

Date: 2020.9.24. 9:00-10:00

Tencent meeting: 60618598357

Zoom: 657 506 64768 (psw 123456)

Speaker: Lijun Bo

Title:

Optimal Tracking Portfolio with A Ratcheting Capital Benchmark

Abstract:

This talk is concerned with the finite horizon portfolio management by optimally tracking a ratcheting capital benchmark process. To formulate such an optimal tracking problem, we envision that the fund manager can dynamically inject capital into the portfolio account such that the total capital dominates the nondecreasing benchmark floor process at each intermediate time. The control problem is to minimize the cost of the accumulative capital injection. We first transform the original problem with floor constraints into an unconstrained control problem, however, under a running maximum cost. By identifying a controlled state process with reflection, we next transform the problem further into an equivalent auxiliary problem, which leads to a nonlinear Hamilton-Jacobi-Bellman (HJB) with a Neumann boundary condition. By employing the dual transform, the probabilistic representation approach and some stochastic flow arguments, the existence of the unique classical solution to the dual HJB is established. The verification theorem is carefully proved, which gives the complete characterization of the primal value function and the feedback optimal portfolio.