be netted or offset against positions taken in Australia or in other offshore sites where there are obstacles to the quick repatriation of profits from that offshore site or from offshore transactions taken by the ADI itself; and

   (e) positions taken in an offshore site must not be netted or offset against positions taken in Australia or in other offshore sites where there are legal and procedural difficulties in carrying out the timely management of risks on a consolidated basis.

   Where the conditions (c) to (e) do not allow for positions in an offshore site to be netted or offset, an ADI must calculate the market risk charge for that offshore site separately. The ADI must calculate the total market risk charge as the sum of the charge calculated for positions which may be netted according to conditions (c) to (e) and the charges calculated for each of the offshore sites for which the conditions (c) to (e) do not allow netting.

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Interest rate risk

3. The standard method for measuring the risk of holding or taking positions in debt securities and other interest-rate-related instruments in the trading book covers all fixed-rate and floating-rate debt securities and instruments that behave like them, including non-convertible preference shares.[3] An ADI must also include interest rate exposures arising from forward foreign exchange transactions and forward sales and purchases of equities and commodities. An ADI may include the interest rate exposure (exposure to a change in the value of an option due to a change in the interest rate) on foreign exchange, equity and commodity options. Convertible bonds must be treated as debt securities if they trade like debt securities, and as equities if they trade like equities.

4. In determining the capital charge for interest rate risk, an ADI must separately calculate the charges applying to the specific risk of each instrument, irrespective of whether it is a short or a long position, and to the interest rate risk in the portfolio (general market risk) where long and short positions in different securities or instruments can be offset.

Specific risk

5. The capital charges for specific risk are outlined in Tables 1 to 5 and paragraphs 6 to 19 of this Attachment. An ADI must not offset between different issues even if the issuer is the same, but may offset matched long and short positions in an identical issue (including positions in derivatives).

Table 1: Specific risk capital charges

Category	External credit assessment[4]	Residual term to maturity	Specific risk capital charge (%)
Government	AAA to AA-		0.00
	A+ to BBB-	6 months or less	0.25
		Greater than 6 months and up to and including 24 months	1.00
		Exceeding 24 months	1.60
	BB+ to B- or unrated		8.00
	Below B-		12.00

[3] A security which is the subject of a repurchase or securities lending agreement will be treated as if it were still owned by the lender of the security, i.e. it will be treated in the same manner as other security's positions.

[4] These external rating grades refer to long-term ratings issued by external credit assessment institutions within the meaning of APS 112 for the purpose of risk-weighting claims on rated counterparties and exposures.

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Category	External credit assessment[4]	Residual term to maturity	Specific risk capital charge (%)
Qualifying		6 months or less	0.25
		Greater than 6 months and up to and including 24 months	1.00
		Exceeding 24 months	1.60
Other	BB+ to BB- or unrated		8.00
	Below BB-		12.00

6. In Table 1, the 'government' category includes all forms of government paper including bonds, Treasury notes and other short-term instruments. These debt instruments may be given a zero specific risk charge if:

   (a) they are issued, fully guaranteed or fully collateralised[5] by securities issued by the Australian Commonwealth, State or Territory governments or the Reserve Bank of Australia; or

   (b) they are issued, fully guaranteed or fully collateralised by securities issued by central governments or central banks within the Organisation for Economic Co-operation and Development (**OECD**); or

   (c) they are issued or fully guaranteed by non-OECD country central governments and central banks and have a residual maturity of one year or less and are denominated in local currency and the ADI's holdings of such paper are funded by liabilities in the same currency.

7. The 'qualifying' category includes securities that are:

   (a) rated investment grade by at least two external credit assessment institutions (**ECAIs**) within the meaning of APS 112 for the purpose of risk-weighting claims on rated counterparties and exposures; or

   (b) rated investment grade by one ECAI or unrated, but deemed, subject to APRA's written approval, to be of comparable investment quality by the ADI and the issuer has its equity included in a recognised market index (refer to Table 8). An ADI must apply to APRA for approval of a policy statement outlining securities the ADI considers to be of comparable investment quality.

5 Refer to APS 112 for acceptable collateral and guarantee arrangements.

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8. In addition, debt securities may be treated as qualifying if they are:

   (a) issued or guaranteed by Australian local governments or Australian public sector entities (except those that have corporate status and operate on a commercial basis);[6]

   (b) issued or fully guaranteed by non-OECD country central governments or central banks and have a residual maturity of over one year and are denominated in local currency and the ADI's holdings of such paper are funded by liabilities in the same currency;

   (c) issued or fully collateralised by claims on an international agency or regional development bank, including the International Monetary Fund, the International Bank for Reconstruction and Development, the Bank for International Settlements and the Asian Development Bank;

   (d) issued, guaranteed, endorsed[7] or accepted by an Australian ADI or a bank incorporated in another OECD[8] country, provided such instruments do not qualify as capital of the issuing institution;[9]

   (e) issued, guaranteed, endorsed or accepted by a non-OECD bank and have a residual maturity of one year or less, provided such instruments do not qualify as capital of the issuing institution;

   (f) issued or guaranteed by OECD state and regional governments or OECD public sector entities;

   (g) issued or guaranteed by an entity that is subject to an equivalent capital adequacy regime (covering both credit and market risk), as determined by APRA;[10] or

   (h) issued by institutions that are deemed, in writing, by APRA to be equivalent to investment grade quality and subject to comparable supervisory and regulatory arrangements.

9. An ADI using the internal ratings-based (**IRB**) approach for credit risk (refer to APS 113) for a portfolio may treat debt securities in that portfolio as qualifying if:

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6 Refer to APS 112.

7 Only where the ADI is the first endorser.

8 This includes banks in non-OECD countries of the Asia-Pacific areas that are accorded the same credit risk weight as OECD banks under APS 112.

9 Instruments that are regarded as capital of the issuing institution should be assessed on the basis of the rating of the issue rather than the issuer.

10 Australia Clearing House Pty Ltd, ASX Limited, and the European Economic Community's Capital Adequacy Directive are deemed to be equivalent regimes as are the regulators of investment firms from the following countries: Canada, Hong Kong, Japan, Switzerland and the USA. An ADI may apply to APRA to have other countries or other regulators added to this list.

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(a) the securities are rated equivalent[11] to investment grade under the reporting ADI's internal rating system, and APRA has confirmed the rating system complies with the requirements for an IRB approach; and

(b) the issuer has securities listed on a recognised stock exchange within the meaning of APS 112.

10. Fund-raising instruments issued, guaranteed or accepted by an ADI and included in the trading book only attract capital charges for general market risk, not specific risk.[12]

Specific risk for securitisation exposures[13] and resecuritisation exposures

11. An ADI must apply a risk-weight of 1250 per cent (i.e. a 100 per cent risk capital charge) to a securitisation or resecuritisation exposure, unless it performs the due diligence specified below. This due diligence requires an ADI to:

(a) on an ongoing basis, have a comprehensive understanding of the risk characteristics of its individual securitisation exposures, whether on-balance sheet or off-balance sheet, as well as the pools underlying its securitisation exposures;

(b) have access to and periodically review performance information on the underlying pools in a timely manner;

(c) for resecuritisations, have access to, and periodically review, information not only on the underlying securitisation tranches but also on the risk characteristics and performance of the pools underlying the securitisation tranches; and

(d) have a comprehensive understanding of all structural features of a securitisation transaction that may have a material impact on the ADI's exposures to the transaction.

12. An ADI using either the standardised approach for credit risk or the standardised approach for market risk must calculate specific risk for securitisation exposures and resecuritisation exposures according to Tables 2 and 3 below. An ADI must apply a risk-weight of 1250 per cent i.e. a 100 per cent risk capital charge to the value of positions with long-term ratings of B+ and below and short-term ratings other than A-1/P-1, A-2/P-2, A-3/P-3. An ADI must also apply a risk-weight of 1250 per cent i.e. a 100 per cent risk capital charge, to the value of unrated positions, other than in the circumstances described in paragraph 6 of Attachment

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11 Equivalent means the debt security has a one-year probability of default (PD) equal to or less than the one year PD implied by the long-run average one-year PD of a security with credit rating grade (refer to APS 112) of three or better.

12 Where the ADI has guaranteed or accepted the instrument, capital must also be held against the credit risk of the issuer (refer to APS 112).

13 Refer to *Prudential Standard APS 120 Securitisation* (**APS 120**) for the definitions of 'securitisation exposure' and 'resecuritisation exposure'.

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C to APS 120. The operational requirements for the recognition of external credit assessments outlined in Attachment B to APS 120 apply.

Table 2: Specific risk capital charges for securitisation exposures and resecuritisation exposures (long term ratings)

External credit assessment	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	Below BB- or unrated
Securitisation exposures	1.6%	4%	8%	28%	100%
Resecuritisation exposures	3.2%	8%	18%	52%	100%

Table 3: Specific risk capital charges for securitisation exposures and resecuritisation exposures (short term ratings)

External credit assessment	A-1/P-1	A-2/P-2	A-3/P-3	Below A-3/P-3 or unrated
Securitisation exposures	1.6%	4%	8%	100%
Resecuritisation exposures	3.2%	8%	18%	100%

13. An ADI which has approval to use both the IRB approach for credit risk and the internal models approach for market risk must calculate the specific risk capital charges for rated securitisation and resecuritisation exposures positions according to Tables 4 and 5, depending on whether or not the positions are granular and/or senior[14]. The operational requirements for the recognition of external credit assessments outlined in Attachment B to APS 120 apply.

Table 4: Specific risk capital charges based on external credit assessments (long term ratings)

External credit assessment	Securitisation exposures			Resecuritisation exposures	
	Senior, granular	Non-senior, granular	Non-granular	Senior	Non-senior
AAA	0.56%	0.96%	1.60%	1.60%	2.40%
AA	0.64%	1.20%	2.00%	2.00%	3.20%
A+	0.80%	1.44%	2.80%	2.80%	4.00%
A	0.96%	1.60%		3.20%	5.20%

14 Refer to APS 120 for the definitions of ‘senior’ and ‘granular’ positions.

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External credit assessment	Securitisation exposures			Resecuritisation exposures	
	Senior, granular	Non-senior, granular	Non-granular	Senior	Non-senior
A-	1.60%	2.80%		4.80%	8.00%
BBB+	2.80%	4.00%		8.00%	12.00%
BBB	4.80%	6.00%		12.00%	18.00%
BBB-	8.00%			16.00%	28.00%
BB+	20.00%			24.00%	40.00%
BB	34.00%			40.00%	52.00%
BB-	52.00%			60.00%	68.00%
Below BB- and unrated	100.00%				

Table 5: Specific risk capital charges based on external credit assessments (short term ratings)

External credit assessment	Securitisation exposures			Resecuritisation exposures	
	Senior, granular	Non-senior, granular	Non-granular	Senior	Non-senior
A-1/P-1	0.56%	0.96%	1.60%	1.60%	2.40%
A-2/P-2	0.96%	1.60%	2.80%	3.20%	5.20%
A-3/P-3	4.80%	6.00%	6.00%	12.00%	18.00%
Below A-3/P-3	100.00%				

14. An ADI may, if APRA approves, calculate the specific risk capital charges for unrated securitisation and resecuritisation positions as follows.

(a) An ADI with approval for the IRB approach for the asset classes which include the underlying exposures may apply the supervisory formula approach (refer to paragraphs 18 to 38 of Attachment D to APS 120). When estimating PDs and LGDs for calculating K_{IRB}, the ADI must meet the minimum requirements for the IRB approach.

