Econ334
Financial Econometrics

Semester 1, 2011

Department of Economics

Year and Semester: Semester 1, 2011
Unit convenor: Dr. George Milunovich
Prerequisites: ECON241 or 3 credit points from STAT271-273
Credit points: 3

Students enrolled in Econ334 should read this unit outline 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 particular 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 a basic knowledge of financial economics.

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 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

1. **Convenor:**
   Dr. George Milunovich,
   Office: E4A-443
   Tel: (02) 9850 8543
   email: george.milunovich@mq.edu.au
2. **Tutors:**
   - Miss Katja Ignatieva: katja.ignatieva@mq.edu.au
   - Mr. Prashan Karunaratne: prashan.karunaratne@mq.edu.au

CONSULTATION TIMES

Office (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 this unit during their regular consultation hours. In special circumstances, an appointment may be made outside regular consultation hours. Staff will not conduct any consultations by email. You may, however, phone staff during their consultation hours. 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 one 2 hour lecture and one 1 hour tutorial
- 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:

i) Alexander, C. (2008) *Practical Financial Econometrics,* John Wiley & Sons Ltd.

ii) Alexander, C. (2008) *Quantitative Methods in Finance,* John Wiley & Sons Ltd.

iii) Campbell, J., Lo, A., and Mackinlay, C. (1997) *The Econometrics of Financial Markets*, Princeton University Press

- 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:*

  i) Not all the material in the text is covered 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.

  ii) The approaches to some problems that are recommended by the lecturer are different to those in the text.

  iii) The lectures will include guidance about the style and content of the final exam and recommendation about study technique.

  iv) 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.**

It is well understood that there are many other econometric programs beside EViews. However, the program is used in this course because of the following reasons:
- It is flexible enough to be applied to all possible situations that can arise from the topics of this course.
- It is easy to manipulate data (that is, to read data series, to generate new variables, and to use only a part of the data, etc)
- Its output contains all necessary statistics that are used in this course.

UNIT WEB PAGE
- Course material is available on the learning management system (BlackBoard), which can be found at: http://learn.mq.edu.au.
- The following information will be available on Blackboard:

• Unit Outline	• Announcements
• Lecture slides	• Selected tutorial solutions
• Information on Assessments	• Staff consultation hours and contact details
• Quizzes	• 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 Blackboard. Please note that there is also a help feature in Blackboard and you may refer to this instead for assistance in using Blackboard. Please remember to log out when you have finished using Blackboard. Failure to do so could result in unauthorised access to your Blackboard account.

LEARNING OUTCOMES AND GRADUATE CAPABILITIES
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;
- Engage into further studies in econometrics.

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop students' generic skills in a range of areas. One of the aims of this unit is that students develop their skills in the following:

Foundation skills of literacy, numeracy and information technology;
Critical analysis skills;
Problem-solving skills;
Engaged and Ethical Local and Global citizens;

Capable of Professional and personal Judgement and Initiative;
Creative thinking skills.

LEARNING AND TEACHING STRATEGY

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.

Independent learning – 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.

After the tutorials – the learning continues
At the end of each week, solutions to the tutorials will be posted on the unit website. Review your tutorial notes, compare your answers to the model solutions, and consult with staff during consultation hours.

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 outputs.The components of assessment in this course are as follows:

(1) **Quizzes**   **10%**
Two short quizzes in Weeks 4 and 10.

(2) **Tests**   **30%**
Two 50-minute multiple-choice tests (15% each) will be held in the first hour of the regular lecture in Weeks 7 and 13. A calculator is needed for the test and attendance is compulsory. If you fail to attend these examinations 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 lecturer, as soon as possible.

(3) **Assignment**   **15%**

There is one assignment that should be submitted in Week 13. Late assignments will lose 20 marks out of the full 100 marks for each day overdue. (Each day ends at 5 pm for this purpose.) Students are strongly recommended to keep a photocopy of their assignment to insure against loss. In early Week 9, 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".

A list of the students who have not submitted before or on the due date will be posted on the unit homepage and on the door of the lecturer's office (E4A 443) soon after the due date. All students must check this list to ensure that their assignment has been received. If you have submitted your assignment but you appear on this list, then you should contact the lecturer-in-charge as soon as possible to arrange the resubmission of your assignment.

