



# Prudential Practice Guide

## **APG 112 – Standardised Approach to Credit Risk**

January 2013

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## About this guide

*Prudential Standard APS 112 Capital Adequacy: Standardised Approach to Credit Risk (APS 112)* sets out APRA's requirements of authorised deposit-taking institutions (ADIs) in relation to the measurement of credit risk for regulatory capital purposes. This prudential practice guide aims to assist ADIs in complying with those requirements and, more generally, to outline prudent practices in relation to the management and measurement of credit risk.

Not all the practices outlined in this prudential practice guide will be relevant for every ADI and some aspects may vary depending upon the size, complexity and risk profile of the ADI.

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## Claims on private sector entities

1. Attachment A of *Prudential Standard APS 112 Capital Adequacy: Standardised Approach to Credit Risk* (APS 112) specifies the risk-weight for claims on private sector counterparties. Typical examples of these claims include personal loans, leasing finance, bill acceptances drawn by private sector counterparties, credit cards, overdrafts, small business facilities and all other property loans (including loans secured against commercial property).

## Market-related off-balance sheet transactions

2. APS 112 requires regulatory capital for credit risk. For off-balance sheet market-related transactions, credit risk is the cost to an ADI of replacing the cash flow specified by the contract in the event of counterparty default. This will depend, among other things, on the maturity of the contract and on the volatility of rates underlying the instrument.
3. For the purposes of APS 112, examples of market-related off-balance sheet transactions include:
  - (a) interest rate contracts – single currency interest rate swaps, basis swaps, forward rate agreements, interest rate futures, interest rate options purchased and any other instruments of a similar nature;
  - (b) foreign exchange contracts (including contracts involving gold) – cross-currency swaps (including cross-currency interest rate swaps), forward foreign exchange contracts, currency futures, currency options purchased, hedge contracts and any other instruments of a similar nature;
  - (c) equity contracts – swaps, forwards, purchased options and similar derivative contracts based on individual equities or equity indices;

- (d) precious metal contracts (other than gold) – swaps, forwards, purchased options and similar derivative contracts based on precious metals such as silver, platinum and palladium;
- (e) other commodity contracts (other than precious metals) – swaps, forwards, purchased options and similar derivative contracts based on energy contracts, agricultural contracts, base metals (such as aluminum, copper and zinc) and any other non-precious metal commodity contracts; and
- (f) other market-related contracts – other contracts covering other items which give rise to credit risk, including credit derivatives.

4. APS 112 states that in the event that the stated amount of a contract is leveraged or enhanced by the structure of the transaction, an ADI must use the effective notional amount when calculating potential future credit exposure. An example of this would be a contract that has a stated notional amount of one million dollars with payments based on an internal rate of two times the bank bill rate. For capital adequacy purposes, this contract would have an effective notional amount of two million dollars.

## Non-market related off-balance sheet transactions

### Commitments

5. For the purpose of recognising a commitment for capital adequacy purposes, APRA generally considers that a commitment arises once an ADI makes a firm offer to a client, i.e. customer acceptance is not required. Therefore, a commitment arises once a letter of offer is provided to the client by the ADI.

6. In the case of commitments to provide residential mortgage loans, a long-standing concessional treatment exists since developments in the nature of residential mortgage lending have led to a situation where a significant proportion of the offers made by ADIs is not eventually accepted by customers. To accommodate this specific characteristic of residential mortgage lending, ADIs may assign a zero per cent credit conversion factor (CCF) to a commitment to provide a residential mortgage facility from the moment they issue a letter of offer up until the letter of offer is accepted or signed by the customer. Once the letter of offer has been signed or accepted by the customer, certain drawdown is considered to apply and, in accordance with Attachment B to APS 112, the exposure would attract a 100 per cent CCF.

### Irrevocable commitments

7. For the purpose of determining the appropriate CCF, APS 112 states that in the case of irrevocable commitments to provide off-balance sheet facilities, the original maturity must be measured from the commencement of the commitment up until the time the associated facility expires. An example of this would be an irrevocable commitment with an original maturity of six months to provide finance with a nine-month term. For capital adequacy purposes, this transaction would have an original maturity of 15 months.
8. APS 112 states that an ADI may use the lower of the two applicable CCFs where it has an irrevocable commitment to provide an off-balance sheet facility. An example of this would be where the ADI has an irrevocable commitment with an original maturity of six months to provide a guarantee in support of a counterparty for a period of nine months. For capital adequacy purposes, this transaction would attract a 50 per cent CCF applicable to the commitment.

