

The Basel Capital Accord

Bruce Porteous explains why there might be fundamental changes in mortgage banking.

IN JANUARY 2001 the Basel Committee of the Bank for International Settlements issued its consultative document 'The New Basel Capital Accord' for comment. The deadline for comments on this paper was 31 May 2001. The final version of the Accord is scheduled for issue by the end of 2002, with the Accord itself due for implementation in 2005.

When it is implemented, it may fundamentally change banking and, moreover, it seems likely that much of this change could be difficult to predict. Its implications could run very deep and may touch almost every aspect of the banking business.

The objectives of this article are:

- ◆ to give actuaries a brief introduction to Basel;
- ◆ to focus on how the Accord might affect the capital requirements of mortgage banks;
- ◆ to quantify the impact of this effect, using actuarial techniques.

Table 1 Draft representative risk weights

PD (%)	Risk weight
0.03	6
0.05	9
0.1	14
0.2	21
0.4	34
0.5	40
0.7	50
1	64
2	104
3	137
5	195
10	310
15	401
20	479
30	605

The Basel Accord

The description of the Accord given here is based on the draft Accord as it stood at July 2001, which was expected to be substantially similar to the final version. Where the committee has indicated that there could be amendments that are relevant to this article, these are highlighted.

The full Accord and its supporting papers run to well over 500 pages. It is therefore important to understand that this introduction represents only the very lightest of appetisers. The Accord, its supporting papers, submitted comments, and other relevant information are all available on the Bank of International Settlements website at www.bis.org.

At the broadest level, the Accord falls into three 'pillars', as follows:

Pillar 1 deals with the amount of regulatory capital that banks will be required to hold to cover credit, market and operational risks. Pillar 1 also covers risk mitigation and asset securitisation.

Pillar 2 deals with supervisory issues, economic capital, and interest rate risk.

Pillar 3 deals with the disclosure requirements of the Accord.

The main rationales for the Accord are:

- ◆ To promote a capital adequacy methodology that is more clearly driven by risk.
- ◆ To reward banks that have developed effective risk measurement/management systems by allowing them to hold less capital than banks with less advanced systems, all else being equal.

The Basel Committee envisages that, as a result of the Accord, the total amount of regulatory capital supporting banks worldwide will remain unaltered, but that its distribution will change.

The current UK setup for determining credit risk capital requirements

For simplicity, I shall focus here on banks that do not operate a trading book, but run only a banking book. The current credit risk regulatory capital requirements for such banks operating in the UK market are broadly set out as follows:

- ◆ The FSA specifies to each bank the minimum percentage that its tier 1 capital (usually equity capital) plus tier 2 capital (usually debt and general reserves) must represent as a percentage of its risk-weighted assets. The amount of tier 2 capital that banks can count towards solvency is capped at their tier 1 capital amount.
- ◆ The ratio of tier 1 plus tier 2 capital to risk-weighted assets is called the risk asset ratio (RAR) and the minimum allowable RAR set by the Bank for International Settlements is 8%. The FSA, however, generally sets higher target percentages on a bank-by-bank basis, to reflect the level of risk they believe each bank is running.
- ◆ A bank's risk-weighted assets are currently calculated by multiplying each asset category by a risk-weighting factor that very crudely represents the riskiness of the category. For retail mortgages, the risk-weighting factor is currently 50%. So, the amount of capital that a bank must currently hold to back a mortgage is $0.5 \times \text{RAR} \times \text{loan amount}$, which is around 4.5% – 6.0% of the loan amount for most banks.

Proposals for credit risk capital requirements

The current risk-weighting factor of 50% represents a very crude assessment of mortgage asset capital requirements. The Accord proposes methodologies that better reflect the relationship between capital and credit risk. In fact the Accord proposes two methodologies for retail assets, the standardised approach and the advanced internal ratings based (AIRB). The standardised approach is a slightly enhanced version of the current setup, although the risk weight for mortgages remains unaltered at 50%, whereas the AIRB approach is more sophisticated and works as described below.

