

A computation of the cost-of-capital margin from loss triangles and a comparison to the risk margin in Solvency II

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Abstract

The upcoming IFRS 17 Insurance entails new starting points for accounting and valuation of insurance contracts. The goal of this thesis is to look further into assigning a value to the aggregate outstanding liability for an insurance company, including a risk margin. We will apply a market-consistent two-stage valuation procedure of an insurance liability based on data from loss triangles. The first step is to find a portfolio of zero-coupon bonds that generates cash flows matching the liability cash flow in expected values. Residual cash flow will arise due to the imperfect replication in the first step, which is managed by repeated one-period replication using only cash funds. The value of the residual cash flow is what we call the cost-of-capital margin. This is compared to the risk margin in the Solvency II framework, calculated according to a proposed approximation technique by EIOPA that is commonly used in the industry. Moreover, we consider two stochastic models for the comparison of the risk margin objects. Our results are both based on data used in the literature and on data from a Swedish insurance company. We will find that the risk margin in Solvency II may overestimate as well as underestimate the risk margin compared to the more correct valuation procedure. We will also see that the approximation technique is performing well for insurance products that is less volatile and furthermore that the value of total outstanding insurance liability is not very different among the approaches.

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