



ECON232 Econometric Principles

Semester 1, 2009

Department of Economics

ECON232

ECONOMETRIC PRINCIPLES

MACQUARIE UNIVERSITY FACULTY OF BUSINESS AND ECONOMICS UNIT OUTLINE

First Semester - 2009

Unit convenor: Dr Roselyne Joyeux

Prerequisites: ECON141 and (ECON110 or ECON111 or BBA103)

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.

INTRODUCTION

The course provides an overview of econometric principles of relevance to applied economic/financial research. The course serves two purposes. Firstly, it may be taken as a general overview course for students who do not intend to take further econometrics courses but who would wish to benefit from an exposure to econometrics beyond the level attainable from ECON141, *Introductory Econometrics*. ECON232 is designed as an intermediate econometrics course for the average economics student who is aware of the need to obtain a moderate degree of quantitative sophistication in his/her economics education. As such students majoring in finance and marketing would also find this course valuable. Secondly, ECON232 is designed as a prerequisite course for more advanced econometrics courses such as ECON233 (*Financial Econometrics*) and/or ECON333 (*Econometric Methods*). Economics/finance students who do not wish to pursue ECON233 and/or ECON333, may nevertheless make use of the background knowledge acquired in this course to pursue more quantity-analysis-type works in both academic and business fields. ECON232 is a core unit for award of a Bachelor of Economics degree. This unit is worth three credit points.

TEACHING STAFF

Roselyne Joyeux

Lecturer in Charge

Phone: 9850-8487

Room: E4A 527

Email: rjoyeux@efs.mq.edu.au

Chris Heaton

Phone: 9850-9921

Room: E4A 526

Email: cheaton@efs.mq.edu.au

CLASSES

There is one two-hour lecture per week at the following time and place:

Day Class:	Wednesday	11 am – 1 pm	C5C T2
Evening Class:	Thursday	6 pm – 8 pm	E7B 264

The timetable for classes can be found on the University web site at:

<http://www.timetables.mq.edu.au/>

TUTORIALS

Wednesday	2 pm	W6B 315
Wednesday	3 pm	W6B 315
Wednesday	4 pm	C4A 312
Thursday	10 am	E7B 263
Thursday	1 pm	C5A 313
Thursday	3 pm	C5C 236
Thursday	8 pm	C5C 240

There will be 8 tutorial meetings throughout the semester. The weeks in which tutorial groups will meet are as follows:

Weeks 2, 3 (Comp.), 5 (Comp.), 8, 9, 10, 12, and 13

The tutorials in **Weeks 3 and 5** will be held in a computer lab (**E4B 208**).

Rolls will be taken in the tutorials. To be considered for special consideration, if necessary, attendance to at least 6 out of 8 tutorials is required.

TEXT

J.M. Wooldridge, *Introductory Econometrics: A Modern Approach*, Thomson, 3rd edition.

Two copies of the above book have been put in the Reserve Section of the Library.

Students may also find the following text useful for some topics:

- D. Gujarati, *Basic Econometrics*, McGraw-Hill, fourth edition
- R Ramanathan, *Introductory Econometrics with Applications*, Harcourt

Material such as lecture slides, examples, and tutorial questions will be available on the unit home page.

It is assumed that students will attend all lectures and tutorials. Students who miss classes put themselves at a significant disadvantage for several reasons, including:

(i) Not all the material in the text is covered in the unit, and not all the material in the unit 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 required for the assessment tasks, and are your guide to the unit content.

(ii) The approaches to some problems that are recommended by the lecturer are different to those in the text.

(iii) The lectures will include significant guidance about the style and content of the final exam and recommendations about study technique.

(iv) 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.

COMPUTING

Students are required to use a computer to carry out certain tasks of the course, such as tutorials and assignment. It is assumed that students are familiar with the procedure needed to log on to the Faculty's student computing network from a computer in the students' computing labs. The software programs used in this course include: *DxData for Windows* and *Gretl*. Students do not have to use *Gretl* to perform their tutorial and assignment tasks if they are familiar with other programs, **but discussions in the lectures and tutorials, and the test and examination questions will be based on output that is produced using *Gretl*.**

It is well understood that there are many other programs beside *Gretl*. However, the program is used in this course because of the following reasons:

- It is flexible enough to be applied to all possible situations that can arise from the topics of this course.
- It is easy to manipulate data (that is, to read data series, to generate new variables, and to use only a part of the data etc.).
- Its output contains all necessary statistics that are used in this course.
- Students can freely download the program from <http://gretl.sourceforge.net/win32/> and install it on their home computer. You can also download all the data sets for Wooldridge's textbook from this website.