(4)   **Final Examination   45%**
A two-hour examination will be held during the final examination period.

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://www.timetables.mq.edu.au/exam. 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.

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

Requirements to Pass This Unit
To pass ECON334, students must satisfy each of the following requirements:
(1)   An overall satisfactory performance in all assessment components; and
(2)   Submission of the assignment.

Under the current grading system, a **standardised numerical grade (SNG)** will be awarded together with a band grade HD, D, CR, P, PC, or F. It is important for students to note that the SNG is NOT the weighted aggregate of the raw marks for the above three assessment components. It is rather a detailed grade that is chosen from 0 to 100 based on other criteria as well as the raw marks. For instance, the SNG for a student who gains a raw aggregate mark of 55 but fails the final would be lower than 45

indicating that he/she fails the unit. As such, an SNG of say 73 or 74 does NOT mean that the student's aggregate mark is one or two marks below the threshold for a D. It means that his/her work and performance in the unit is of predominantly good quality and did better than other students in the CR band but not quite of superior quality needed for a D.

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.

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. Information about unavoidable disruption and the special consideration process is available at http://www.reg.mq.edu.au/Forms/APSCon.pdf. All claims have to be substantiated by a signed Professional Authority Form, and if they are based on non-medical grounds, supporting documentation (such as statutory declarations by independent witnesses, police reports, or statements from sufficiently senior officials in the place of employment) must also be provided. If accepted, in most cases, the students will be required to sit a supplementary examination on a date set by the Faculty. So, students who intend to be away must take account of this rule in scheduling any travel after lodging the request.

The format of the supplementary examination may be different from the usual examination. To prevent students from abusing this facility and to protect only the students with genuine reasons, **the result of supplementary examination will replace the result of the usual examination if a student sits a supplementary examination as well as the usual examination.** This implies that a student will fail the unit if he/she fails the supplementary examination regardless of his/her performance in the usual examination. If you believe this rule unfairly disadvantages you, contact the lecturer in charge before lodging the request form.

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, i.e. the final day of the official examination period.

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

Please refer to relevant Bachelor Degree rule in the Handbook of Undergraduate Studies.

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.businessandeconomics.mq.edu.au/for/new_and_current_students/undergraduate/admin_central/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/procedure.html

STUDENT SUPPORT SERVICES

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at http://www.student.mq.edu.au.

The Faculty of Business and Economics offers additional support for its students such as EFS Resource and Information Centre commonly known as BESS, Peer Assisted Learning (PAL), etc… Details of these services can be accessed at
http://www.businessandeconomics.mq.edu.au/current/undergraduate/bess

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 utilising 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 unit 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.

2011 COURSE CALENDAR ECON334

Week No.	Lecture Topic	Tutorials
1	Understanding Financial Data, Revision of Basic Statistical and Mathematical Concepts – textbook Ch.1 + additional material that may be provided	
2	Review of regression and hypothesis testing – textbook Ch. 2 + additional material that may be provided	Tutorial Week 2
3	Review of regression and hypothesis testing – textbook Ch. 3 + additional material that may be provided	Tutorial Week 3
4	Review of regression and hypothesis testing – textbook Ch. 4. + additional material that may be provided	Quiz No. 1 Tutorial Week 4
5	Stationary ARMA models and forecasting – textbook Ch. 5 + additional material that may be provided	Tutorial Week 5
6	Long-Run Relationships in Finance - textbook Ch. 7 + additional material that may be provided	Tutorial Week 6
7	Test No. 1	Tutorial Week 7
	MID-SEMESTER BREAK	
8	Volatility modeling – textbook Ch. 8. + additional material that may be provided	Tutorial Week 8
9	Volatility modeling –textbook Ch. 8 + additional material that may be provided	Tutorial Week 9
10	Switching Models - textbook Ch.9 + additional material that may be provided	Quiz No. 2 Tutorial Week 10
11	Multivariate Models – textbook Ch. 6 + additional material that may be provided	Tutorial Week 11
12	To be decided	Tutorial Week 12
13	Test No. 2 ASSIGNMENT DUE	Tutorial Week 13