Discussion Paper

Implementation of the Basel II Capital Framework
3. Internal ratings-based approach to credit risk

28 July 2005
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Introduction

This discussion paper introduces the draft prudential standard for the internal ratings-based (IRB) approach to credit risk, APS 113 Capital Adequacy: Internal Ratings-based Approach to Credit Risk (APS 113). Under the Basel II capital adequacy regime, known as the Basel II Framework, the IRB approach to credit risk is the most complex approach that will be available to an authorised deposit-taking institution (ADI) for determining its regulatory capital requirement for credit risk. A schematic representation of the Basel II Framework and of the IRB approach is contained in Appendix 1, which also briefly outlines the theoretical underpinnings of the IRB approach.

APRA expects that the vast majority of Australian banks, building societies and credit unions will use the standardised approach, rather than the IRB approach, in determining their regulatory capital charge for credit risk when the Basel II Framework is implemented in Australia from 1 January 2008. ADIs will require individual approval from APRA before the IRB approach will be able to be used for regulatory capital purposes.

Prudential standard

APS 113 sets out the methodology for the calculation of the regulatory capital charge for credit risk under the IRB approach. The main requirements of the draft standard are:

- An ADI’s credit exposures are divided into defined IRB asset classes.
- Subject to meeting minimum requirements, the ADI will be able to use its own estimates of certain credit risk components in determining its regulatory capital charge for credit risk when the Basel II Framework is implemented in Australia from 1 January 2008. ADIs will require individual approval from APRA before the IRB approach will be able to be used for regulatory capital purposes. The main requirements of the draft standard are:

  - The ADI’s credit risk components serve as inputs into the IRB risk-weight functions for each defined IRB asset class. Those risk-weight functions produce the regulatory capital requirement for the unexpected loss component for each credit exposure.
  - Within the non-retail asset classes, a foundation IRB approach will be available in which the ADI will only be required to provide its own estimates for PD and M. An advanced IRB approach will also be available in which the ADI will provide its own estimates for each of the relevant risk components.
  - The ADI will be required to calculate an estimate for expected loss on its credit exposures and compare that amount to eligible provisions. Where eligible provisions are not sufficient to cover the total expected loss amount, that deficiency is to be deducted from the ADI’s capital. Where the total expected loss amount is less than the amount of eligible provisions for non-defaulted exposures, the difference may be recognised in Tier 2 capital subject to a defined limit.

All ADIs will be required to have in place a comprehensive risk management framework for credit risk. The requirements of this framework will be separately detailed in a risk management prudential standard that will be released in 2006.

The draft APS 113 is available on the APRA web site www.apra.gov.au. Written submissions on the draft standard should be forwarded by 31 December 2005 to:

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1 The draft prudential standard APS 112 Capital Adequacy: Standardised Approach to Credit Risk was released by APRA on 11 April 2005.
Outstanding issues

The following issues for APS 113 remain outstanding:

- The netting proposals in the Basel II Framework have not been included. As there are similar issues involved, APRA’s guidance on netting under the IRB approach is expected to be prepared later this year when the guidance note on netting in the standardised approach to credit risk is drafted.

- The proposals in the Basel Committee on Banking Supervision’s (Basel Committee’s) document *The Application of Basel II to Trading Activities and the Treatment of Double Default Effects* have not been included as the document was finalised on 18 July 2005.

- ADIs’ LGD estimates are required, where appropriate, to reflect economic downturn conditions (that is, stressed LGDs) as well as an appropriate discount rate. The Basel Committee released additional guidance on these requirements on 13 July 2005 and APRA is considering the implications.

Policy issues surrounding APS 113

APRA has previously released the majority of the discretions it intends to exercise for the IRB approach to credit risk. The remaining IRB discretions are included in Appendix 2 of this paper.

In addition to the discretions included in the Basel II Framework, there are a number of areas where APRA has tailored the IRB requirements where considered necessary or appropriate. These issues are discussed below.

Size thresholds

The Basel II Framework contains a number of thresholds expressed in Euros. Requiring that these thresholds be converted to Australian dollars at a current exchange rate would add considerable operational complexity to the Australian implementation. Moreover, the resulting Australian dollar levels would be excessive given Australian market practice. Accordingly, APRA proposes to convert the Euro thresholds to Australian dollars on a (fixed) 1:1 basis.

Qualifying revolving retail (QRR) sub-asset class

Under the Basel II Framework, QRR exposures are subject to a distinct IRB risk-weight function. Among the relevant classification criteria, QRR exposures must be to individuals.

