



Scandinavian Actuarial Journal >

Volume 2006, 2006 - [Issue 1](#)

437 | 58

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The fair value of guaranteed annuity options

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Pages 23-41 | Published online: 18 Feb 2007

Cite this article <https://doi.org/10.1080/03461230500462204>

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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

We thank the participants to the 27th AMASES Conference in Cagliari (Italy), the 8th IME Conference in Rome, the 7th Spanish-Italian Meeting on Financial Mathematics in Cuenca (Spain) and the 3 Conference in Actuarial Science and Finance in Samos (Greece), where earlier versions of this paper were presented, and the people at the University of Trieste (Department of Applied Mathematics), ETH Zürich (Department of Mathematics) and Bocconi University (IMQ) for helpful comments and suggestions. All errors are ours. We acknowledge financial support from the Italian MIUR.

Notes

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

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