Liang, Zhibin [Liang, Zhi Bin] (PRC-NJN-SM); Yuen, Kam Chuen (PRC-HK-SA)

Optimal dynamic reinsurance with dependent risks: variance premium principle.
(English summary)

In the paper under review, the authors consider the optimal proportional reinsurance strategy in a risk model with two dependent classes of insurance business, where the two claim number processes are correlated through a common shock component. Under the criterion of maximizing the expected exponential utility with the variance premium principle, they adopt a nonstandard approach to examining the existence and uniqueness of the optimal reinsurance strategy. Using stochastic control theory, closed-form expressions for the optimal strategy and the value function are derived for the compound Poisson risk model as well as for the Brownian motion risk model. From the numerical examples, they see that the optimal results for the compound Poisson risk model are very different from those for the diffusion model. The former depend not only on the safety loading, time, and the interest rate, but also on the claim size distributions and the claim number processes, while the latter depend only on the safety loading, time, and the interest rate.

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