Business-related revolving facilities (for example, business overdraft facilities and credit cards where a business wholly or partially accepts responsibility for repayment) would not generally meet the qualifying criteria for QRR because they would not be exposures to individuals. An exception would be lending to an unincorporated sole trader.

It is unclear, however, why the capital treatment for similar loans should differ simply because one is to a business organised as a sole trader and the other is to a business that has been incorporated.

In order to provide a more consistent approach, APRA is restricting the QRR sub-asset class to non-business exposures to individuals.

Definition of default

Credit obligations sold at a material credit-related economic loss

The Basel II Framework sets out several possible indicators that should be taken into account by an ADI when considering whether an obligor is unlikely to pay its credit obligations in full and in a timely manner (that is, when an obligor should be considered in default for purposes of estimating PD, LGD and EAD). One of the criteria is if an ADI sells a credit obligation at a material credit-related economic loss. Globally, banks have asked for further guidance on how to operationalise this requirement.

The requirement’s purpose is to close a potential loophole whereby an ADI could avoid including certain exposures in its default database by selling them just prior to recording them internally as defaults. This could lead to a downwards bias in the institution’s PD, LGD and EAD estimates.

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2 Refer to APRA’s media release of 11 April 2005.
One difficulty with this requirement, however, is that unless an obligor is virtually certain of imminent default, any loss on sale experienced by the selling ADI will reflect a combination of PD and LGD considerations (that is, the recorded loss will only be a fraction of the likely underlying LGD). Unless PD and LGD can be untangled from one another, automatically including as defaults those obligations that have been sold at a credit-related economic loss could also lead to a downwards bias in an ADI’s LGD estimates. In other words, in an attempt to resolve one problem, another (perhaps worse) problem is potentially created.

Against this background, APRA will require an ADI adopting the IRB approach to have a policy requiring:

- the maintenance of an internal register of credit obligations sold at a material credit-related economic loss;
- data contained in the register to be considered by the ADI in its rating system design and validation processes. The subsequent inclusion in, or exclusion from, those processes of any data contained in the register must be justified and must not result in lower LGD estimates; and
- the creation and use of data in the register must be transparent to reviewers of the ADI’s rating systems, such as the ADI’s internal or external auditors and prudential regulators.

Re-aging

ADIs with approval to use the IRB approach will be required to have clearly articulated and documented policies in respect of the re-aging of facilities and the granting of extensions, deferrals and rewrites to existing accounts. The Basel II Framework outlines minimum criteria covering what such re-aging policies must include, although national supervisors may choose to establish more specific requirements on re-aging for banks in their jurisdictions.

The Basel II Framework’s minimum re-aging requirements are mainly focussed on limiting the ability of banks to reclassify defaulted exposures as performing (by re-aging or restructuring the accounts) and, perhaps inappropriately, avoid including such accounts in their default and loss databases.

The way ADIs record and subsequently treat multiple default events on single accounts can affect the outcome of their procedures for developing/validating their PD, LGD and EAD estimates, potentially biasing the resulting capital calculations. These impacts can be minimised/eliminated through appropriate re-aging policies.

Our discussions with Australian banks planning to adopt the IRB approach show that there are currently significant differences in re-aging policies both among and within banks, with some doing little to rectify the above-mentioned estimation/validation problems. These discussions led to the approach set out below. Feedback suggests that the approach should reduce the estimation/validation issues to immaterial levels, and is acceptable to ADIs in terms of the scale and cost of necessary system changes required for compliance.

The minimum re-aging criteria in the IRB approach will be expanded to include the following:

Unless otherwise agreed with APRA, at a minimum, an ADI’s re-aging policy should only allow for the re-aging of a facility when all amounts in arrears, inclusive of accrued interest and penalties, have been repaid or the outstanding balance has been reduced to, or below, the advised limit.

Threshold for days past due

Under the Basel II Framework, a default is considered to have occurred, inter alia, if a material credit obligation is past due more than 90 days. For retail and public sector enterprises, national supervisors have discretion to substitute the 90-day threshold with one of up to 180 days.

APRA has previously announced its intention not to exercise this discretion. An implication of this discretion, however, is that ADIs with subsidiary operations in other countries may be required to meet a different Basel II definition of default in those jurisdictions that have exercised the discretion.

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3 In this context, re-aging refers to the resetting of the number of days past due of an exposure once it has been classified in default under the Basel II Framework.
4 Refer to APRA media release 11 April 2005.
(for example, the United Kingdom and the United States of America). If an ADI were to be required to meet both APRA’s and a differing host country definition of default, that ADI would need to develop duplicate default and loss databases and associated sets of PD, LGD and EAD estimates – clearly an inappropriate outcome. Host countries, however, may not have discretion to accept home country definitions of default.

