Extreme-scenario risk measures and superadditivity

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Abstract

There have been extensive debates on the comparison of risk measures in both academia and industry. In particular, the coherent/non-elicitable risk measure Expected Shortfall and the non-coherent/elicitable risk measure Value-at-Risk have been the center of discussion in the recent decade. In this talk, we compare popular risk measures, and address the fundamental question of "how superadditive can a risk measure be?". We introduce the extreme-scenario measures induced by risk measures to quantify the worst-case aggregate capital requirement in the presence of model uncertainty. Our results suggest that ES and the property of coherence indeed have some unique features - which were never discovered in the literature - desired by a good risk measure. The results we obtained are particularly relevant to the recent consultative documents by the Basel Committee on Banking Supervision.