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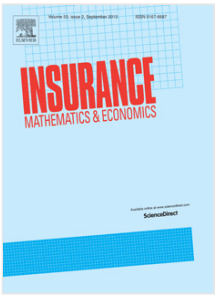

On the effectiveness of natural hedging for insurance companies and pension plans

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On the effectiveness of natural hedging for insurance companies and pension plans

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ABSTRACT

Natural hedging is one possible method to reduce longevity risk exposure for an annuity provider or a pension plan. In this paper, we provide an assessment of the effectiveness of natural hedging between annuity and life products, using the correlated Poisson Lee-Carter model, Poisson common factor model, product-ratio model, and historical simulation. Our analysis is based on the mortality experience of UK assured lives, pensioners, and annuitants, and the national population of England and Wales. We consider a range of different scenarios, and find that the level of risk reduction is significant in general, with an average of around 60%. These results have important implications for those insurers, reinsurers, and pension plan sponsors who are seeking ways to hedge their unwanted risk exposures.

Keywords: Longevity risk, natural hedging, Poisson Lee-Carter model, Poisson common factor model, product-ratio model, historical simulation, Value-at-Risk, risk reduction

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