

Optimal Reinsurance of Dependent Risks

ABSTRACT

The talk will focus on the optimal reinsurance problem for two dependent risks, from the point of view of the ceding insurance company. We assume that the two risks are dependent by means of a copula structure. By risk we mean a line of business, a portfolio of policies or a policy. The reinsurance optimization problem as well as the copula framework for modeling dependent risks will be briefly introduced.

We then present the problem here studied, consisting in finding the optimal combination of quota-share and stop loss treaties, for each risk, that maximizes the expected utility or the adjustment coefficient of the total wealth of the insurer. Sensitivity of the optimal reinsurance strategy is analyzed numerically to several factors, including the dependence structure, through the copula chosen, and the dependence strength, by means of the dependence parameter, corresponding to different values of the Kendall's tau. A variety of reinsurance premium calculation principles are also considered.