Reevaluation of the capital charge in insurance after a large shock: empirical and theoretical views

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Abstract

Motivated by the recent introduction of regulatory stress tests in the Solvency II framework, we study the impact of the re-estimation of the tail risk and of loss absorbing capacities on post-stress solvency ratios. Our contribution is threefold. First, we build the first stylized model for re-estimated solvency ratio in insurance. Second, this leads us to solve a new theoretical problem in statistics: what is the asymptotic impact of a record on the re-estimation of tail quantiles and tail probabilities for classical extreme value estimators? Third, we quantify the impact of the re-estimation of tail quantiles and of loss absorbing capacities on real-world solvency ratios thanks to regulator data from EIOPA. Our analysis sheds a first light on the role of the loss absorbing capacity and its paramount importance in the Solvency II capital charge computations. We conclude with a number of policy recommendations for insurance regulators. Keywords. Insurance, Extreme Value Theory, Financial Regulation, Solvency II, Solvency Capital Requirement, Loss Absorbing Capacities, Stress Tests, Enterprise Risk Management.

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