

基于监管的保险公司最优比例再保险策略

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收稿日期 2009-5-5 修回日期 网络版发布日期 2009-12-14 接受日期

摘要 根据监管规定, 保险公司必须提存一定水平的准备金. 鉴于此, 保险公司必须保持盈余不低于这个准备金水平. 将保险公司盈余首次达该准备金水平的时刻定义为“破产”时刻, 以最小化“破产”概率为目标; 假设保险公司可购买比例再保险, 其盈余过程由扩散模型刻画且盈余按连续复利方式计算利息, 其中利力为常数; 借助随机动态规划方法, 通过求解相应的HJB方程得到了最优值函数与最优比例再保险策略的解析式. 最后给出了经济解释与数值算例.

关键词 [盈余过程](#), [破产概率](#), [比例再保险](#), [Hamilton-Jacobi-Bellman方程](#).

分类号 [49L20](#), [90C39](#)

Optimal Proportional Reinsurance Policy Based on Regulations

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Abstract According to regulations, an insurance company must convert a certain level of reserve. In view of this, the insurer must keep its surplus no less than this reserve level. In this paper, the “ruin” time is defined as the first time to achieve the reserve level, and the target is to minimize the “ruin” probability of the insurer. It is assumed that the surplus process is described by a diffusion model, the insurer can purchase proportional reinsurance and its surplus is appreciated according to continuous compound interest with a constant force of interest. By using the stochastic dynamic programming approach, explicit expressions of the optimal value function and the optimal proportional reinsurance policy are obtained via solving the corresponding HJB equation. Finally, some economical explanations and a numerical example are provided.

Key words [Surplus process](#) [ruin probability](#) [proportional reinsurance](#) [Hamilton-Jacobi-Bellman equation](#).

DOI:

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