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Longevity 12 Articles

Mortality Risk Management Under the Factor Copula Framework—With Applications to Insurance Policy Pools

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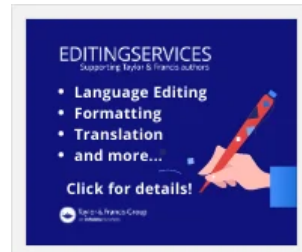
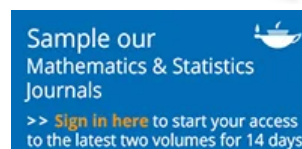
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Abstract

Mortality risk is one of the core risks that life insurers undertake. The uncertain future lifetime of each insured represents one risk factor, and the dependence structure among these risk factors determines the aggregate risk of an insurance policy pool. We propose using factor copulas to describe the dependence structure among the future lifetimes of numerous insureds. This differs from Chen, MacMinn, and Sun (2015) in that their focus is on pricing the securities linked to several mortality indexes. To mitigate the systematic mortality risk associated with an insurance pool, the insurer may purchase an asset exposed to similar systematic risk. We thus set up a two-

factor copula framework and solve for the optimal investment amount in the asset. In numerical illustrations, we employ real-case data from a life insurer and a life settlement market maker involving hundreds of policies.

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Additional information

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