AIRB

The risk weight to be used depends on an estimate of the annual probability of default (PD) on the bank's

mortgage book, usually after segmentation into homogeneous risk segments, and a corresponding loss given default (LGD) estimate. In table 1 opposite, draft representative risk weights as proposed in the Accord have been reproduced. These risk weights are calibrated in the Accord to be appropriate for an LGD of 50%.

If a default is defined to have occurred if three or more payments are missed, then a PD of around 0.01 is a reasonable ballpark value to use for illustrative purposes (a higher value may be more appropriate during recessionary conditions). Similarly, a LGD of around 20% is reasonable for illustrative purposes. Obviously, the values of these parameter estimates will vary from bank to bank, depending on their relative experiences.

Based on a PD of 0.01 and an LGD of 20%, the risk weight for a mortgage (and in fact all retail assets) as proposed in the draft Accord is $64 \times (20/50) = 26\%$, around one-half of the current risk weight. Moreover, the better that a bank is in managing its mortgage credit risks, the lower its associated risk weight will be. Banks that are good at managing credit risk therefore have a very clear incentive to calculate their regulatory capital requirements using the AIRB method, rather than the standardised method.

Note that in its recent press release, the Basel Committee stated its intention to recalibrate the draft retail risk weights shown above. However, the general expectation is that the recalibration will still result in a large reduction in the retail risk weights from the current level of 50%.

In order to qualify for the use of the AIRB method, banks must satisfy certain specified minimum requirements. It is not the purpose of this article to cover these requirements, but they include meaningful risk differentiation, independent reviews, and certain data and parameter estimation requirements.

Numerical illustration and discussion

In order to illustrate the impact that the Accord might have on retail mortgage banks, I have taken a fairly standard flexible interest-only mortgage product and have priced it using life insurance embedded value techniques. Apart from certain key elements, the precise details of the pricing basis are relatively unimportant and are not described in full here. The key assumptions are as follows:

- ◆ the mortgage is priced to achieve a target post-tax rate of return on capital of 10%;
- ◆ assumed margin of 1.1% between the cost of funding and the mortgage's standard variable rate (SVR);
- ◆ a discount of 1.5% on the SVR is assumed for the first 12 months of the mortgage;
- ◆ for simplicity, 100% tier 1 (equity) capital backing has been assumed;

- ◆ initial risk weight factor of 50%;
- ◆ loan size of £100,000;
- ◆ fixed expenses, commission, lapses, redemption penalties, and taxation are all modelled explicitly using conventional life insurance embedded value techniques.

If the risk weight factor is reduced from 50% to 26%, we see the following results:

- ◆ the post-tax rate of return on capital increases from 10% to around 14%;
- ◆ depending on the duration of the mortgage, its embedded value increases by as much as 40%;
- ◆ if the mortgage is re-priced to maintain the 10% rate of return on capital, the SVR on the mortgage can be reduced by around 0.2%.

Note that these results are dependent on the particular capital structure used in the illustration and, if an alternative structure is used, different results will be seen. It is also possible that other parts of the Accord, for example the operational risk capital charge, may partially nullify the effect of the reduced credit risk capital charge. However, the illustration does demonstrate, using actuarial techniques, the potential impact that the Accord might have on mortgage pricing and mortgage bank valuations.

It is problematic to predict with much certainty how the Accord will affect the mortgage market and mortgage banks, but a few observations can be made, as follows:

- ◆ implementation of the Accord might free up capital from the mortgage banks and this could be returned to shareholders;
- ◆ mortgage bank valuations might increase to reflect higher rates of return earned on their capital;
- ◆ similarly, the building societies might find that they have excess capital, and this could strengthen their relative positions;
- ◆ mortgages might become cheaper.

Future impact

In this article I have introduced the Basel Capital Accord and, using actuarial techniques, have illustrated the impact that one aspect of the Accord might have on mortgage banks. Other areas of the Accord, for example the operational risk aspects, are also likely to have a very significant impact.

In the EU, the Accord is applicable to investment firms as well as banks and the FSA also appears to be indicating that a risk-based approach to capital might be in the offing for insurance firms. Whatever the future holds, actuaries seem well placed to participate in the development of risk-based capital management methodologies in financial services firms. □



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