ECON240     FINANCIAL MODELLING     6 CP
COM121 or STAT131 or STAT151 or STAT252 or MATH141

EQUIVALENT SUBJECT(S): NOT TO COUNT WITH ANY ONE OF ECON231 AND ECON221

For online learning resources visit the WebCT Vista site for this subject

SPRING 2007 WOLLONGONG CAMPUS

Subject Coordinator /Lecturer
A/PROF ABBAS VALADKHANI School of Economics
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Consultation: Monday Time: 12:30pm – 1:30pm
Thursday Time: 9:30am – 11:30am

Tutor
A/PROF ABBAS VALADKHANI School of Economics
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Consultation: Monday Time: 12:30pm – 1:30pm
Thursday Time: 9:30am – 11:30am

TBA School of Economics
Room: TBA Ph: TBA email: TBA
Consultation: TBA Time: TBA
### SECTION A: GENERAL INFORMATION

#### LECTURE TIMES

Lectures will be held on Monday 9:30am to 11:30am 20.2

#### LECTURE PROGRAM

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics Covered</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23 July</td>
<td><strong>Emergency Evacuation Procedures</strong>&lt;br&gt;<strong>Mathematics of finance</strong>&lt;br&gt;Fixed-income securities; The time value of money; Effective vs nominal rates of interest; Present value or discounting; Annuities; Valuation of debt securities; Yield to maturity; and Money market instrument returns.</td>
<td>My notes</td>
</tr>
<tr>
<td>2</td>
<td>30 July</td>
<td><strong>Review of Basic Concepts; and an introduction to EViews</strong></td>
<td>Chs 1 &amp; 2</td>
</tr>
<tr>
<td>3</td>
<td>6 August</td>
<td><strong>A brief overview of the classical linear regression model:</strong> Part 1&lt;br&gt;What is a regression model? Regression vs correlation; the assumptions underlying the classical linear regression model; properties of the OLS estimator; precision and standard errors; and statistical inference. Examples: Can US mutual funds beat the market? Can UK unit trust managers beat the market? The overreaction hypothesis and the UK stock market. Estimation of the CAPM beta.</td>
<td>Ch. 3</td>
</tr>
<tr>
<td>4</td>
<td>13 August</td>
<td><strong>A brief overview of the classical linear regression model:</strong> Part 2&lt;br&gt;The OLS estimator for the multiple regression model; Hypothesis testing using t-ratios and the F test; Data mining; Examples: Can UK unit trust managers “beat the market”; The overreaction hypothesis and the UK stock market; Testing for seasonal effects in overreactions; The relationship between the t and the F-distributions.</td>
<td>Ch. 3</td>
</tr>
<tr>
<td>5</td>
<td>20 August</td>
<td><strong>Further issues with the classical linear regression model:</strong> Part 1&lt;br&gt;Goodness of fit statistics; Hedonic pricing models; Tests of non-nested hypotheses; Violations of the assumptions of the classical linear regression model (heteroscedasticity and autocorrelation); and Dynamic models.</td>
<td>Ch. 4</td>
</tr>
<tr>
<td>6</td>
<td>27 August</td>
<td><strong>Further issues with the classical linear regression model:</strong> Part 2&lt;br&gt;Violations of the assumptions of the classical linear regression model (non-normality and multicollinearity); Specification and measurement errors; Parameter stability tests; Approaches to building econometric models; Regression Analysis in practice - A further example: determinants of sovereign credit ratings; and What determines how the market reacts to ratings announcements?</td>
<td>Ch. 4</td>
</tr>
<tr>
<td>7</td>
<td>3 September</td>
<td><strong>Mid-session test will be held in the lecture room (25%)</strong></td>
<td>Chs 1-4 plus my notes in week 1</td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Topics Covered</td>
<td>Readings</td>
</tr>
<tr>
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<tr>
<td>8</td>
<td>10 September</td>
<td><strong>Univariate time series modelling and forecasting</strong>&lt;br&gt;Univariate time series models; A white noise process; Moving average and autoregressive processes; The stationary condition for an AR model; Wold’s decomposition theorem; The moments of an autoregressive process; ACF and PACF; ARMA processes; The Box Jenkins methodology; Exponential smoothing; Forecasting with ARMA models; and Measures of forecast accuracy.</td>
<td>Ch. 5</td>
</tr>
<tr>
<td>9</td>
<td>17 September</td>
<td><strong>Multivariate models</strong>&lt;br&gt;Simultaneous equations models; Identification conditions; Tests for exogeneity; Recursive systems; ILS and 2SLS; Example: modelling the bid-ask spread and volume for options; VAR models compared with structural equations models; Block significance and causality tests; impulse responses and variance decompositions; and Example: the interaction between property returns and the macroeconomy.</td>
<td>Ch. 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>24 September - 30 September: Mid-Session Recess (1 week)</strong></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>8 October</td>
<td><strong>Modelling long-run relationship in finance</strong>&lt;br&gt;Types of Non-Stationarity; Unit root tests; Definition of cointegration; Error correction models; The Engle-Granger two-step procedure; Example: the relationships between spot and futures prices; the Johansen technique; Example: are international bond markets cointegrated?</td>
<td>Ch. 7</td>
</tr>
<tr>
<td>12</td>
<td>15 October</td>
<td><strong>Modelling volatility and correlation-Part 1</strong>&lt;br&gt;Non-linearity in econometrics; Types of non-linear models; Testing for ARCH effects; GARCH models; Estimation of ARCH &amp; GARCH models using maximum likelihood; The EGARCH model; The GJR model; and Example: news impact curves for S&amp;P 500 returns using GARCH and GJR models.</td>
<td>Ch. 8</td>
</tr>
<tr>
<td>13</td>
<td>22 October</td>
<td><strong>Modelling volatility and correlation-Part 2</strong>&lt;br&gt;GARCH-in Mean; Forecasting variances using GARCH models; Applications of GARCH-type models; GARCH models vs implied volatility; and Multivariate GARCH models.</td>
<td>Ch. 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>29 October - 2 November: Study Recess (1 week)</strong></td>
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<tr>
<td></td>
<td></td>
<td><strong>3 November - 16 November: Examinations (2 weeks)</strong></td>
<td></td>
</tr>
</tbody>
</table>

