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The fair value of guaranteed annuity options

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Abstract

We discuss the fair valuation of Guaranteed Annuity Options, i.e. options providing the right to convert deferred survival benefits into annuities at fixed conversion rates. The use of doubly stochastic stopping times and of affine processes provides great computational and analytical tractability, while enabling to set up a very general valuation framework. For example, the valuation of options on traditional, unit-linked or indexed annuities is encompassed. Moreover, security and reference fund prices may feature stochastic volatility or discontinuous dynamics. The longevity risk is also taken into account, by letting the evolution of mortality present stochastic dynamics subject not only to random fluctuations but also to systematic deviations.

Keywords:

Fair value | Options to annuitize | Stochastic mortality | Longevity risk | Financial risk | Doubly stochastic stopping times | Affine processes

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Notes

[1]We are grateful to Freddy Delbaen for clarifying these points.

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