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A Comonotonicity-based Valuation Method for Annuity-linked Contracts

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We consider the valuation of a guaranteed annuity option (GAO) under a generalised modelling set-up where both interest and mortality risks are stochastic and correlated. Changes of probability measures are employed to obtain more implementable valuation formulae for mortality-linked contracts. Comonotonicity theory is applied to derive upper and lower bounds for the annuity rate in the convex order sense. These bounds provide accurate approximations for the value of GAOs. Numerical demonstrations are included to show the accuracy and reasonableness of our comonotonic approximations for the GAO values.