

MODELLING AGGREGATE NON-LIFE UNDERWRITING RISK: STANDARD FORMULA VS INTERNAL MODEL

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Abstract

The main target of this paper is to analyse the risk profile of a multi-line non-life insurer. A risk theoretical simulation model is then applied with the aim to predict the risk capital regarding only premium risk. A systematic comparison has been performed between Risk Based Capital obtained by the application of an Internal Model and the corresponding Solvency Capital Requirement as provided by the Solvency II-QIS3 standard formula for different insurers according to dimension and risk distribution. Finally the paper discusses the dependence problem: losses from different line of business are linked by different approaches. At this regard the dependence effect on RBC is examined comparing the QIS3 aggregation formula (using correlation matrix) with Internal Model results. Furthermore different results are obtained applying either elliptical copula functions and approximation formula based on linear correlation

Keywords: Aggregation and dependency in non-life insurance, Premium Risk, Internal Model, Solvency II-QIS3 Standard Formula.