(b) An ADI which has approval for using a value-at-risk measure for specific market risk (refer to paragraph 43 of Attachment C) for products or asset classes which include the underlying exposures may apply the supervisory formula approach (refer to paragraphs 18 to 38 of Attachment D to APS 120). When estimating PDs and LGDs for calculating K_{IRB}, the ADI must meet the same standards as for calculating the incremental risk capital charge according to paragraphs 55 and 56 of Attachment C.

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(c) In all other cases an ADI must calculate the capital charge as eight per cent of the weighted-average risk weight that would be applied to the securitised exposures under the standardised approach, multiplied by a concentration ratio. This concentration ratio is equal to the sum of the nominal amounts of all the tranches divided by the sum of the nominal amounts of the tranches junior to or pari passu with the tranche in which the position is held, including that tranche itself.

The resulting specific risk capital charge must not be lower than any specific risk capital charge applicable to a rated more senior tranche. If an ADI is unable to determine the specific risk capital charge as described above or prefers not to apply the treatment described above to a position, it must apply a risk-weight of 1250 per cent i.e. a 100 per cent risk capital charge to that position.

Specific risk offsetting for the correlation portfolio

15. An ADI's correlation trading portfolio includes securitisation exposures and n^{th}-to-default credit derivatives that meet all of the following criteria:

(a) the positions are neither resecuritisation positions, nor derivatives of securitisation exposures that do not provide a pro-rata share in the proceeds of a securitisation tranche (this criterion therefore excludes options on a securitisation tranche, or a synthetically leveraged super-senior tranche);

(b) all reference entities are single-name products, including single-name credit derivatives, for which a liquid two-way market exists[15];

(c) the positions do not reference underlying exposures that would be treated as a retail exposure or a property exposure under the standardised approach to credit risk (refer to APS 112); and

(d) the positions do not reference a claim on a special purpose entity.

16. An ADI may also include in the correlation trading portfolio positions that hedge the positions described above and which are neither securitisation exposures nor n^{th}-to-default credit derivatives and where a liquid two-way market (as described in footnote 15) exists for the instrument or its underlying exposures.

17. APRA may allow an ADI to determine the capital charge for specific interest rate risk for the correlation trading portfolio as the larger of:

(a) the total specific risk capital charges that would apply just to the net long positions from the net long correlation trading exposures combined; and

15 This will include commonly traded indices based on these reference entities. A two-way market is deemed to exist where there are independent bona fide offers to buy and sell so that a price reasonably related to the last sales price or current bona fide competitive bid and offer quotations can be determined within one day and settled at such price within a relatively short time conforming to trade custom.

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(b) the total specific risk capital charges that would apply just to the net short positions from the net short correlation trading exposures combined.

Transitional provisions for securitisation positions

18. Until 31 December 2013, APRA may allow an ADI to determine the capital charge for specific interest rate risk for the securitisation instruments that are not included in the correlation trading portfolio as the larger of:

(a) the total specific risk capital charges that would apply just to the net long positions in securitisation instruments in the trading book; and

(b) the total specific risk capital charges that would apply just to the net short positions in securitisation instruments in the trading book.

This calculation must be undertaken separately from the calculation for the correlation trading portfolio as described in paragraph 18 of this Attachment.

Limitation of specific risk capital charge to maximum possible loss

19. An ADI may limit the capital charge for an individual position in a credit derivative or securitisation instrument to the maximum possible loss. For a short risk position, an ADI may calculate this limit as a change in value due to the underlying names immediately becoming default risk-free. For a long position, the maximum possible loss may be calculated as the change in value in the event that all the underlying names were to default with zero recoveries.

General market risk

20. The capital charges for general market risk capture the risk of loss arising from changes in market interest rates. An ADI using the standard method may either use the maturity method or may apply to APRA for written approval to use the duration method of measuring general market risk. An ADI that has approval to use the duration method must do so on a continuing basis, unless a change in method is approved, in writing, by APRA. In each method, positions are allocated across a maturity ladder and the capital charge is calculated as the sum of four components:

(a) the net short or long weighted position across the whole trading book;

(b) a small proportion of the matched positions in each time band (the 'vertical disallowance');

(c) a larger proportion of the matched positions across different time bands (the 'horizontal disallowance'); and

(d) a net charge for positions in options, where appropriate.

21. An ADI must use separate maturity ladders for positions in each currency, with capital charges calculated separately for each currency and then summed, with no offsetting between positions of different currencies. Where business in one or more currencies is insignificant (residual currencies), the ADI may construct a

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single maturity ladder for those currencies and record, within each appropriate time band, the net long or short position in each currency, rather than having to use separate maturity ladders for each currency. The ADI must sum the absolute value of the individual net positions within each time band, irrespective of whether they are long or short positions, to produce a gross position figure.

22. In the maturity method, long or short positions in debt securities and other sources of interest rate exposures, including derivative instruments, are entered into a maturity ladder comprising thirteen time bands (or 15 time bands in the case of low-coupon instruments) (refer to Table 6). An ADI must allocate fixed-rate instruments according to the residual term to maturity and floating-rate instruments according to the residual term to the next repricing date. Zero-coupon bonds and bonds with a coupon of less than three per cent must be entered according to the time bands set out in the second column of Table 6. An ADI may omit from the interest rate maturity framework opposite positions of the same amount in the same issue (but not different issues by the same issuer) and closely matched swaps, forwards, futures and forward rate agreements (FRAs) that comply with paragraphs 38 to 40 of this Attachment.

23. To calculate the general market risk capital charge using the maturity method, an ADI must:

    (a) weight the positions in each time band by the risk-weight corresponding to the position's time band (refer to Table 6); then

    (b) offset the weighted longs and shorts within each time band, where weighted positions arising from low-coupon instruments are combined with other weighted positions across corresponding time bands; then

    (c) offset the weighted longs and shorts within each zone (refer to Table 7), using only positions that have not been already been offset under (b); then

    (d) offset the weighted longs and shorts between zones using positions that have not already been offset under (b) and (c).

    The net amount remaining is the net position.

24. An ADI must then calculate the vertical disallowances for each time band as 10 per cent of the smaller of the offsetting positions determined according to paragraph 23(b) of this Attachment, whether long or short.

25. An ADI must then calculate the horizontal disallowances as the sum of:

    (a) 40 per cent of the smaller of the offsetting weighted positions within zone 1 determined according to paragraph 23(c) of this Attachment;

    (b) 30 per cent of the smaller of the offsetting weighted positions within zones 2 and 3 determined according to paragraph 23(d) of this Attachment; and

    (c) 40 per cent of the smaller of the offsetting weighted positions between zones 1 and 2, and between zones 2 and 3 determined according to paragraph 23(d) of this Attachment.

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26. An ADI must calculate the general market risk capital charge under the maturity method as the sum of the net position and the vertical and horizontal disallowances.

27. Under the duration method, an ADI must:

    (a) calculate the price sensitivity of each instrument in terms of a change in interest rates of between 0.6 and 1.0 percentage points depending on the modified duration of the instrument (refer to Table 6);

    (b) enter the resulting sensitivity measures into a duration-based ladder in the fifteen time bands set out in the second column of Table 6;

    (c) subject long and short positions in each time band to a five per cent vertical disallowance to capture basis risk; and

    (d) carry forward the net positions in each time band for horizontal offsetting subject to the disallowances (refer to Table 7).

28. An ADI must subject the gross positions in each time band for residual currencies to either the risk weightings in Table 6 if positions are reported using the maturity method, or the assumed changes in yield in Table 6, if positions are reported using the duration method, with no further offsets.

Interest rate derivatives

29. An ADI's measurement system must include all interest rate derivatives and off-balance sheet instruments in the trading book that react to changes in interest rates. Options must be treated in accordance with the methods outlined in paragraphs 77 to 95 of this Attachment.

30. An ADI must convert derivatives into positions in the relevant underlying to become subject to specific and general market risk charges. To determine the capital charge, the amounts reported must be the market value of the principal amount of the underlying or of the notional underlying.

31. An ADI must treat futures and forward contracts (including FRAs) as a combination of a long and a short position in a notional government security or, in the case of futures or forwards on bank or corporate debt, as a combination of a long and a short position in the underlying debt security. The maturity of a future or an FRA is the period until delivery or exercise of the contract, plus the life of the underlying or notional underlying instrument. The long and short positions must be reported at the market value of the underlying or notional underlying security or portfolio of securities. Where a range of deliverable instruments may be delivered to fulfil the contract, the ADI may elect which deliverable security goes into the maturity or duration ladder but must take account of any conversion factor defined by the exchange.[16]

[16] In some cases, in permitting delivery of a security against a futures contract the full value of the contract is not recognised, but rather some pre-specified fraction of the value is recognised; that fraction is termed the 'conversion factor'.

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32. An ADI must treat swaps as two notional positions in government securities with relevant maturities. Both legs of the swap must be reported at their market values. For swaps that pay or receive a fixed or floating interest rate against some other reference price, e.g. a stock index, the ADI must enter the interest rate component into the appropriate repricing maturity category, with the equity component being included in the equity framework. The separate legs of cross-currency swaps must be reported in the relevant maturity ladders for the currencies concerned and the capital for any foreign exchange risk calculated in accordance with the methods outlined in paragraphs 56 to 64 of this Attachment.

Pre-processing techniques

33. An ADI may use alternative methods to calculate the positions to be included in the maturity or duration ladder, subject to APRA determining in writing that it is satisfied as to the accuracy of the systems being used. Such formulae may be applied to all interest-rate-sensitive positions, arising from both physical and derivative instruments, including swaps, FRAs, option delta-equivalents[17] and forward foreign exchange. An ADI may only use an alternative treatment if:

    (a) the positions calculated fully reflect the sensitivity of the cash flows to interest rate changes and are entered into the appropriate time bands; and

    (b) the positions allocated to a single maturity ladder are denominated in the same currency.

34. An ADI may combine positions calculated using a pre-processing method with any weighted positions calculated using the duration method but must not offset such positions against weighted positions calculated using the maturity method.

Calculation of capital charge for derivatives under the standard method

35. Interest rate and cross-currency swaps, FRAs, forward foreign exchange contracts, interest rate futures and futures on an interest rate index are not subject to a specific risk charge. Where the underlying is a specific debt security or an index representing a basket of debt securities, a specific risk charge must be calculated in accordance with paragraphs 5 to 19 of this Attachment.[18]

36. Bank bill futures contracts traded on the Australian Securities Exchange are exempt from a specific risk charge. For other futures or forwards comprising a range of deliverable instruments with different issuers, a specific risk charge applies to long positions in the future or forward, but not short positions.

37. Positions in all derivative products are subject to a general market risk capital charge in the same manner as for cash positions, except for fully or very closely matched positions in identical instruments in compliance with paragraph 41 of

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17 Delta measures the sensitivity of an option's value to a change in the price of the underlying asset.

18 Forward and futures contracts where the ADI has a right to substitute cash settlement for physical delivery and the price on settlement is calculated with reference to a general market price indicator are exempt from specific risk charges, but cannot be offset against specific securities (including those securities making up the market index).

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this Attachment. These positions must be entered into the maturity ladder and treated according to paragraphs 20 to 28 of this Attachment.

38. An ADI may exclude long and short positions (both actual and notional) in identical instruments with exactly the same issuer, coupon, currency and maturity from the interest rate maturity framework. An ADI may also fully offset, and exclude from the calculation, a matched position in a future or forward and its corresponding underlying may also be fully offset. The leg representing the time to expiry of the future (i.e. the net exposure from the combination of the future and the underlying) must, however, be reported.

