ECON840

Applied Econometrics

S1 Evening 2018

Dept of Economics

Contents

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General Information

Unit convenor and teaching staff
Lecturer
Daehoon Nahm
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E4A (4 Eastern Road) 417
Tuesday, 3:30pm - 5:00pm

Credit points
4

Prerequisites
ECON634

Corequisites

Co-badged status
ECON735 - Econometric Techniques and Applications

Unit description
The objective of this unit is to enable students with 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.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

Develop an econometric model suitable for the objective of their analysis

Estimate the model using an appropriate estimation method

Interpret the estimation results and draw valid inferences

Appreciate the relevance and limitations of the econometric methods they use

Critically analyse the econometric methods covered in the unit

Assessment Tasks

Name	Weighting	Hurdle	Due
1. Class Test	20%	No	Week 6
2. Assignment	30%	No	Week 11
3. Final Examination	50%	No	University Examination Period

1. Class Test

Due: **Week 6**
Weighting: **20%**

The class test will be held on Tuesday 3 April (Week 6) at 6pm in class. It will be of one hour duration. The main purpose of the class 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 approved, a supplementary test will be arranged.

On successful completion you will be able to:

• Interpret the estimation results and draw valid inferences

• Appreciate the relevance and limitations of the econometric methods they use

• Critically analyse the econometric methods covered in the unit

2. Assignment

Due: **Week 11**
Weighting: **30%**

The assignment question will be made available on the unit homepage about 3-4 weeks before the due date. The completed assignment must be submitted to the lecturer at the beginning of the class on Tuesday 22 May (Week 11). The assignment question sheet will include instructions that must be followed closely. There are no set minimum or maximum lengths for the assignment. However, assignments should be complete and typed or concisely written.

No extension will be granted. Late submissions will be accepted up to three days after the submission deadline. There will be a deduction of 10% of the total available marks made from the total awarded marks for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission – 20% penalty). This penalty does not apply for cases in which an application for special consideration is made and approved.

Always keep a copy of the document you submit for assessment, including assignment, to insure yourself against loss.

On successful completion you will be able to:

- Develop an econometric model suitable for the objective of their analysis
- Estimate the model using an appropriate estimation method
- Interpret the estimation results and draw valid inferences
- Appreciate the relevance and limitations of the econometric methods they use
- Critically analyse the econometric methods covered in the unit

3. Final Examination

Due: **University Examination Period**
Weighting: **50%**

A two hour final examination for this unit will be held during the University examination period. 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 a supplementary examination 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; see below for the related information. If a supplementary examination is granted as a result of the special-consideration process the examination will be scheduled for 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.

On successful completion you will be able to:

- Develop an econometric model suitable for the objective of their analysis
- Interpret the estimation results and draw valid inferences
- Appreciate the relevance and limitations of the econometric methods they use
- Critically analyse the econometric methods covered in the unit

Delivery and Resources

Classes: Tuesday 6:00 pm - 9:00 pm (6EAR [E4B] 206)

There is a single three-hour lecture each week of semester. 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 is not detailed 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.

Exercise questions and solutions will be provided for private studies. Some selected questions will be discussed in class.

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.

The timetable for classes can be found on the University website at: http://www.timetables.mq.edu.au/

Required and Recommended Texts and/or Materials

The prescribed text for the unit is

R. Carter Hill, William E. Griffiths, and Guay C. Lim (2011) *Principles of Econometrics*, 4rd ed., John Wiley & Sons.

Lecture slides will be provided on the unit home page.

Technology Used and Required

(1)   Students will require a **non-programmable calculator** for exercises, test and the final examination.

Students will also require access to a **computer**, on which the following programs are installed.

(2)   *Gretl*: It is free, open-source software. Visit the Gretl website: http://gretl.courceforge.net/, and choose the operating system of your computer from the menu on the left-hand side. Download and install the program onto the computer. Download also the manual and all the data for practice. Students are required to be able to use this program to answer exercise, test and assignment questions. Students are also required to understand its outputs.

(3)   An internet browser, such as *Firefox* and Internet *Explorer*, to access *iLearn*.

(4)   *Adobe Acrobat Reader*: to read course material downloaded from *iLearn*. This program can be downloaded from http://www.adobe.com/downloads/.

Unit web page

Useful information and some course material will be made available on the learning management system (*iLearn*): ilearn.mq.edu.au. Visit the homepage regularly for new information, course material and announcements.

Teaching and Learning Strategy

This unit is taught as a traditional lecture course. Students should attend class and read the relevant parts of the text each week. Exercise questions will be set and made available on the unit homepage throughout the semester. The solutions to selected questions 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.

Unit Schedule

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

- Interpretation

- The properties of the OLS estimator under the standard assumptions

- Testing a single-equation hypothesis

- Goodness of fit

- Analysis of Variance (ANOVA)

- 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

- Functional forms

- Dummy variables

2. HETEROSKEDASTICITY (Ch 8)

- Nature

- Detection

- Consequences

- Remedy

3. REGRESSION WITH TIME-SERIES DATA (Chs 9 & 12)

- Autoregressive Distributed-lag (ADL) models

- Autocorrelation functions, partial autocorrelation functions, and correlogram)

- Serially correlated errors

- Autoregressive Moving-Average (ARMA) models

- Non-stationarity

- Unit-root test

- Spurious regression and cointegration

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

- Random regressors and endogeneity

- Consequences

- IV, MM and GMM estimation

- The Hausman test for endogeneity

- The Sargan's overidentifying restrictions test

- Weak instruments

5. BINARY-CHOICE MODELS (Ch 16)

- Linear probability model

- Probit model

- Logit model

- Maximum likelihood estimation

6. MODELS FOR PANEL DATA (Ch 15)

- Fixed-effects model

- Random-effects model

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to improve your marks and take control of your study.

- Workshops

- StudyWise
- Academic Integrity Module for Students
- Ask a Learning Adviser

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

Learning outcomes

- Develop an econometric model suitable for the objective of their analysis
- Estimate the model using an appropriate estimation method
- Interpret the estimation results and draw valid inferences
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- Critically analyse the econometric methods covered in the unit

Assessment tasks

- 1. Class Test
- 2. Assignment
- 3. Final Examination

PG - Critical, Analytical and Integrative Thinking

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and

knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

Learning outcomes

- Develop an econometric model suitable for the objective of their analysis
- Estimate the model using an appropriate estimation method
- Interpret the estimation results and draw valid inferences
- Appreciate the relevance and limitations of the econometric methods they use
- Critically analyse the econometric methods covered in the unit

Assessment tasks

- 2. Assignment
- 3. Final Examination

PG - Research and Problem Solving Capability

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

Learning outcomes

- Develop an econometric model suitable for the objective of their analysis
- Estimate the model using an appropriate estimation method
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Changes since First Published

Date	Description
16/02/2018	Unit convenor details have been added.