

Quantile-based risk sharing with heterogeneous beliefs

Abstract:

We study risk sharing games with quantile-based risk measures and heterogeneous beliefs, motivated by the extensive use of internal models in current financial regulation. Explicit forms of Pareto-optimal allocations and competitive equilibria are obtained by solving various optimization problems. For Expected Shortfall (ES) agents, Pareto-optimal allocations are shown to be equivalent to equilibrium allocations, and the equilibrium price is unique. For Value-at-Risk (VaR) agents or mixed VaR and ES agents, a competitive equilibrium does not exist. Our results largely generalize existing results on risk sharing games with risk measures and belief homogeneity, and draw an interesting connection to the early work on optimization properties of ES and VaR. This talk is based on joint work with Paul Embrechts, Tiantian Mao, and Ruodu Wang.