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## Potential Modifications to the Committee's Proposals

In light of the Basel Committee's objective to ensure that the foundation IRB approach provides a modest capital incentive relative to current capital requirements, several of the Committee's working groups have been considering the results of its Quantitative Impact Study as well as other evidence. In this context, these working groups have been exploring the potential implications of several possible modifications to the Committee's proposals. To further assist the Committee in reaching decisions that affect the overall level of capital, the working groups are now seeking to obtain feedback from the industry about the potential impact of such modifications. This is being done through an additional quantitative impact exercise.

It is important to emphasise that the Basel Committee has not at this stage endorsed the specific modifications that are the focus of the additional quantitative impact exercise. The Committee aims to use the results of this exercise to help shape its next consultative package for release early next year. Accordingly, the modifications contained in the consultative package could turn out to be either more or less extensive than the modifications that are the focus of the additional impact exercise.

In terms of potential modifications to the Committee's proposals, it is important to take note of several of the potential changes that have already been described in working papers issued over the last few months. These include the following:

- Modifications related to the coverage of expected losses, including the use of excess general provisions, specific provisions, and margin income (under certain circumstances) to offset IRB capital requirements.
- Modifications to the proposed treatment of operational risk, including the introduction of the advanced measurement approach (AMA) and the reduction in the proposed target of operational risk capital as a percent of current minimum capital requirements from 20% to 12% (with a further reduction potentially available under the AMA approach).
- Modifications to the credit risk mitigation framework such that residual risks will be assessed through pillar two and the "w" factor will be eliminated from pillar one of the framework.
- Further specification of proposals relating to equity positions held outside the trading book, specialised lending exposures, and securitisations.

In addition to these developments, the additional quantitative impact exercise seeks to assess the impact of the following further possible modifications to the Committee's proposals.

- A modified risk weight curve for all corporate, sovereign, and interbank portfolios. The effects of this modified risk weight curve would also flow through to other portfolio treatments that are defined relative to the corporate IRB risk weights, including aspects of the securitisation, equity, and specialised lending proposals.
- Greater recognition of physical collateral and receivables.
- Modified risk weight curves for both residential mortgage exposures and for other retail exposures.

**Modified Corporate Risk Weight Curve**

Banks participating in the additional quantitative impact exercise are requested to assess the impact of a modified risk weight curve for wholesale exposures. The modified curve is generally lower than the curve proposed in the Committee's January 2001 consultative paper. It is also considerably less steep overall. The specific changes to the formula as well as the precise specification of the modified risk weight formula are contained in the annex to this note. The following table illustrates the capital requirements that would apply to a senior unsecured loan using the formula in the January paper as well as using the modified risk weight formula.

Probability of Default (PD)	IRB Capital Requirement – January Proposals (corporate)	IRB Capital Requirement – Modified Formula (corporate)
3 basis points (bp)	1.1%	1.4%
10 bp	2.3%	2.7%
25 bp	4.2%	4.3%
50 bp	6.4%	5.9%
75 bp	8.3%	7.1%
100 bp (1%)	10.0%	8.0%
1.25%	11.5%	8.7%
1.50%	12.9%	9.3%
2.00%	15.4%	10.3%
2.50%	17.6%	11.1%
3.00%	19.7%	11.9%
4.00%	23.3%	13.4%
5.00%	26.5%	14.8%
10.00%	38.6%	21.0%
20.00%	50.0%	30.0%

Both the January figures and the modified figures include a component for expected losses. As noted above, however, the Committee is continuing to assess the appropriate treatment of expected losses. The treatment described in the recent working paper on this topic provides for the use of excess general provisions and specific provisions to offset expected losses on wholesale portfolios. The additional impact exercise will gather information sufficient to calculate the impact of such modifications.

An important consideration in the Committee's decisions with regard to the corporate risk weight formula is the appropriate treatment of exposures to small and medium-sized enterprises (SMEs). Certainly, the modified corporate risk weight curve is likely to reduce the capital requirements for many SME borrowers relative to the January proposals. The proposals discussed below regarding collateral recognition may also have an impact on SMEs. In addition, the new impact exercise seeks to develop a clarified picture of the extent to which SME borrowers would be treated under the retail IRB framework. Finally, to allow a better assessment of the issues relating to SMEs, the additional quantitative impact exercise is seeking supplementary information on the relationship between probability of default and borrower size. Through such data, the Committee aims to achieve an enhanced understanding of the effect of its proposals on loans to SMEs and whether additional modifications may be necessary to develop capital requirements appropriate to borrowers of varying sizes.

