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Financial Statistics and Risk Management

Rong Chen, Per Mykland, Qiwei Yao

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EDITORIAL

Financial Statistics and Risk Management

This volume represents recent advances in the field of Financial Statistics and Risk Management. The papers, written by a diverse group of leading experts, reflect a wide range of topics which continue to attract substantial efforts across econometrics, empirical finance, statistics and mathematics. Most of the papers were presented at the International Symposium on Financial Engineering and Risk Management (FERM) in June 2014, which was held at the Central University of Finance and Economics in Beijing. FERM is by now established as one of the most important conferences in the field.

An important area in financial statistics is high frequency data. Over the last decade, we have seen substantial growth in such data, both in the sense that the frequency of trades and quote-revisions is increasing, and also in that the number of securities which are traded at high frequency is getting larger. High frequency data is important in that it permits estimation of certain financial variables, such as volatility, with high precision. Such data are also related to high frequency trading, the regulation of which is a major current policy discussion. This volume contains four papers that involve high frequency data. Aït-Sahalia and Xiu discuss estimators of the continuous and discontinuous part of the quadratic variation (q.v.) in the presence of noise and under regular sampling. They use this to show that the fraction of q.v. due to these two components remained unaltered during the recent financial crisis. This settles a question which has been much debated. Kim and Wang face the question of how to unify short and long term behavior of processes. It is common practice to use potentially incompatible models for high and low frequency, and Kim and Wang present an elegant unification where the low frequency process is allowed to be a GARCH process. Zhang and Zhu study multivariate maximum and minimum processes to capture extreme behavior of high frequency series, and develop an important econometric methodology based on sparsity. Mykland and Zhang show that pre-averaging and pre-M-estimation generally leads to observable processes that are (contiguous to) a locally Gaussian processes, possibly with jumps. This result can ease future analysis of the properties of high frequency data based estimators. Also, pre-averaging is seen to cause jumps to pulverize, while pre-M-estimation mitigates this problem.

Analyzing and modeling high dimensional data and functional data have become increasing important and have attracted significant research interests. Three papers in this volume are in this area. Liu, Xiao and Chen investigate modeling of functional time series. They propose a convolutional AR model which is interpretable and easy to estimate, with solid asymptotic results. Modeling building, validation and prediction