# ECON232

## Econometric Principles

S2 Day 2014

*Economics*

# Contents

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# General Information

Unit convenor and teaching staff
Unit Convenor
Chris Heaton
chris.heaton@mq.edu.au
Contact via chris.heaton@mq.edu.au
E4A-414
By appointment (currently enrolled students should consult the section on contacting staff in iLearn. Others should email the Unit Convenor at the above email address).

Credit points
3

Prerequisites
ECON141 or ECON241 or STAT272

Corequisites

Co-badged status

Unit description
This unit provides an introduction to modern econometric techniques. Its principal objectives are to extend students' knowledge beyond the classical regression model and to develop literacy in methods that are commonly used to analyse data in economics, finance and business. The topics covered usually include heteroscedasticity, stochastic regressors, limited dependent variables, time-series regression and panel data analysis. This unit will be of interest to any students who are interested in how useful information may be inferred from economic data in a logically valid way.

## 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:

Understand the econometric concepts relevant for each topic covered in the unit.

Estimate econometric models and test parametric hypotheses using techniques that are appropriate for the problem at hand.

Diagnose and resolve heteroscedasticity, endogeneity, autocorrelation and non-

stationarity problems in econometric models.

Evaluate the appropriateness of alternative econometric techniques in practical applications.

# General Assessment Information

Extensions

No extensions will be granted. Students who have not submitted an assessment task prior to the deadline will be awarded a mark of 0 for the task, except for cases in which a student has submitted a Disruption of Studies Notification to the University and has been granted Special Consideration.

# Assessment Tasks

| Name | Weighting | Due |
|---|---|---|
| Tutorial Exercises | 10% | Weeks 2-7 and 9-13 in class |
| Homework | 50% | Monday 8am in weeks 7, 11, 14 |
| Assignments | 40% | Monday 8am in weeks 9 and 12 |

## Tutorial Exercises

Due: **Weeks 2-7 and 9-13 in class**
Weighting: **10%**

Submission

The tutorial exercises must be attempted and submitted during the tutorial class in which the student is officially enrolled each week. The exercises will not be made available for assessment at any other time. Each tutorial assesses work that has been covered in previous lectures, with an emphasis on the most recent work. Students are permitted to re-attempt questions that they have incorrectly answered any number of times during the class, but a penalty of 20% will apply to each question, each time that each question is re-attempted (i.e. the maximum available marks from each question decays linearly as the number of attempts increases). The best 10 out of 12 tutorial results will contribute 1% each to the final grade.

What is required to complete the unit satisfactorily

Students must demonstrate satisfaction of the learning objectives assessed in each particular tutorial exercise. Students are welcome to consult reference material during the tutorial, and may discuss the work with other students and the tutor. However, the responses that students submit must reflect their own ideas and work. In particular, students who submit the answers of other students, without making any contribution to the derivation of the answers, will be deemed to have violated the Academic Honesty Policy. *Note that tutorial attendance is required.*

Students who do not attend at least 9 out of the 12 tutorials without being granted Special Consideration may be deemed to have unsatisfactory attendance and consequently be refused permission to continue in the unit and awarded a grade of F irrespective of their performance in other components of the assessment. Students must bring their Macquarie University Campus Card to each tutorial and display it in the holder provided. Failure to display a campus card may result in a student being refused access to the tutorial.

On successful completion you will be able to:

- Understand the econometric concepts relevant for each topic covered in the unit.
- Estimate econometric models and test parametric hypotheses using techniques that are appropriate for the problem at hand.
- Diagnose and resolve heteroscedasticity, endogeneity, autocorrelation and non-stationarity problems in econometric models.
- Evaluate the appropriateness of alternative econometric techniques in practical applications.

# Homework

Due: **Monday 8am in weeks 7, 11, 14**
Weighting: **50%**

Each homework exercise assesses work covered in lectures up to the submission deadline and contributes 16.667% to the final assessment.

