Pareto-optimal reinsurance under distortion risk measures

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Abstract

In this talk, we discuss the Pareto-optimal reinsurance policies, where both the insurers and the reinsurers risks and returns are considered. We assume that the risks of the insurer and the reinsurer, as well as the reinsurance premium, are determined by some distortion risk measures with different distortion operators. Under the constraint that a reinsurance policy is feasible only if the resulting risk of each party is below some pre-determined values, we derive explicit expressions for the optimal reinsurance polices. Methodologically, we show that the generalized Neyman-Pearson method, the Lagrange multiplier method, and the dynamic control methods can be utilized to solve our problem. Special cases when both parties risks are measured by Value-at-Risk (VaR) and Tail Value-at-Risk (TVaR) are studied in great details. Numerical examples are provided to illustrate practical implications of the results.

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