### Credit conversion factors

9. APS 112 details the CCFs to be applied to non-market-related off-balance sheet transactions. The following transactions would generally be included in each category as follows:
  - (a) direct credit substitutes – irrevocable off-balance sheet obligations that carry the same credit risk as a direct extension of credit, such as an undertaking to make a payment to a third party in the event that a counterparty fails to meet a financial obligation or an undertaking to a counterparty to acquire a potential claim on another party in the event of default by that party (i.e. the risk of loss depends on the creditworthiness of the counterparty or the party against whom a potential claim is acquired).

Examples would include potential credit exposures arising from the issue of guarantees and credit derivatives (selling credit protection), confirmation of letters of credit, issue of standby letters of credit serving as financial guarantees for loans, securities and any other financial liabilities, and bills endorsed under bill endorsement lines (but which are not accepted by, or have the prior endorsement of, another ADI);

- (b) performance-related contingencies – contingent liabilities that involve an irrevocable obligation to pay a third party in the event a counterparty fails to fulfill or perform a contractual non-monetary obligation, such as the delivery of goods by a specified date (i.e. the risk of loss depends on a future event which need not necessarily be related to the creditworthiness of the counterparty involved).

Examples would include the issue of performance bonds, bid bonds, warranties, indemnities, and standby letters of credit in relation to a non-monetary obligation of a counterparty under a particular transaction;

- (c) trade-related contingencies – contingent liabilities arising from trade-related obligations that are secured against an underlying shipment of goods for both issuing and confirming ADIs.

Examples would include documentary letters of credit issued, acceptances on trade bills, shipping guarantees issued and any other trade-related contingencies;

- (d) lending of securities or posting of securities as collateral – exposures that arise from an ADI's lending of securities as collateral.

Examples would include repurchase agreements, reverse repurchase agreements, and securities lending/borrowing transactions;

- (e) assets sold with recourse – asset sales (to the extent that such assets are not included on-balance sheet) by an ADI where the holder of the asset is entitled to 'put' the asset back to the ADI within an agreed period or under certain prescribed circumstances, e.g. deterioration in the value or credit quality of the asset concerned.

This type of transaction would generally be risk-weighted according to the type of assets or the issuer of securities (as appropriate) and not according to the counterparty with whom the transaction is made, where the credit risk associated with the underlying asset that has been sold (temporarily with recourse) or purchased, remains with the ADI;

- (f) forward asset purchases – commitments to purchase at a specified future date and on pre-arranged terms, a loan, security or other asset from another party, including written put options on specified assets with the character of a credit enhancement. Where an ADI purchasing the asset has an unequivocal right to substitute cash settlement in place of accepting delivery of the asset and the price on settlement is calculated with reference to a general market price indicator (and not to the financial condition of any specific entity), the purchase could be treated as a market-related off-balance sheet transaction.

This type of transaction would generally be risk-weighted according to the type of assets or the issuer of securities (as appropriate) and not according to the counterparty with whom the transaction is made, where the credit risk associated with the underlying asset that has been sold (temporarily with recourse) or purchased, remains with the ADI. Written put options expressed in terms of market rates for currencies or financial instruments bearing no credit risk may be excluded from this type of transaction;

- (g) partly-paid shares and securities – any amounts owed on uncalled paid shares and securities held by an ADI that represent commitments with certain drawdown by the issuer at a future date.

This type of transaction would generally be risk-weighted according to the type of assets or the issuer of securities (as appropriate) and not according to the counterparty with whom the transaction is made, where the credit risk associated with the underlying asset which has been sold (temporarily with recourse) or purchased, remains with the ADI;

- (h) placements of forward deposits – transactions that relate to any agreement between an ADI and another party whereby the ADI will place a deposit at an agreed rate of interest with that party at a predetermined future date; and
- (i) note issuance and underwriting facilities – arrangements whereby a borrower may drawdown funds up to a prescribed limit over a predefined period by making repeated note issues to the market and where, should the issue prove unable to be placed in the market, the unplaced amount is to be taken up or funds made available by an ADI being committed as an underwriter of the facility.