To address this issue, for the purpose of calculating consolidated group-wide regulatory capital numbers, APS 113 will permit ADIs to utilise host country definitions of default for the relevant exposures in their credit portfolios.

**Treatment of ‘excess’ specific provisions for defaulted exposures**

Under the Basel II Framework, an ADI must calculate expected loss (EL) for its exposures and compare this amount to total eligible provisions. Where specific provisions exceed the EL amount on defaulted exposures, this excess may be used to offset the EL amount on non-defaulted exposures. This, in turn, may increase the excess between EL for non-defaulted exposures and eligible provisions. The Basel II proposals allow this excess to be included in Tier 2 capital (up to a limit of 0.6 per cent of credit risk-weighted assets).

APRA does not support the proposal that allows the excess amount between specific provisions on defaulted exposures and EL on those exposures to be used to reduce the EL amount on non-defaulted exposures. Specific provisions on defaulted exposures are raised by an ADI on the basis of a full assessment of potential loss on individual exposures given current market conditions. APRA does not consider that it is prudentially sound to allow an excess between an EL amount on defaulted exposures calculated using long-term general estimates and specific provisions on those exposures determined on a different basis to be included in the capital base of an ADI.

APS 113 will therefore not permit the excess between specific provisions on defaulted exposures and EL for those exposures to be used by an ADI to offset the EL amount on non-defaulted exposures. The amount by which eligible provisions exceed EL for non-defaulted exposures will be eligible for inclusion in an ADI’s Tier 2 capital up to a maximum of 0.6 per cent of credit risk-weighted assets.

**Specialised lending – high-volatility commercial real estate (HVCRE) sub-asset class**

The Basel II Framework assumes higher default correlation for HVCRE exposures, which results in increased capital requirements for this type of lending, other things being equal.

APRA acknowledges that, globally, property-based lending has often featured prominently in ADI failures but notes that:

- the HVCRE proposals are aimed at only a relatively small proportion of most ADIs’ property-based exposures; and
- the options for operationalising the HVCRE proposals may create perverse incentives for industry underwriting standards in this area.

With this in mind, APRA has decided not to progress with the HVCRE category and associated requirements in APS 113. Other national supervisors that have already announced their intentions in this area have reached similar conclusions, including those that will be complying with the European Union’s Capital Requirements Directive. APRA will continue to monitor industry underwriting standards and international thinking in this area and may review its decision in the light of future developments. In any event, ADIs will need to take into account relevant features of their property-based lending in their own capital adequacy assessments. Those assessments will be reviewed by APRA under Pillar 2 of the new Basel II Framework.

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1 For both defaulted and non-defaulted exposures, where total EL exceeds eligible provisions, the deficiency is deducted 50 per cent from Tier 1 capital and 50 per cent from Tier 2 capital.
Appendix 1: Overview of the internal ratings-based (IRB) approach to credit risk

(i) Overview of the Basel II Framework and the IRB approach to credit risk

The Basel II Framework consists of three regulatory pillars.

Pillar 1 refers to that part of the Basel II Framework that sets out the rules for calculating the minimum amount of capital that a bank must hold for credit, operational and market risks. Within each risk area, there are generally two approaches for determining the amount of regulatory capital required for each defined risk – a standardised (simple) approach and a more sophisticated approach that draws upon a bank’s own quantitative risk estimates.

Pillar 2 is labelled the ‘supervisory review process’. It requires a bank to have its own comprehensive capital adequacy assessment process and hold sufficient capital to cover, inter alia, risks outside of those defined in Pillar 1 (for example, liquidity risk, interest rate risk in the banking book and credit concentration risk). Pillar 3 relates to market disclosure. It will require significant disclosures to be made by banks that use internal estimates in the determination of regulatory capital.

Figure 1 provides a schematic overview of the Basel II Framework and, in particular, where the IRB approach to credit risk fits within the Basel II Framework.

The IRB approach is the most sophisticated approach a bank may use to determine its Pillar 1 regulatory capital requirement for credit risk.

Under the IRB approach, a bank’s credit exposures are grouped into defined asset classes: corporate, sovereign, bank, retail, equities and securitisation exposures. For each asset class, there are a set of rules that a bank must follow in calculating credit risk estimates and associated operational requirements that must be complied with before the approach will be approved for regulatory capital purposes.

For the corporate, sovereign and bank asset classes, a bank must be able to determine probability of default (PD) estimates and measure effective maturity (M). If the bank is unable to determine loss given default (LGD) and exposure at default (EAD) estimates for its exposures, it must use the foundation IRB (FIRB) approach. In this case, supervisory estimates for LGD and EAD must be used. Where a bank uses its own PD, LGD and EAD estimates for its corporate, sovereign and bank exposures, this is referred to as the advanced IRB (AIRB) approach. In both cases, there is one risk-weight function for all three asset classes.