39. An ADI may only offset positions in a future or forward comprising a range of deliverable instruments and the corresponding underlying where there is a readily identifiable underlying security that is most profitable for the ADI with a short position to deliver. The price of this security, sometimes called the 'cheapest-to-deliver', and the price of the future or forward contract must move in close alignment.

40. An ADI must not offset between positions in different currencies. It must treat separate legs of cross-currency swaps or forward foreign exchange deals as notional positions in the relevant instruments and include them in the appropriate calculation for each currency.

41. An ADI may fully offset opposite positions within and across product groups, including (if using the delta-plus method for options)[19] the delta-equivalent value of options (including the delta-equivalent value of legs arising out of the treatment of caps and floors as set out in paragraph 81 of this Attachment), subject to meeting the following conditions:

    (a) the positions must relate to the same underlying instruments, be of the same nominal value and be denominated in the same currency;[20]

    (b) for futures, offsetting positions in the notional or underlying instruments to which the futures contract relates must be for identical products and mature within seven days of each other; and

    (c) for swaps, FRAs and forwards,[21] the reference rate (for floating-rate positions) must be identical and the coupons must differ by no more than 15 basis points. Also, the next interest fixing date or, for fixed coupon positions or forwards, the residual maturity, must correspond within the following limits:

        (i) if either instrument has an interest fixing date or residual maturity up to and including one month, the dates or residual maturities must be the same for both instruments; or

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19 This excludes offsetting between a matched position in a future or forward and its underlying, which is governed by paragraphs 38 and 39 of this Attachment.

20 The separate legs of different swaps may also be 'matched' subject to the same conditions.

21 Spot or cash positions in the same currency may be offset subject to these same conditions.

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(ii) if either instrument has an interest fixing date or residual maturity greater than one month and up to and including one year, the dates or residual maturities must be within seven days of each other; or

(iii) if either instrument has an interest fixing date or residual maturity over one year, the dates or residual maturities must be within thirty days of each other.

Table 6: Time bands and risk weights

Coupon 3% or more	**Coupon less than 3% or the duration method**	**Risk weight (%)**	**Assumed changes in yield (%)**
1 month or less	1 month or less	0.00	1.00
Over 1 and up to 3 months	Over 1 and up to 3 months	0.20	1.00
Over 3 and up to 6 months	Over 3 and up to 6 months	0.40	1.00
Over 6 and up to 12 months	Over 6 and up to 12 months	0.70	1.00
Over 1 and up to 2 years	Over 1.0 and up to 1.9 years	1.25	0.90
Over 2 and up to 3 years	Over 1.9 and up to 2.8 years	1.75	0.80
Over 3 and up to 4 years	Over 2.8 and up to 3.6 years	2.25	0.75
Over 4 and up to 5 years	Over 3.6 and up to 4.3 years	2.75	0.75
Over 5 and up to 7 years	Over 4.3 and up to 5.7 years	3.25	0.70
Over 7 and up to 10 years	Over 5.7 and up to 7.3 years	3.75	0.65
Over 10 and up to 15 years	Over 7.3 and up to 9.3 years	4.50	0.60
Over 15 and up to 20 years	Over 9.3 and up to 10.6 years	5.25	0.60
Over 20 years	Over 10.6 and up to 12 years	6.00	0.60
	Over 12 and up to 20 years	8.00	0.60
	Over 20 years	12.50	0.60

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Table 7: Horizontal disallowances

Zones[22]	Time band	Within the zone	Between adjacent zones	Between zones 1 and 3
Zone 1	0 – 1 month 1 – 3 months 3 – 6 months 6 – 12 months	40%	40%	100%
Zone 2	1 – 2 years 2 – 3 years 3 – 4 years	30%		
Zone 3	4 – 5 years 5 – 7 years 7 – 10 years 10 – 15 years 15 – 20 years Over 20 years	30%	40%	100%

Equity position risk

42. The standard method for measuring the risk of equity positions in the trading book applies to long and short positions in all instruments that exhibit market behaviour similar to equities. The method covers ordinary shares, whether voting or non-voting, convertible securities that behave like equities, and commitments to buy or sell equity securities. An ADI may report long and short positions in instruments relating to the same issuer on a net basis.

43. An ADI must calculate the long or short position in the market on a market-by-market basis and must undertake a separate capital calculation for each national market in which the ADI holds equities.

Specific and general market risks

44. The capital charge for specific risk must be calculated as eight per cent of the sum of the absolute value of all long equity positions and of all short equity positions.[23]

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22 The zones for coupons less than three per cent are zero to one year, over one to 3.6 years, and over 3.6 years.

23 An equity position is the net of short and long exposures to an individual company. Hence, specific risk is assessed on the gross position across companies rather than individual transactions.

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45. The capital charge for general market risk is eight per cent of the net position (sum of all long equity positions and short equity positions) in an equity market.

Equity derivatives

46. An ADI must include equity derivatives and off-balance sheet positions that are affected by changes in equity prices in its risk measurement system. Where equities form one leg of a forward or futures contract (the quantity of equities to be received or to be delivered), any interest rate or foreign currency exposure from the other leg of the contract must be reported as set out in paragraphs 3 to 41 and paragraphs 56 to 64 of this Attachment.

47. The treatment of equity options is set out in paragraphs 77 to 95 of this Attachment. To calculate the relevant charges for equity position risk for other equity derivatives and other off-balance positions that are affected by changes in equity prices, an ADI must convert positions into notional equity positions, where:

    (a) futures and forward contracts relating to individual equities are reported at current market prices;

    (b) futures relating to stock indices are reported as the mark-to-market value of the notional underlying equity portfolio; and

    (c) equity swaps are treated as two notional positions.

48. If an ADI takes a position in depository receipts against an opposite position in the underlying equity or the same equity listed in a different country, it may only offset the position if any costs on conversion are fully taken into account.

49. An ADI may fully offset matched positions in each identical equity or stock index in each market, resulting in a single net short or long position to which the specific and general market risk charges will apply. For this purpose, a future in a given equity may be offset against an opposite physical position in the same equity.

50. An ADI must apply a specific risk capital charge of two per cent to the net long or short position in any index contract listed in Table 8.

51. If a position is not listed in Table 8, the ADI must either decompose it into its component shares or treat it as a single position based on the sum of current market values of the underlying instruments; if treated as a single position, the specific risk charge is the highest specific risk charge that would apply to any of the index's constituent shares.

52. If an ADI employs a futures-related arbitrage strategy where it:

    (a) takes an opposite position in exactly the same index at different dates or in different market centres; or

    (b) has an opposite position in contracts at the same date in different but similar indices, and subject to APRA's written agreement that the two indices contain sufficient common components to justify offsetting,

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the ADI may apply the additional two per cent capital specific risk capital charge (referred to in paragraph 50 of this Attachment) to only one index with the opposite position exempt from a capital charge for both specific risk and general market risk.

53. Where an ADI engages in a deliberate arbitrage strategy, in which a futures contract on a broadly-based index matches a basket of shares, the ADI may decompose the index position into notional positions in each of the constituent stocks and include these notional positions and the disaggregated physical basket in the country portfolio, netting the physical positions against the index-equivalent positions in each stock. The ADI may only apply the capital charge set out in paragraph 54 of this Attachment if:

    (a) the trade has been deliberately entered into and separately controlled; and

    (b) the composition of the basket of shares represents at least 90 per cent[24] of the index when broken down into its notional components, or a minimum correlation between the basket of shares and the index of 0.9 can be clearly established over a minimum period of one year. An ADI wishing to rely on the correlation based criteria will need to satisfy APRA of the accuracy of the method chosen.

    Where these conditions are not met, the ADI must use the approach in paragraph 55 of this Attachment to deal with the arbitrage.

54. If the values of the physical and futures positions are matched, an ADI must assess the capital charge as two per cent of the gross value of the positions on each side, giving a total of four per cent. The ADI must treat any excess value of the shares comprising the basket over the value of the futures contract, or excess value of the futures contract over the value of the basket, as an open long or short position and use the approach in paragraph 55 of this Attachment.

55. Where an arbitrage does not comply with paragraph 53 of this Attachment, the ADI must treat the index position using the approach in either paragraph 50 or 51 of this Attachment as appropriate. The ADI must then disaggregate the physical basket of shares into individual positions and include them in the country portfolio for calculation of the capital charge.

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24 To determine whether a basket of shares represents at least 90 per cent of the index, the relative weight of each stock in the physical basket is compared to the weight of each stock in the index to calculate a percentage slippage from the index weights. Stocks that comprise the index but are not held in the physical basket have a slippage equal to their percentage weight in the index. The sum of these slippages across each stock in the index represents the total level of slippage from the index. In summing the percentage differences, no netting is applied between under market-weight and over market-weight holdings (i.e. the absolute values of the percentage slippages should be summed). Deducting the total slippage from 100 gives the percentage coverage of the index to be compared to the required minimum of 90 per cent.

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Table 8: Market indices

Country	Index	Country	Index
Australia	S&P/ASX 200	Japan	Nikkei 225, Nikkei 300, TOPIX
Austria	ATX	Korea	Kospi
Belgium	BEL20	Netherlands	AEX
Canada	TSE 35, TSE 100, TSE 300	Singapore	Straits Times Index
European	Dow Jones Stoxx 50 Index, FTSE Eurotop 300, MSCI Euro Index	Spain	IBEX 35
France	CAC 40, SBF 250	Sweden	OMX
Germany	DAX	Switzerland	SMI
Hong Kong	Hang Seng 33	UK	FTSE 100, FTSE mid-250, FTSE All Share
Italy	MIB 30	USA	S&P 500, Dow Jones Industrial Average, NASDAQ Composite, Russell 2000

Foreign exchange risk

56. The standard method also covers the risk of holding or taking positions in foreign currencies and gold.[25] Where, however, an ADI is exposed to interest rate exposure on such positions, the ADI must include the relevant interest rate positions in the calculation of interest rate risk.

57. The capital charge for foreign exchange risk is eight per cent of the foreign exchange net open position plus eight per cent of the net position in gold.

Measuring the exposure in a single currency

58. An ADI must include in its net open position in each currency:

    (a) the measurement of currency exposure in accordance with paragraphs 14 to 17 of Attachment A; and

    (b) the net delta-equivalent of the total book of foreign currency options, subject to separately calculated capital charges for gamma risk and vega risk as described in paragraphs 77 to 95 of this Attachment. Alternatively,

[25] Gold must be dealt with as a foreign exchange position rather than as a commodity position because its volatility is more in line with foreign currencies and it is typically managed in a similar manner to foreign currencies.

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options and their associated underlying assets may be subject to one of the other methods described in paragraphs 77 to 95 of this Attachment.

59. An ADI must separately report positions in composite currencies but, for measuring its open positions, may treat them as either a currency in their own right or as split, on a consistent basis, into their component parts.

60. An ADI may treat currency pairs subject to a binding inter-governmental agreement linking the two currencies as the one currency.

61. An ADI must measure positions in gold in accordance with paragraph 70 of this Attachment.[26] An ADI may double-count gold in Australian dollar equivalent amounts, first as a gold exposure and secondly as a US dollar exposure, allowing the US dollar exposure to then be netted against US dollar exposures arising from other activities.

62. An ADI must value forward currency and gold positions at current spot market exchange rates. An ADI that bases its normal management accounting on net present values must use the net present values of each forward position, discounted using current interest rates and translated at current spot rates, for measuring its forward currency and gold positions.