Submission

Each homework exercise will be a web-based task made available on iLearn once sufficient material has been covered in lectures to enable students to start the work. Responses to the homework questions must be submitted via the iLearn interface for the homework task. Each homework exercise may be submitted once only. Shortly following the submission deadline for each homework exercise, a number of students may be required to present a defence of their submitted work. Students who are selected to present a defence will be contacted (at short notice) via their Macquarie University student email account and must attend at the time and place allocated to them. In the defence, the student may be asked to work through similar exercises in the presence of teaching staff from the unit, and may be asked to explain how he or she answered each question. The student may also be asked supplementary questions about the same topics. The student will be assigned a mark for the defence that will override the mark that was awarded for the previously submitted version of the exercise. A student who does not attend a defence that he or she was selected to present will be awarded a mark of zero for that task. Note that students must read their Macquarie University email at least once every 24 hours. Failure to read the relevant email will not be accepted as an excuse for not attending a defence.

What is required to complete the unit satisfactorily

Students must demonstrate satisfaction of the learning objectives assessed in each particular homework exercise. Students will be awarded a numerical mark for each exercise that indicates the proportion of the questions that they answered correctly. It should be noted that the final grade for a student will not be computed simply by summing the marks attained in individual assessment tasks. Rather, the grading process will take into account *which* questions were answered correctly or incorrectly and what that indicates about the extent to which the student has achieved the learning outcomes of the unit. Many questions in the homework exercises will be quite close to work that has been covered in the lecture program and in tutorials (i.e. they ask the student to do little more than replicate the unit material as presented to them). The responses to these questions will be of most interest in determining whether the student is awarded a grade of P. The homework exercises will also contain several questions that ask students to extend the unit material, or approach it in a way that is in some sense different to what was covered in the lectures (i.e. they seek evidence of learning that goes beyond replication of content). The responses to these questions will be of most interest when determining whether the student is awarded a grade of Cr.

Consequently, while the aggregate mark attained in homework exercises will be broadly indicative of the level of student achievement, there is no exact functional relationship between the total mark and the grade awarded. Students are encouraged to read the grade descriptors in the grading policy and reflect on the extent to which their submitted work corresponds to each of the descriptors. Students are welcome to contact the Unit Coordinator at any time to discuss their work and the evidence that it provides of their learning achievement.

It is intended that students will work on the homework exercises independently. Students who collude or otherwise violate the Academic Honesty Policy will face further action which may result in failure in the unit (with an SNG of zero) and more severe penalties.

On successful completion you will be able to:
- Understand the econometric concepts relevant for each topic covered in the unit.
- Estimate econometric models and test parametric hypotheses using techniques that are appropriate for the problem at hand.
- Diagnose and resolve heteroscedasticity, endogeneity, autocorrelation and non-stationarity problems in econometric models.
- Evaluate the appropriateness of alternative econometric techniques in practical applications.

## Assignments

Due: **Monday 8am in weeks 9 and 12**
Weighting: **40%**

Each assignment assesses work covered in lectures up to the the submission deadline and contributes 20% to the final assessment.

Submission

Each assignment must be submitted via the relevant links in iLearn prior to the deadline. No other form of submission is acceptable. Each assignment may be submitted once only. Submission instructions and information about the requirements of the assignments will be provided in class and on iLearn. Following the submission deadline for each assignment, a number of students may be required to present a defence of their submitted work. Students who are selected to present a defence will be contacted via their Macquarie University student email account (at short notice) and must attend at the time and place allocated to them. In the defence, the student may be asked to work through the relevant assignment in the presence of teaching staff from the unit, and to explain how he or she completed the assignment. The student may also be asked supplementary questions. The student will be assigned a mark for the defence that will override the mark that was awarded for the submitted version of the assignment. A student who does not attend a defence that he or she was selected to present will be awarded a mark of zero for that task. Note that students must read their Macquarie University email at least once every 24 hours. Failure to read the relevant email will not be accepted as an excuse for not attending a defence.

