TIME SERIES ECONOMETRICS
PEKING UNIVERSITY, SPRING 2018

BO HU

General Information

Time: TBA
Location: TBA
Instructor: Bo Hu
Email: bohu@nsd.pku.edu.cn
Website: http://www.econbohu.com/teaching/tsa/
Teaching Assistant: TBA

Course Description

Time series econometrics has been widely used in analyzing economic dynamics. This graduate course introduces theoretical background and tools for time series analysis. This course contains two parts. Part I introduces statistical foundations for time series econometrics, including theories for stationary time series and non-stationary time series. Part II focuses on selected econometric time series models and methods that are relevant and useful for conducting empirical research in dynamic settings.

Prerequisites

Students are supposed to have taken Advanced Econometrics I and II.

Textbook

There is no required textbook for this course. I will use my own lecture notes. The following textbooks are for reference.

Aït-Sahalia, Y. and Jacod, J. (2014). *High-Frequency Financial Econometrics*. Princeton University Press.

Brockwell, P. and Davis, R. A. (1991). *Time Series: Theory and Methods*. Springer, 2nd edition.

Canova, F. (2007). *Methods for Applied Macroeconomic Research*. Princeton University Press.

DeJong, D. N. and Dave, C. (2011). *Structural Macroeconometrics*. Princeton University Press, 2nd edition.

Hamilton, J. D. (1994). *Time Series Analysis*. Princeton University Press.

Lütkepohl, H. (2005). *New Introduction to Multiple Time Series Analysis*. Springer.

Tsay, R. S. (2010). *Analysis of Financial Time Series*. Wiley, 3rd edition.

Computer Usage

This course requires programming. You may use any software package/programming language to solve homework problems. I suggest choosing from Matlab, Python, or R.

In-Class Presentations

The last few classes will be devoted to student presentations. You may choose to present a paper at your own choice from a reading list, which will be available in the middle of the semester.

Grading

For those who take this course for credit, a final grade will be assigned based on your grades of homework assignments (30%), the midterm exam (30%) and the final presentation (40%). The mid-term exam will be in-class.

Office Hours

The time and location of my office hours are to be announced. The time and location of the TA's office hours are to be announced. If you wish to meet me outside my office hours, you should make an appointment in advance via email at `bohu@nsd.pku.edu.cn`.

Course Contents

This course will cover the followings topics.

Part I

1. Introduction
    1.1. Introduction to Time Series
    1.2. A Review of Probability Theory
    1.3. Basic Theory of Hilbert Space
2. Mathematical Theory of Stationary Processes
    2.1. Stationary Processes in the Time Domain
    2.2. Stationary Processes in the Frequency Domain
    2.3. Prediction of Stationary Processes
3. Statistical Theory of Stationary Processes
    3.1. Estimation of Sample Mean and Autocovariance Function

Part II