Insurance Finance Arbitrage

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In most cases, insurance contracts are linked to the financial markets, such as through interest rates or equity-linked insurance products. To motivate an evaluation rule in these hybrid markets, Artzner et al. (2022) introduced the notion of insurance-finance arbitrage. In this paper we extend their setting by incorporating model uncertainty. To this end, we allow statistical uncertainty in the underlying dynamics to be represented by a set of priors P. Within this framework we introduce the notion of robust asymptotic insurance-finance arbitrage and characterize the absence of such strategies in terms of the concept of QP-evaluations. This is a nonlinear two-step evaluation which guarantees no robust asymptotic insurance-finance arbitrage. Moreover, the QP-evaluation dominates all two-step evaluations as long as we agree on the set of priors P which shows that those two-step evaluations do not allow for robust asymptotic insurance-finance arbitrages. Furthermore, we introduce a doubly stochastic model under uncertainty for surrender and survival. In this setting, we describe conditional dependence by means of copulas and illustrate how the QP-evaluation can be used for the pricing of hybrid insurance products.