What is required to complete the unit satisfactorily

For each assignment, students will be awarded a mark that reflects their level of achievement indicated by the grade descriptors and the cut-off marks for the SNG described in the Grading Policy. For example, a mark of less than 50% would indicate a failure to demonstrate achievement of the learning outcomes under consideration; a mark of greater than 84% would indicate the achievement of deep and critical understanding; etc. The primary purpose of the assignments is to assess students for the grades of D and HD. It is not necessary for students to perform well in the assignments in order to pass the unit since they may demonstrate satisfactory achievement of the learning outcomes in the homework exercises. Nonetheless, in cases where inadequate evidence of learning achievement was presented in the homework, it may be possible for the required evidence to be presented in the assignments.

It is intended that students will work on the assignments independently. Students who collude or otherwise violate the Academic Honesty Policy will face further action which may result in failure in the unit (with an SNG of zero) and more severe penalties.

On successful completion you will be able to:
- Understand the econometric concepts relevant for each topic covered in the unit.
- Estimate econometric models and test parametric hypotheses using techniques that are appropriate for the problem at hand.
- Diagnose and resolve heteroscedasticity, endogeneity, autocorrelation and non-stationarity problems in econometric models.
- Evaluate the appropriateness of alternative econometric techniques in practical

applications.

# Delivery and Resources

## Classes

There is a single 2 hour lecture class per week and there is also a 1 hour tutorial class. Students must enrol in a tutorial class that they are able to attend each week. Changes of tutorial class may only be effected using the online enrolment system and may only be made during the first two weeks of semester. ***Tutorial attendance is required.*** Students who attend fewer than 9 of the 12 tutorial classes may be deemed to have unsatisfactory attendance and consequently be refused permission to continue in the unit and awarded a grade of F irrespective of their performance in other parts of the unit.

## Required and Recommended Texts and/or Materials

Hill, R.C., Griffiths, W.E., and G.C. Lim (2011) Principles of Econometrics, Wiley, 4th edition.

Adkins, L (2014) Using Gretl for Principles of Econometrics, 4rd edition, http://www.learneconom etrics.com/gretl/using_gretl_for_POE4.pdf

Material such as lecture slides, examples, etc will be made available on the unit web site as the unit progresses.

## Technologies used and required

The main software used in this unit is gretl. The Windows version may be freely downloaded from http://gretl.sourceforge.net/win32/. For a Mac version see http://gretl.sourceforge.net/osx.ht ml. Linux users should check their repositories or download the rpm or source from http://gretl.so urceforge.net/index.html.

Students may need to use a spreadsheet for some parts of this unit. Microsoft Excel will be provided in the computing laboratories and must be used in some tutorials.

## Learning and Teaching Activities

ECON232 is taught by lectures, set reading, tutorial exercises, class discussion and online discussion. Students are expected to attend lectures, read the texts after the lecture, attend tutorial classes, submit tutorial exercises, homework exercises and assignments, and participate in online discussions and class discussions.

## Changes since the last offering of this unit

The homework exercises are now worth a total of 50% instead of 60%, and the assignments are worth a total of 40% instead of 30%.

# Unit Schedule

**AN APPROXIMATE SCHEDULE OF WORK (The schedule of lecture topics may be varied during the semester according to the rate of progress made. The deadlines for the homework and assignments, and the tutorial schedule, will be altered only in response to**

**extreme circumstances).**

| Week | Topic | Tutorials | Homework/Assignment Due |
|------|-------|-----------|-------------------------|
| 1 | Housekeeping, Probability | | |
| 2 | Probability | Tutorial 1 | |
| 3 | Probability, Estimation | Tutorial 2 | |
| 4 | Regression | Tutorial 3 | |
| 5 | Heteroskedasticity | Tutorial 4 | |
| 6 | Binary Dependant Variables | Tutorial 5 | |
| 7 | Binary Dependant Variables | Tutorial 6 | Homework 1 |
| | Mid-semester break | | |
| 8 | No classes this week due to public holiday | | |
| 9 | Stochastic Regressors | Tutorial 7 | Assignment 1 |
| 10 | Stochastic Regressors | Tutorial 8 | |
| 11 | Stationary Time Series Regression | Tutorial 9 | Homework 2 |
| 12 | Unit Roots and Cointegration | Tutorial 10 | Assignment 2 |
| 13 | Panel Data if we have time | Tutorial 11 | |
| 14 | | | Homework 3 |

# Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central. Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy http://mq.edu.au/policy/docs/academic_honesty/policy.html

Assessment Policy  http://mq.edu.au/policy/docs/assessment/policy.html

Grading Policy http://mq.edu.au/policy/docs/grading/policy.html

Grade Appeal Policy http://mq.edu.au/policy/docs/gradeappeal/policy.html

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the Learning and Teaching Category of 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/support/student_conduct/

# Academic Honesty

The nature of scholarly endeavour, dependent as it is on the work of others, binds all members of the University community to abide by the principles of academic honesty. Its fundamental principle is that all staff and students act with integrity in the creation, development, application and use of ideas and information. This means that:

- all academic work claimed as original is the work of the author making the claim

- all academic collaborations are acknowledged

- academic work is not falsified in any way

- when the ideas of others are used, these ideas are acknowledged appropriately.

Further information on the academic honesty can be found in the Macquarie University Academic Honesty Policy at http://www.mq.edu.au/policy/docs/academic_honesty/policy.html. Students are required to comply with this policy and heavy penalties may apply in cases where the policy is breached. Several methods are used to monitor compliance with this policy.

# Grades

Macquarie University uses the following grades in coursework units of study:

- HD - High Distinction
- D - Distinction
- CR - Credit
- P - Pass
- F - Fail Grade

Descriptors and other information concerning grading are contained in the Macquarie University Grading Policy which is available at: http://www.mq.edu.au/policy/docs/grading/policy.html

# Grading Appeals

During the semester, if you wish to query a mark awarded to you for a particular assessment task then you should email the Unit Convenor within 1 week of the marked task being returned to you. Your email should clearly state the nature of your query and any grounds you have for suspecting that an error has been made in the calculation of your mark. If, at the conclusion of the unit, you have performed below expectations, and are considering lodging an appeal of grade, please refer to the following website which provides information about these processes and the cut off dates in the first instance. Please read the instructions provided concerning what constitutes a valid grounds for appeal before appealing your grade.

http://www.businessandeconomics.mq.edu.au/new_and_current_students/undergraduate_current_students/how_do_i/grade_appeals/

# Disruption to Studies Policy

The University is committed to equity and fairness in all aspects of its learning and teaching. In stating this commitment, the University recognises that there may be circumstances where a student is prevented by unavoidable disruption from performing in accordance with their ability. A disruption to studies policy exists to support students who experience serious and unavoidable disruption such that they do not reach their usual demonstrated performance level. The policy is available at: http://www.mq.edu.au/policy/docs/disruption_studies/policy.html. It is recommended that students read this policy before notifying the University of a disruption to studies. Note that to be considered "serious and unavoidable" a disruption must last for 3 consecutive days.

Students who are granted Special Consideration may be required to sit a written and/or oral examination in place of the affected assessment task.

# 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://informatics.mq.edu.au/help/.

When using the University's IT, you must adhere to the Acceptable Use 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

- Understand the econometric concepts relevant for each topic covered in the unit.
- Estimate econometric models and test parametric hypotheses using techniques that are appropriate for the problem at hand.
- Diagnose and resolve heteroscedasticity, endogeneity, autocorrelation and non-stationarity problems in econometric models.
- Evaluate the appropriateness of alternative econometric techniques in practical applications.

### Assessment tasks

- Tutorial Exercises
- Homework
- Assignments

## 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

- Diagnose and resolve heteroscedasticity, endogeneity, autocorrelation and non-stationarity problems in econometric models.
- Evaluate the appropriateness of alternative econometric techniques in practical applications.

## Assessment task

- Assignments

# 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

- Estimate econometric models and test parametric hypotheses using techniques that are appropriate for the problem at hand.
- Diagnose and resolve heteroscedasticity, endogeneity, autocorrelation and non-stationarity problems in econometric models.
- Evaluate the appropriateness of alternative econometric techniques in practical applications.

## Assessment tasks

- Tutorial Exercises
- Homework
- Assignments