

ACTUARIAL DERIVATION OF THE COST OF ISSUING STRUCTURED DEBT – ASSESSING THE CAPITAL CONSUMPTION OF CREDIT DEFAULT RISK

ABSTRACT

A core component of the Standard Model of Solvency II is the SCR estimated for the sake of Counterparty Default Risk. Specific levels of default probabilities are determined in the model, depending on the rating of the reinsurance counterparties – or their solvency ratios, in the case that credit ratings are not available. Thus, specific shocks of default probability are defined for every transition in the scale of credit ratings.

Yet, in practice, reinsurance contracts may take the form of structured credit products, such as Credit Default Swaps (CDS), Collateralised Debt Obligations (CDO), and Constant Proportion Debt Obligations (CPDO). Such products have been shown to be extremely sensitive to the volatility of the underlying assets and the levels of credit spreads. Furthermore, empirical investigations have shown that credit spreads can be severely distorted under conditions of financial distress.

Within this context, the question arises of whether the shocks of default probabilities defined in the Standard Formula reflect the actual effects of changes in the reinsurers' credit standing.

A model is presented to characterise the cost of a generalised class of structured products, where guarantees are represented by a class of reinsurance policies promising to reimburse the excess of loss over some retention level. A market equilibrium approach is adopted to determine the cost of issuing debt, associated with the cost of insuring the aggregate portfolio. A rich description of funding markets is possible within this framework, allowing for a broad range of states, where credit spreads are uniquely determined for every pair of solvency ratios and assets volatilities.

Shocks of solvency ratios and assets volatilities thus lead to specific variations in the levels of credit spreads and credit default probabilities, which can provide a benchmark to the default probabilities defined under the Counterparty Default Risk SCR module.