ASTIN / AFIR-ERM COLLOQUIUM
PANAMA CITY, PANAMA
20 - 24 AUGUST, 2017

SYNOPSIS

TITLE Solvency capital estimation, reserving cycle and ultimate risk

AUTHOR(S) Alessandro Ferriero

Key words: Solvency II; SCR; One-year risk; Risk margin; Non-life insurance risk; Reserving cycle

Purpose of your paper: the purpose of the paper is to provide a realistic, reliable and practical methodology for the estimation of the one-year risk and the risk margin, as defined in the Solvency II European regulation. The need for a new methodology is consequence of the many limitations of the Merz-Wüthrich method, which will be discussed in the presentation. Furthermore the method proposed in the paper is able to capture the reserving cycle, which is not the case for the methodology currently used for the estimation of the one-year risk and the risk margin, and to create a link between these quantities and the ultimate risk.

Synopsis: in this paper we propose a stochastic model for the evolution of the reserves for a non-life insurance run-off portfolio that captures the dynamic of the reserving cycle, which consists in years of prudent reserves releases followed by sudden reserves strengthening. In our model we assume that the relative loss developments over time follow a stochastic process with dependent increments, and that the consequently estimated reserves evolve as a stochastic process with discontinuous paths, which all together could be mathematically described as a geometric fractional Brownian motion with random jumps. The dependence between increments reflects the first phase of the reserving cycle, i.e. prudent reserve releases, whereas the second phase of the cycle is captured by the jumps. Remarkably in our model a jump in the reserves occurs after a period of systematic under-estimation of the losses, as happens in reality. As a product of our model we propose practical estimators for the Solvency Capital Requirement and the Risk Margin as defined in the European regulation (Solvency II), and analogously in the Swiss regulation (SST), as functions of the ultimate risk.

Note: If you are not presenting a paper for this Colloquium, please include as much detail as possible in your Synopsis (maximum three pages) to enable delegates to prepare for your session.

ASOCIACIÓN CENTROAMERICANA de ACTUARIOS

AFIR/ERM

ASTIN