UNIT WEB PAGE

The web page for this unit can be found at: <http://learn.mq.edu.au>

LEARNING OUTCOMES

At the end of this course you will be able to:

- apply basic econometric tools to modelling, estimation, inference and forecasting in practice;
- Critically evaluate empirical econometric work;
- Engage into further studies in econometrics.

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop students' generic skills in a range of areas. One of the aims of this unit is that students develop their skills in the following:

Foundation skills of literacy, numeracy and information technology;
Critical analysis skills;
Problem-solving skills;
Creative thinking skills.

LEARNING AND TEACHING STRATEGY

This unit is taught as a mix of tutorials and lectures. The lectures are designed to provide the tools which can then be applied in tutorials. Tutorials are based mainly on empirical applications which require the use of econometric software packages. How to use these packages is taught during two practical tutorials which are held in the computer labs.

Students are expected to read the relevant chapters before each lecture. They are also expected to complete the tutorials empirical work and attempt the tutorial questions before each tutorial.

RELATIONSHIP BETWEEN ASSESSMENT AND LEARNING OUTCOMES

The modes of assessment are designed to ensure that students become familiar with the econometric tools necessary to develop, estimate and evaluate their own models. The assignment will also ensure that you are proficient with the software and can interpret the relevant computer outputs.

The components of assessment in this course are as follows:

- (1) **Mid-semester test** 20%
A 50-minute multiple-choice test will be held in place of the regular lecture on Wednesday 1 April (Week 6) between 11 am – 12 am for the students enrolled in the Wednesday class while it will be held on Thursday 2 April (Week 6) between 6 pm – 7 pm for the evening students. **Students must sit the test in their enrolled class.** A calculator is needed for the test.

- (2) **Assignment** 20%
There is one assignment that should be submitted by 5 pm, Monday 11 May (Week 10). Late assignments will lose 20 marks out of the full 100 marks for each day overdue. (Each day ends at 5 pm for this purpose.) Students are strongly recommended to keep a photocopy of their assignment to insure against loss.

In early Week 9, tutorial boxes designated ECON232 will be prepared in the Business and Economics Student Services (BESS) where students can submit their assignments. A list of the students who will have submitted before or on the due date will be posted on the unit homepage and on the door of the lecturer's office (E4A 527) soon after the due date. All students must check this list to ensure that their assignment has been received. If you have submitted your assignment but you do not appear on this list, then you should contact the lecturer-in-charge as soon as possible to arrange the resubmission of your assignment.

(3) **Final Examination** 60%

A two-hour examination will be held during the final examination period. Computer outputs and statistical tables are provided. Only non-programmable calculators without alphabetic storage capability are allowed into the examination room. The time and venue of the exam will be organised and announced in due time by the University.

Requirements to Pass This Unit

To pass ECON232, students must satisfy each of the following requirements:

- (1) An overall satisfactory performance in all assessment components;
- (2) **A pass in the final examination;** and
- (3) Submission of the assignment.

Under the current grading system, a **standardised numerical grade (SNG)** will be awarded together with a band grade HD, D, Cr, P, PC, or F.

It is important for students to note that the SNG is NOT the weighted aggregate of the raw marks for the above three assessment components. It is rather a detailed grade that is chosen from 0 to 100 based on other criteria as well as the raw marks. For instance, the SNG for a student who gains a raw aggregate mark of 55 but fails the final would be lower than 45 indicating that he/she fails the unit.

As such, an SNG of say 73 or 74 does **NOT** mean that the student's aggregate mark is one or two marks below the threshold for a D. It means that his/her work and performance in the unit is of predominantly good quality and did better than other students in the Cr band but not quite of superior quality needed for a D.

- Attendance: Rolls will be taken in the tutorials. To be considered for special consideration, if necessary, attendance to at least 6 out of 8 tutorials is required.
- The University Examination period in First Half Year 2009 is from June 10 to June 26 inclusive.

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.

<http://www.timetables.mq.edu.au/exam>

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you 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>

All claims have to be substantiated by a signed **Professional Authority Form**, and if they are based on non-medical grounds, supporting documentation (such as statutory declarations by independent witnesses, police reports, or statements from sufficiently senior officials in the place of employment) must also be provided.

If accepted, in most cases, the students will be required to sit a supplementary examination on a date set by the Faculty. So, students who intend to be away must take account of this rule in scheduling any travel after lodging the request.

The format of the supplementary examination may be different from the usual examination. To prevent students from abusing this facility and to protect only the students with genuine reasons, **the result of supplementary examination will replace the result of the usual examination if a student sits a supplementary examination as well as the usual examination.** This implies that a student will fail the unit if he/she fails the supplementary examination regardless of his/her performance in the usual examination. If you believe this rule unfairly disadvantages you, contact the lecturer in charge before lodging the request form.

