香港中文大學
The Chinese University of Hong Kong

劉佐德全球經濟及金融研究所
Lau Chor Tak Institute of Global Economics and Finance

Lecture on
"Limit theory for mildly explosive time series when initialization is in the infinite past"

by Professor Yiu Lim Lui

Associate Professor, Institute for Advanced Economic Research,
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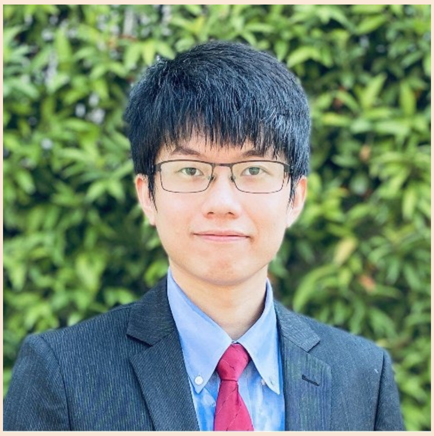

Date: **10 February 2026 (Tuesday)**

Time: **4:00 pm – 5:15 pm**

Venue: **Room 215,**
2/F, Cheng Yu Tung Building,
The Chinese University of Hong Kong,
12 Chak Cheung Street,
Shatin, N.T.

Language: **English**

Abstract:

Mildly Explosive (ME) time series models are frequently analyzed under the simplify- ing, but often unrealistic, assumption of recent past initialization. This paper addresses a key econometric challenge by developing the limit theory for the Least Squares (LS) estimator of the autoregressive (AR) coefficient when the ME model is initialized in the distant past or the infinite past. We argue that these initialization scenarios are more empirically realistic for financial data. Our central contribution is demonstrating that, critically, the asymptotic distribution of the LS t-statistic remains standard normal re- gardless of the initialization assumption (recent past, distant past, or infinite past). This finding provides a robust framework for inference, enabling the construction of a simple, asymptotically valid confidence interval for the AR coefficient across various initialization regimes. A new real-time detection method for identifying ME time series is also proposed. Furthermore, we significantly extend the ME model by incorporating exogenous regres- sors, which may be either finite- or high-dimensional. We propose a Post-Lasso confidence interval (CI) for the AR coefficient and establish its asymptotic validity under general conditions. Our simulation results demonstrate that the inclusion of additional regressors improves the precision of the resulting confidence interval. Finally, empirical application to the Nasdaq index during the dot-com bubble period highlights the proposed method's usefulness. Our novel confidence intervals provide significantly narrower results than the conventional Cauchy confidence interval, successfully confirming mild explosiveness in the log price of the Nasdaq index.

About the Speaker:

Professor Yiu Lim Lui is currently an associate professor at the Institute for Advanced Economic Research, Dongbei University of Finance and Economics. Professor Lui received his Ph.D. in Economics from the School of Economics, Singapore Management University. His research interests include time series econometrics, econometric theory, and financial econometrics. His research focuses on nonstationary time series, bootstrap methods, and fractionally integrated time series. His work has been published in reputable academic journals, such as the Journal of Econometrics, Journal of Business and Economic Statistics, and Oxford Bulletin of Economics and Statistics. Additionally, he serves as an anonymous referee for journals like Econometric Theory, Journal of Financial Econometrics, and Econometrics Review.

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