Within the corporate asset class, there are four sub-asset classes of specialised lending (SL). Where a bank does not meet the criteria pertaining to the approach used for its general corporate exposures, it may apply the ‘supervisory slotting approach’. Under this approach, the bank aligns its internal ratings categories for SL exposures to defined supervisory slotting categories to which specific risk-weights have been assigned under the Basel II Framework.

For the retail asset class, there is no FIRB approach, that is, a bank must determine its own PD, LGD and EAD estimates. Within the retail asset class, there are three sub-asset classes: exposures secured by residential properties, qualifying revolving retail exposures and other retail exposures. Each retail sub-asset class has its own risk-weight function.

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6 The securitisation rules are included in a separate standard, APS 120 Securitisation (to be released).
Figure 1: Overview of Basel II Framework and the internal ratings-based approach to credit risk

- Basel II
  - Pillar 1: Credit Risk
  - Pillar 2: Operational Risk
  - Pillar 3: Market Risk

- Standardised Approach
- Internal Ratings-Based Approach

- Corporate
- Sovereign
- Bank
- General
- Specialised Lending
- Retail
- Equity
- Securitisation
- Housing
- Qualifying revolving retail
- Other retail

- Object finance
- Commodities finance
- Project finance
- Incoming producing real estate

Legend:
- Foundation IRB (FIRB) and advanced (AIRB) approaches
- FIRB, AIRB and slotting approaches
- Own PD/LGD/EAD estimates
- 300% risk-weight for listed equities 400% risk-weight for unlisted equities
(ii) Underpinnings of the regulatory capital requirement under the IRB approach to credit risk

The IRB risk-weight functions are based on probability distributions of potential future credit losses that are generated by an underlying value-at-risk model. The approach is a simple version of the type of portfolio credit risk modelling used by many banks for their own capital adequacy assessment purposes.

As illustrated in figure 2, the IRB approach distinguishes between average or expected credit losses (EL) and the variability of losses around that average (typically referred to as unexpected loss (UL)). The shape of the credit loss probability distribution is determined by the estimates that the bank inputs into the IRB risk-weight functions. The IRB regulatory model requires EL to be covered by provisions (or capital if provisions are insufficient). Regulatory capital (as determined by the IRB risk-weight functions) is required to absorb UL.

Unless wholly funded by capital, a bank could not absorb all conceivable unexpected losses. Instead, the IRB approach seeks to estimate the amount of regulatory capital that is required to bring the probability of UL exhausting the bank’s capital down, or equivalently the risk coverage level up, to an acceptable targeted level. Under the Basel II Framework, the minimum targeted risk coverage level is 99.9 per cent.

To help confirm the sufficiency of the Pillar 1 capital number, the IRB approach requires the bank to stress test this capital estimate. If as a result of that testing a bank comes up with plausible scenarios that would be expected to lead to losses greater than the Pillar 1 requirement, there is an expectation that the bank, through its capital adequacy assessment process, will hold (Pillar 2) capital above that level. In addition to this general stress test, the bank must estimate the impact of an economic downturn on its ratings profile (and the consequent impact on its Pillar 1 capital requirement). Again, the results of such scenario testing must be incorporated into the bank’s capital adequacy assessment process.

Figure 2: Underpinnings of the IRB approach to credit risk

### Appendix 2: List of national discretions

Australian discretions for the internal ratings-based approach to credit risk.

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<td>No</td>
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<td><strong>Risk-weights for project finance, object finance, commodities finance and income producing real estate exposures under the slotting approach</strong></td>
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<td>Allow banks to assign preferential risk-weights for unexpected loss of 50 per cent to ‘strong’ exposures and 70 per cent to ‘good’ exposures provided they have a remaining maturity of less than 2.5 years or the supervisor determines that banks’ underwriting and other risk characteristics are substantially stronger than specified in the slotting criteria for the relevant supervisory category</td>
<td>No</td>
</tr>
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<td><strong>Risk-weights for high volatility commercial real estate (HVCRE) exposures under the slotting approach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>282</td>
<td>Allow banks to assign preferential risk weights of 70 per cent to ‘strong’ exposures and 95 per cent to ‘good’ exposures provided they have a remaining maturity of less than 2.5 years or the supervisor determines that banks’ underwriting and other risk characteristics are substantially stronger than specified in the slotting criteria for the relevant supervisory risk category</td>
<td>n.a. (APRA does not propose to have a HVCRE specialised lending sub-asset class)</td>
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