



B.E. International Program

Faculty of Economics, Thammasat University



Course Outline

EE425 Econometrics 1

Semester 1/2014 (August 18 – December 6, 2014)

Number of credits: 3 credits

Lecture Time: Tuesdays and Thursdays, 12.30 - 2.00 PM

Lecture Venue: Room 304 , Faculty of Economics

Instructor: Dr. Wanwiphang Manachotphong

Office: Room 525, Faculty of Economics

Email: wanwiphang@econ.tu.ac.th

Office hours: Wednesdays, 11:00-12 noon (or by appointment)

Course Description:

In this course, we will study applications of statistical and economic theories in analyzing economic data. This includes parameter estimation using the ordinary least squares (OLS) technique and hypothesis testing. The course covers single and multiple regressions. It also discusses problems encountered by OLS, including autocorrelation, heteroskedasticity, multi-collinearity and specification error. Other estimation techniques such as generalized least squares (GLS), maximum likelihood estimation (MLE) and the use of computer application in practice will also be covered.

Prerequisites: MA216 (or MA211) and ST217 (or ST212)

Course Objectives:

This course is the more advanced alternative for EE325 (Introductory Econometrics). It will focus on the theory that underpins standard econometric methods. Students will learn to derive simple theoretical results from standard principles. They will also learn to apply the knowledge to analyze actual datasets using a standard software such as STATA.

Recommended Textbooks:

1. ** Wooldridge, J. M. *Introductory Econometrics: A Modern Approach*. 3rd ed. Thompson: South-Western, 2006.
** used as the main text.
2. Gujarati, D.N., and D.C. Porter, *Econometrics by Example*., N.Y., Palgrave Macmillan, 2011.
3. Gujarati, D.N., and D.C. Porter, *Basic Econometrics*. 5th ed., N.Y., McGraw-Hill, 2009.

Other teaching materials:

4. Teaching notes will be uploaded on Moodle at least 1 days prior to class.

Teaching Plan:

Introduction

- What is econometrics?
- Methodology of econometrics
- Types of economic data
(Wooldridge, ch.1; Gujarati, ch. 1)

Review of Some Statistical Concepts

- Random variables and distributions
- Expectation, variance, covariance and correlation
- Estimators and desirable properties of estimators
(Wooldridge, Appendix B; Gujarati, Appendix A, pp.869-912)

Simple Regression Models

- Principle, assumptions and derivation of ordinary least squares (OLS) estimators
- Properties of OLS estimators
- Statistical inference
- Prediction
- Regression Through the Origin
(Wooldridge, ch. 2; Gujarati, chs. 2 – 6)

Multiple Regression Analysis (Estimation)

- Motivation
- Model and assumptions
- Estimation of parameters and properties of estimators

- Meaning of partial regression coefficients
- Measuring goodness of fit: R^2 and adjusted R^2
- The matrix approach to linear regression model
(Wooldridge, ch. 3; Gujarati: ch. 7, Appendix B, C)

Multiple Regression Analysis (Inference)

- Sampling Distribution of the OLS estimators
- Test on individual regression coefficients
- Testing the multiple linear restrictions
- Testing the equality of two regression coefficients
- Testing for equality or stability of parameters (Chow test)
- Prediction with general linear model
(Wooldridge, ch. 4; Gujarati: ch. 8)

Multiple Regression Analysis (Extensions)

- Data scaling on OLS statistics
- More on functional forms
(Wooldridge, ch. 6, (6.1 and 6.2))

Dummy Variable Regression Models

- Describing Qualitative Information
- Models with a single dummy independent variable
- Using dummy variables for multiple categories
- Interactions involving dummy variables
(Wooldridge, ch. 7; Gujarati: ch. 15)

Matrix Algebra in Economics

- Summary of Matrix Operations
- The Linear Regression Model in Matrix Form
(Wooldridge Appendix D, Appendix E)

Heteroscedasticity Problem

- Nature and Consequences of heteroscedasticity for OLS
- Testing for heteroscedasticity
- Remedial measures (weighted least squares estimation)
(Wooldridge, ch. 8; Gujarati, ch. 11)

Specification Errors and Data Problems

- Type of specification errors
- Consequences of specification error
- Tests of specification error
- Errors of measurement
(Wooldridge ch. 9; Gujarati: ch. 13)

Multicollinearity Problem

- Nature and Consequences of Multicollinearity
- Detecting Multicollinearity
(Wooldridge, ch. 3 (3.4); Gujarati, ch. 10)

Autocorrelation Problem

- Nature and Consequences of Autocorrelation, Serial Correlation
- Testing for Autocorrelation
- Remedial measures
(Wooldridge, ch. 12 (12.1-12.3); Gujarati, ch. 12)

Instrumental Variables Estimation (if time allows)

- Motivation
- The instrumental variables (IV) method
(Wooldridge, ch.15; Dougherty, ch.8.1-8.3)

Grading:

Homework and Pop Quizzes	10%	
Paper Replication	10%	(Due on December 15, 2014 right before the Final Exam)
Midterm Exam	30%	(October 9, 2014, 12.30 PM – 2:00 PM)
Final Exam	50%	(December 15, 2014, 1.30 AM – 4.30 Noon)

***Late homeworks count as 50% of your actual marks.**

*If there is any handout or additional reading, it will be posted on Moodle prior to class. Students are responsible to review the topic ahead of the class for more effective learning.

Important Dates:

Classes Begins	August 18, 2014
Adding and Dropping Courses	August 18 – September 1, 2014
Midterm Exam Period	October 6 – 11 (No Lectures)
Course Withdrawal with “W”	October 22 – 27
Class Ends	December 6, 2014