Measuring foreign exchange risk in a portfolio of foreign currency positions and gold

63. Under the standard method, an ADI must convert at spot rates the nominal amount (or net present value) of the net position in each foreign currency and in gold into the reporting currency.[27] The overall net open position must be measured by aggregating:

    (a) the sum of the net short positions or the sum of the net long positions, whichever is the greater; plus

    (b) the net position (short or long) in gold, regardless of whether positive or negative.

64. An ADI must calculate the capital charge as eight per cent of the overall net open position.

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26 Where gold is part of a forward contract (the quantity of gold to be received or to be delivered), the interest rate and foreign exchange exposure from the other leg of the contract should be reported as set out in paragraphs 3 to 41 of this Attachment and paragraph 14 of Attachment A.

27 Where the ADI is assessing its foreign exchange risk on a consolidated basis, it may be technically impractical in the case of some marginal operations to include the currency positions of a foreign branch or subsidiary of the ADI. In such cases the internal limit in each currency applied to such entities may be used as a proxy for the positions. Provided there is adequate *ex post* monitoring of actual positions against such limits, the limits are to be added, without regard to sign, to the net open position in each currency.

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Commodities risk

65. The standard method also covers the risk of holding positions in commodities, including precious metals (excluding gold), where a commodity is defined as a tradeable physical or energy product, e.g. agricultural products, minerals (including oil), electricity and precious and base metals.

66. If an ADI is exposed to interest rate or foreign exchange risk from funding commodities positions, the relevant positions must be included in the calculation of interest rate and foreign exchange risk.[28]

67. An ADI using the standard method may measure commodities risk using either the maturity ladder approach or the simplified approach.

68. Under these approaches, the ADI may report long and short positions in each commodity on a net basis for the purposes of calculating open positions. Positions in different commodities must not be offset unless they:

    (a) are deliverable against each other; or

    (b) are close substitutes for each other and a minimum correlation between price movements of 0.9 can be clearly established over a minimum period of one year. An ADI wishing to use correlation-based offsetting must seek APRA's written approval.

69. Subject to prior written approval from APRA, an ADI may double-count foreign currency denominated commodities as both a commodity exposure and as a foreign currency exposure.

70. An ADI must first express each commodity position (spot plus forward) in terms of the standard unit of measurement (barrels, kilos, grams, etc). The net position in each commodity is then converted at current rates into Australian dollars.

71. An ADI must include all commodity derivatives and off-balance sheet positions that are affected by changes in commodity prices in the measurement framework. These include commodity futures, commodity swaps and options where the delta-plus method is used.[29] In order to calculate the risk, an ADI must convert commodity derivatives into notional commodities positions and assign them to maturities such that:

    (a) futures and forward contracts relating to individual commodities are incorporated in the measurement system as notional amounts in terms of the standard units of measurement multiplied by the spot price of the commodity, and are assigned a maturity based on the contract's expiry date;

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28 Where a commodity is part of a forward contract (a quantity of commodities is to be received or to be delivered), any interest rate, equity or foreign currency exposure from the other leg of the contract should be reported as set out in paragraphs 3 to 41, 42 to 55 and 56 to 64 of this Attachment.

29 For an ADI using other approaches to measure option price risk, all options and the associated underlying assets are to be excluded from both the maturity ladder approach and the simplified approach.

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(b) commodity swaps where one leg is a fixed price and the other leg is the current market price are incorporated as a series of positions equal to the notional amount of the contract, with one position corresponding to each payment on the swap and entered into the maturity ladder accordingly. The positions are long positions if the ADI is paying fixed and receiving floating, and short positions if the ADI is receiving fixed and paying floating;[30] and

(c) commodity swaps where the legs are in different commodities are incorporated in the relevant maturity ladder. An ADI must not offset positions except as allowed by paragraph 68 of this Attachment.

Maturity ladder approach

72. An ADI using the maturity ladder approach must enter positions in each separate commodity (expressed in Australian dollar terms) into a maturity band (refer to Table 9 of this Attachment). Physical stocks must be allocated to the first time band. Separate maturity ladders must be used for each commodity except where netting is allowed by paragraph 68 of this Attachment.[31]

73. Within each time band, an ADI must apply a capital charge for spread risk of three per cent of the matched position (the smaller of the absolute value of the short and long positions within a time band).

74. An ADI may then carry forward residual net positions from nearer time bands to offset exposures in time bands that are further out. A capital charge equal to 0.6 per cent of the net position carried forward is to be applied each time a position is carried forward to the next time band. The capital charge for each matched amount created by carrying net positions forward is three per cent of that matched position.

75. An ADI must apply a capital charge of 15 per cent of the net open position in the commodity.

Simplified approach

76. An ADI using the simplified approach must apply a capital charge equal to 15 per cent of the overall net position, long or short, in each commodity, plus three per cent of the ADI's gross positions (the absolute value of all long positions plus the absolute value of all short positions regardless of maturity) in each commodity. In valuing the gross positions in commodity derivatives for this purpose, an ADI must use the current spot price.

Table 9: Commodity time bands

30 If one of the legs involves receiving/paying a fixed or floating interest rate, that exposure is to be slotted into the appropriate repricing maturity band in the maturity ladder covering interest rate-related instruments.

31 For markets that have daily delivery dates, any contracts maturing within ten days of one another may be offset.

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Time band
1 month or less
Over 1 month and up to 3 months
Over 3 months and up to 6 months
Over 6 months and up to 12 months
Over 1 year and up to 2 years
Over 2 years and up to 3 years
Over 3 years

Treatment of options

77. An ADI must obtain prior approval from APRA to use an approach to the treatment of options. An ADI:

    (a) that uses solely purchased options[32] may use the simplified approach to the treatment of options; or

    (b) that also writes options must use either the delta-plus method, contingent loss method or the internal model approach (refer to Attachment C), depending on the significance of its trading.[33]

78. An ADI must, for the delta-plus method and the contingent loss approach, calculate the specific risk capital charges separately by multiplying the delta-equivalent amount of each option by the specific risk weights set out in paragraphs 3 to 55 of this Attachment.

Simplified approach

79. An ADI using the simplified approach may use the capital charges outlined in Table 10. In this approach, the positions for the options and the associated underlying assets, cash or forward, are not subject to the standard methodology but rather are 'carved-out' and subject to separately calculated capital charges that incorporate both general market risk and specific risk. The risk numbers thus generated are then added to the capital charges for the relevant category, i.e. interest rate related instruments, equities, foreign exchange and commodities.

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32 Where all the written option positions are hedged by perfectly matched long positions in exactly the same options, no capital charge for market risk is required.

33 An ADI doing business in certain classes of exotic options (e.g. barriers, digitals) may be required to use the contingent loss approach (described in paragraphs 89 to 95 of this Attachment) or the internal models alternative (Attachment C), which can accommodate more detailed revaluation approaches.

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Table 10: Simplified approach: Capital charges

Position	Treatment
Long cash and long put or Short cash and long call	The capital charge will be the market value of the underlying security[34] multiplied by the sum of specific and general market risk charges[35] for the underlying less the amount the option is in the money (if any) bounded at zero.[36]
Long call or Long put	The capital charge will be the lesser of: (a) the market value of the underlying security multiplied by the sum of specific and general market risk charges for the underlying; and (b) the market value of the option.[37]

Delta-plus method

80. An ADI that writes options may be allowed to include delta-weighted options positions within the standard method. The ADI must report such options as a position equal to the sum of the market values of the underlying multiplied by the sum of the absolute values of the deltas. As delta does not cover all risks associated with options positions, the ADI must measure gamma (which measures the rate of change of delta) and vega (which measures the sensitivity of the value of an option with respect to a change in volatility) in order to calculate the total capital charge. These sensitivities must be calculated using an approved Exchange model[38] or a proprietary options pricing model approved, in writing, by APRA.

81. When calculating general market risk using the delta-plus method, an ADI must place delta-weighted positions with debt securities or interest rates as the underlying into the interest rate time bands by using a two-legged approach, where there is one entry at the time the underlying contract takes effect and a

34 In some cases, such as foreign exchange, it may be unclear which side is the 'underlying security'; this should be taken to be the asset which would be received if the option were exercised. In addition, the nominal value should be used for items where the market value of the underlying instrument could be zero, e.g. caps and floors, swaptions, etc.

35 Some options (eg where the underlying is an interest rate, a currency or a commodity) bear no specific risk but specific risk will be present in the case of options on certain interest rate related instruments and for options on equities and stock indices. The charge under this measure for currency options will be eight per cent and, for options on commodities, 15 per cent.

36 For options with a residual maturity of more than six months, the strike price should be compared with the forward, not current, price. An ADI unable to do this must take the in-the-money amount to be zero. For options with a residual maturity of less than six months, an ADI, if able, is to use the forward price rather than the spot price.

37 Where the position does not fall within the trading book (i.e. options on certain foreign exchange or commodities positions), it may be acceptable to use the book value instead.

38 For example, the pricing models used by the Australian Securities Exchange.

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second at the time the underlying contract matures.[39] An ADI using the delta-plus method must treat caps and floors as a series of European-style options.

82. For options with debt securities as the underlying, an ADI must apply a specific risk charge to the delta-weighted position on the basis of the issuer of the underlying security according to the approach in paragraphs 5 to 19 of this Attachment.

83. The capital charge for options with equities as the underlying must also be based on the delta-weighted positions that will be incorporated in the measure of market risk (both specific and general market risk) described in paragraphs 42 to 55 of this Attachment. An ADI must calculate the capital charge for options on foreign exchange and gold positions according to the method in paragraphs 56 to 64 of this Attachment. For delta risk, the net delta-based equivalent of the foreign currency and gold options must be incorporated into the measurement of the exposure for the respective currency (or gold) position. The capital charge for options on commodities must be based on the incorporation of delta-weighted positions into either the maturity ladder (refer to paragraphs 72 to 75 of this Attachment) or the simplified approach (refer to paragraph 76 of this Attachment).

84. An ADI using the delta-plus method must calculate the gamma and vega capital charges for each option position separately.

85. The capital charges for 'gamma risk' must be calculated as:

$$\text{Gamma impact} = \tfrac{1}{2} \times \text{gamma} \times (\text{VU})^2$$

where VU denotes the variation in the price of the underlying of the option. VU must be calculated as follows:

(a) for interest rate options, if the underlying is a bond, the market value of the underlying must be multiplied by the risk weights outlined in Table 6 of this Attachment. An equivalent calculation, based on the assumed changes in yield in Table 6, must be carried out where the underlying is an interest rate;

(b) for options on equities and equity indices, the market value of the underlying must be multiplied by eight per cent;

(c) for options on foreign exchange and gold, the market value of the underlying must be multiplied by eight per cent; and

(d) for options on commodities, the market value of the underlying must be multiplied by 15 per cent.

86. When calculating the gamma impact, an ADI must treat as the same underlying:

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39 In the case of options on futures or forwards the relevant underlying is that on which the future or forward is based (e.g. for a bought call option on a June three-month bill future the relevant underlying is the three-month bill).

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(a) for interest rates,[40] each time band outlined in Table 6 for an ADI using the maturity method. An ADI using the duration method must use the time bands as set out in the second column of Table 6;

(b) for equities and stock indices, each national market;

(c) for foreign currencies and gold, each currency pair and gold; and

(d) for commodities, each individual commodity as defined in paragraph 68 of this Attachment.

