

Heterogeneous Preferences, Constraints, and the Cyclicalities of Leverage

Tyler ABBOT

Abstract: This paper solves an open problem in financial mathematics by characterizing the equilibrium in a continuous time financial market populated by heterogeneous agents who differ in their rate of relative risk aversion and face convex portfolio constraints. The model is studied in an application to margin constraints and found to match real world observations about financial variables and leverage cycles. It is shown how margin constraints increase the market price of risk and decrease the interest rate by forcing more risk averse agents to hold more risky assets, producing a higher equity risk premium. In addition, heterogeneity and margin constraints are shown to produce both pro- and counter-cyclical leverage cycles. Beyond two types, more preference types causes a reduction in the severity of crisis and a lower relative deviation from complete markets in almost all variables. At the same time expected returns on the stock must remain high to compensate risk averse agents to hold a larger share and leverage is mechanically low as agents are limited in their borrowing. Finally, empirical results are given, documenting a novel stylized fact which is predicted by the model, namely that the leverage cycle is both pro- and counter-cyclical.