## Residential mortgages

### Standard eligible mortgages

10. For the purposes of defining 'standard eligible mortgage', one of the criteria detailed in APS 112 is that the ADI has, prior to loan approval and documented as part of its origination and approval processes, assessed and verified the ability of borrowers to meet their repayment obligations. In general, this would require the ADI to assess and verify all material income sources and employment details of borrowers.
11. An additional criterion in the definition of standard eligible mortgages is that the ADI has valued any residential property offered as security. For this purpose, if an ADI accepts the purchase price or other means of valuation as being an indication of the value of the residential property offered as security in lieu of a professional valuation, good practice would mean that the lending or credit policy and procedures manual detail the basis for its use. APRA envisages that there would be clear guidelines on the circumstances under which the purchase price or other means of valuation are acceptable to the ADI as an indication of the property value as well as circumstances where a professional valuation of the property is required. APRA regards a professional valuation of a residential property as a valuation carried out by an independent accredited valuer nominated by the ADI. The lending or credit policy and procedures manual would document procedures for determining whether a professional valuation of one or more existing residential security properties is required in support of a new loan.
12. In assessing the marketability of properties securing standard eligible mortgages, the ADI could take into account factors such as whether the property is within residential or rural residential zoning or other evidence which can demonstrate that the property is likely to be readily sold (such as recent price and turnover data for similar properties in the same area or region). This would normally exclude remote rural residential properties or residential properties that could only be sold at a significant discount.

### Lending criteria

13. Where the ADI outsources any part of its credit assessment process for residential mortgages to a third party, prudent practice would generally mean the ADI has undertaken due diligence on all third parties it uses to make any lending decisions or assessments of borrower information on its behalf. A formal written agreement would typically be expected to be in place with the third party, along with audit and monitoring procedures to ensure compliance with agreed procedures.
14. Where security for residential mortgages is provided by a third party (i.e. a party other than the borrower), the ADI would be expected to ensure that the party understands fully the consequences of default on the loans and its legal obligations.

## Use of short-term and long-term ratings

### Inferred ratings from an issue-specific external credit assessment institution rating of another debt issued by a counterparty

15. APS 112 allows an ADI to use the solicited ratings of external credit assessment institutions (ECAIs) to determine the credit rating grades that correspond to risk-weights for counterparties and exposures. Where the ADI's claim does not have an issue-specific ECAI rating, APS 112 allows a credit rating grade for the ADI's claim to be inferred from, where available, an issue-specific ECAI rating of another issued debt of the counterparty. In order to infer such a rating, the ADI's claim would generally have to rank *pari passu* or be senior in all respects to the debt issued by the counterparty that has an issue-specific ECAI rating.

Where the risk-weight inferred from the issue-specific ECAI rating is higher than the risk-weight for unrated claims of the relevant kind, APRA envisages that the higher risk-weight would be used.

16. Where an ADI's claim on a counterparty does not have an issue-specific ECAI rating and the claim is subordinated to an issued debt of the same counterparty that does have an issue-specific ECAI rating, the ADI's claim may be assigned the risk-weight for unrated claims of the relevant kind, although this generally will not be appropriate if it produces a lower risk-weight than the risk-weight for the issue-specific ECAI rating. In the latter case, APRA envisages that the claim would be assigned the issue-specific ECAI rating of the rated claim.

### Inferred ratings from a counterparty's general issuer external credit assessment institution rating

17. Where an ADI's claim does not have an issue-specific ECAI rating or a rating cannot be inferred from another issue-specific ECAI rating of debt issued by the counterparty, APS 112 allows a credit rating grade to be inferred from, where available, the counterparty's general issuer ECAI rating. For this purpose, the ADI's claim would generally have to be a senior claim on the counterparty. If the risk-weight associated with the counterparty's general issuer ECAI rating is higher than the risk-weight for unrated claims of the relevant kind, APRA envisages that the higher risk-weight would be used.
18. It would be preferable for unrated subordinated claims against a counterparty to be assessed as unrated for risk-weighting purposes, unless this produces a lower risk-weight than that which would apply to a senior claim.

### Treatment of collateral

19. APS 112 states that a capital requirement will be applied to an ADI on both sides of a collateralised transaction. In practice, this would require regulatory capital for both sides of securities financing transactions as well as the posting of securities in connection with a derivative exposure or other borrowing.

20. APS 112 requires that, under the comprehensive approach to collateral, an ADI must use haircuts to adjust the value of the collateral in order to take into account possible future price fluctuation of the collateral. In calculating haircuts, an ADI must apply a minimum holding period of 20 business days to netting sets containing one or more trades involving either illiquid collateral or an over-the-counter (OTC) derivative that cannot be easily replaced, where both liquidity and ease of replacement are determined in the context of stressed market conditions. This situation would be characterised by the absence of continuously active markets where a counterparty would, within two or fewer days, obtain multiple price quotations that would not move the market or represent a price reflecting a market discount (in the case of collateral) or premium (in the case of an OTC derivative). Examples of situations where trades are deemed illiquid for this purpose include, but are not limited to, trades that are not marked daily and trades that are subject to specific accounting treatment for valuation purposes (e.g. OTC derivatives or repo-style transactions referencing securities whose fair value is determined by models with inputs that are not observed in the market).

