

$$K_{No\ FMI} = EAD * LGD * N[(1-R)^{\wedge} - 0.5 * G(PD) + (R/(1-R))^{\wedge} 0.5 * G(0.999)]$$

Where

$K_{No\ FMI}$ denotes the capital requirement assuming no FMI offset;

EAD denotes exposure at default;

LGD denotes loss given default;

$N(x)$ denotes the standard normal cumulative distribution function;

R denotes asset correlation;

$G(x)$ denotes the inverse of the standard normal cumulative distribution function; and

PD denotes probability of default.

Future Margin Income Adjustment

The result of this calculation effectively includes both an EL and a UL component. As already discussed, for QREs only, the Agencies are considering the possibility of allowing institutions to offset a portion of the EL portion of the capital requirement using eligible FMI. Up to 75 percent of the EL portion of the capital requirement could potentially be offset in this fashion. The specific calculation for determining the capital requirement (K) after application of the potential offset for eligible FMI is as follows.

$$K = K_{No\ FMI} - \text{eligible FMI offset}$$

Where

K denotes the capital requirement after application of an offset for eligible FMI;

$K_{No\ FMI}$ denotes the capital requirement assuming no FMI offset;

Eligible FMI offset equals:

0.75 * EL if estimated FMI equals or exceeds the expected 12-month loss amount plus two standard deviations of the annualized loss rate, or zero otherwise;

EL denotes expected loss ($EL = EAD * PD * LGD$);

FMI denotes future margin income;

EAD denotes exposure at default;

PD denotes probability of default; and

LGD denotes loss given default.

If eligible FMI did not exceed the required minimum, then recognition of eligible FMI would be disallowed.

The Agencies are interested in views on whether partial recognition of FMI should be permitted in cases where the amount of eligible FMI fails to meet the required minimum. The Agencies also are interested in views on the level of portfolio segmentation at which it would be

appropriate to perform the FMI calculation. Would a requirement that FMI eligibility calculations be performed separately for each portfolio segment effectively allow FMI to offset EL capital requirements for QREs?

The following table depicts a range of representative capital requirements (K) for QREs based on these formulas. In each case, it is assumed that the maximum offset for eligible FMI has been applied. The LGD is assumed to equal 90 percent, consistent with recovery rates for credit card portfolios. The table shows capital requirements with recognition of FMI and without recognition of FMI but using the same formula in other respects. As PDs increase, the proportion of total required capital held against EL after deducting the 75 percent offset rises at an increasing rate and the proportion held against UL declines at an increasing rate. Offsets from EL, as considered in this ANPR, would therefore have a proportionally greater impact on reducing required capital charges as default probabilities increase. For comparison purposes, the current capital requirement on drawn credit card exposures is 8 percent and is zero for undrawn credit lines.

CAPITAL REQUIREMENT

[In percentage points]

| PD | With FMI capital 8% | Without FMI capital 8% |
|------------|------------------------|---------------------------|
| 0.05 | 0.68 | 0.72 |
| 0.10 | 1.17 | 1.23 |
| 0.25 | 2.24 | 2.41 |
| 0.50 | 3.44 | 3.78 |
| 1.00 | 4.87 | 5.55 |
| 2.00 | 6.21 | 7.56 |
| 5.00 | 7.89 | 11.27 |
| 10.0 | 11.12 | 17.87 |
| 20.0 | 17.23 | 30.73 |

Subject to the same qualifications mentioned earlier, the QIS3 results estimated an increase in credit risk capital requirements for QREs of about 16 percent.

Other Retail Exposures

The third and final sub-category of retail A-IRB exposures is other retail exposures. This sub-category encompasses a wide variety of different exposures including auto loans, student loans, consumer installment loans, and some SME loans. Two steps would be

required to calculate the A-IRB capital requirement for other retail exposures: (1) Calculating the relevant asset correlation parameter, and (2) calculating the capital requirement. Both of these steps would be done separately for each portfolio segment included within the other retail sub-category.

As for wholesale exposures and QREs, the asset correlation parameter for other retail exposures declines as PD rises. In the case of other retail exposures, the asset correlation parameter approaches an upper bound value of 17 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 for other retail exposures is as follows:

$$R = 0.02 * (1 - \text{EXP}(-35 * PD)) + 0.17 * [1 - (1 - \text{EXP}(-35 * PD))]$$

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 other retail exposures would be the calculation of the capital requirement (K). The specific formula to calculate this amount is as follows:

$$K = EAD * LGD * N[(1-R)^{\wedge} - 0.5 * G(PD) + (R / (1-R))^{\wedge} 0.5 * G(0.999)]$$

Where

K denotes the capital requirement;

EAD denotes exposure at default;

LGD denotes loss given default;

PD denotes probability of default;

$N(x)$ denotes the standard normal cumulative distribution function;

$G(x)$ denotes the inverse of the standard normal cumulative distribution function; and

R denotes asset correlation.

The following table depicts a range of representative capital requirements (K) for other retail exposures based on this formula. Three different LGD assumptions are shown—25 percent, 50 percent, and 75 percent—in order to depict a range of potential outcomes depending on the characteristics of the underlying retail exposure. For comparison purposes, the current capital requirement on most of the exposures likely to be included in the other retail sub-category is 8 percent.

CAPITAL REQUIREMENTS

[In percentage points]

| PD | LGD | | |
|--------------------|------------|------------|------------|
| | 25 percent | 50 percent | 75 percent |
| 0.05 percent | 0.33 | 0.66 | 0.99 |