International Workshop on Modern Statistics

February 28, 2011, Xiamen, China

Sponsors: **The Wang Yanan Institute for Studies in Economics, Xiamen University**
The Department of Statistics, School of Economics, Xiamen University
The Ministry Of Education Key Laboratory of Econometrics
The Fujian Provincial Key Laboratory of Statistical Sciences

Venue: **D110 of Economics Building**

Program:

2:00 - 3:45 pm   **Opening Remark and Session I**
Venue: D110 of Economics Building

Chair: Zongwu Cai, University of North Carolina at Charlotte and WISE, Xiamen University

[1] Yan Liu, Chinese University of Hong Kong
"Shrinkage Method for Estimating Optimal Expected Return of Self-financing Portfolio"

[2] Zhi Liu, Hong Kong University of Science and Technology
"Estimating Volatility Functional With Multiple Transactions"

3:45 - 4:00 pm   **Coffee Break**

4:00 - 5:40 pm   **Session II**
Venue: D110 of Economics Building

Chair: Jianping Zhu, School of Economics, Xiamen University

[3] Muyi Li, Hong Kong University
"Score Tests for Hyperbolic GARCH Models"

[4] Yuanyuan Lin, Hong Kong University of Science and Technology
"Efficient Estimation of Censored Linear Regression Model"

ABSTRACT

Venue: D110 of Economics Building

Chair: Zongwu Cai, University of North Carolina at Charlotte and WISE, Xiamen University

[1] Yan Liu, Chinese University of Hong Kong
"Shrinkage Method for Estimating Optimal Expected Return of Self-financing Portfolio"

Abstract: The mean-variance portfolio optimization procedure proposed by Markowitz (1952) requires two crucial inputs: the theoretical mean and the theoretical covariance matrix of the portfolio in one period. Since the traditional plug-in method using the sample mean and the sample covariance matrix of the historical data incurs substantial estimation errors, this paper explores how the sample mean and the sample covariance matrix behave in the optimization procedure on the idea of conditional expectation. A new estimator for calculating the optimal expected return of a self-financing portfolio is then proposed, which is applicable for a given portfolio of dimension p and a given sample size n under the assumption that p/n is only bounded. Simulation studies show that the new estimator is superior to the previous methods.

[2] Zhi Liu, Hong Kong University of Science and Technology
"Estimating Volatility Functional With Multiple Transactions"

Abstract: In this paper, we consider the volatility functional estimation (especially, the integrated volatility) when there are more than one transaction within one time unit. The simple numerical example shows that averaged realized integrated volatility does not work in this case. We propose an estimator which can overcome the difficulty and moreover it does not need to impose any constraint on the number of transactions. The asymptotic results are established. Using simulation of stochastic models commonly used in finance, we confirm the performance of our estimators. Finally, we apply our estimators to several real data sets.

Venue: D110 of Economics Building

Chair: Jianping Zhu, School of Economics, Xiamen University

[3] Muyi Li, Hong Kong University
"Score Tests for Hyperbolic GARCH Models"

Abstract: Davidson (2004) recently proposed the hyperbolic GARCH model to capture the phenomenon of long-range dependence in volatility, and the extent of such dependence is measured by the geometric or hyperbolic decay of the coefficients in an

ARCH(∞) model. This paper reinterprets the hyperbolic GARCH model by building a link with the common GARCH model, and a simplified score test is constructed to check the presence of the hyperbolic decay. The asymptotic of the test statistic are derived under the null hypothesis and the local alternatives. Monte Carlo simulation experiments are conducted to study the performance of this test, and the illustration on two log return sequences is reported.

[4] Yuanyuan Lin, Hong Kong University of Science and Technology
"Efficient Estimation of Censored Linear Regression Model"

Abstract: In linear regression or accelerated failure time model, the method of efficient estimation, with or without censoring, has long been overlooked. The main reason is that complications arise from multiple roots of the efficient score and density estimation. In particular, when smoothing is involved, uncertainty in the choice of bandwidth is inevitable. Zeng and Lin (2007) provided a novel efficient estimation method for the accelerated failure time model by maximizing a kernelsmoothed profile likelihood function. This paper proposes a one-step efficient estimation method based on counting process martingale, which has several advantages: it avoids the multiple root problem, the initial estimator is easily available, and it is easy to implement numerically with a built-in inference procedure. The requirement on bandwidth is rather loose and less restrictive than that imposed in Zeng and Lin (2007). A simple and effective data-driven bandwidth selection method is provided. The resulting estimator is proved to be semiparametric efficient with the same asymptotic variance as the efficient estimator when the error distribution is assumed to be known up to a location shift. The asymptotic properties of the proposed method are justified and the asymptotic variance matrix of the regression coefficients is provided in a closed form. Numerical studies with supportive evidence are presented. Applications are illustrated with the well-known PBC data and the Colorado Plateau uranium miners data.