Economic Capital and the Aggregation of Risks

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Insurance companies measure and manage capital across a broad range of diverse business products. This usually requires the companies to aggregate various business products whose risk distributions vary, that is, the loss distributions of the product lines are different. In this paper, we address the issue of aggregation using the method of copulas. Copulas can be used to construct joint multivariate distribution of the losses and provide a rather flexible and realistic model of allowing dependence structure, while separating the effects of peculiar characteristics of the marginal distributions such as thickness of tails. This modeling structure allows us to explore then the impact of inter-correlation of risks on the total required economic capital. We further analyze, using numerical illustrations, the sensitivity of the choice of the copula to examine the dependence structure.

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