ECON634

Econometrics and Business Statistics

S1 Day 2019

Dept of Economics

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General Information

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Credit points
4

Prerequisites
Admission to MAppEcon or MCom or MAcc(Prof)MCom or MBkgFin or MBioTechMCom or MEc

Corequisites

Co-badged status

Unit description
This unit is designed to bring students with no econometrics background to an intermediate level in econometrics. Starting from first principles, the unit outlines standard econometric methods to the extent necessary for students to understand key concepts, apply basic methods, and interpret empirical research results in economics, finance and business. The unit material also includes elementary discussions of violations of the standard assumptions for a regression model, such as autocorrelation and heteroscedasticity.

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:

Apply basic statistical techniques to problems in economics and business

Use econometric tools to model, estimate and forecast economic data

Critically evaluate empirical econometric work

Engage into further studies in econometrics

Demonstrate the ability to work effectively in a group

Assessment Tasks

Name	Weighting	Hurdle	Due
Class Test	35%	No	Week 6
Take Home Test	35%	No	Week 11
Group Assignment	30%	No	Week 13

Class Test

Due: **Week 6**
Weighting: **35%**

A two hour test consisting of short-answer and multiple-choice questions will be held during the lecture in week 6. A calculator is needed for the test and attendance is compulsory.

Students must be available during the time of the lecture class to sit the class test. The only exception to this is that a student could not do the test because of documented illness or unavoidable disruption. In these circumstances this student may wish to consult the University's Disruption to Studies policy -http://www.mq.edu.au/policy/docs/disruption_studies/policy.html.

On successful completion you will be able to:

- Apply basic statistical techniques to problems in economics and business
- Engage into further studies in econometrics

Take Home Test

Due: **Week 11**
Weighting: **35%**

A take home test will consist of econometric problems that you will need to solve.

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 – 20% penalty). This penalty does not apply for

cases in which an application for disruption of studies is made and approved. In these circumstances this student may wish to consult the University's Disruption to Studies policy - http://www.mq.edu.au/policy/docs/disruption_studies/policy.html.

On successful completion you will be able to:

- Apply basic statistical techniques to problems in economics and business
- Critically evaluate empirical econometric work

Group Assignment

Due: **Week 13**
Weighting: **30%**

Hands on research using econometric models. Groups of up to 4 students will write a research report which will also be submitted in class in week 13 (as well as electronically). 50% of a group work task will be allocated to individual performance. Assignment topic will be announced in class.

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 – 20% penalty). This penalty does not apply for cases in which an application for disruption of studies is made and approved. In these circumstances this student may wish to consult the University's Disruption to Studies policy - http://www.mq.edu.au/policy/docs/disruption_studies/policy.html

On successful completion you will be able to:

- Apply basic statistical techniques to problems in economics and business
- Use econometric tools to model, estimate and forecast economic data
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Delivery and Resources

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 numerical problems as well as empirical applications which require the use of econometric software packages. How to use these packages is taught in tutorials which are held in the computer labs.

Lectures – large group learning (2 hour each teaching week)

Lectures are intended to provide an overview of statistical and econometrics techniques that are critical to the core themes of the unit. Students are expected to read the relevant material before

each lecture. Additional reading material such as academic papers and research reports will be provided on the website.

Tutorials – 1 hour per week

Tutorials will go through assigned problems, computer lab as well as discuss group assignments.

Self-study activities – learning by doing (about 6 hours each teaching week and 9 hours each week during the 2-week mid-semester recess)

ECON634 relies heavily on independent learning where students read the relevant chapter, revise the lecture notes, prepare answers to the pre-set tutorial questions and extend themselves by doing additional reading, questions, exercises and problems.

