Measuring Basis Risk Involved in Longevity Hedges

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Abstract

In recent years, a number of mortality-linked securities have become available for pension plan providers to hedge their longevity risk exposures. Most of these securities are related to broad population mortality indexes rather than the pension plans' own mortality experience. This mismatch creates basis risk in longevity hedges for pension funds whose exposures might be concentrated in specific geographic regions or socio-economic groups. On the basis of the Lee-Carter framework, we present in this paper a stochastic model for measuring basis risk in longevity hedges. The model is then applied to a hypothetical longevity hedge designed for a pension plan in North America.

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