Abstract:

The Pillar 1 of the Solvency II directive requests from European insurance companies to assess their solvency capital requirement using market-consistent valuation bases that take into account the implicit instantaneous risk aversion level of the market. This snapshot approach induces significant fluctuations for the company's wealth and can insidiously lead companies to overback their assets to their liabilities to reduce this artificial volatility. Beyond this standardized valuation approach, the Pillar 2 of the Solvency II directive gives companies the opportunity to proceed to an alternative assessment of overall solvency needs using different recognition and valuation bases (the ORSA overall solvency needs). In this paper, we use expected utility and cumulative prospect theories to construct alternative valuations for assets and liabilities of insurance companies. Specifically, we use a SAHARA utility framework and we also introduce a new Cumulative Prospect Theory (CPT) framework that incorporates the SAHARA utility function as a value function. The process used for assessing the companies' own funds consists in replacing the point-in-time market risk aversion characteristics extracted from the last observed market prices by some long term market risk aversion levels more relevant with the duration of the companies' commitments. Our approach extends the market-consistent valuation setting and assesses the wealth of an insurance company by considering risk aversion characteristics that can differ from the point-in-time market-consistent ones. In our illustrations, we show that this approach leads to a smaller volatility of own funds and of the ORSA overall solvency needs. Furthermore, the CPT framework could capture two modes of behaviors: a classic case and a case overweighting extreme events.

Keywords:

Solvency II, Expected Utility Theory, Cumulative Prospect Theory, ORSA, Market-Consistent, Fair Value, Best Estimate of Liabilities, Overall Solvency Needs, Own Funds, SAHARA-CPT
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