FACULTY OF
BUSINESS AND ECONOMICS

ECON840
Applied Econometrics I

Semester 1,   2011

Department of Economics

MACQUARIE UNIVERSITY
FACULTY OF BUSINESS AND ECONOMICS
UNIT OUTLINE

Unit: ECON840 Applied Econometrics 1
Year and Semester: 2011, semester 1
Unit Convenor: Daehoon Nahm

Students in this unit should read this unit outline carefully at the start of semester. It contains important information about the unit. If anything in it is unclear, please consult one of the teaching staff in the unit.

1.   About This Unit

The objective of this unit is to enable MEc students with only basic statistical knowledge to upgrade their understanding to a practical level where they can apply their knowledge of econometrics to empirical analysis. By successfully completing this unit, students should be able to develop an econometric model suitable for the objective of their analysis, estimate the model using an appropriate estimation method, and draw valid inferences from the estimation results.

The unit starts with a brief review of the standard multiple linear regression model and the OLS estimation method. It then relaxes the standard assumptions and investigates alternative estimation methods that are valid under the new circumstances. The final part introduces the interesting discrete-choice models.

Prerequisite: ECON634 or equivalent

Assumed knowledge: basic statistics including the simple regression model and hypothesis testing, differentiation, concept of integration, the exponential and (natural) logarithmic functions, and introductory/intermediate-level economics.

2.   Teaching Staff

Dr Daehoon Nahm
Office: E4A 417
Telephone: 9850 9615
Email: Daehoon.Nahm@mq.edu.au

3.   Classes

There is a single 3 hour class per week, each week of semester. The timetable for classes can be found on the University web site at: http://www.timetables.mq.edu.au/ . Class attendance is not compulsory and will not be recorded. However, students who miss classes put themselves at a considerable disadvantage for several reasons, including:

1) Not all of the material in the text is covered in the unit, and not all the unit material is covered in the text. In some places the text deals with issues in greater depth than is necessary for the unit, and in other places it doesn't go far enough. The lectures contain all the unit material taught at the level that is required for successful completion of the assessment tasks, and they are your guide to the content of the unit.
2) The approaches to some problems that are recommended by the lecturers are different to those in the text.
3) The lectures will include significant guidance about the style and content of the final exam and recommendations about study technique.
4) It is difficult (and often impossible) for staff to provide meaningful assistance to students outside class times on topics for which they did not attend the relevant lectures and tutorials.

It should be noted that class attendance is only one part of university study. In addition to class attendance, students will need to spend around six to nine hours per week in private study in order to perform well in the unit.

4.   Required and Recommended Texts and/or Materials

The prescribed text for the unit is

R. Carter Hill, William E. Griffiths, and Guay C. Lim (2008) *Principles of Econometrics*, 3rd ed., John Wiley & Sons.

The software used in this unit is *gretl*.

The Windows version may be freely downloaded from http://gretl.sourceforge.net/win32/. For Mac/OS X version see http://gretl.sourceforge.net/osx.html.

5.   Unit Web Page

Publically available information for this unit can be found at: http://www.econ.mq.edu.au/postgraduate_programs/units/econ840,

while the other course material and announcements for students enrolled in the course can be accessed from http://learn.mq.edu.au.

6.   Learning Objectives and Outcomes

The learning objectives of this unit are that successful students will be able to

i)   develop an econometric model suitable for the objective of their analysis,
ii)   estimate the model using an appropriate estimation method,
iii)   interpret the estimation results,
iv)   draw valid inferences, and

v) appreciate the relevance and limitations of the econometric methods they use.

Students will also have the opportunity to develop their numeracy and computational skills as well as to develop general skills of critical analysis and problem-solving.

7. Learning and Teaching Strategy

This unit is taught as a traditional lecture course. Students should attend class and read the relevant parts of the text each week. Tutorial exercises will be set and made available from the unit homepage throughout the semester. The solutions to selected exercises will be discussed in class. Students should attempt all the exercises before they are covered in class. The text also contains many examples and exercises which students should work through as part of their private study.

