Temple University

ANNOUNCES A
COLLOQUIUM

Yingying Fan

Department of Operations Research and Financial Engineering
Princeton University

will speak on

Aggregation of Time-and State-Domain Methods for Volatility Matrix Estimation

Time: 3:00 – 4:00 PM
Date: Monday, January 22, 2007
Place: Speakman Hall 318

Abstract

Time-and state-domain methods are two common approaches for nonparametric estimation. While the former predominantly uses data from recent history, the latter mainly relies on historical information. The question of combining these two pieces of valuable information is an interesting challenge in statistics. We surmount this problem by dynamically integrating information from both the time and the state domains.

The estimators from these two domains are optimally combined via a data driven weighting strategy, which provides a more efficient estimator of volatility. Asymptotic normality is separately established for the time-domain, the state-domain, and aggregated estimators. By comparing their efficiencies, it is demonstrated that the newly proposed aggregated estimator uniformly dominates the other two estimators. Intensive simulations and empirical studies further demonstrated convincingly that our aggregation procedure outperforms some popular ones such as the RiskMetrics, etc.

Multivariate volatility estimation is for more important in econometrics. To attenuate the curse of dimensionality, a factor modeling strategy is proposed. Similar asymptotic results to those in scalar volatility estimation are established. A simulation study, based on an essentially affine model for the term structure, is conducted, and our new procedure outperforms both time-and state-domain estimators. Empirical studies also favor our aggregated estimator.

This talk is based on collaborated works with Professor Jianqing Fan and Dr. Jiancheng Jiang.

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