

Arrow-Debreu equilibria for rank-dependent utilities

Xunyu Zhou

The University of Oxford, UK

We provide conditions on a pure exchange economy with rank-dependent utility agents under which Arrow-Debreu equilibria exist. When such an equilibrium exists, we derive the state-price density *explicitly*, which is a weighted marginal rate of substitution between initial and end-of-period consumption of a representative agent, while the weight is expressed through the differential of the probability weighting function. A key step in our derivation is to obtain an analytical solution to the individual consumption optimization problem that involves the concave envelope of certain non-concave function. Based on the result we have several findings, including that asset prices depend upon agents' subjective belief on overall consumption growth, that an uncorrelated security's entire probability distribution and its dependence with the other part of the economy should be priced, and that there is a direction of thinking about the equity premium puzzle and the risk-free rate puzzle. Moreover, we propose a "rank-neutral probability" that is an appropriate modification of the original probability measure under which assets can be priced in the same way as in an economy with expected utility agents.

This is a joint work with Jiangming Xia.