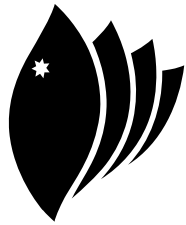


MACQUARIE
UNIVERSITY



FACULTY OF
BUSINESS AND ECONOMICS

Econ334
Financial Econometrics

Semester 1, 2012

Department of Economics

**MACQUARIE UNIVERSITY
FACULTY OF BUSINESS AND ECONOMICS
UNIT GUIDE**

| | |
|---------------------------|---|
| Year and Semester: | Semester 1, 2012 |
| Unit convenor: | Dr. George Milunovich |
| Prerequisites: | ECON241 or 3 credit points from STAT271-273 |
| Credit points: | 3 |

Students in this unit should read this unit guide 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.

ABOUT THIS UNIT

Unit Description

This unit is highly recommended for students majoring in economics and finance. ECON334 will develop econometric and statistical techniques within the context of financial applications, and discuss some empirical evidence found in the literature. This subject is mathematical and statistical in nature. You will need to be competent in algebra and familiar with basic statistical concepts and tools to complete this course successfully. Nevertheless, the main focus is on models that use time series data, and mathematical proofs and derivations are considered only to the extent necessary to facilitate an understanding of key concepts and the interpretation of results. The use of a computer program is an integral component of tutorial exercises and assignments. Instruction in the use of the computer program will be given in lectures and tutorials. Although ECON232 Econometric Principles is not a prerequisite, it is highly recommended. **Students are also expected to have basic knowledge of financial economics/finance theory.**

Unit rationale

The last three decades have seen a remarkable growth in the use of quantitative methods in financial applications. Finance practitioners now routinely apply statistical methods in risk and portfolio management, proprietary trading, policy analysis and forecasting. The aim of ECON334 is to acquaint students with some of the statistical/econometric techniques that are commonly applied in finance. A basic level of competence in using these techniques, together with an appreciation of their strengths and limitations, is essential for anyone seeking employment in the finance industry.

TEACHING STAFF

- **Convenor:** Dr. George Milunovich
E4A 443 – 9850 8543 – george.milunovich@mq.edu.au
- **Other Staff:** fazeel.jaleel@mq.edu.au – Lecturer/Tutor
prashan.karunaratne@mq.edu.au – Teaching Assistant
geoffrey.avery@students.mq.edu.au – Tutor
ryanesplin@gmail.com - Tutor
james.de-kock@students.mq.edu.au - Tutor

CONTACTING STAFF

- Consultation times
Consultation hours will be announced in class and made available on the unit's website.

You are encouraged to seek help at a time that is convenient to you from a staff member teaching on this unit during their regular consultation hours. In special circumstances, an appointment may be made outside regular consultation hours. *Staff will not conduct consultations by email.* You may, however, phone staff during their consultation hours.

In order to gain access to staff located at levels 1, 2 and 3 of building E4A during their consultation hours please ring the staff member from the phones available in the lobby (phone numbers of relevant staff members will be provided on Blackboard and are available next to the phones).

Students experiencing significant difficulties with any topic in the unit must seek assistance immediately.

CLASSES

- Number and length of classes: 3 hours face-to-face teaching per week consisting of 1 x 2 hour lecture and 1 x 1 hour tutorial

Lecture times:

| | |
|---------|----------------------------|
| Mondays | 8am-10am E7B T4 |
| Fridays | 9am-11am W5A Price Theatre |

- The timetable for classes can be found on the University web site at:
<http://www.timetables.mq.edu.au/>

REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS

The prescribed text for the unit is:

Brooks, C. (2008) Introductory Econometrics for Finance, 2nd Edition, Cambridge University Press.

It can be purchased from the Macquarie University Co-op Bookshop, and it is also available in the Macquarie Library. Additional, useful but not required, references include:

- Amemiya, T. (1994) Introduction to Statistics and Econometrics, Harvard University Press, (one of the best introductory econometrics books I have read)
- Campbell, J., Lo, A., and Mackinlay, C. (1997) The Econometrics of Financial Markets, Princeton University Press, (this book may be too advanced for our class, but contains a lot of interesting material)

- Material such as lecture slides, examples, and tutorial questions will be available on the unit home page. The text and 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:
 - Not all the material in the text is included 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.
 - The approaches to some problems that are recommended by the lecturer are different to those in the text.
 - The lectures will include guidance about the style and content of the final exam and recommendation about study technique.
 - 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.

TECHNOLOGY USED AND REQUIRED

Students are required to use a computer to carry out certain tasks of the course, such as tutorials and assignments. The software programs used in this course include EViews 7.0 and Microsoft Excel. Students do not have to use EViews 7.0 to perform their tutorial and assignment tasks if they are familiar with other programs, but discussions in the lectures and tutorials, as well as in the test and examination questions will be based on output that is produced using EViews.