**WORKSHOP/ LABORATORY TIMES**

Workshop will be held on<br>Group 1: Mon* 11:30  12:30  40.231<br>Group 2: Mon 12:30  13:30  40.231<br>Group 3: Mon 13:30  14:30  40.231<br>Group 4: Thu 13:30  14:30  40.232<br>Group 5: Thu 14:30  15:30  40.232
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics Covered</th>
<th>Selected questions from*:</th>
</tr>
</thead>
</table>
| 2    | 30 July    | Emergency Evacuation Procedures  
Mathematics of finance                                                         | My notes                  |
| 3    | 6 August   | Review of Basic Concepts; and an introduction to EViews                       | My notes  
Plus Chs 1-2               |
| 4    | 13 August  | A brief overview of the classical linear regression model:  
Part 1                                                                 | Ch. 3  
Questions 3-6               |
| 5    | 20 August  | A brief overview of the classical linear regression model:  
Part 2                                                                 | Ch. 3  
Questions 8-12               |
| 6    | 27 August  | Further issues with the classical linear regression model:  
Part 1                                                                 | Ch. 4  
Questions 1, 2, 5 and 6      |
| 7    | 3 September| No tutorial                                                                    |                           |
| 8    | 10 September| Further issues with the classical linear regression model:  
Part 2                                                                 | Ch. 4  
Questions 10, 11 and 12.     |
| 9    | 17 September| Univariate time series modelling and forecasting                               | Ch. 5  
Question 2-9                 |
| 11   | 8 October  | Multivariate models                                                            | Ch. 6  
Questions 1-4                 |
| 12   | 15 October | Modelling long-run relationship in finance                                     | Ch. 7  
Questions 1-6                 |
| 13   | 22 October | **Practical test will be based on the use of the EViews program at computer labs (25%)** | Chs. 2-7                  |

