

# **Basis risk in static versus dynamic longevity-risk Hedging**

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## **Abstract**

This paper provides a simple model for basis risk in a longevity framework, by separating common and idiosyncratic risk factors. Basis risk is captured by a single parameter, that measures the co-movement between the portfolio and the reference population. In this framework, the paper sets out the static, swap-based hedge for an annuity, and compares it with the dynamic, delta-based hedge, achieved using longevity bonds. We assume that the longevity intensity is distributed according to a CIR-type process and provide closed-form derivatives prices and hedges, also in presence of an analogous CIR process for interest rate risk.

Keywords: longevity risk, basis risk, static vs. dynamic hedging, longevity swaps, longevity bonds.