Approaches and Techniques to Validate Internal Model Results

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Abstract

The development of risk model for managing portfolio of financial institutions and insurance companies require both from the regulatory point of view and from the management point of view strong validation of the quality of the results provided by internal risk models. In Solvency II for instance, regulators require company who apply for the approval of their internal models to provide independent validation reports.

Unfortunately, the usual statistical techniques do not work for the validation of risk models as they should be based on many observations that we lack for the results of the models. We certainly do not have enough relevant data to statistically estimate the significance of the VaR at 99.5% for insurance. We thus need to develop various strategies to test the reasonableness of the model.

In this paper, we review the ways, management and regulators can gain confidence in the quality of models. It all starts by ensuring a reasonable calibration of the risk models and the dependencies between the various risk drivers. Then applying stress tests to the model and various empirical analysis, in particular the probability integral transform, we build a full and credible framework to validate risk models.