The following topics will be covered in the unit:

1. THE MULTIPLE REGRESSION MODEL (Chs 5 & 6) – 2.5 weeks

- Interpretation
- The properties of the OLS estimator under the standard assumptions
- Hypothesis testing for a single coefficient
- Goodness of fit
- Summary Report

- F test (including the overall significance test, testing economic hypothesis, the use of nonsample information)
- Model specification (omitted & irrelevant variables, RESET test, and multicollinearity)
- Prediction

2. NONLINEAR RELATIONSHIPS (Ch 7) – 1.5 weeks

- Polynomials
- Dummy variables
- Interactions between continuous variables
- Log variables

3. HETEROSKEDASTICITY & AUTOCORRELATION (Chs 8 & 9) – 1 week

- Nature
- Detection
- Consequences
- Remedy

4. RANDOM REGRESSORS & MOMENT-BASED ESTIMATION (Ch 10) – 3 weeks

- Random regressors and endogeneity
- Consequences
- IV, MM and GMM estimation
- The Hausman test for endogeneity

5. QUALITATIVE DEPENDENT VARIABLE MODELS (Ch 16) – 3.5 weeks

- Binary choice models (probit and logit)
- Maximum likelihood estimation
- Ordered choice models
- Multinomial (and conditional) logit models

6. NONSTATIONARITY & SPURIOUS REGRESSION – 0.5 week

- A brief warning

8.   Assessment

8.1   The Assessment Tasks and their Weighting

- Mid-semester test 20%
- Assignment 20%
- Final Exam 60 %

8.2   Mid-Semester Test

The mid-semester test will be held on <u>Monday 21st of March (Week 5)</u> at 6pm in class. It will be of less than one hour duration. The main purpose of the mid-semester test is to provide students with early feedback on their performance in the unit.

Students who are prevented from sitting the test due to illness or misadventure may apply for special consideration. If special consideration is granted, this component will not be counted in deciding the final grade. No supplementary test will be available.

8.3   Assignment

The assignment question will be made available from the unit homepage about 3-4 weeks before the due date. The completed assignment must be submitted to the lecturer in the class on <u>Monday 23rd May (Week 12)</u>. The assignment question sheet will include instructions that must be followed closely. Late assignments will be accepted if they are submitted within 5 days from the due date, but will be penalised at a rate of 20 marks per day. There are no set minimum or maximum lengths for the assignment. However, assignments should be complete and concisely written.

8.4 The Final Exam

A two hour final examination for this unit will be held during the University examination period. The University examination period in first half year 2011 is from 6th June to 24th June. You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations. The draft and final timetables will be available from http://www.timetables.mq.edu.au/exam.

Students who do not sit for the final exam will be awarded a grade of FA (failed absent). The only exception to this rule will occur in cases where the student has been granted special consideration on the grounds of unavoidable disruption. Students who are prevented from sitting the final exam due to illness or unavoidable disruption may wish to consider applying for special consideration. Information about unavoidable disruption and the special consideration process is available at http://www.reg.mq.edu.au/Forms/APSCon.pdf. If a supplementary examination is granted as a result of the special consideration process the examination will be scheduled after the conclusion of the official examination period. If the student does not attend the supplementary examination at the scheduled time, a grade of FA will be awarded.

You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, the final day of the official examination period.

8.5 Relationship Between Assessment and Learning Outcomes

The assessment tasks will evaluate the extent to which students have satisfied the learning objectives listed in Section 6 by requiring them to correctly answer questions about the unit material.

9. Plagiarism

Plagiarism involves using the work of another person and presenting it as one's own. Plagiarism is a serious breach of the University's rules and carries significant penalties. You must read the University's practices and procedures on plagiarism. These can be found in the Handbook of Undergraduate Studies or on the web at http://www.student.mq.edu.au/plagiarism. The policies and procedures explain what plagiarism is, how to avoid it, the procedures that will be taken in cases of suspected plagiarism, and the penalties if you are found guilty. Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

10. Student Support Services

Macquarie University provides a range of Academic Student Support Services. Details of these services can accessed at http://www.futurestudent.mq.edu.au/undergraduate/AccessingStudentSupport/index.html.