

Liability Distribution Management for Life Insurance Company under Longevity Risk with Parameter Uncertainty

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Abstract

By incorporating the mortality duration matching strategy of Wang, et. al. (2008) and two-factor stochastic mortality model of Cairns, et. al. (2006b), we propose a mini-mized loss distribution model for insurance companies to hedge against longevity risk. We demonstrate that the proposed minimized loss distribution model can lead to an optimal liability structure and effectively reduce parameter risks associated with forecasting future mortality. Compared with the mortality duration matching strategy, the hedged distribution constructed by the proposed model is thinner in the tails and can effectively reduce longevity risks for life insurance companies.

Keywords: longevity risk, stochastic mortality, parameter risk, liability management, duration match.