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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

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[DEFAULT RISK INSURANCE AND INCOMPLETE MARKETS¹](#)

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[Guaranteed Annuity Options](#)

Source: Astin Bulletin

[Stochastic Duration and Fast Coupon Bond Option Pricing in Multi-Factor Models](#)

Source: SSRN Electronic Journal

[A General Version of the Fundamental Theorem of Asset Pricing \(1994\)](#)

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[A YIELD-FACTOR MODEL OF INTEREST RATES](#)

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