

September 13th, 2021
Zoom Meeting
2:00 P.M. - 3:00 P.M.

Prof. Çağın Ararat
(Bilkent University, Turkey)

Dynamic mean-variance problem: recovering time-consistency

Abstract: The dynamic mean-variance problem is a well-studied optimization problem that is known to be time-inconsistent. The main source of time-inconsistency is that the family of conditional variance functionals indexed by time fails to be recursive. We consider the mean-variance problem in a discrete-time setting and study an auxiliary dynamic vector optimization problem whose objective function consists of the conditional mean and conditional second moment. We show that the vector optimization problem satisfies a set-valued dynamic programming principle and is time-consistent in a generalized sense. Moreover, its weighted sum scalarizations are closely related to the mean-variance problem through simple nonlinear transformations. This is at the cost of using stochastic and time-varying weights in the mean-variance problem. We also discuss the relationship between our results and some recent results in the literature that discuss the use of time-varying weights under special dynamics. Finally, in a finite probability space, we propose a computational procedure that relies on convex vector optimization and convex projection problems, and we use this procedure to calculate time-consistent solutions in concrete market models. Joint work with Seyit Emre Düzoylum (Bilkent).

Zoom link:

Topic: Math Finance Colloquium (USC)

Time: Sep 13, 2021 02:00 PM Pacific Time (US and Canada)

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