## **Enhanced Recognition of Physical Collateral and Receivables**

An additional set of potential modifications that banks are requested to provide feedback on relates to the recognition of collateral. Under the foundation IRB approach, all senior unsecured loans are assigned a loss-given-default (LGD) of 50%. In addition, the January 2001 proposal generally did not recognize the benefits of physical collateral (other than commercial and residential real estate collateral, which would result in a 40% LGD for fully covered exposure) or trade receivables as collateral, so that loans fully secured by such collateral also received a 50% LGD.

The additional quantitative impact survey requests that banks specify the amounts of loans that are fully secured by either physical collateral or by receivables. The survey will then consider the impact of assuming a 45% LGD for loans fully secured by (non-real estate) physical collateral and a 40% LGD for loans fully secured by receivables.

## **Modified Retail Risk Weight Curves**

Under the Committee's January 2001 proposal, the IRB approach treated all retail exposures using the same risk weight curve. Banks participating in the additional quantitative impact exercise are requested to assess the impact of applying separate risk weight curves for residential mortgage exposures and for other retail exposures. Both of these risk weight curves are different from the January retail risk weight curve. Details of the differences between these curves as well as the detailed specification of the modified risk weight curves are described in the annex to this note. The following table illustrates the capital requirements that result from the two modified retail risk weight curves as well as from the retail risk weight curve contained in the January consultative paper.

Probability of Default (PD)	IRB Capital Requirement – January Proposal (retail)	IRB Capital Requirement – Modified Formula (residential mortgage)	IRB Capital Requirement – Modified Formula (other retail)
3 basis points (bp)	0.5%	0.4%	0.4%
10 bp	1.1%	1.0%	0.9%
25 bp	2.0%	2.0%	1.8%
50 bp	3.2%	3.4%	2.8%
75 bp	4.2%	4.5%	3.6%
100 bp (1%)	5.1%	5.5%	4.2%
1.25%	6.0%	6.4%	4.7%
1.50%	6.8%	7.3%	5.1%
2.00%	8.3%	8.8%	5.7%
2.50%	9.7%	10.2%	6.2%
3.00%	11.0%	11.5%	6.6%
4.00%	13.4%	13.7%	7.1%
5.00%	15.6%	15.7%	7.4%
10.00%	24.8%	23.2%	8.5%
20.00%	38.3%	32.5%	10.6%

It is important to note that all of these figures assume a 50% LGD value. In practice, banks would be in a position to scale such numbers up or down depending on the actual LGD that they assign to these loans. The additional impact exercise allows banks to input appropriate values for retail LGD portfolios to better assess the impact of the modifications to the retail risk weight curves.

While the modified figures for residential mortgage loans include a component for expected losses, the modified figures for other retail exposures do not include such a component. The latter choice reflects the possibility, outlined in the recent working paper, that margin income could be used to offset the expected loss component for retail portfolios under certain circumstances. Importantly, however, the Committee continues to assess the appropriate treatment of expected losses, and banks should not assume that this reflects a final decision of the Committee. In particular, because concerns have been raised about the inclusion of margin income for residential mortgage portfolios, the figures for these exposures continue to include an expected loss component. The additional impact exercise is intended to help provide information on the potential scale of the effects of different treatments of expected losses.

## Annex

### Detailed Specification of the Modified Risk Weight Formulas

#### Corporate Risk Weight Curve

The modified formula relating probability of default (PD) to capital requirements differs from the formula proposed in January in several ways reflecting both industry feedback and additional research by the Committee's working groups.