87. Each option on the same underlying will have a gamma impact that is either positive or negative. An ADI must sum these individual gamma impacts, resulting in a net gamma impact for each underlying that is either positive or negative. Only those gamma impacts that are negative are included in the capital calculation. The total gamma capital charge is the sum of the absolute value of the net gamma impacts.

88. To calculate vega risk, an ADI must multiply the vega for each option by a 25 per cent proportional shift in the option's current volatility. The results must then be summed across each underlying. The total capital charge for vega risk is calculated as the sum of the absolute value of vega across each underlying.

Contingent loss approach

89. An ADI may also base the market risk capital charge for options portfolios and associated hedging positions on contingent loss matrix analysis. This requires the ADI to specify a fixed range of changes in the option portfolio's risk factors (i.e. underlying price and volatility) and calculate changes in the value of the option portfolio at various points along this matrix. For the purpose of calculating the capital charge, the ADI must revalue the option portfolio using matrices for simultaneous changes in the option's underlying rate or price and in the volatility of that rate or price. A different matrix must be set up for each individual underlying as defined in paragraph 86 of this Attachment. As an alternative, an ADI that is a significant trader in options may, for interest rate options, base the calculation on a minimum of six sets of time bands if not more than three of the time bands (as defined in column 1 of Table 6) are combined into any one set.

90. An ADI must evaluate the options and related hedging positions over a specified range above and below the current value of the underlying to define the first dimension of the matrix. The range for interest rates is consistent with the assumed changes in yield in Table 6. An ADI using the contingent loss approach for interest rate options must use, for each set of time bands, the highest of the assumed changes in yield applicable to the group to which the time bands belong.[41] The other ranges are ± eight per cent for equities, ± eight per cent for foreign exchange and gold, and ±15 per cent for commodities. For all risk

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40 Positions must be slotted into separate maturity ladders by currency.

41 If, for example, the time-bands three to four years, four to five years and five to seven years are combined, the highest assumed change in yield of these three bands would be 0.75.

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categories, at least seven price shifts (including the current observation) must be used to divide the range into equally spaced intervals.

91. The second dimension of the matrix entails a change in the volatility of the underlying rate or price. While a single change in the volatility of the underlying rate or price equal to a proportional shift in volatility of ±25 per cent may be sufficient in most cases, APRA may require that a different change in volatility be used and/or that intermediate points on the matrix be calculated.

92. After calculating the matrix, each cell will contain the net profit or loss of the option and the underlying hedge instrument. The capital charge for each underlying must then be calculated as the largest loss contained in the matrix.

93. An ADI using the contingent loss approach must calculate the specific risk charge using the same approach as for the delta-plus method (refer to paragraphs 82 and 83 of this Attachment).

94. An ADI using the contingent loss approach must comply with the qualitative standards set out in Attachment C that are appropriate to the nature of the ADI's business.

95. An ADI undertaking significant options business must, at a minimum, closely monitor any other risks associated with options, e.g. rho (rate of change of the value of the option with respect to the interest rate). The ADI may incorporate rho into its capital calculations for interest rate risk.

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Attachment C

The internal model approach

Key requirements

1. The internal model approach is based on the use of value-at-risk (VaR) techniques. However, an ADI may seek APRA's written approval to use a capital calculation methodology other than VaR.

2. In addition, an ADI must calculate a 'stressed VaR' measure according to the requirements set out in paragraph 34 of this Attachment.

3. An ADI using an internal model must meet, on a daily basis, a capital requirement expressed as:

   (a) the higher of:

      (i) an average of the daily VaR measures on each of the preceding sixty trading days, multiplied by a scaling factor (the total of ***the*** VaR multiplication factor and a plus factor); and

      (ii) its previous day's VaR number; and

   (b) the higher of:

      (i) an average of the stressed VaR measures calculated over the preceding sixty trading days, multiplied by a scaling factor (the total of the multiplication factor for stressed VaR and a plus factor); and

      (ii) its latest available stressed VaR number; and

   (c) the incremental risk charge (IRC), where the VaR measures referred to in paragraph 1 of this Attachment include an estimation of the specific risk charge in accordance with paragraphs 43 to 45 of this Attachment; and

   (d) the comprehensive risk charge, where an ADI has approval to calculate capital for its correlation trading portfolio in accordance with paragraphs 77 to 79 of this Attachment.

   Both the VaR multiplication factor and the multiplication factor for stressed VaR are set by APRA, subject to a minimum of three. If an ADI using an internal model for calculating its TFC capital requirement does not adequately satisfy the requirements set out in this Attachment and the trading book requirements set out in Attachment A, but APRA does not consider the failure to satisfy those requirements material enough to withdraw model approval, APRA may, in writing, determine a multiplication factor higher than three. The plus factor, which ranges between zero and one inclusive, will depend on the *ex post* performance of the ADI's internal model, as determined by back-testing of the VaR measure (refer to paragraphs 81 to 87 of this Attachment).

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4. An ADI that does not have approval from APRA to use an internal model to calculate its specific risk capital charge must calculate the specific risk capital charge using the standard method (refer to Attachment B).

5. If an ADI's internal model does not fit the VaR framework, the ADI may seek approval under paragraph 1 of this Attachment to use an alternative approach. In deciding whether to approve an alternative approach, APRA will consider whether the internal model adequately captures the risks involved and identifies the capital needed to support those risks in a comparable manner.

6. Unless required to do otherwise by APRA:

   (a) an ADI that has market-related activities in Australia and offshore branches (offshore Level 1 sites) and manages those market-related activities centrally may, for the purpose of calculating its Level 1 TFC capital requirement using the internal model approach, allow for netting of positions that have been taken within the ADI, whether in Australia or an offshore Level 1 site, and risk diversification between positions that have been taken by the ADI, whether within Australia or an offshore Level 1 site ('Level 1 globally diversified VaR calculation'); and

   (b) an ADI that has market-related activities in Australia and offshore Level 2 sites (offshore branches or offshore subsidiaries) and manages those market-related activities centrally may, for the purpose of calculating its Level 2 TFC capital requirement using the internal model approach, allow for netting of positions that have been taken within the group comprising the entities in Australia and the offshore Level 2 sites and risk diversification between positions that have been taken within the group comprising the entities in Australia and the offshore Level 2 sites ('Level 2 globally diversified VaR calculation');

   subject to the following conditions:

   (c) positions taken in an offshore Level 2 site may only be included in a globally diversified VaR calculation if the position-taking of that site is monitored by the ADI's Australian office on a daily basis;

   (d) positions must not be included in a globally diversified VaR calculation where there are obstacles to the quick repatriation of profits from a foreign subsidiary or branch or from offshore transactions taken by the ADI itself; and

   (e) positions must not be included in a globally diversified VaR calculation where there are legal and procedural difficulties in carrying out the timely management of risks on a consolidated basis.

   Where the positions in an offshore Level 2 site are not included in a globally diversified VaR calculation, an ADI must calculate the VaR for that offshore Level 2 site separately. The ADI must calculate the total VaR as the sum of the globally diversified VaR and the VaRs for the offshore Level 2 site.

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General criteria

7. An ADI using an internal model for regulatory capital purposes must:

   (a) have a market risk management strategy that is conceptually sound and implemented with integrity;

   (b) have sufficient numbers of staff skilled in the use of sophisticated models in the trading, risk control, audit and back-office areas;

   (c) have a proven track record of reasonable accuracy in measuring risk; and

   (d) regularly conduct stress tests.

8. An ADI must also be able to participate in testing exercises to provide any additional information required to satisfy APRA of the adequacy of the internal model (both prior to model approval and subsequently, if APRA wishes to review the internal model).

Qualitative standards

9. An ADI must have an independent risk control unit that is responsible for the design and implementation of the ADI's market risk management system. The risk control unit must produce and analyse daily reports on the output of the ADI's risk measurement model, including an evaluation of limit utilisation. This risk control unit must be independent from business trading and other risk-taking units and must report directly to senior management of the ADI.

10. The risk control unit must conduct a back-testing program at least quarterly that complies with the minimum requirements in paragraphs 81 to 87 of this Attachment.

11. The Board, or a Board committee, and senior management of an ADI must be actively involved in the risk control process and must treat risk control as an essential aspect of the business, to which significant resources need to be devoted. The daily reports prepared by the independent risk control unit must be reviewed by a level of management with sufficient seniority and authority to enforce both reductions of positions taken by individual traders and reductions in the ADI's overall risk exposure.

12. An ADI's internal market risk measurement model must be closely integrated into the day-to-day risk management process of the ADI. Accordingly, the output of the model must be an integral part of the process of planning, monitoring and controlling the ADI's market risk profile.

13. An ADI's market risk measurement system must be used in conjunction with internal trading and exposure limits. An ADI's trading limits must be related to the ADI's VaR measurement model in a manner that is consistent over time and that is well understood by both traders and senior management.

14. An ADI must have a routine and robust program of stress testing as a supplement to the risk analysis based on the day-to-day output of the risk measurement model.

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The results of stress testing exercises must be used in the internal assessment of capital adequacy and reflected in the policies and limits set by management and the Board, or Board committee. The results of stress testing must be routinely communicated to senior management and, periodically, to the ADI's Board, or a Board committee.

15. An ADI's risk measurement system must be well documented. An ADI must have a routine for ensuring compliance with a documented set of internal policies, controls and procedures concerning the operation of the risk measurement system.

16. An ADI must ensure that an independent review of the risk measurement system and overall risk management process is carried out initially (i.e. at the time when model approval is sought) and then regularly as part of the ADI's internal audit process. This review must be conducted by functionally independent, appropriately trained and competent personnel, and must take place at least once every three years or when a material change is made to the framework. The review must cover the activities of both the business trading units and the independent risk control unit and must, at a minimum, specifically address the:

    (a) scope of market risks captured by the risk measurement model;

    (b) integrity of the management information system;

    (c) accuracy and completeness of position data;

    (d) verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources;

    (e) accuracy and appropriateness of volatility and correlation assumptions, proxy assumptions and (if using the historical simulation approach) calculations of historical rate movements;

    (f) accuracy of valuation and risk sensitivity calculations;

    (g) verification of the model's accuracy through frequent back-testing;

    (h) approval process for risk pricing models and valuation systems used by front- and back-office personnel;

    (i) validation of any significant change in the risk measurement process;

    (j) adequacy of the documentation of the risk management system and process;

    (k) organisation of the risk control unit;

    (l) integration of market risk measures into daily risk management; and

    (m) process used to produce the calculation of market risk capital.

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Specification of market risk factors

17. An ADI must specify, in its risk management system, an appropriate set of market risk factors (market rates and prices that affect the value of the ADI's market-related positions) that are sufficient to capture the risks inherent in the ADI's portfolio of on-balance sheet and off-balance sheet trading positions.

18. The VaR model must capture nonlinearities beyond those inherent in options and other relevant products (e.g. mortgage-backed securities, tranched exposures or n^{th} loss positions), as well as correlation risk and basis risk (e.g. between credit default swaps and bonds).

19. Where a risk factor is incorporated in a pricing model but not in the VaR model, the ADI must justify this omission to APRA's satisfaction. An ADI must also justify, to APRA's satisfaction, that all proxies used in the VaR model show a good track record for the actual position held (i.e. an equity index for a position in an individual stock).

Interest rates

20. An ADI must specify a set of risk factors corresponding to interest rates in each currency in which the ADI has interest rate sensitive on-balance sheet or off-balance sheet trading book positions. The number of risk factors used must be driven by the nature of the ADI's trading strategies. For material exposures to interest rate movements in the major currencies and markets, an ADI must model the yield curves for those currencies using a minimum of six risk maturity segments.