UNIT WEB PAGE

- Course material is available on the learning management system (iLearn), which can be found at: <https://ilearn.mq.edu.au/login/MQ/>
- The following information will be available on iLearn:

| | |
|------------------------------|--|
| • Unit Outline | • Announcements |
| • Lecture slides | • Selected tutorial solutions |
| • Information on Assessments | • Staff consultation hours and contact details |
| • Other relevant material | |

You are strongly encouraged to regularly visit the website and use it as a resource centre to assist with your learning. If you are unable to access the website because you are not aware of or have forgotten your username and password, please contact

the IT helpdesk located on Level 1 of the Library on 9850 6500. The IT helpdesk will also be able to assist you with using iLearn. Please remember to log out when you have finished using iLearn. Failure to do so could result in unauthorised access to your account.

LEARNING OUTCOMES

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

- Apply financial econometric tools to modeling, estimation, inference and forecasting of financial data;
- Understand different estimation methodologies;
- Critically evaluate empirical econometric work;

GRADUATE CAPABILITIES

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop the capabilities the University's graduates will need to develop to address the challenges, and to be effective, engaged participants in their world.

This unit contributes to this by developing the following graduate capabilities:

- Critical, Analytical and Integrative Thinking
- Problem Solving and Research Capability
- Effective Communication
- Commitment to Continuous Learning

LEARNING AND TEACHING ACTIVITIES

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

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

ECON334 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.

Tutorials –small group learning (1 hour each teaching week)

Tutorials constitute a critical learning experience of this unit and students must attend them. The tutor will facilitate a highly student-centred discussion of answers to pre-set tutorial questions. A tutorial is also an active forum to present to the tutor difficulties you encountered when preparing for the pre-set tutorial questions. Ask your tutor questions and further guidance on how to approach questions. Students are expected to complete the tutorials empirical work and attempt the tutorial questions before each tutorial.

RESEARCH AND PRACTICE

- This unit uses research by Macquarie University researchers as follows:
 1. Heaton, C, Milunovich, G, and Passé-de Silva, A., (2011), “International Commodity Prices and the Australian Stock Market”, *Economic Record*, **87**, 37-44.
 2. Milunovich, G. (2011) “Measuring the Impact of the GFC on European Equity Markets”, *Economics Bulletin*, Vol. **31(2)**, 1237-1246.
 3. Joyeux, R., and Milunovich, G., (2010) “Testing Market Efficiency in the EU Carbon Futures Market”, *Applied Financial Economics* **20(10)**, 803-809.
 4. Liu, J., Loudon, G, and Milunovich, G. “Linkages between the U.S. and Asia-Pacific REITs: The Role of Economic and Financial Factors” forthcoming in *Journal of Property Investment & Finance*
- This unit uses research from external sources (as referenced in the textbook)
- This unit gives you practice in applying research findings in your assignments
- This unit gives you opportunities to conduct your own research

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 financial models. The assignment will also ensure that you are proficient with the software and can interpret the relevant computer output. The components of assessment in this course are as follows:

| | Assessment Task 1 | Assessment Task 2 | Assessment Task 3 |
|------------------------------------|--|--|--|
| Title/Name | Class Test | Group Assignment | Final Examination |
| Description | A mix of short-answer and multiple-choice questions, one hour in duration. | Hands on research using econometric models – topic to be announced in class | A two-hour examination - mix of short-answer and multiple-choice questions |
| Due date | Week 7 – in lectures. | Last week of lectures. Will be announced in class. | During final examination period. |
| % Weighting | 30% | 30% | 40% |
| Grading method | Marked by teaching staff and computer | Marked by teaching staff | Marked by teaching staff and computer |
| Submission method | In class | BESS and email | In exam |
| Feedback | | Comments by assessors noted on the assignment | |
| Estimated student workload (hours) | Depends on student's aptitude | Depends on student's aptitude | Depends on student's aptitude |
| Learning outcomes assessed | | | |
| 1 | Apply financial econometric tools to modeling, estimation, inference and forecasting of financial data | Apply financial econometric tools to modeling, estimation, inference and forecasting of financial data | Apply financial econometric tools to modeling, estimation, inference and forecasting of financial data |
| 2 | Understand different estimation methodologies | Understand different estimation methodologies | Understand different estimation methodologies |
| 3 | | Critically evaluate empirical econometric work | Critically evaluate empirical econometric work |
| Graduate capabilities assessed | | | |
| 1 | Critical, Analytical and Integrative Thinking | Critical, Analytical and Integrative Thinking | Critical, Analytical and Integrative Thinking |
| 2 | Problem Solving and Research | Problem Solving and Research | Problem Solving and Research |

| | Assessment Task 1 | Assessment Task 2 | Assessment Task 3 |
|---|---|---|---|
| | Capability | Capability | Capability |
| 3 | Effective Communication | Effective Communication | Effective Communication |
| 4 | Commitment to Continuous Learning | Commitment to Continuous Learning | Commitment to Continuous Learning |

