January 9, 2023
Zoom Meeting
2:00pm-3:00pm

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Dr. Weixuan Xia
(Boston University)

Optimal consumption-investment problems
under time-varying incomplete preferences

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Abstract: Our objective is to devote a first comprehensive study to the martingale solution to Merton's consumption-investment choice problem ([Merton, 1969] and [Merton, 1971]) under time-varying incomplete preferences driven by externality such as patience, socialization effects, and market volatility. The market consists of multiple risky assets and multiple consumption goods, while in addition there are multiple fluctuating preferential parameters with inexact values representing imprecise tastes. These send utility maximization to a multi-criteria problem with possibly function-valued criteria. To come up with a complete characterization of its solutions, first we motivate and introduce a set-valued stochastic process for the dynamics of multi-utility indices and formulate the optimization problem in a topological vector space. Then, we modify a classical scalarization method allowing for randomness in dimensions and prove results of equivalence to the original problem. Illustrative examples are given to demonstrate practical interests and the method applicability progressively. By using Malliavin calculus with stochastic geometry, we find optimal investment policies to be generally set-valued, each of whose selectors admits a three-way decomposition involving an additional indecisiveness risk-hedging portfolio. Our results touch on new directions for optimal consumption-investment choices in the presence of incomparability, also signaling potentially testable assumptions on the ranges of asset prices. Simulation techniques for set-valued processes are studied for how solved optimal policies can be computed in practice.
(This work is based on the first chapter of the speaker's doctoral dissertation.)

Zoom Link: USC Math Finance Colloquium
Time: Jan 9, 2023 02:00 PM Pacific Time (US and Canada)

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