

# Solvency II Calibrations: Where Curiosity Meets Spuriousity

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## Abstract

The Solvency II regulatory framework specifies procedures and parameters for determining solvency capital requirements (SCRs) for insurance companies. The proposed standard SCR calculations involve two steps. The Value-at-Risk (VaR) of each risk driver is measured and, in a second step, all components are aggregated to the company's overall SCR, using the *Standard Formula*. This formula has two inputs: the VaRs of the individual risk drivers and their correlations. The appropriate calibration of these input parameters has been the purpose of various Quantitative Impact Studies that have been conducted by the European regulator during recent years.

This paper demonstrates that the parameter calibration for the market-risk module—overall, the most significant risk component—is fundamentally flawed, giving rise to spurious and highly erratic parameter values. As a consequence, an implementation of the Standard Formula with the currently proposed calibration settings for market-risk is likely to produce inaccurate, biased and, over time, highly erratic capital requirements.

A more appropriate approach to calibrating the parameters of the standard formula is presented.

*Keywords:* Solvency capital requirements capital, standard formula, near-unit root, spurious correlation, VaR-implied correlations, tail dependence.