- **Class Test (further instructions)**
A calculator is needed for the test and attendance is compulsory. If you fail to attend the test you will be awarded a zero mark. There will be no catch-up or supplementary examinations. Students who experience serious misadventure and are unable to attend either test should submit a letter with appropriate documentary evidence to the student centre within 5 days of the test.
- **Group Assignment (further instructions)**
Late assignments will lose 20 marks out of the full 100 marks for each day overdue. (Each day ends at 4pm for this purpose.) Students are strongly recommended to keep a photocopy of their assignment to insure against loss. In early Week 12, tutorial boxes designated ECON334 will be prepared in the Business and Economics Student Services (BESS) where students can submit their assignments. In addition, students must also email the assignment to the lecturer in charge (george.milunovich@mq.edu.au) with the following subject line: "Econ334 Assignment".
- **Final Examination (further instructions)**

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.

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:// exams.mq.edu.au/](http://exams.mq.edu.au/).

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. The University's policy on special consideration process is available at http://www.mq.edu.au/policy/docs/special_consideration/policy.html

If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period. (Individual Faculties may wish to signal when the Faculties' Supplementary Exams are normally scheduled.)

The Macquarie university examination policy details the principles and conduct of examinations at the University. The policy is available at:
<http://www.mq.edu.au/policy/docs/examination/policy.htm>

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

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 AND FINAL EXAMINATION SCRIPT VIEWING

If, at the conclusion of the unit, you have performed below expectations, and are considering lodging an appeal of grade and/or viewing your final exam script 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.businessandconomics.mq.edu.au/new_and_current_students/undergraduate_current_students/how_do_i/grade_appeals

SPECIAL CONSIDERATION

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 special consideration 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/special_consideration/policy.html

STUDENT SUPPORT SERVICES

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

IT CONDITIONS OF USE

Access to all student computing facilities within the Faculty of Business and Economics is restricted to authorised coursework for approved units. Student ID cards must be displayed in the locations provided at all times.

Students are expected to act responsibly when using University IT facilities. The following regulations apply to the use of computing facilities and online services:

- Accessing inappropriate web sites or downloading inappropriate material is not permitted. Material that is not related to coursework for approved units is deemed inappropriate.
- Downloading copyright material without permission from the copyright owner is illegal, and strictly prohibited. Students detected undertaking such activities will face disciplinary action, which may result in criminal proceedings.

Non-compliance with these conditions may result in disciplinary action without further notice.

Students must use their Macquarie University email addresses to communicate with staff as it is University policy that the University issued email account is used for official University communication.

SEMESTER 1, 2012 COURSE CALENDAR ECON334

| Week No. | Lecture Topic | Tutorials |
|--------------------|---|------------------|
| 1 | Understanding Financial Data, Revision of Basic Statistical and Mathematical Concepts – textbook Ch.1 + lecture notes | |
| 2 | Review of regression and hypothesis testing – textbook Ch. 2 + lecture notes | Tutorial Week 2 |
| 3 | Review of regression and hypothesis testing – textbook Ch. 3 + lecture notes | Tutorial Week 3 |
| 4 | Review of regression and hypothesis testing – textbook Ch. 4. + lecture notes | Tutorial Week 4 |
| 5 | Stationary ARMA models and forecasting – textbook Ch. 5 + lecture notes | Tutorial Week 5 |
| 6 | Stationary ARMA models and forecasting – textbook Ch. 5 + lecture notes | Tutorial Week 6 |
| MID-SEMESTER BREAK | | |
| 7 | CLASS TEST | Tutorial Week 7 |
| 8 | Long-Run Relationships in Finance - textbook Ch. 7 + lecture notes | Tutorial Week 8 |
| 9 | Long-Run Relationships in Finance - textbook Ch. 7 + Volatility modeling – textbook Ch. 8 | Tutorial Week 9 |
| 10 | Volatility modeling – textbook Ch. 8 | Tutorial Week 10 |
| 11 | Volatility modeling – textbook Ch. 8. + lecture notes | Tutorial Week 11 |
| 12 | Volatility modeling –textbook Ch. 8 + lecture notes | Tutorial Week 12 |
| 13 | Switching Models - textbook Ch.9 + lecture notes ASSIGNMENT DUE | Tutorial Week 13 |