* In addition to these review questions, a number of practical EViews exercises will be conducted during these workshops. Most EViews examples in the textbook will be replicated at computer lab by your tutor. The relevant financial data files will be posted to WebCT Vista in due course.
BRIEF OUTLINE

This subject deals with the application of statistical techniques to financial decision-making. Students will use econometric methods and data to solve real-world problems by estimating and interpreting financial and business relationships. The subject covers a brief introduction to the mathematics of finance, regression analysis, hypothesis testing and the assumptions underpinning the classical regression model. It then provides a thorough treatment of model diagnostics, univariate time series modelling and forecasting, as well as applied multivariate cointegration techniques and the estimation of financial market volatility.

STUDENT LEARNING OUTCOMES

On successful completion of this subject, the student should be able to:

1. Explain important financial econometric methods, interpret estimation results and their applications and limitations to provide input into the financial decision making process.

2. Identify and test standard asset pricing models in the framework of the general linear regression model.

3. Analyse the concepts of model specification and diagnostic testing procedure in the modelling of financial time series.

4. Apply the EViews software package to test for unit-roots and multivariate cointegration, conduct univariate time-series forecasting and model volatility clustering.

ATTENDANCE REQUIREMENTS

In order to maximise learning outcomes, it is strongly recommended that students attend all lectures and workshops conducted at the class and computer labs.

PARTICIPATION/CONTRIBUTION TO TUTORIALS/SEMINARS

See Assessment 1.

PERFORMANCE LEVEL

To be eligible to pass this subject, students must achieve an overall mark of at least 45%, and at least 40% on the final examination.

REQUIRED TEXT


This textbook is available from the University Bookshop at http://unishop.uow.edu.au/textbooks/

RECOMMENDED BACKGROUND AND FURTHER READING


This is not an exhaustive list of references. Students should also use the library catalogue and databases to locate additional resources.
ADDITIONAL MATERIALS

A scientific calculator and the EViews software package (student version) are also required in this subject.

SECTION B: ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment 1:</th>
<th>Practical Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td>Students will be required to demonstrate their skills in the use of the EViews program to answer a number of predetermined questions at the computer labs for which they are allocated. The relevant data files and problem descriptions will be given to students on the exam day. Students should work individually on their own PC at the lab to generate the required empirical results similar to those provided in the textbook or by the lecturer during weeks 1-11. No consultation with other fellow students is allowed.</td>
</tr>
<tr>
<td><strong>Marking criteria</strong></td>
<td>Students’ skills will be evaluated by their tutor based on the extent to which they can use econometric techniques and the data to estimate, validate and interpret financial and business relationships.</td>
</tr>
<tr>
<td><strong>Length:</strong></td>
<td>45 minutes.</td>
</tr>
<tr>
<td><strong>Weighting:</strong></td>
<td>25%</td>
</tr>
<tr>
<td><strong>Due date</strong></td>
<td>Weeks 13 at the computer lab for which they were initially allocated. Should students fail to take this test on the designated date, they will receive a zero mark for this piece of assessment.</td>
</tr>
</tbody>
</table>

IN SESSION TEST

| Weighting | 25% |
| Date | Week 7 (Monday 9:30am to 11:30am Room 20.2) |

It will be based on lecture materials covered from lectures in weeks 1-5 (inclusive). The mid-session test will be held during the normal lecture time slot in the usual lecture venue, comprising short answer and multiple choice questions. The duration of the test will be 100 minutes.