### Qualitative standards for own-estimate haircuts

21. Where an ADI calculates its own-estimate haircuts, APS 112 requires an independent review of the risk measurement and management systems and processes. This review would generally include an assessment of:
  - (a) the integration of risk measures into daily risk management;
  - (b) the validation of any significant change in the risk measurement process;
  - (c) the accuracy and completeness of data;
  - (d) the verification of the consistency, timeliness and reliability of data sources used to run internal models, including the independence of such data sources; and
  - (e) the accuracy and appropriateness of volatility assumptions and measurement calculations.

## Recognised exchanges and clearing houses

22. For the purpose of APS 112, it will generally be appropriate to treat an exchange or clearing organisation as 'recognised' where it meets the following criteria:
- it is subject to authorisation, licensing or other means of recognition by a government or other competent authority;
  - it has rules, issued or approved, by the government or other competent authority defining the conditions:
    - for the operation of the exchange or clearing house;
    - for access to the exchange or clearing house; and
    - that must be satisfied by a contract before it can be dealt on the exchange or payment effected by the clearing house;
  - it has a clearing mechanism that provides for contracts dealt through the exchange or clearing house to be settled;
  - it functions regularly;
  - the exchange or clearing house has a prudent and frequent margining system, where relevant;
  - the clearing house guarantees settlement and the exchange requires settlement on a particular day, as applicable;
  - members of the exchange or clearing house are themselves subject to supervision by the exchange, clearing house or competent authority; and
  - the operations of the exchange or clearing house in turn are supervised by a government or other competent authority.

23. A recognised exchange or clearing house is to be distinguished from a qualifying central counterparty (QCCP). The required conditions for a CCP to be recognised as qualifying are set out in APS 112.

## Margin loans

24. APS 112 requires an ADI to risk-weight margin loans, unless they are deducted under paragraphs 15 and 16 of Attachment D to *Prudential Standard APS 111 Capital Adequacy: Measurement of Capital (APS 111)*. As a guide, credit risk mitigation techniques typically do not apply to retail products marketed as margin loans.

### Example: calculation of the counterparty credit default risk capital requirement

25. The calculation follows the following steps:
- paragraph 26: calculation of CEA (or exposure at default), before allowance for collateral;
  - paragraph 27: allowance for collateral, and any credit value adjustment (CVA) incurred to profit and loss in respect of that counterparty; and
  - paragraph 28: calculation of risk-weighted assets.
26. Calculation of CEA (or exposure at default), before allowance for collateral:
- assume for this example that the following table is the complete set of OTC transactions for an ADI, all of which are with the same counterparty, which is an ADI with a credit rating grade of 3. In this example, two trades are subject to an eligible netting agreement<sup>1</sup>.

Product class	Interest rates	Interest rates	Netting set total
Trade ID	A	B	
Netting set	1	1	1
Maturity (years)	2.0	1.5	
Notional (\$m)	100	150	
Mark-to-market (\$m)	-2.00	3.00	1.00

<sup>1</sup> Or, equivalently, are in the same netting set.

(b) the calculations for this portfolio are as follows:

Product class	IR	IR	Netting set total
Trade ID	A	B	
NCCE = $\max\{0, \sum \text{MTM}\}$ (\$m) <sup>2</sup>			1.00
GCCE = $\sum \max\{0, \text{MTM}\}$ (\$m) <sup>3</sup>	0.00	3.00	3.00
NGR = NCCE/GCCE <sup>3</sup>			0.333
CCF (%) <sup>4</sup>	0.5	0.5	
Add-on = Notional x CCF = PFCE <sub>gross</sub> (\$m) <sup>5</sup>	0.50	0.75	1.25
PFCE <sub>adjusted</sub> = PFCE <sub>gross</sub> x (0.4 + 0.6 x NGR)(\$m) <sup>6</sup>			0.75
CEA (before allowance for collateral) = NCCE + PFCE <sub>adjusted</sub> (\$m) <sup>7</sup>			1.75

(c) in the calculations above, NGR has been calculated on a counterparty-by-counterparty basis, based on NCCE/GCCE calculated for transactions subject to legally enforceable netting agreements, which in this example is the set of transactions in netting set 1;

(d) the total CEA (or exposure at default) before allowance for collateral is then \$1.75m.