- There is no explicit scaling factor in the formula. To cover some of the elements previously dealt with by the scaling factor, the confidence level that was implicit in the formula has been increased from 0.995 to 0.999.
- The January formula incorporated an implicit assumption that asset correlation is equal to 0.20. The new formula assumes that asset correlation declines with PD. For the lowest PD value it is equal to 0.20 and for the highest PD value it is equal to 0.10.
- There is at this stage no modification to the proposed inclusion of an implicit maturity adjustment for all exposures in the foundation IRB approach based on the assumption of an average three-year maturity.

The combined impact of these changes, as described in the main text, is a risk-weight curve that is generally lower and flatter than that proposed in January, which are the directions suggested by industry feedback and the Committee's own quantitative efforts.

The modified formula can be calculated by first calculating the correlation value (R) that corresponds to the appropriate PD value. This value can then be input into the main formula for the capital requirement. Capital requirements and risk-weighted assets are related in a straightforward manner. The key equations are as follows.

$$\text{Correlation (R)} = \frac{0.10 \times (1 - \text{EXP}(-50 \times \text{PD}))}{(1 - \text{EXP}(-50))} + \frac{0.20 \times [1 - (1 - \text{EXP}(-50 \times \text{PD})) / (1 - \text{EXP}(-50))]}{1 - \text{EXP}(-50)}$$

$$\text{Maturity factor (M)} = 1 + 0.047 \times ((1 - \text{PD}) / \text{PD})^{0.44}$$

$$\text{Capital requirement (K)} = \text{LGD} \times \text{M} \times \text{N}[(1 - \text{R})^{-0.5} \times \text{G}(\text{PD}) + (\text{R} / (1 - \text{R}))^{0.5} \times \text{G}(0.999)]$$

$$\text{Risk-weighted assets} = \text{K} \times 12.50$$

In these equations, EXP( ) stands for the natural exponential function, N( ) stands for the standard normal cumulative distribution function and G( ) stands for the inverse standard normal cumulative distribution function. A 1% PD should be input into these equations as 0.01 rather than as 1.

It should also be noted that these formulas (and the ones for retail below) automatically impose a maximum capital requirement equal to the LGD value.

## Residential Mortgage Risk Weight Curve

Similar to the modified corporate risk weight formula, the modified formula for residential mortgage exposures does not contain an explicit scaling factor but does incorporate a higher confidence level. Importantly, it also does not contain any maturity adjustment, either implicit or explicit. Based on the detailed work that has been done on retail risks, the effect of average maturity for these exposures is subsumed in the choice of a correlation input. Moreover, based on this research, the correlation assumption applied is a fixed value of 0.15 that does not vary with PD. This results in the following equations.

$$\text{Correlation (R)} = 0.15$$

$$\text{Capital requirement (K)} = \text{LGD} \times N[(1 - R)^{-0.5} \times G(\text{PD}) + (R / (1 - R))^{0.5} \times G(0.999)]$$

$$\text{Risk-weighted assets} = K * 12.50$$

As above, in these equations, EXP( ) stands for the natural exponential function, N( ) stands for the standard normal cumulative distribution function and G( ) stands for the inverse standard normal cumulative distribution function. A 1% PD should be input into these equations as 0.01 rather than as 1.

## Other Retail Exposures Risk Weight Curve

The modified risk weight formula for other retail exposures is similar to the modified formula for residential mortgage exposures in that it does not contain an implicit maturity factor. However, like the modified corporate risk weight formula, it does allow correlation to vary with PD. In this case, the maximum correlation is 0.15 (achieved for the lowest PD) and the minimum correlation value is 0.04 (achieved for the highest PD). The rate of decline in correlation as PD rises is somewhat slower than for the modified corporate risk weight formula. In addition, as noted in the text, the formula below assumes that all expected losses will be covered by margin income. The relevant equations are as follows.

$$\text{Correlation (R)} = 0.04 \times (1 - \text{EXP}(-25 \times \text{PD})) / (1 - \text{EXP}(-25)) + 0.15 \times [1 - (1 - \text{EXP}(-25 \times \text{PD})) / (1 - \text{EXP}(-25))]$$

$$\text{Capital requirement (K)} = \text{LGD} \times N[(1 - R)^{-0.5} \times G(\text{PD}) + (R / (1 - R))^{0.5} \times G(0.999)] - \text{LGD} \times \text{PD}$$

$$\text{Risk-weighted assets} = K * 12.50$$