EXAMINATIONS

FINAL EXAMINATION

| Weighting | 50% |
| Date | The final examination date will be confirmed during the course of the subject and published on SOLS 3 to 4 weeks before the examination period. |
| Time allowed | 2 hours 15 minutes |
| Structure of paper | Short answer/ multiple choice |
| General instructions | All materials covered during the semester will be examinable. A detailed guide to the examination structure and content will be provided towards the end of the semester. |

NOTE: The examination format cannot be changed from that stated above without the written consent of all students enrolled in this subject.
SCALING

The Economics Department reserves the right to scale marks if this is deemed necessary.

SUBMISSION, RETENTION AND COLLECTION OF WRITTEN ASSESSMENT

Not applicable.

PENALTIES FOR LATE SUBMISSION OF ASSESSMENT

Not applicable.

PLAGIARISM

Plagiarism means using the ideas of someone else without giving them proper credit. For example, that someone else may be an author, critic, journalist, artist, composer, lecturer, tutor or another student. Unintentional plagiarism can result if you don’t understand and use the acceptable scholarly methods of acknowledgement. Whether plagiarism is deliberate or unintentional, the University may impose penalties, which can be very severe. When it is desirable, or necessary, to use other people’s material, take care to include appropriate references and attribution. Plagiarism will not be tolerated and has led to expulsion from the University.

Students should visit the following University website and become familiar with the University’s policy on Plagiarism.

## SECTION C: RULES, CODES OF PRACTICE & POLICIES

### C1 UNIVERSITY POLICIES

Information on the following University Policies can be found at the websites below:

<table>
<thead>
<tr>
<th>Policy</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethical objection by students to the use of animal and animal products in coursework subjects</td>
<td><a href="http://www.uow.edu.au/about/policy/ethicalobjectionanimals.html">http://www.uow.edu.au/about/policy/ethicalobjectionanimals.html</a></td>
</tr>
</tbody>
</table>

* see brief explanation of policy below.

### C1.1 Non-discriminatory Language

The Faculty of Commerce supports the University’s policy on the use of non-discriminatory language. It is the responsibility of students to ensure that they understand and abide by this policy. The policy is available at:

http://staff.uow.edu.au/eeo/nondiscrimlanguage.html
C1.2 Special Consideration Policy

The Faculty of Commerce recognises that it has a responsibility to ensure equity and consistency across its subjects for all students. Sometimes, in exceptional circumstances, students need to apply for special consideration in order to complete all assessable work.

The University applies strict criteria to the granting of special consideration. Before applying for special consideration students should carefully read the University’s policy. The policy can be found at:


C1.3 Student Academic Grievance Policy

The Faculty of Commerce aims to provide a fair, equitable and productive learning environment for all its students. The Student Academic Grievance Policy seeks to support the achievement of this goal by providing a transparent and consistent process for resolving student academic grievances.

Any student who has a grievance over a result should obtain a Faculty of Commerce Appeal of Assessment Form from the Schools or the Sub-Dean’s Unit. The student should firstly take the form to the marker/lecturer to discuss the matter and, if the student is still not satisfied, s/he should take the next step as outlined on the form.

Once the grievance has been considered by the Faculty, if the student still feels the situation has not been fully resolved s/he may consult the Dean of Students. However, the Dean of Students can have no input into the academic judgement of the lecturer and can only review the grievance to ensure proper procedure has been followed.

For more information, please consult the policy in full at


C2 Faculty and School Policies

Referencing

Why do you need to reference?

At University it is necessary to acknowledge the sources of information and ideas that you have incorporated in your assignments. Failure to do this thoroughly may result in accusations of plagiarism: this is the academic equivalent of stealing (because by not acknowledging someone else's work, you are presenting it as your own). Plagiarism is taken very seriously by the University and may result in expulsion from the University.

Referencing is not only about acknowledging other people's work: accurate referencing and lists of references are beneficial when researching a topic as they allow the reader to follow up information and read further into the area. In a sense, references provide readers with clues to help them explore different avenues of a topic. This aspect of referencing will become more valuable to you as you progress in your studies.

There is a correct procedure that must be followed when referencing and using footnotes. Not complying with these set techniques and format will most likely result in loss of marks.