27. Allowance for collateral and incurred CVA:

(a) assume for this example that the collateral held from the given counterparty comprises the following:

- (i) \$0.10m cash; and
- (ii) \$0.20m of 1.5 Year AAA rated RMBS;

(b) assuming the comprehensive approach to eligible collateral is used, the collateral amount net of haircut is calculated as follows:

Collateral type	Current value (\$m)	Haircut <sup>8</sup> (%)	Amount after haircut (\$m)
Cash	0.1	0	0.10
1.5 year AAA rated RMBS	0.2	8	0.184
Total			0.284

(c) the unadjusted CEA (CEA adjusted for collateral but not adjusted for incurred CVA) is then **\$1.750m - \$0.284m = \$1.466m.**

2 Refer to paragraph 29 of Attachment J to APS 112.

3 Refer to paragraph 33 of Attachment J to APS 112.

4 Refer to table 1 of Attachment B to APS 112.

5 Refer to paragraph 31 of Attachment J to APS 112.

6 Refer to paragraph 30 of Attachment J to APS 112.

7 Refer to paragraph 28 of Attachment J to APS 112.

8 Refer to table 10 of Attachment H to APS 112.

- (d) assume that the current incurred CVA in respect of the counterparty is \$1.00m. Then the CEA is calculated as **\$1.466m - \$1.00m = \$0.466m** (subject to a minimum of zero);
- (e) the following table summarises the steps above:

Calculation Step	(\$m)
MTM	1.00
PFCE <sub>adjusted</sub>	0.75
Collateral after haircut	(0.284)
Unadjusted CEA	1.466
Incurred CVA	(1.00)
CEA	0.466

Note that the unadjusted CEA (= \$1.466m) is to be used for the purposes of calculating the CVA capital charge.

28. Calculation of risk-weighted assets (RWA) for counterparty credit default risk capital charge:
- (a) for calculating the capital charge for credit risk, the CEA calculated above is then added to any other CEA in respect of that counterparty and subject to the risk-weight applicable for that counterparty;
- (b) the risk-weight applicable to this counterparty is 50 per cent<sup>9</sup>, and the RWA in respect of the counterparty credit default risk charge are calculated as: **\$0.466m x 50% = \$0.233m.**

## Example: calculations of the CVA risk capital charge

29. Calculation of CVA risk capital charge for one counterparty, without eligible CVA hedges:

Assume for this example that the OTC derivative exposure is the same as described in paragraph 26<sup>10</sup>:

- (a) from paragraph 27,  
**unadjusted CEA = \$1.466m;**
- (b) for credit rating grade 3, **w=1.0%**;
- (c) effective maturity is weighted average maturity of OTC derivatives

$$\text{(weighted by notional amount)} = \frac{100 \times 2.0 + 150 \times 1.5}{100 + 150} = 1.7 \text{ years};$$

- (d) discount factor =

$$\frac{1 - e^{-0.05 \times 1.7}}{0.05 \times 1.7} = 0.9587;$$

- (e) CVA risk capital charge

$$\begin{aligned} &= 2.33 \times w \times M \times D \times \text{CEA} \\ &= 2.33 \times 1.0\% \times 1.7 \times 0.9587 \times \$1.466\text{m} \\ &= \$55,670 \end{aligned}$$

30. Calculation of CVA risk capital charge for more than one counterparty, without eligible CVA hedges:

- (a) assume for this example that the ADI has OTC derivatives in place with counterparties, and is not allowed to recognise CVA hedges for capital purposes, and has a portfolio of OTC derivatives with three counterparties, for which the unadjusted CEAs have been calculated and are given in the table below. The effective maturity for each counterparty has been calculated as the notional weighted average maturity for all transactions with that counterparty, with a floor of 1 year;

9 Refer to Attachment A to APS 112.

10 Refer to paragraph 9(a) of Attachment C to APS 112

(b) assumed counterparty credit risk exposures:

Counterparty	Rating grade	Effective maturity (years)	Unadjusted CEA (\$m)
1	1	1	100
2	3	2	50
3	5	1	150

(c) calculations<sup>11</sup>:

C-party	Weighting (%)	Discount factor	$0.5w_i M_i D_i CEA_i^{total}$ (\$m)	$0.75w_i^2 (M_i D_i CEA_i^{total})^2$ (\$m) <sup>2</sup>
1	0.7	0.9754	0.341	0.350
2	1.0	0.9516	0.476	0.679
3	3.0	0.9754	2.195	14.450
Total			3.012	15.479

(d) CVA risk capital charge =  $2.33\sqrt{(\$3.012m)^2 + 15.479(\$m)^2} = 2.33 \times \$4.955m = \$11.545m$

<sup>11</sup> Refer to paragraph 9(b) of Attachment C to APS 112



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