FINXXX
Advanced Econometrics I
Module 3, 2022

Course Information

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Classes:
Lectures: Session F3 Tue & Fri 8.30-10.20, Session F2 Tue & Fri 1.30-3.20
Venue: PHBS Building, Room TBA

Course Website:

1. Course Description

1.1 Context

Course overview: First course in graduate econometrics.

Prerequisites: Statistics and linear algebra

1.2 Textbooks and Reading Materials
Introduction to Econometrics Stock J. and Mark Watson, 3rd edition

2. Learning Outcomes

2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment (YES with details or NO)
1. Our graduates will be effective communicators.	1.1. Our students will produce quality business and research-oriented documents.	Yes
	1.2. Students are able to professionally present their ideas and also logically explain and defend their argument.	Yes
2. Our graduates will be skilled in team work and leadership.	2.1. Students will be able to lead and participate in group for projects, discussion, and presentation.	NA

	2.2. Students will be able to apply leadership theories and related skills.	NA
3. Our graduates will be trained in ethics.	3.1. In a case setting, students will use appropriate techniques to analyze business problems and identify the ethical aspects, provide a solution and defend it.	NA
	3.2. Our students will practice ethics in the duration of the program.	Yes
4. Our graduates will have a global perspective.	4.1. Students will have an international exposure.	NA
5. Our graduates will be skilled in problem-solving and critical thinking.	5.1. Our students will have a good understanding of fundamental theories in their fields.	Yes
	5.2. Our students will be prepared to face problems in various business settings and find solutions.	Yes
	5.3. Our students will demonstrate competency in critical thinking.	Yes

2.2 Course specific objectives

To be an econometric thinker, not software operator.

2.3 Assessment/Grading Details

Simulation Homework (20%) Midterm Apr 1 (40%) Final Exam, Apr. 26, 4pm-6pm (40%)

2.4 Academic Honesty and Plagiarism

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.

3. Topics, Teaching and Assessment Schedule

Part I: Linear Regression/Single equation model

A Econometric Modelling: what econometrics can and cannot do?

Ex 2.27; Ex 14.5.

B Standard assumptions and possible violations (5.4;6.5,18.1)

C Parameter Estimation: OLS, Measures of fit (4.3; 6.2-6.4,18.1, Apdx 6.3, 18.7), properties of OLS (Apdx 18.5;5.5).

EX 4.4, 4.12, 17.6, 18.4, 18.7, 18.17, 6.1-6.5

D Sampling distribution of OLS: Finite sample (5.6; Apdx 18.4), Large sample (18.2; Apdx 18.3;6.6;4.5), HSK robust standard error (18.2); HAC standard error (15.4).

Ex 17.4

E Hypothesis Testing: Test for individual coefficients (5.1;7.1); Test for several coefficients jointly (7.2;7.3;18.3;18.4).

EX 5.5; 5.8; 5.9; 7.1-7.6;7.8(ignore part c),7.9,7.11,18.2;18.13;

F Model Misspecifications: Omitting variable bias (6.1;9.2); Sample selection bias; Simultaneous equation bias (9.2); Inconsistent beta due to endogeneity; inconsistent standard error dur to non-spherical error (9.2, p368-9).

G Modelling Strategy: Nonlinear X (8.2); interaction term (8.3); control variables (7.5; Apdx 7.2); *Ex 18.9; 6.6-6.8*

H Generalized least squares (18.6): weighted least squares (17.5); quasi-differencing (15.5).

Ex 17.8, 17.13.

Part II IV Regression (Chapter 12 and 18.7, p762-768)

A IV and Two-stage least squares (12.1;18.7)

B IV Asymptotics (18.7)

C IV relevance and IV exogeneity (12.2;12.3)

Ex 12.6; 12.7; 12.9; 12.10.

Part III Time series Models/Time series Regression

A Univariate Time series model: ARMA(p,q) (14.2,14.3, Apdx 14.2; Apdx 14.3; Apdx 14.4)

Ex 14.1; 14.7; 14.9; 14.11

B Stationary time series vs Nonstationary time series characterized by unit roots (16.3); Spurious regression (14.6)

Ex 14.6; 14.3.

C Time series Regressions: Distributed Lag Models (15.1-15.5); ADL models; first look at VAR (16.1). Granger Causality test (14.4).

Ex 14.4; EX 15.1; 15.2; 15.4; 15.10;

D Nonstationarity due to break: QLR test (14.7). *Ex 14.2*;

E. GARCH Process: Volatility clustering (16.5). *Ex 16.3; 16.9*

PART IV Panel Regression

A Introduction to panel models (10.1; 10.2)

B Least squares Estimation with Individual fixed effect and time fixed effect (10.3;10.4)

Ex 10.5; 10.7; 10.8; 10.10.

C Key assumption: strict exogeneity (10.5;15.1)

D Least squares Asymptotics and cluster standard error (Apdx 10.2)

4. Miscellaneous

*Classroom discipline***: No laptop computer, No mutter. Cheating in any form will result in F. Every absence without permission will receive one step downgrade. For example, once, from B+ to B, twice from B+ to B- etc.**