When writing an essay it is easiest to reference as you go, making sure you are writing down all relevant information. This will save hours trying to find the source again in the library.
THE HARVARD SYSTEM OF REFERENCING

The Faculty of Commerce uses the Harvard system of referencing. This system makes use of short references within the body of the text. It is supplemented by a detailed list of references at the end of the text, which provides all the information necessary to find the source material. In-text references include the author and year of publication, and where necessary the page number(s).

*It is the responsibility of students to ensure that they are familiar with the Harvard system of referencing and that they use it accurately in all written work submitted.*

Students should consult the following University Library website for a detailed explanation and examples of the Harvard system of referencing.


CITATION OF ELECTRONIC SOURCES

It is necessary for students to reference all sources used in their written work, including file transfer protocol sites, worldwide web sites, telnet sites, synchronous communications (MOOs, MUDs, IRC, etc.) Gopher sites, and email, Listserv and Newsgroup citations.

*It is the responsibility of students to ensure that they are familiar with the accepted Faculty of Commerce practice for referencing electronic material and that they use it accurately in all written work submitted.*

Students should consult the following University Library website for a detailed explanation and examples of how to reference electronic material.


OCCUPATIONAL HEALTH AND SAFETY WHERE RELEVANT, INCLUDING SAFETY IN LABORATORIES AND ON FIELD TRIPS

C3 SUPPORT SERVICES AND FACILITIES

{The following details of C3 are relevant to the Wollongong campus. Off-campus sites should include their relevant support service details and delete areas which are not relevant}.

LEARNING RESOURCE CENTRE

Learning Development offers a range of free services to all enrolled students who wish to improve their academic or English language skills. There are a range of workshops available including: essay writing and editing; reading for assignments; grammar; presentation skills; pronunciation and exam preparation.

For information on language and academic skills workshops, or to make appointments for consultations, please visit the Learning Resource Centre (LRC), Building 19, Ground Floor, Room G102, or Phone 02 4221 3977. For further information visit the website:

FACULTY LIBRARIANS

Each faculty has a Faculty Librarian who is available to help with research related enquiries. Research Help Desk staff are also available in the Library to assist with research needs.

The Faculty Librarians for Commerce can be contacted as follows:

  email: lib_commerce@uow.edu.au
  telephone: 42 213078

DISABILITY LIAISON OFFICER

The Disability Liaison Officer (DLO) can provide advice on how particular disabilities affect university study and information on resources available at the University for assisting students with disabilities. Students commencing courses are advised to contact the Disability Liaison Officer prior to the beginning of their first session of study.

For further information on services offered, consult the Disability Services website or contact the office.

  web address: http://www.uow.edu.au/student/services/ds/
  telephone: 42 213445
  fax: 42 215667

FACULTY DISABILITY ADVISERS

Faculty Disability Advisers are academic staff who provide assistance and support to students with disabilities within their Faculty and act as an intermediary between the student and the Faculty's academic and general staff. They provide support, educational advice and referral to appropriate staff on issues related to teaching and learning within the Faculty and the University. Students are advised to communicate specific information about the ways in which their disability affects learning to the Faculty Disability Adviser as soon as possible after enrolment.

The Faculty of Commerce Disability Adviser is Mr. Ron Perrin. Mr. Perrin can be contacted as follows:

  Office location: Building 40, room 224
  email address: ron_perrin@uow.edu.au
  telephone: 42 214118

WOOLYUNGAH INDIGENOUS CENTRE

The Woolyungah Indigenous Centre provides academic and personal support for Aboriginal & Torres Strait Islander and other indigenous students. The Centre also runs an Indigenous Specific
Orientation Program for students who gain entry to the University through the alternative admissions program.

For further information on services offered, consult the Woolyungah Indigenous Centre website or contact the office.

Centre location: Building 30
web address: http://www.uow.edu.au/aec/
telephone: 42 213563
fax: 42 214244