Robust Asymptotic Growth in the Presence of Stability
Scott Robertson, Questrom School of Business, Boston University

In this talk, we revisit "Robust Asymptotic Growth" (Kardaras, Robertson 2012) where the investor seeks to maximize the growth rate of her portfolio when there is uncertainty in the drift of asset dynamics. Therein, robust growth optimal portfolios are constructed via the generalized principal eigen-function for a degenerate elliptic operator, and arise as a long-horizon limit of the relative arbitrage portfolios, introduced by Fernholz and Karatzas . Presently, we extend the analysis to where asset dynamics are stable in that a limiting measure exists. This naturally arises in stochastic portfolio theory, where optimal policies are governed by the ranked relative market capitalizations. We provide simple conditions upon the domain, covariance matrix and limiting measure under which robust growth optimal portfolios exist. After presenting results for the case when asset dynamics do not exhibit local time behavior on the boundary of the state space, the case containing local times will be considered, as this is the natural setting for ranked based diffusions; the primary example of interest.

This is joint work with Kostas Kardaras, of the London School of Economics.