Mean-variance hedging of guaranteed annuity options

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Abstract. Guaranteed annuity options can represent significant liabilities for life companies and pension schemes. They are difficult to hedge because of market incompleteness and because their dynamics are affected by the simultaneous interaction of interest rate, equity and longevity risk. In this paper, we study mixed static and dynamic hedging strategies that are optimal according to the mean-variance criterion. Tradeable assets are bonds, stocks, swaptions and possibly mortality-linked securities. Considering all the risks involved, we examine different strategies by allowing for various degrees of market incompleteness.

Keywords: mean-variance hedging, incomplete markets, options to annuitize, static hedging, linear-quadratic optimal control.

References


