## Optimal Investment-Consumption Strategies under Uncertain Lifetimes

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## Abstract

This paper considers the continuous-time optimisation of investmentconsumption decisions, subject to uncertainty about the eventual time of death. We extend and correct the existing literature, incorporating Epstein-Zin recursive utility and a general force of mortality. We solve the problem analytically for the Gompertz-Makeham law of mortality, one of the most accurate and widely used models of human mortality. We find that the Merton allocation remains robust to more general specifications, and that the optimal rate of consumption, as a proportion of remaining wealth, can be expressed as the reciprocal of the value of an annuity, under a modification of the individual's law of mortality. We demonstrate a practical application of this solution using real lifetables and routine actuarial calculations.