Useful but not required texts include:

1. Gujarati, N. G. and Porter, D. C. (2009) Essentials of Econometrics, 4th Edistion, McGraw-Hill
2. Keller, Gerald (2014) *Statistics for Management and Economics* (10th, ed.), Cengage Learning.
3. Amemiya, T. (1994) Introduction to Statistics and Econometrics, Harvard University Press.
4. Stock, J. H. and Watson, M. W. (2014) Introduction to Econometrics, 3rd Edition, Pearson

Material such as lecture slides, examples, and tutorial questions will be available on the unit home page. The lecture notes, together with the lectures and additional references will provide students with a clear indication of the basic content of the unit.

It is recommended that students attend all lectures and tutorials for several reasons including:

1. Not all the material in the texts is included in the unit, and not all the material in the unit is covered in the texts. In some places the texts 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.
2. The approaches to some problems that are recommended by the lecturer are different to those in the text.
3. The lectures will include guidance about the style and content of the final exam and recommendation 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.

Unit Schedule

	Week No.	Lecture Topic	Tutorials
	1	Introduction – Types of Data, Summation Operator, Basic Probability Gujarati & Porter Appendix A + Lecture Notes	Tutorial Week 1
	2	Probability Rules, Conditional Probability, Addition and Multiplication Rules Combinations and Permutations, Bayes' Theorem Gujarati & Porter Appendix A + Lecture Notes	Tutorial Week 2
	3	Discrete and Continuous Random Variables, Probability Distribution, Density, Cumulative Distribution Function, Independence Distributions: Bernoulli, Binomial Gujarati & Porter Appendix A + Lecture Notes	Tutorial Week 3
	4	Expected Value, Variance, Sample Moments, Covariance and Correlation Best Linear Prediction, Best Prediction Gujarati & Porter Appendix B + Lecture Notes	Tutorial Week 4
	5	Normal Random Variable + Point Estimation Properties of Estimators, Laws of Large Numbers, Central Limit Theorem Convergence of Sample Moments Gujarati & Porter Appendix B, C, D + Lecture Notes	Tutorial Week 5
	6	Class Test	Tutorial Week 6
	7	Confidence Intervals for Mean, Difference of Two Means, Proportions, Difference of Two Proportions, Bivariate Normal Variables Gujarati & Porter Appendix D + Lecture Notes Tests of Hypotheses	Tutorial Week 7
		MID-SEMESTER BREAK	
	8	Hypothesis Testing: Type I and Type II Errors, Significance Level, One- and Two-Sided Tests Testing Hypotheses about Means and Proportions Gujarati & Porter Appendix D + Lecture Notes	Tutorial Week 8

	9	Bivariate Regression Model, R-squared, CLRM Assumptions, OLS Estimator OLS Standard Errors Gujarati & Porter Chapters 2 & 3 + Lecture Notes	Tutorial Week 9
	10	Dummy Variables, Functional Forms Multiple Regression Gujarati & Porter Chapters 4, 5 & 6 + Lecture Notes	Tutorial Week 10
	11	Multiple Regression Topics: F-test, Adjusted R-squared, Diagnostic Tests (Take Home Test Due) Lecture Notes	Tutorial Week 11
	12	Further Multiple Regression Topics Lecture Notes	Tutorial Week 12
	13	Recap Group Assignment Due	

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

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

- Apply basic statistical techniques to problems in economics and business
- Use econometric tools to model, estimate and forecast economic data
- Critically evaluate empirical econometric work
- Engage into further studies in econometrics

Assessment tasks

- Class Test
- Take Home Test
- Group Assignment

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

- Apply basic statistical techniques to problems in economics and business
- Use econometric tools to model, estimate and forecast economic data
- Critically evaluate empirical econometric work
- Engage into further studies in econometrics
- Demonstrate the ability to work effectively in a group

Assessment tasks

- Class Test
- Take Home Test
- Group Assignment

Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

Learning outcomes

- Apply basic statistical techniques to problems in economics and business
- Engage into further studies in econometrics
- Demonstrate the ability to work effectively in a group

Assessment task

- Group Assignment