

CREDIT RISK CAPITAL ADEQUACY REQUIREMENT: ADDITIONAL INFORMATION REGARDING EFFECTIVE MEAN TERM AND DIVERSIFICATION OF THE CREDIT ASSETS

Version 1.2 Effective from 31 December 2012

1. BACKGROUND

- 1.1. The standard method for the calculation of the capital adequacy requirement (CAR) in respect of credit risk is described in Section 6.10.8 of SAP 104. Credit risk is the inability or unwillingness of a counterparty to fully meet its on- or off-balance sheet contractual obligations.
- 1.2. The standard method is based on the capital requirements set out in a draft of Solvency 2 (Quantitative Impact Study 4, or QIS 4), but was simplified by the implicit assumptions that:
 - The credit assets (other than cash and money-market instruments with an outstanding term of less than 1 year) have an effective mean term of 4 years, and
 - The portfolios of assets for which credit CAR is being calculated are suitably diversified.
 - The credit risk capital for structured credit products and credit derivatives is the same as for bonds.
- 1.3. This information note provides additional information regarding the impact that a different effective mean term would have on the capital requirements, how the extent of diversification of the credit assets could have on capital requirements, and what the additional requirements with regards to structured credit products and credit derivatives are in QIS4.
- 1.4. This information note was compiled by the CAR subcommittee of the Life Assurance Committee of the Actuarial Society of South Africa in September 2008.

2. TERM

- 2.1. According to 6.10.8.4 of SAP 104 the table of factors to be used in the credit CAR calculation needs to be determined as follows:

Factors to use in calculation of credit CAR		
Rating	Effective mean term	
	1-year or less	4-years
AAA	0.25%	1.00%
AA	0.25%	1.00%
A	1.03%	4.10%
BBB	1.25%	5.00%
BB	3.40%	13.60%
B	5.60%	22.40%
CCC	11.20%	44.80%

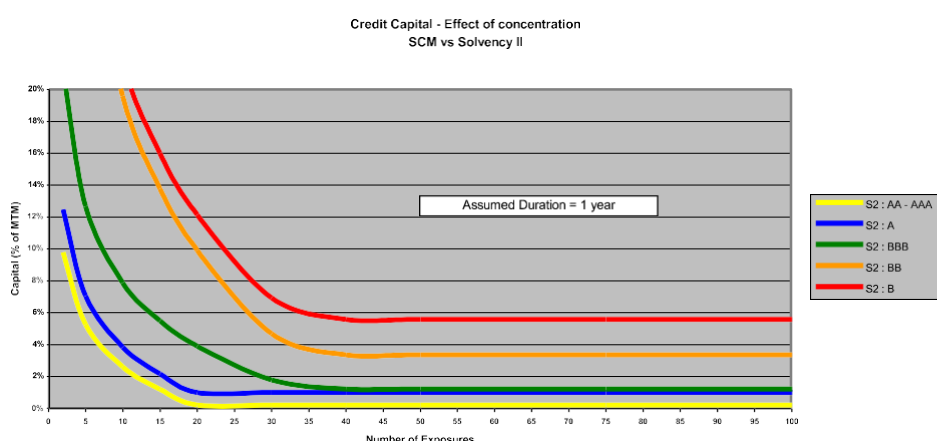
- 2.2. The method described by QIS 4 is similar to that set out in SAP 104 apart from the fact that QIS4 does not allow for the simplification of SAP 104 whereby an effective mean term of 4 years is implicitly assumed for credit instruments (excluding cash and money market instruments).
- 2.3. In terms of QIS4 an insurer has to determine the credit capital requirement for each credit instrument as the product of the factor shown in the 2nd column of the table in paragraph 2.1 above, an adjusted effective mean term for that specific instrument, and the market value of the credit instrument. The adjusted effective mean term is determined as follows:

$$\text{Adjusted effective mean term} = \left\{ \begin{array}{ll} \min(\text{effective mean term} ; 8) & \text{if rating} = \text{BB or the exposure is unrated} \\ \min(\text{effective mean term} ; 6) & \text{if rating} = \text{B} \\ \min(\text{effective mean term} ; 4) & \text{if rating} = \text{CCC} \\ \text{effective mean term} & \text{otherwise} \end{array} \right\}$$

- 2.4. The Statutory Actuary could follow the QIS4 approach for determining credit risk if there is reason to believe that the average effective mean term of the credit instruments (excluding the instruments for which the effective mean term is less than 12 months) exceeds 4 years.