21. An ADI must specify separate risk factors to capture credit spread risk (e.g. between government bonds, corporate bonds and swaps).

Equity prices

22. An ADI must specify risk factors corresponding to each of the equity markets to which it has material positions.

Exchange rates (including gold)

23. An ADI must specify risk factors corresponding to the exchange rate between the domestic currency and individual foreign currencies in which its positions are denominated.

Commodity prices

24. An ADI must specify risk factors corresponding to each of the commodity markets in which it holds material positions.

25. An ADI's commodity risk factors must, at a minimum, encompass:

    (a) directional risk, to capture the exposure from changes in spot prices arising from net open positions;

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(b) forward gap and interest rate risks, to capture the exposure to changes in forward prices; and

(c) basis risk, to capture the exposure to changes in the price relationships between two similar, but not identical, commodities.

26. For more active trading, an ADI's model must also take into account the variation in the 'convenience yield'[42] between derivatives positions, such as forwards and swaps, and cash positions in the commodity.

Option prices

27. An ADI that may take option positions must specify risk factors corresponding to the implied volatilities of those options, to capture the vega risk of those positions.

Quantitative standards

28. An ADI with approval to use an internal model must comply with the quantitative criteria outlined in paragraphs 29 to 34 of this Attachment for the purpose of calculating its capital charge. This does not preclude an ADI from imposing more stringent criteria if it wishes to do so.

29. VaR must be calculated on a daily basis, using a 99 per cent, one-tailed confidence interval and a 10-day holding period. An ADI which uses VaR numbers calculated according to a shorter holding period scaled up to ten days must justify the reasonableness of its approach to APRA's satisfaction

30. The historical observation period (sample period) chosen for calculating VaR must have a minimum length of one year. An ADI using a weighting scheme or other method for the historical observation period cannot have a weighted-average time lag of the individual observations of less than six months[43]. APRA may require an ADI to calculate its VaR using a shorter observation period if APRA's considers this is justified by a significant upsurge in price volatility.

31. An ADI must update its data sets at least monthly and must reassess them whenever market prices are subject to material changes. An ADI must have processes in place to update their data sets more frequently.

32. An ADI may only recognise empirical correlations within and across broad risk categories if approved in writing by APRA

33. An ADI's model must accurately capture the unique risks associated with options within each of the broad risk categories, in particular the non-linear price characteristics of option positions.

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42 The convenience yield reflects the benefits from direct ownership of the physical commodity (e.g. the ability to profit from temporary market shortages), and is affected both by market conditions and by factors such as physical storage costs.

43 An ADI may calculate the VaR estimate using a weighting scheme that is not fully consistent with the requirements of paragraph 30 as long as that method results in a capital charge at least as conservative as that calculated according to paragraph 30.

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34. The stressed VaR measure must be calculated using a 10-day, 99th percentile, one-tailed confidence interval value-at-risk measure of the current portfolio, with VaR model inputs calibrated to historical data from a continuous 12-month period of significant financial stress relevant to the ADI's portfolio. The choice of historical period is subject to APRA approval, and the ADI must review the appropriateness of the choice as part of its regular model validation process. This stressed VaR must be calculated at least weekly.

Stress testing

35. An ADI that uses the internal model approach to meet market risk capital requirements must have a comprehensive stress testing program.

36. An ADI's stress scenarios must cover a range of factors that can create extraordinary losses or gains in trading portfolios, or make the control of risk in those portfolios very difficult. Stress tests must shed light on the impact of such events on positions that display both linear and non-linear price characteristics (such as options and instruments that have option-like characteristics).

37. An ADI's stress tests must be both quantitative and qualitative, incorporating both market risk and liquidity aspects of market disturbances. Quantitative criteria must identify plausible stress scenarios to which an ADI could be exposed. Qualitative criteria must emphasise that the two major goals of stress testing are to evaluate the capacity of the ADI's capital to absorb potential large losses and to identify steps the ADI can take to reduce its risk and conserve capital.

38. An ADI must combine the use of supervisory stress scenarios with an internally developed stress testing program that reflects the risk characteristics of the ADI's portfolio. The ADI must report to APRA information on stress testing as required under *Reporting Standard ARS 116.0 Market Risk*, and as outlined in paragraph 39 of this Attachment.

39. An ADI must also develop its own stress tests that it identifies as most adverse based on the characteristics of its portfolio. The ADI must provide APRA with a description of the methodology used to select and to carry out stress tests and include this in the description of the ADI's management systems. The stress tests must also address:

    (a) illiquidity/gapping of prices;

    (b) concentrated positions (in relation to market turnover);

    (c) one-way markets;

    (d) non-linear products/deep out-of-the money positions;

    (e) events and jumps-to-defaults; and

    (f) other risks that may not be captured appropriately in VaR (e.g. recovery rate uncertainty, implied correlations, or skew risk).

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The market shocks applied in the tests must reflect the nature of portfolios and the time it could take to hedge or manage risks under severe market conditions.

40. An ADI must ensure that the results of the stress tests are reviewed periodically by senior management and reflected in the policies and limits set by management and the Board, or Board committee.

Model review

41. When reviewing an internal model (both prior to and after model approval), APRA will consider whether:

    (a) the internal validation processes are operating in a satisfactory manner;

    (b) the formulae used in the calculation process and for the pricing of options and other complex instruments are validated by qualified parties, who are independent from the trading area and not involved in the development or implementation of those formulae;

    (c) the structure of the internal model is adequate with respect to the ADI's activities and geographical coverage;

    (d) the results of the ADI's back-testing of its internal measurement system ensure the model provides a reliable measure of potential losses over time;

    (e) data flows and processes associated with the risk measurement system are transparent and accessible, in that the model's specifications and parameters can be easily accessed; and

    (f) the ADI has processes to ensure that its internal models have been adequately validated by suitably qualified parties independent of the development process to ensure that they are conceptually sound and adequately capture all material risks. This validation must be conducted when the model is initially developed and when any significant changes are made to the model.

42. An ADI must validate its internal models on a periodic basis but especially where there have been any significant structural changes in the market or changes to the composition of the portfolio that might lead to the model no longer being adequate. As techniques and best practices evolve, an ADI must avail itself of these advances. Apart from back-testing, model validation must, at a minimum, also include:

    (a) tests to demonstrate that any assumptions made within the internal model are appropriate and do not underestimate or overestimate risk;

    (b) the use of additional back-tests; and

    (c) the use of hypothetical portfolios to ensure that the model can account for particular structural features that may arise.

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Treatment of specific risk

43. An ADI that uses an internal model to calculate its regulatory capital in respect of general market risk may apply to APRA to use an internal model to calculate its specific risk capital requirement for equities and interest rate risk positions other than securitisation exposures and n^{th}-to-default credit derivatives. An ADI using an internal model to calculate its specific risk capital requirement must comply with the criteria set out in paragraphs 7 to 16, 28 to 34, and 44 to 48 of this Attachment. An ADI using an internal model to calculate its specific risk capital requirement for interest rate risk positions other than securitisation exposures and n^{th}-to-default credit derivatives must also comply with the criteria set out in paragraphs 49 to 80 of this Attachment.

44. An ADI's internal model used to calculate the specific risk capital requirement must:

    (a) explain the historical price variation in the portfolios concerned;

    (b) capture concentrations, resulting in higher capital charges for portfolios with higher concentrations, and be sensitive to changes in portfolio composition;

    (c) be robust to an adverse environment;

    (d) be validated through back-testing designed to assess whether both specific and general market risks are being accurately captured;

    (e) capture name-related basis risk; and

    (f) capture event risk[44].

45. An ADI's model must conservatively assess the risk arising from less liquid positions and/or positions with limited price transparency under realistic market scenarios. An ADI may only use proxies where available data are insufficient or do not reflect the true volatility of a position or portfolio, and only if the proxies are appropriately conservative.

Back-testing for specific risk models

46. An ADI using an internal model to measure specific risk must conduct back-testing to assess whether specific risk is being accurately captured. To validate its specific risk estimates, the ADI must perform separate back-tests using daily data on sub-portfolios subject to specific risk, being traded debt and equity positions. If an ADI decomposes its trading portfolio into finer categories (e.g. emerging markets and traded corporate debt), the ADI may retain these distinctions for sub-portfolio back-testing purposes. The ADI, however, is required to commit to a sub-portfolio structure; hence, changes to the sub-portfolio structure must be

[44] An ADI need not capture default and migration risks for positions subject to the incremental risk capital charge. For equity positions, events that are reflected in large changes or jumps in prices must be captured, e.g. merger break-ups/takeovers. In particular, an ADI must consider issues related to survivorship bias.

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agreed with APRA and be made only where there is a business case for such a change.

47. An ADI must have a process to analyse exceptions identified through the back-testing of specific risk to ensure that it can correct its models of specific risk in the event that they become inaccurate.

48. An ADI with an unacceptable specific risk model (i.e. where the back-testing results fall within the red zone described in paragraph 86 of this Attachment) must take immediate action to improve the model and to ensure that there is a sufficient capital buffer to absorb the risk that the back-test showed had not been adequately captured.

Incremental risk charge

49. An ADI that uses an internal model to calculate regulatory capital for interest rate specific risk must have an approach to capture the regulatory capital default and migration risks in positions subject to a capital charge for specific interest rate risk, with the exception of securitisation positions and n^{th}-to-default credit derivatives that are incremental to the risk captured by the VaR-based calculation, as specified in paragraph 1 of this Attachment.

50. An ADI using an internal model to calculate its incremental risk charge must comply with the criteria set out in paragraphs 51 to 76 and 80 of this Attachment. An ADI that does not capture the incremental default risk through an internally developed approach must use the specific risk capital charges under the standard method (refer to Attachments B and D).

51. The IRC encompasses all positions subject to a capital charge for specific interest rate risk according to the internal models approach to specific market risk but not subject to the treatment outlined in paragraphs 11 to 19 of Attachment B, regardless of their perceived liquidity.

52. With APRA approval, an ADI can choose consistently to include all listed equity, and derivatives positions based on listed equity, of a desk in its incremental risk model when such inclusion is consistent with how the ADI internally measures and manages this risk at the trading desk level. If equity securities are included in the computation of incremental risk, default is deemed to occur if the related debt defaults (as defined in paragraph 72 of Attachment D to APS 113).

53. An ADI is not permitted to incorporate into its IRC model any securitisation or re-securitisation positions, even when these positions are viewed as hedging underlying credit instruments held in the trading book.

54. For IRC-covered positions, the IRC captures:

    (a) Default risk. This means the potential for direct loss due to an obligor's default as well as the potential for indirect losses that may arise from a default event;

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(b) Credit migration risk. This means the potential for direct loss due to an internal/external rating downgrade or upgrade as well as the potential for indirect losses that may arise from a credit migration event.

IRC soundness standard comparable to IRB

55. For all IRC-covered positions, an ADI's IRC model must measure losses due to default and migration at the 99.9 per cent confidence interval over a capital horizon of one year, taking into account the liquidity horizons applicable to individual trading positions or sets of positions. Losses caused by broader market-wide events affecting multiple issues/issuers are encompassed by this definition.

56. For each IRC-covered position an ADI's IRC model must also capture the impact of rebalancing positions at the end of their liquidity horizons so as to achieve a constant level of risk over a one-year capital horizon. The model may incorporate correlation effects among the modelled risk factors, subject to validation standards set forth in APS 113. The trading portfolio's IRC equals the IRC model's estimate of losses at the 99.9 per cent confidence level.

