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Optimal consumption, investment and life-insurance purchase under a stochastically fluctuating economy

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Abstract: We study the optimal consumption, investment and life-insurance purchase and selection strategies for a wage-earner with an uncertain lifetime with access to a financial market comprised of one risk-free security and one risky-asset whose prices evolve according to linear diffusions modulated by a continuous-time stochastic process determined by an additional diffusive nonlinear stochastic differential equation. The process modulating the linear diffusions may be regarded as an indicator describing the state of the economy in a given instant of time. Additionally, we allow the Brownian motions driving each of these equations to be correlated. The life-insurance market under consideration herein consists of a fixed number of providers offering pairwise distinct contracts. We use dynamic programming techniques to characterize the solutions to the problem described above for a general family of utility functions, studying the case of discounted constant relative risk aversion utilities with more detail.

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