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, i.e. the final day of the official examination period.

PLAGIARISM

The University defines plagiarism in its rules: "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.

UNIVERSITY POLICY ON GRADING

Academic Senate has a set of guidelines on the distribution of grades across the range from fail to high distinction. Your final result will include one of these grades plus a standardised numerical grade (SNG).

On occasion your raw mark for a unit (i.e., the total of your marks for each assessment item) may not be the same as the SNG which you receive. Under the Senate guidelines, results may be scaled to ensure that there is a degree of comparability across the university, so that units with the same past performances of their students should achieve similar results.

It is important that you realise that the policy does not require that a minimum number of students are to be failed in any unit. In fact it does something like the opposite, in requiring examiners to explain their actions if more than 20% of students fail in a unit.

The process of scaling does not change the order of marks among students. A student who receives a higher raw mark than another will also receive a higher final scaled mark.

For an explanation of the policy see
<http://www.mq.edu.au/senate/MQUonly/Issues/Guidelines2003.doc> or
<http://www.mq.edu.au/senate/MQUonly/Issues/detailedguidelines.doc>.

STUDENT SUPPORT SERVICES

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at <http://www.student.mq.edu.au>.

The Faculty of Business and Economics offers additional support for its students such as EFS Resource and Information Centre commonly known as BESS, Peer Assisted Learning (PAL), etc... Details of these services can be accessed at <http://www.businessandeconomics.mq.edu.au/current/undergraduate/bess>

COURSE OUTLINE

Topic 1: Review

- (1) Review of statistical concepts (**Some** sections from Appendices A, B and C)¹
 - Constants and random variables
 - Probability distribution
 - Population and random sample
 - Estimators and estimates
 - Sampling distribution of an estimator
 - Point estimation and interval estimation
 - Expected values
 - Unbiasedness of an estimator
 - Variance
 - Efficiency of an estimator
 - Consistency of an estimator
 - Mean Squared Error (MSE) criterion
 - Joint, marginal, and conditional distributions
 - Statistical independence

- (2) Review of Regression Analysis (Chs. 1, 2, 3, 6)
 - Simple (gross) Correlation
 - Causality
 - Population regression models
 - OLS estimation
 - Sample regressions
 - Interpretation of coefficient estimates
 - Standard (classical) assumptions
 - Properties of the OLS estimators
 - Multicollinearity
 - Normality assumption and the sampling distribution of the OLS estimator
 - Probability distributions related to Normal distribution
 - Central limit theorem

¹ The codes in parentheses indicate relevant sections in the text by Wooldridge, 3rd edition.

Measures of goodness of fit
Analysis of variance (ANOVA)
Scaling and units of measurement
Functional forms (brief)

Topic 2: Hypothesis Testing (Ch. 4)

Equality restrictions and restricted regression
Single equality hypothesis testing
Testing the significance of individual coefficients
Confidence intervals and hypothesis testing
Types of errors in hypothesis testing
Significance level and power of a test
P-value method
Multiple equality hypothesis testing
Structural stability test (Chow test)
Choosing between linear and log-linear (double-log) regression models

Topic 3: Multiple Regression Analysis: OLS Asymptotics (Ch. 5)

Consistency
Asymptotic normality
Asymptotic efficiency

Topic 4: Heteroscedasticity (Ch. 8)

Nature of the problem
Consequences
Detection
Remedy

Topic 5: Limited Dependent Variable Models (Ch. 17)

Linear Probability Model
Logit and Probit models

Topic 6: Time Series (Chs. 10, 11, 12)

The nature of time series data
Stationarity, integration and cointegration
Asymptotic properties of the OLS estimators
Autocorrelation

COURSE DIARY

Week	Dates	Lecture	Tutorial
1	Feb 25, February 26	Review	X
2	March 4, 5	Review	Tut 1
3	March 11, 12	Review	Tut 2 (E4B 208)
4	March 18, 19	Hypothesis Testing	X
5	March 20, 21	OLS Asymptotics	Tut 3 (E4B 208)
6	April 1, 2	Mid-Semester Test Heteroscedasticity	X
7	April 8, 19	Limited Dependent Variable Models	X
April 10 – April 26		Mid-semester Break	
8	April 29, April 30	Limited Dependent Variable Models	Tut 4
9	May 6, 7	Time Series	Tut 5
10	May 13, 14	Assignment due on Monday Time Series	Tut 6
11	May 20, 21	Time Series	X
12	May 27, 28	Time Series	Tut 7
13	June 3, 4	Examination Briefing	Tut 8