DEPARTMENT OF MATHEMATICAL SCIENCES

Colloquium

Mihnea S. Andrei

Worcester Polytechnic Institute

Bayesian Analysis for Asset Allocation with Investor's Views Considered

ABSTRACT: The Black-Litterman model combines the market equilibrium with the investor's personal views and gives optimal portfolio weights. In this paper we will review the original Black-Litterman model, we will modify the model such that it fits in a Bayesian framework by considering the investors' personal views to be a direct prior on the means of the returns and by including a typical Inverse Wishart prior on the covariance matrix of the returns. We will then consider Leonard and Hsu's (1992) idea for a prior on the logarithm of the covariance matrix. We encountered both running time and memory allocation problems when we applied the latter version to the whole S&P500. To overcome such computational problems, Bayesian factor models are considered for the analysis. This choice was also motivated by the strong connection between Black-Litterman and the Capital Asset Pricing Model, which itself can be seen as a factor model. Sensitivity analysis for the level of confidence that investors have in their own personal views were performed and performance of the models was assessed on a test data set consisting of returns over the month of January 2018.

Friday, September 6, 2019
11:00AM-12:00PM
Stratton Hall 203