School of Economics

Academic Year 2018-19
Term 1

COURSE CODE & COURSE TITLE: ECON726 Panel Data Econometrics I

Instructor: Lee Kong Chian Professor SU Liangjun
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Lecture time/venue: Mondays 3:30-6:45pm

COURSE DESCRIPTION:

Panel data econometrics is one of the most exciting and fruitful fields in modern econometrics. This course serves as a solid introduction to panel data analysis. We will first introduce static panel data models where we learn basic techniques to handle panel data with random or fixed effects, to distinguish between random and fixed effects panel data models, and test for serial correlation and heteroskedasticity in panel data models. Then we introduce dynamic panel data models where we discuss both GMM and maximum likelihood estimation. We will also introduce panel data models with variable coefficients where the coefficients can change over either the cross section or time dimension, or both, review various tests of structural breaks in panel data models, and study panel data models with latent structures. More advanced topics such as panel data models with cross sectional dependence, nonstationary panels, nonlinear panels, unbalanced and high-dimensional panels, and nonparametric/semiparametric panels will be covered in Panel Data Econometrics II.

PRE-REQUISITE/CO-REQUISITE/MUTUALLY EXCLUSIVE COURSE(S)

Econ 611

ASSESSMENT METHODS

Assignments	:	50 %
Research proposal	:	50 %
Total	:	100 %

CLASS TIMINGS

Student is required to attend 1 session of lecture every week over the first half of the term. Each lecture lasts for three hours.

6 lessons * 3 hours = 18 hours in total.

RECOMMENDED TEXT AND READINGS (OPTIONAL)
1. *Analysis of Panel Data* (Highly recommended), by Cheng Hsiao, Cambridge University Press, 3rd edition, 2014.

2. *Econometric Analysis of Panel Data* (Optional), by Badi H. Baltagi, Wiley, 5th edition, 2013.

3. *Panel Data Econometrics* (Optional), Manuel Arellano, Oxford University Press, 2003.

My lecture note will be made available on e-Learn.

Tentative Schedule
1. Introduction
   a. Types of Panel Data Sets
   b. Example of Panel Data Sets
   c. Benefits and Limitations of Panel Data
   d. Unobserved Heterogeneity
2. Static Panel Data Models
   a. A Taxonomy of Individual Effects
   b. Random Effects Model
   c. Fixed Effects Model
   d. Hausman-Wu Specification Test
   e. Hausman and Taylor's Approach
   f. Panel Data Models with Endogeneity
   g. Difference-in-Difference Estimators
   h. Panel Data Models with Two-Way Error Components
   i. Test for Heteroskedasticity
   j. Test for Serial Correlation
3. Dynamic Panel Data Models
   a. Models with Sequentially Exogenous Regressors
   b. Anderson and Hsiao's IV Estimation
   c. GMM Estimation
   d. System GMM Estimators
   e. Many and Weak IV Issues
   f. Maximum Likelihood Estimation
   g. Random Effects Model
   h. A Factor-Analytic Approach to Dynamic Panel Data Models
   i. Specification Tests
4. Panel Data Models with Variable Coefficients
   a. Introduction
   b. Coefficients That Vary Over Individuals
   c. Testing for Slope Homogeneity in Panel Data Models
   d. Panel Data Models with Latent Group Structures
   e. Coefficients That Vary Over Time
   f. Panel Data Models with Structural Breaks
   g. Coefficients That Vary Over Both Individuals and Time
   h. Time-Varying Panel Data Models with Latent Structures