

residential mortgage exposures and is therefore higher than would likely be the case if a specific maturity adjustment were also included in the retail A-IRB framework. The proposed retail A-IRB capital formula for residential mortgage and related exposures is as follows:

$$K = EAD * LGD * N[1.08465 * G(PD) + 0.4201 * G(0.999)]$$

Where

K denotes the capital requirement;
EAD denotes exposure at default;
LGD denotes loss given default;
N(x) denotes the standard normal cumulative distribution function;
G(x) denotes the inverse of the standard normal cumulative distribution function; and
PD denotes probability of default.

The following table depicts a range of representative capital requirements (K) for residential mortgage and related exposures based on this formula. Three different illustrative LGD assumptions are shown: 15 percent, 35 percent, and 55 percent. For comparison purposes, the current capital requirement on most first mortgage loans is 4 percent and on most home equity loans is 8 percent.

CAPITAL REQUIREMENTS

[In percentage points]

PD	LGD		
	15 percent	35 percent	55 percent
0.05 percent	0.17	0.41	0.64
0.10 percent	0.30	0.70	1.10
0.25 percent	0.61	1.41	2.22
0.50 percent	1.01	2.36	3.70
1.00 percent	1.65	3.86	6.06
2.00 percent	2.64	6.17	9.70
5.00 percent	4.70	10.97	17.24
10.00 percent	6.95	16.22	25.49
20.00 percent	9.75	22.75	35.75

Subject to the caveats noted earlier, evidence from QIS3 suggested that advanced approach banking organizations would experience a reduction in credit risk capital requirements for residential mortgage exposures of about 56 percent.

Private Mortgage Insurance

The Agencies wish to highlight one issue associated with the A-IRB capital requirements for the residential mortgage sub-category relating to the treatment of private mortgage insurance (PMI). Most PMI arrangements effectively provide partial compensation to the banking organization in the event of a mortgage default. Accordingly, the Agencies consider that it may be appropriate for banking organizations to recognize such effects in the LGD estimates for individual mortgage portfolio segments, consistent with the historical loss experience on those segments during periods of high default rates. Such an approach would avoid requiring banking organizations to quantify specifically the effect of PMI on a loan-by-loan basis; rather, they could estimate the effect of PMI on an average basis for each segment. This approach effectively ignores the risk that the mortgage insurers themselves could default.

The Agencies seek comment on the competitive implications of allowing PMI recognition for banking organizations using the A-IRB approach but not allowing such recognition for general banks. In addition, the Agencies are interested in data on the relationship between PMI and LGD to help

assess whether it may be appropriate to exclude residential mortgages covered by PMI from the proposed 10 percent LGD floor. The Agencies request comment on whether or the extent to which it might be appropriate to recognize PMI in LGD estimates.

More broadly, the Agencies are interested in information regarding the risks of each major type of residential mortgage exposure, including prime first mortgages, sub-prime mortgages, home equity term loans, and home equity lines of credit. The Agencies are aware of various views on the resulting capital requirements for several of these product areas, and wish to ensure that all appropriate evidence and views are considered in evaluating the A-IRB treatment of these important exposures.

The risk-based capital requirements for credit risk of prime mortgages could well be less than one percent of their face value under this proposal. The Agencies are interested in evidence on the capital required by private market participants to hold mortgages outside of the federally insured institution and GSE environment. The Agencies also are interested in views on whether the reductions in mortgage capital requirements on mortgage loans contemplated here would unduly extend the federal safety net and risk contributing to a credit-induced bubble in housing prices. In addition, the Agencies are also interested in views on whether there has been any shortage of mortgage credit under the general risk-based capital rules that would be alleviated by the proposed changes.

Qualifying Revolving Exposures

The second sub-category of retail exposures is QREs. The calculation of A-IRB capital requirements for QREs would require three steps: (1) Calculation of the relevant asset

correlation parameter, (2) calculation of the minimum capital requirement assuming no offset for eligible FMI, and (3) application of the offset for eligible FMI. These steps would be performed for each QRE portfolio segment individually.

As in the case of wholesale exposures, it is assumed that the asset correlation for QREs declines as PD rises. This reflects the view that pools of borrowers with lower credit quality (higher PD) are less likely to experience simultaneous defaults than pools of higher credit quality (lower PD) borrowers, because with higher PD borrowers defaults are more likely to result from borrower-specific or idiosyncratic factors. In the case of QREs, the asset correlation approaches an upper bound value of 11 percent for very low PD values and approaches a lower bound value of 2 percent for very high PD values. The specific formula for determining the asset correlation parameter for QREs is as follows:

$$R = 0.02 * (1 - \text{EXP}(-50 * PD)) + 0.11 * [1 - (1 - \text{EXP}(-50 * PD))]$$

Where

R denotes asset correlation;

EXP denotes the natural exponential function; and

PD denotes probability of default.

The second step in the A-IRB capital calculation for QREs would be the calculation of the capital requirement assuming no FMI offset. The specific formula to calculate this amount is as follows: