



Division of Economic and Financial Studies

ECON333: ECONOMETRIC METHODS

Unit Outline

E2, 2004

1. Introduction

The purpose of this unit is to extend the econometric techniques and theory covered in the second-year units beyond the ideal world of the classical linear regression model. Students will be introduced to advanced econometric methods and their properties to analyze more realistic economic phenomena where some of the classical assumptions are most likely to be violated.

For each topic, after an introduction to the underlying theory, interesting examples of practical applications of the model will be provided. To give students hands-on experience for each topic, many tutorial and assignment questions will require the use of computers. While the lectures and tutorial discussions will be based on the econometrics package, *Shazam*, students are allowed to use any package they are familiar with to answer tutorial and assignment questions.

2. Prerequisites

ECON232 or ECON233

3. Class Arrangement

Lectures/Tutorials: Thursday 6:00 pm – 8:00 (9:00 with tutorial) pm, E6A109

Formally, there are thirteen 2-hour lectures and five tutorials. The first two hours are usually used for lectures while the third hour is for tutorials. However, lectures may extend beyond the two-hour period or tutorial questions may be discussed during the lecture hours when necessity arises.

4. References

Enders, Walter, (2004), Applied Econometric Time Series, 2nd edition
Greene, William H., (2003), Econometric Analysis, 5th edition
Verbeek, Marno, (2000), A Guide to Modern Econometrics

For some topics, supplementary notes will be provided to help students understand the text.

5. Assessment

Assessment for ECON333 will consist of two small tests, one assignment and a two hour end-of-year examination:

- Test 1 (one hour): worth 5%, on **Thursday, 26 August** (Week 4), topic = matrix algebra;
- Test 2 (one hour): worth 10%, will be announced two weeks before the test;
- Assignment: worth 15%, due **Thursday, 21 October** (Week 10);
- Final examination (two hours): worth 70%.

Keep a photocopy of your assignment to insure yourself against loss.

The schedule for the final examination of this unit will be organised by the university examination section. So, it is individual student's responsibility to find out the time and location for the examination when they become available.

To pass the course students must complete the following requirements:

- (1) an overall satisfactory performance in all assessment; and**
- (2) a pass in the final examination; and**
- (3) submission of the assignment and obtaining a reasonable mark.**

6. Topics

- Models with Limited Dependent Variables (Verbeek Ch. 7, Greene Chs. 21,22,17)
 - Binary-choice models
 - Multi-response models
 - Tobit models
 - Sample selection bias
 - Maximum likelihood (ML) estimation
- Matrix Algebra (Verbeek Appendix A, Greene Appendix A)

A supplementary note will be distributed.

- Time Series Models (Enders Chs 5 & 6, Verbeek Ch. 9, Greene Ch. 20)
 - Nonstationarity and unit root test
 - Cointegration (single-equation approach)
 - Cointegration (multi-equation approach)
- Nonspherical Disturbances and Generalised Least Squares Estimation (Verbeek Ch. 4, Greene Chs. 10,11,12)
 - Matrix notation of linear regression model
 - Finite sample properties of OLS estimator
 - Large sample properties of OLS estimator
 - Efficient estimation (GLS and ML estimators)
- Systems of Regression Equations (Greene Ch. 14)
 - Random coefficients model
 - Seemingly unrelated regressions (SUR) model
- Endogeneity, Instrumental Variables and GMM (Verbeek Ch. 5, Greene Chs. 5, 15, 18)
 - Introduction
 - Instrumental variables estimation
 - GMM
- Models for Panel Data (Verbeek Ch. 10, Greene Ch.13)
 - Fixed effects
 - Random effects
 - Other issues

7. Lecturer in Charge

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