3. DIVERSIFICATION

- 3.1. The factors proposed in 6.10.8.4 of SAP 104 assumed a suitably diversified portfolio of credit instruments.
- 3.2. QIS4 requires additional capital to be held should the concentration in specific counterparty/issuer be such that the portfolio can no longer be considered suitably diversified.
- 3.3. The chart below indicates the additional credit capital required by QIS4 for different numbers of equally weighted counterparties:



- 3.4. For example, based on the above noted chart, a portfolio consisting entirely of BBB instruments can only be considered suitably diversified if none of the underlying credit instruments constitute more than 3,3% of the total fixed interest exposures.
- 3.5. A Statutory Actuary could consider increasing the amount of credit CAR calculated in respect of a portfolio of assets, if there is a concentration of risk.
- 3.6. In determining the exposure weightings the Statutory Actuary may take account of limits already placed on the admissibility of assets either through Regulation 2 of the Long-term Insurance Act, 1998 or Board Notice 14 of 2010.

4. STRUCTURED CREDIT PRODUCTS AND CREDIT DERIVATIVES

- 4.1. QIS4 requires a higher capital requirement for structured credit products (such as asset-backed securities and collateralised debt obligations) than for bonds and cash.
- 4.2. In general, these products include transactions or schemes, whereby the credit risk associated with an exposure or pool of exposures is tranching, having the following characteristics:
 - 4.2.1. Payments in the transaction or scheme are dependent upon the performance of the exposure or pool of exposures; and
 - 4.2.2. The subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme.
- 4.3. The capital requirement for spread risk of structured credit products is determined as follows:

$$Mkt_{sp}^{struct} = \sum_i MV_i \cdot n(dur_i) \cdot G(rating_i)$$

Where

$G(rating_i)$ = a function of the rating class of the credit risk exposure which is calibrated to deliver a shock consistent with VaR 99.5%

$n(dur_i)$ = a function of the duration of the credit exposure

- 4.4. The function G is as follows:

Rating	G
AAA	2.13%
AA	2.55%
A	2.91%
BBB	4.11%
BB	8.42%
B	13.35%
CCC	29.71%
Unrated	100.00%

4.5. The adjusted duration of the product, $n(dur_i)$, is determined as follows:

$$n(dur) = \left\{ \begin{array}{ll} \max(\min(\text{duration}; 5); 1) & \text{if rating} = \text{BB or the exposure is unrated} \\ \max(\min(\text{duration}; 4); 1) & \text{if rating} = \text{B} \\ \max(\min(\text{duration}; 2.5); 1) & \text{if rating} = \text{CCC or lower} \\ 1 & \text{if unrated} \\ \max(\text{duration}; 1) & \text{otherwise} \end{array} \right\}$$

4.6. For collateralised debt obligations (CDO) companies should ensure that the rating reflects the nature of the underlying risks associated with collateral assets. For example, in the case of a CDO-squared, the rating should take into account the risks associated with the CDO tranches held as collateral, i.e. the extent of their leveraging and the risks associated with the collateral assets of these CDO tranches.

4.7. QIS4 also requires an additional capital requirement for credit derivatives (such as credit default swaps, total return swaps and credit linked notes) where the derivatives are not held as part of a recognised risk mitigation policy.

4.8. For credit derivatives, Mkt_{sp}^{cd} is determined as the change in the value of the derivative (i.e. as the decrease in the asset or the increase in the liability) following specified events. A notional capital requirement is therefore calculated for each of the following events:

4.8.1. a widening of credit spreads by 300% if overall this is more onerous, or

4.8.2. a narrowing of credit spreads by 75% if this is more onerous.

4.9. The capital requirement for credit derivatives is taken as the higher of these two notional capital requirements.

4.10 The total capital requirement for spread risk in QIS4 is equal to:

$$Mkt_{sp} = Mkt_{sp}^{bonds} + Mkt_{sp}^{struct} + Mkt_{sp}^{cd}$$

Where:

Mkt_{sp}^{bonds} is the capital requirement for spread risk of bonds, calculated using the factors and adjusted effected mean terms in section 2 above

Mkt_{sp}^{struct} is the capital requirement for spread risk of structured credit products

Mkt_{sp}^{cd} is the capital requirement for credit derivatives