Constant level of risk over one-year capital horizon

57. An ADI's IRC model must be based on the assumption of a constant level of risk over the one-year capital horizon.

58. This constant level of risk assumption implies that an ADI rebalances, or rolls over, its trading positions over the one-year capital horizon in a manner that maintains the initial risk level, as indicated by a metric such as VaR or the profile of exposure by credit rating and concentration. This means incorporating the effect of replacing positions whose credit characteristics have improved or deteriorated over the liquidity horizon with positions that have risk characteristics equivalent to those that the original position had at the start of the liquidity horizon. The frequency of the assumed rebalancing must be governed by the liquidity horizon for a given position.

59. Rebalancing positions does not imply, as the IRB approach for the banking book does, that the same positions will be maintained throughout the capital horizon. However, an ADI may elect to use a one-year constant position assumption, as long as it does so consistently across all portfolios.

Liquidity horizon

60. The liquidity horizon represents the time required to sell the position or to hedge all material risks covered by the IRC model in a stressed market. The liquidity horizon must be measured under conservative assumptions and should be sufficiently long that the act of selling or hedging, in itself, does not materially affect market prices. The determination of the appropriate liquidity horizon for a position or set of positions may take into account an ADI's internal policies relating to, for example, prudent valuation (as per the prudent valuation guidance

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of Attachment A to APS 111), valuation adjustments[45] and the management of stale positions.

61. The liquidity horizon for a position or set of positions has a floor of three months.

62. An ADI must use conservative assumptions regarding the liquidity horizon for non-investment-grade positions until further evidence is gained regarding the market's liquidity during systematic and idiosyncratic stress situations. An ADI must also apply conservative liquidity horizon assumptions for products, regardless of rating, where either (i) secondary market liquidity is not deep, particularly during periods of financial market volatility and investor risk aversion; or (ii) the product is from a rapidly growing class that has not been tested in a downturn.

63. An ADI can assess liquidity by position or on an aggregated basis ('buckets'). If an aggregated basis is used[46], the aggregation criteria would be defined in a way that meaningfully reflects differences in liquidity.

64. The liquidity horizon must be greater for positions that are concentrated, reflecting the longer period needed to liquidate such positions.

65. The liquidity horizon for a securitisation warehouse must be longer than three months, and reflect the time to build, sell and securitise the assets, or to hedge the material risk factors, under stressed market conditions.

Correlations and diversification

Correlations between defaults and migrations

66. An ADI's IRC model must include the impact of clustering of default and migration events that may arise as a result of correlations between default and migration events among obligors.

Correlations between default or migration risks and other market factors

67. An ADI may not include the impact of diversification between default or migration events and other market variables in the computation of capital for incremental risk. Accordingly, the capital charge for incremental default and migration losses is added to the VaR-based capital charge for market risk.

Concentration

68. An ADI's IRC model must appropriately reflect issuer and market concentrations. Thus, other things being equal, a concentrated portfolio should attract a higher capital charge than a more granular portfolio (refer to paragraph 64). Concentrations that can arise within and across product classes under stressed conditions must also be reflected.

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45 For establishing prudent valuation adjustments, refer to Attachment A to APS 111.

46 For example, investment-grade European corporate exposures not part of a core CDS index.

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Risk mitigation and diversification effects

69. Within an ADI's IRC model, exposure amounts may be netted only when long and short positions refer to the same financial instrument. Otherwise, exposure amounts must be captured on a gross (i.e. non-netted) basis. Thus, hedging or diversification effects associated with long and short positions involving different instruments or different securities of the same obligor ('intra-obligor hedges'), as well as long and short positions in different issuers ('inter-obligor hedges'), may not be recognised through netting of exposure amounts. Rather, such effects may only be recognised by capturing and modelling separately the gross long and short positions in the different instruments or securities.

70. An ADI's IRC model must include the impact of significant basis risks by product, seniority in the capital structure, internal or external rating, maturity, vintage for offsetting positions as well as differences between offsetting instruments, such as different payout triggers and procedures.

71. If an instrument has a maturity shorter than the liquidity horizon or if a maturity longer than the liquidity horizon is not contractually assured, an ADI's IRC model must, where material, include the impact of potential risks that could occur during the interval between the maturity of the instrument and the liquidity horizon.

72. For trading book risk positions that are typically hedged via dynamic hedging strategies, a rebalancing of the hedge within the liquidity horizon of the hedged position may also be recognised. Such recognition is only admissible if the ADI (i) chooses to model rebalancing of the hedge consistently over the relevant set of trading book risk positions, (ii) demonstrates that the inclusion of rebalancing results in a better risk measurement, and (iii) demonstrates that the markets for the instruments serving as hedge are liquid enough to allow for this kind of rebalancing even during periods of stress. Any residual risks resulting from dynamic hedging strategies must be reflected in the capital charge. An ADI must validate its approach to capture such residual risks to APRA's satisfaction.

Optionality

73. An ADI's IRC model must include the nonlinear impact of options and other positions with material nonlinear behaviour with respect to price changes. The ADI must also have due regard to the amount of model risk inherent in the valuation and estimation of price risks associated with such products.

Validation

74. In designing, testing and maintaining their IRC models an ADI must evaluate conceptual soundness and conduct ongoing monitoring, including process verification and benchmarking, and outcomes analysis. Some factors that must be considered in the validation process include:

    (a) liquidity horizons must reflect actual practice and experience during periods of both systematic and idiosyncratic stresses;

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(b) the IRC model for measuring default and migration risks over the liquidity horizon must take into account objective data over the relevant horizon and include comparison of risk estimates for a rebalanced portfolio with that of a portfolio with fixed positions;

(c) correlation assumptions must be supported by analysis of objective data in a conceptually sound framework. If an ADI uses a multi-period model to compute incremental risk, it must evaluate the implied annual correlations to ensure they are reasonable and in line with observed annual correlations. An ADI must validate that its modelling approach for correlations is appropriate for its portfolio, including the choice and weights of its systematic risk factors. An ADI must document its modelling approach so that its correlation and other modelling assumptions are transparent to supervisors; and

(d) owing to the high confidence standard and long capital horizon of the IRC, robust direct validation of the IRC model through standard back-testing methods at the 99.9 per cent/one-year soundness standard will not be possible. Accordingly, validation of an IRC model necessarily must rely more heavily on indirect methods including, but not limited to, stress tests, sensitivity analyses and scenario analyses, to assess its qualitative and quantitative reasonableness, particularly with regard to the model's treatment of concentrations. Such tests must not be limited to the range of events experienced historically. An ADI must agree its set of validation procedures with APRA.

Use of internal risk measurement models to compute the IRC

75. The approach that an ADI uses to measure the IRC is subject to the 'use test'. Specifically, the approach must be consistent with the ADI's internal risk management methodologies for identifying, measuring, and managing trading risks.

76. Where an ADI's internal approach for measuring the IRC does not satisfy all requirements of paragraphs 49 to 75 of this Attachment, the ADI must demonstrate that the resulting internal capital charge would deliver a charge at least as high as the charge produced by a model that directly applies the supervisory principles set out in this Attachment.

Comprehensive risk measure

77. An ADI that is active in buying and selling products that meet the criteria for inclusion in the correlation trading portfolio (refer to paragraph 15 of Attachment B) may apply to APRA to use an internal model to calculate its specific risk capital requirement for its correlation trading portfolio in an internally developed approach that adequately captures not only incremental default and migration risks, but all price risks ('the comprehensive risk approach'). The value of such products is subject in particular to the following risks which must be adequately captured:

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(a) the cumulative risk arising from multiple defaults, including the ordering of defaults, in tranched products;

(b) credit spread risk, including the gamma and cross-gamma effects;

(c) volatility of implied correlations, including the cross effect between spreads and correlations;

(d) basis risk, including both:

(i) the basis between the spread of an index and those of its constituent single names; and

(ii) the basis between the implied correlation of an index and that of bespoke portfolios;

(e) recovery rate volatility, as it relates to the propensity for recovery rates to affect tranche prices; and

(f) to the extent the comprehensive risk measure incorporates benefits from dynamic hedging, the risk of hedge slippage and the potential costs of rebalancing such hedges.

The approach must meet all of the requirements specified in paragraphs 55, 56, 78 and 79 of this Attachment. Exposures for which the ADI does not meet the due diligence requirements set out in paragraph 11 of Attachment B must be risk-weighted at 1250 per cent (i.e. a 100 per cent risk capital charge is applied) in accordance with that paragraph, and may not be included in the comprehensive risk approach. For the exposures that the ADI does incorporate in its comprehensive risk approach, the ADI will be required to subject them to a capital charge equal to the higher of the capital charge according to this internally developed approach and eight per cent of the capital charge for specific risk according to the standardised measurement. It will not be required to calculate an incremental risk charge for these positions. It must, however, incorporate them in both the VaR and stressed VaR measures.

78. For an ADI to apply the comprehensive risk approach for calculating capital, it must:

(a) have sufficient market data to ensure that it fully captures the salient risks of these exposures in its comprehensive risk measure in accordance with the standards set forth above;

(b) demonstrate (e.g. through back-testing) that its risk measures can appropriately explain the historical price variation of these products; and

(c) ensure that it can separate the positions for which it holds approval to incorporate them in its comprehensive risk measure from those positions for which it does not hold this approval.

79. An ADI applying the comprehensive risk approach must report to APRA information on comprehensive risk stress testing, including comparisons with the

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capital charges implied by the ADI's internal model for estimating comprehensive risks, as required under *Reporting Standard ARS 116.0 Market Risk*. The ADI must also apply these stress scenarios at least weekly, and any instances where the stress tests indicate a material shortfall of the comprehensive risk measure must be reported to APRA in a timely manner. Based on these stress testing results, or if an ADI does not adequately meet the requirements of paragraphs 77 and 78, APRA may impose a supplemental capital charge against the correlation trading portfolio, to be added to the ADI's internally modelled capital requirement.

Frequency of calculation

80. An ADI that uses an internal model to calculate regulatory capital for the incremental risk measure and/or the comprehensive risk approach must calculate the measure(s) at least weekly, or more frequently as directed by APRA. The capital charge for incremental risk is given by the maximum of:

    (a) the average of the incremental risk measures over 12 weeks; and

    (b) the most recent incremental risk measure.

    The capital charge for comprehensive risk is given by the maximum of:

    (a) the average of the comprehensive risk measures over 12 weeks; and

    (b) the most recent comprehensive risk measure.

Framework for the use of back-testing

81. An ADI's back-testing program must consist of a periodic comparison of its daily VaR measure (based on a one-day holding period) with the realised daily profit or loss ('trading outcome'). The program must include a formal evaluation of instances where trading outcomes are not covered by the risk measures (termed 'exceptions') on at least a quarterly basis, using the most recent twelve months of VaR and profit data. The ADI must document all of the exceptions generated from its ongoing back-testing program, including an explanation for the exceptions. An ADI must have the capacity to perform back-testing analysis both at the level of the whole portfolio and at the level of sub-portfolios or books or that contain material risk.

82. An ADI must perform back-tests using both actual trading outcomes and hypothetical trading outcomes. Hypothetical trading outcomes are calculated by applying the day's price movements to the previous day's end-of-day portfolio. When performing back-tests using actual trading outcomes, an ADI must use clean trading outcomes, i.e. actual trading outcomes adjusted to remove the impact of income arising from factors other than market movements alone, such as fees and commissions, brokerage, additions to and releases from reserves which are not directly related to market risk (e.g. administration reserves).

