ECON333

Econometric Methods

S1 Day 2019

Dept of Economics

Contents

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General Information

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4 EAR (E4A) 417
Available on iLearn

Credit points
3

Prerequisites
(6cp at 200 level including ECON232 or ECON233) or ECON334

Corequisites

Co-badged status

Unit description
The objective of this higher-level econometrics unit is to provide students with an opportunity to acquire more advanced econometric techniques that can be applied to an empirical analysis of economic, financial, or business phenomena. The unit is suitable both for students who simply want to equip themselves with a more practical knowledge of econometrics and to those planning to pursue a research degree. To expose students to a broad and more complete range of econometric issues, this unit may include topics such as a review of the multiple regression model and OLS estimation, matrix algebra, GLS estimation, endogenous regressors and consistent estimation, maximum-likelihood estimation, discrete choice models, treatment effects, multivariate time-series models (VECM), and models for panel data. Real-world examples, such as analysing people's choice of mobile phone brands, patterns of crediting rating, or the effectiveness of a medical treatment, are used to illustrate particular techniques. The use of econometric software programs such as Gretl and Shazam provide a practical problem-solving experience.

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:

Analyse and apply key concepts and results and employ them over a range of scenarios.

Specify an econometric model that is appropriate for the problem at hand, estimate it using a relevant method, and interpret the estimation results.

Demonstrate knowledge of statistical properties of the estimator used and draw correct inferences from them (including hypothesis tests).

Critically examine the advantages and limitations of an econometric method in various situations.

Use matrix algebra to define estimators and to analyse their properties.

Assessment Tasks

Name	Weighting	Hurdle	Due
Homework	20%	No	TBA
Class Test	20%	No	Week 5
Assignment	20%	No	Week 11
Final Examination	40%	No	examination period

Homework

Due: **TBA**
Weighting: **20%**

Four sets of homework questions, of equal value, will be given throughout the semester. Students are required to submit their answers by the due date for each set via *turnitin*. Late submission: Students who do not submit this task by the due date and time receive a result of zero. This penalty does not apply when an application for Special Consideration has been made and approved. Note: applications for Special Consideration Policy must be made within 5 (five) business days of the due date and time. Students who have applied for special consideration must let the lecturer know about it immediately via email. No homework will be accepted after the marked homework has been returned to the students.

On successful completion you will be able to:

- Analyse and apply key concepts and results and employ them over a range of scenarios.
- Specify an econometric model that is appropriate for the problem at hand, estimate it using a relevant method, and interpret the estimation results.
- Demonstrate knowledge of statistical properties of the estimator used and draw correct inferences from them (including hypothesis tests).
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situations.

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Class Test

Due: **Week 5**
Weighting: **20%**

Topics: the topics covered in Weeks 1−4.

Date and time: during lecture time **- 10:00 am, 27 March (Week 5)**

Duration: 50-60 minutes

You will need a calculator. This is a closed-book test. If you cannot sit the test due to illness or unavoidable disruption, you will have to apply for special consideration with supporting documentations attached. If approved, a supplementary test will be arranged.

On successful completion you will be able to:

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Assignment

Due: **Week 11**
Weighting: **20%**

The assignment will consist of questions requiring computed and written answers. The questions will be based on material covered in the lectures up to the due date. The due date is **5:00 pm, Tuesday 21 May** (Week 11). It must be submitted via *turnitin*.

Late submission: No extensions will be granted. There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission incurs a 20% penalty). Late submissions will be accepted up to 96 hours after the due date and time. This penalty does not apply for cases in which an application for Special Consideration is made and approved. Note: applications for Special Consideration must be made within 5 (five) business days of the due date and time. Students who have applied for special consideration must let the lecturer know about it immediately via email. No assignment will be accepted after the marked assignments have been returned to the students.

On successful completion you will be able to:

- Analyse and apply key concepts and results and employ them over a range of scenarios.
- Specify an econometric model that is appropriate for the problem at hand, estimate it using a relevant method, and interpret the estimation results.
- Demonstrate knowledge of statistical properties of the estimator used and draw correct inferences from them (including hypothesis tests).
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Final Examination

Due: **examination period**
Weighting: **40%**

The examination will be closed-book and of two hours' duration. It will cover all the topics that have been discussed in class during the semester. You will need a calculator.

The University Examination period in Semester 1, 2019 starts from 11 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: 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 a special consideration is granted on the grounds of unavoidable disruption to studies. 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, that is the final day of the official examination period.

On successful completion you will be able to:

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Delivery and Resources

Classes

Classes: Wednesday 10 am - 1:00 pm (E4B 316, 6 Eastern Road)

There is a single three-hour lecture/tutorial each week of semester. Attendance at lectures is strongly recommended. Selected questions from tutorials will be discussed during lectures.

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/

References

The prescribed textbook is:

Verbeek, Marno, A Guide to Modern Econometrics (latest 4th edition, 2012).

If necessary, supplementary notes will be provided (on the unit homepage). Students are expected to download the notes for the next lecture topic and bring them to the lecture.

Technology Used and Required

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

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

(2)　*Gretl*: It is free, open-source software. Visit the *Gretl* website: http://gretl.sourceforge.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. The program has code facilities, but it is basically menu-based. Its functions cover most of the topics, but not all of them. This program may be used in combination with *Shazam* to verify results and to better understand the estimation methods.

(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.

Unit Schedule

* Weeks shown below are an approximate indication only and may vary slightly depending upon the pace of progress.

Week 1

- A Review of Mathematics and Statistics (Appendix B)

Week 2

- A Review of the Multiple Regression Model and OLS Estimation (Chs. 2 & 3)

Week 3

- Matrix Algebra (Appendix A, 2.1, 2.2, and 2.3)

Week 4

- Nonspherical Disturbances and Generalised Least Squares (GLS) estimation (Ch. 4)

  − Heteroscedasticity

  − Serial correlation of random errors

Week 5 & 6

- Stochastic Regressors and Consistent Estimation(Ch. 5)

  - Instrumental variables (IV) estimation

  - Method of moments (MM) estimation

  - Generalised method of moments (GMM) estimation

Weeks 7 - 9

- Models with Discrete Dependent Variables (Sections 7.1, 7.2,)

  - Binary-choice models

  - Ordered-choice models

  - Multinomial-choice models

  - Maximum likelihood (ML) estimation

⁻ Sample selection bias and treatment effects

Weeks 10-12

- Time Series Models (Chs. 8 and 9)

  - Nonstationarity and unit root test

  - Cointegration (single-equation approach)

  - Cointegration (multi-equation approach)

Week 13

- Models for Panel Data (Ch. 10)*

  - Fixed-effects model

  - Random-effects model

  * *To be covered if time permits*.

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 published on platform other than eStudent, (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@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

If you are a Global MBA student contact globalmba.support@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

Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

Learning outcome

- Analyse and apply key concepts and results and employ them over a range of scenarios.

Assessment task

- Assignment

Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

Learning outcomes

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Assessment tasks

- Homework
- Class Test
- Assignment
- Final Examination

Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

Learning outcomes

- Analyse and apply key concepts and results and employ them over a range of scenarios.
- Specify an econometric model that is appropriate for the problem at hand, estimate it using a relevant method, and interpret the estimation results.
- Demonstrate knowledge of statistical properties of the estimator used and draw correct inferences from them (including hypothesis tests).
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- Class Test
- Assignment
- Final Examination

Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

Learning outcomes

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