83. An ADI must calculate the number of exceptions for use by APRA in developing its supervisory response. For this purpose, the ADI must use either the

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hypothetical trading outcomes or clean trading outcomes as determined, in writing, by APRA. The plus factor to be added to the multiplication factor will be based on the number of exceptions out of the most recent 250 trading days. These plus factors are outlined in Table 11.

Table 11: Plus factors

Zone	Number of exceptions	Plus factor
Green Zone	4 or less	0.00
Yellow Zone	5	0.40
	6	0.50
	7	0.65
	8	0.75
	9	0.85
Red Zone	10 or more	1.00

84. If the results of an ADI's back-testing fall within zero to four exceptions (the green zone), the ADI is not required to add a plus factor to the multiplication factor.

85. If the results of the ADI's back-testing fall within five to nine exceptions (the yellow zone), APRA may, in writing, require the ADI to add a plus factor in accordance with Table 11.

86. If an ADI's back-testing results in 10 or more exceptions (the red zone), the ADI must submit to APRA analysis which identifies the causes for each of the exceptions, and must also add a plus factor of one to the multiplication factor, unless otherwise directed by APRA.

87. APRA, in writing, may also require the ADI to take appropriate action in addition to the plus factor, depending on the nature of the exceptions. Where the exceptions arise from:

    (a) issues with the basic integrity of the model, APRA may require the ADI to make appropriate corrections to the model or, if there are severe problems relating to the basic integrity of the model, APRA may revoke the ADI's model approval under paragraph 21 of this Prudential Standard;

    (b) the need for improvement in the accuracy of the model, APRA may require the ADI to improve its risk measurement techniques; and

    (c) unanticipated market movements, APRA may require the ADI to recalculate its VaR using volatilities and correlations based on a shorter historical observation period if the shifts in volatilities and/or correlations are deemed to be permanent.

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Attachment D

Treatment of credit derivatives in the trading book

1. An ADI must determine the capital to be held against credit derivative instruments in the trading book in accordance with this Attachment.

2. An ADI must include in its trading book total-rate-of-return swaps, except those that have been transacted to hedge a banking book credit exposure in accordance with the requirements in Attachment J to APS 112. An ADI must include open short positions in credit derivatives in its trading book. APRA may, in writing, exempt the ADI from this requirement on a one-off approval basis. When determining whether other credit derivative transactions should be allocated to the banking or trading book, the ADI must consider the trading book requirements outlined in Attachment A to this Prudential Standard. Before including other credit derivative transactions (i.e. transactions other than total-rate-of-return swaps and open short positions) in its trading book, the ADI must undertake a written assessment setting out its reasons for doing so. The ADI must provide its written assessment to APRA upon request. APRA may make a determination requiring the ADI to allocate the transaction to the banking book where APRA considers that this is more appropriate given the nature of the transaction.

Application

3. This Attachment applies to single name credit-default swaps, certain total-rate-of-return swaps, cash-funded credit-linked notes and first- and second-to-default baskets. An ADI that transacts more complex credit derivatives that fall outside the scope of this Attachment must, prior to execution of the relevant credit derivative contract, undertake a written assessment of the appropriate regulatory capital treatment for the transaction. The ADI must provide its written assessment to APRA upon request. The ADI must apply the treatment set out in its written assessment unless APRA determines, in writing, an alternative methodology for calculating the regulatory capital treatment.

4. Where APRA considers that an ADI is undertaking significant credit derivative activity, as either a purchaser or seller of protection, such that large exposures and concentrations are a potential concern, APRA may, in writing, require the ADI to adopt an alternative capital treatment to that described in this Attachment.

5. An ADI may use either the standard method or, with APRA's approval, either an internal model or other method to measure the general market risk and specific risk charges on credit derivative positions in the trading book. This Attachment outlines the calculation of the capital charge for credit derivatives under the standard method. An ADI that wishes to use an internal risk measurement model to generate the capital requirement must obtain APRA's written approval.

General principles - General market risk

6. An ADI that uses the standard method must treat credit derivatives based on a single reference entity in the same way as interest-rate-related derivatives (refer

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to Attachment B) for the purposes of calculating a general market risk capital charge. Each credit derivative instrument must be broken down into a notional debt instrument, to reflect the interest rate or fee-paying leg (if regular fees are paid under the terms of the contract) and, where applicable, a position in the reference obligation.

7. An ADI must include these positions in the maturity ladder applicable to the currency of the cash flows and report at their market values.

General principles - Specific risk

8. Where the credit-event payment is defined as the par value of the reference obligation less its recovery value (i.e. the credit derivative is cash settled), an ADI must report for specific risk purposes the par value of the reference obligation. Where the credit-event payment is defined as a fixed amount, the ADI must report the fixed amount. Where there is payment of the par value of an obligation in exchange for its physical delivery, the ADI must report the par value of the obligation. In the latter two cases, the amount reported must reflect a position in the reference entity with maturity equal to the term to maturity of the credit derivative.

Credit-default swaps

9. If an ADI is a protection buyer in a credit-default swap, it must enter into the maturity ladder a short position in a notional debt instrument, where regular interest or fee cash flows are to be paid, to reflect the general market risk associated with those cash flows. The ADI must also calculate a specific risk capital charge on a short position in the reference entity.

10. If an ADI is a protection seller in a credit-default swap, it must enter into the maturity ladder a long position in a notional debt instrument, where regular interest or fee cash flows are to be received, to reflect the general market risk associated with those cash flows. The ADI must also calculate a specific risk capital charge on the long position in the reference entity.

Total-rate-of-return swaps

11. If an ADI is a protection buyer in a total-rate-of-return swap, it must enter into the maturity ladder a position in a notional debt instrument, where regular interest or fee cash flows are to be exchanged, to reflect the general market risk associated with those cash flows. General market risk and specific risk capital charges must also be calculated on the short position in the reference obligation.

12. If an ADI is a protection seller in a total-rate-of-return swap, it must enter into the maturity ladder a position in a notional debt instrument, where regular interest or fee cash flows are to be exchanged, to reflect the general market risk associated with those cash flows. General market risk and specific risk capital charges must also be calculated on the long position in the reference obligation.

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Cash-funded credit-linked notes

13. If an ADI is a protection buyer in a credit-linked note, it must enter into the maturity ladder a short position in the underlying interest rate instrument for general market risk purposes. The ADI must also calculate a specific risk capital charge on the short position in the reference entity.

14. If an ADI is a protection seller in a credit-linked note, it must enter into the maturity ladder a long position in the underlying interest rate instrument for general market risk purposes. The ADI must calculate a specific risk capital charge on the long position in the reference entity and the long position in the underlying interest rate instrument (i.e. the long position in the protection buyer).

N^{th}-to-default basket credit derivatives

15. If an ADI is a protection buyer in a first- or second-to-default basket, it must enter into the maturity ladder a short position in a notional debt instrument, where regular interest or fee cash flows are to be paid, to reflect the general market risk associated with those cash flows.

16. If an ADI is a protection seller in a first- or second-to-default basket, it must enter into the maturity ladder a long position in a notional debt instrument, where regular interest or fee cash flows are to be received, to reflect the general market risk associated with those cash flows.

17. An ADI must determine the capital charge for specific risk for an n^{th}-to-default credit derivative as follows:

    (a) The capital charge for specific risk for a first-to-default credit derivative is the lesser of (1) the sum of the specific risk capital charges for the individual reference credit instruments in the basket, and (2) the maximum possible credit event payment under the contract. Where an ADI has a risk position in one of the reference credit instruments underlying a first-to-default credit derivative and this credit derivative hedges the ADI's risk position, the ADI is allowed to reduce, with respect to the hedged amount, both the capital charge for specific risk for the reference credit instrument and that part of the capital charge for specific risk for the credit derivative that relates to this particular reference credit instrument. Where an ADI has multiple risk positions in reference credit instruments underlying a first-to-default credit derivative this offset is allowed only for that underlying reference credit instrument having the lowest specific risk capital charge.

    (b) The capital charge for specific risk for an n^{th}-to-default credit derivative with n greater than one is the lesser of (1) the sum of the specific risk capital charges for the individual reference credit instruments in the basket but disregarding the (n-1) obligations with the lowest specific risk capital charges; and (2) the maximum possible credit event payment under the contract. For n^{th}-to-default credit derivatives with n greater than 1 no offset of the capital charge for specific risk with any underlying reference credit instrument is allowed.

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(c) If an ADI is a protection seller, then where a first- or second-to-default basket product has an external credit assessment[47] from an ECAI, the ADI must calculate the specific risk capital charge using the rating of the derivative and apply the respective securitisation risk weights as specified in paragraphs 12 or 13 of Attachment B, as applicable.

(d) The capital charge against each net n^{th}-to-default credit derivative position applies irrespective of whether the ADI has a long or short position (i.e. obtains or provides protection).

Specific risk offsetting

18. An ADI may recognise full allowance for offsetting when the values of two legs (i.e. long and short) always move in the opposite direction and broadly to the same extent. This occurs where:

(a) the two legs consist of completely identical instruments; or

(b) a long cash position is hedged by a total rate of return swap (or *vice versa*) and there is an exact match between the reference obligation and the underlying exposure (i.e. the cash position).[48] In these cases, specific risk capital requirements do not apply to either side of the position.

19. An ADI may recognise an offset of 80 per cent when the value of two legs (i.e. long and short) always moves in the opposite direction but not broadly to the same extent. This would be the case when a long cash position is hedged by a credit-default swap or a credit-linked note (or *vice versa*) and there is an exact match in terms of the reference obligation, the maturity of both the reference obligation and the credit derivative, and the currency of the underlying exposure. In addition, key features of the credit derivative contract (e.g. credit-event definitions, settlement mechanisms) must not cause the price movement of the credit derivative to materially deviate from the price movements of the cash position. To the extent that the transaction transfers risk (i.e. taking account of restrictive payout provisions such as fixed payouts and materiality thresholds), an 80 per cent specific risk offset may be applied to the side of the transaction with the higher capital charge, while the specific risk requirement on the other side is zero.

20. An ADI may recognise a partial offset when the value of the two legs (i.e. long and short) usually moves in the opposite direction. This occurs where:

(a) the position is captured in paragraph 18(b) of this Attachment but there is an asset mismatch[49] between the reference obligation and the underlying exposure; nonetheless, the position meets the requirements for an asset mismatch to be allowed for credit risk mitigation purposes as set out in Attachment J to APS 112; or

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47 Refer to APS 112.

48 The maturity of the swap itself may be different from that of the underlying exposure.

49 Refer to Attachment J of APS 112 for the definition of this mismatch between the reference obligation and the underlying obligation.

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(b) the position is captured in paragraphs 18(a) or 19 of this Attachment but there is a currency or maturity mismatch[50] between the credit protection and the underlying asset; or

(c) the position is captured in paragraph 19 of this Attachment but there is an asset mismatch between the cash position and the credit derivative. However, the underlying asset is included in the (deliverable) obligations in the credit derivative documentation.

In each of these situations, rather than adding the specific risk capital requirements for each side of the transaction, an ADI may apply only the higher of the two capital requirements.

21. If an instrument does not comply with paragraphs 18, 19 or 20 of this Attachment, the ADI must assess a specific risk capital charge against both sides of the position.

[50] Refer to Attachment J of APS 112 for the definitions of currency mismatch and maturity mismatch. Currency mismatches are to feed into the normal reporting of foreign exchange risk.

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