Faculty of Commerce and Economics
School of Economics

ECON5206
FINANCIAL ECONOMETRICS

COURSE OUTLINE, SESSION 2, 2005

1. COURSE STAFF 2
   1.1 Communication with Staff 2

2. INFORMATION ABOUT THE COURSE 2
   2.1 Teaching times and Locations 2
   2.2 Relationship of this course to other course offerings 2
   2.3 Approach to learning and teaching 2

3. COURSE AIMS AND OUTCOMES 2
   3.1 Course Aims 2
   3.2 Student Learning Outcomes 3
   3.3 Teaching Strategies 3

4. STUDENT RESPONSIBILITIES AND CONDUCT 3

5. LEARNING ASSESSMENT 4
   5.2 Assessment Details 4
   5.3 Assignment Submission Procedure 4
   5.4 Late Submission 4

6. ACADEMIC HONESTY AND PLAGIARISM 4

7. STUDENT RESOURCES 5
   7.1 Course Resources 5
   7.2 Other Resources, Support and Information 7

8. CONTINUAL COURSE IMPROVEMENT 7

9. COURSE SCHEDULE 8
1. COURSE STAFF

Dr Minxian Yang (LIC), 9385-3353, JG209, m.yang@unsw.edu.au

Professor Ron Bewley,

Dr Yang will teach the first part of this subject (from Week 1 to Week 7) and Professor Bewley will teach the second part of this subject (from Week 8 to Week 14).

1.1 Communication with Staff

You may either use e-mail or telephone to communicate with Dr Yang. His consultation time is Fridays 10am-13pm, or by appointment.

Professor Bewley is currently the Head of Quantitative Research at the Commonwealth Bank. The communication details will be available in Week 8.

Some of the materials, such as data and lecture notes, will be posted on the WebCT. Important announcements will also be published on WebCT.

2. INFORMATION ABOUT THE COURSE

2.1 Teaching times and Locations

The lecture and tutorial time and location:

Lectures: Wednesday, 17pm-19pm, ME 502
Tutorials: Wednesday, 19pm-20pm, ME 502 or Lab 7.

2.2 Relationship of this course to other course offerings

The minimum prerequisite for this subject is ECON5203 (Statistics for Business).

2.3 Approach to learning and teaching

The philosophy underpinning this course and its Teaching and Learning Strategies (see 3.3 below) are based on “Guidelines on Learning that Inform Teaching at UNSW. These guidelines may be viewed at: [www.guidelinesonlearning.unsw.edu.au](http://www.guidelinesonlearning.unsw.edu.au).

3. COURSE AIMS AND OUTCOMES

3.1 Course Aims

The goal of this course is to introduce students to the econometric techniques commonly used for analysing financial data. This course will cover the
- key empirical characteristics of financial data;
- inference methods in the capital asset pricing model and arbitrage pricing model;
- inference methods in simple time series models;
- concepts of volatility, loss and risk;
- inference methods for modelling volatility;
- concepts of efficient portfolios frontiers and portfolio tracking.

3.2 Student Learning Outcomes

On completion of this course, students should be able to apply simple modern econometric methods to financial data analysis and to use these methods to provide input into the financial decision making process. In particular, students should be able to draw inference from data using various models introduced in this course.

3.3 Teaching Strategies

Lectures will be used to introduce the logic structures and/or main ideas of various topics. Students should read the prescribed reading materials to achieve a thorough understanding of the topics introduced in the lectures. Tutorial exercises are designed for students to practise on the modelling techniques. Many tutorial exercises involve data analysis by using EViews (an easy-to-use econometrics package).

4. STUDENT RESPONSIBILITIES AND CONDUCT

4.1 Workload

It is expected that you will spend at least ten hours per week studying this course. This time should be made up of reading, research, working on exercises and problems, and attending classes. In periods where you need to complete assignments or prepare for examinations, the workload may be greater.

Over-commitment has been a cause of failure for many students. You should take the required workload into account when planning how to balance study with employment and other activities.

4.2 Attendance

Your regular and punctual attendance at lectures and seminars is expected in this course. University regulations indicate that if students attend less than eighty per cent of scheduled classes they may be refused final assessment.

4.3 General Conduct and Behaviour

You are expected to conduct yourself with consideration and respect for the needs of your fellow students and teaching staff. Conduct which unduly disrupts or interferes with a class, such as ringing or talking on mobile phones, is not acceptable and students may be asked to leave the class. More information on student conduct is available at: www.my.unsw.edu.au.

4.4 Keeping informed

You should take note of all announcements made in lectures, tutorials or on the course web site. From time to time, the University will send important announcements to your university e-mail address without providing you with a paper copy. You will be deemed to have received this information.
5. LEARNING ASSESSMENT

5.1 Formal Requirements
In order to pass this course, you must:
- achieve a composite mark of at least 50; and
- make a satisfactory attempt at all assessment tasks (see below).

5.2 Assessment Details
The total assessment comprises the following components:

- Tutorial Assignments for Part 1 (Dr Yang) 10%
- Mid-session Exam for Part 1 (Dr Yang) 25%
- Final Exam for Parts 1 and 2 (Prof Bewley and Dr Yang) 65%

There will be tutorial exercises/assignments each week. From time to time, tutorial exercises/assignments will be collected and marked. These marked tutorial exercises/assignments will comprise 10% of the assessment. You will be given at least one week’s notice for the tutorial assignments to be collected.

The mid-session exam will be held during the lecture time of Week 7 and will comprise 25% of the assessment. The mid-session exam will test the topics introduced in the first 6 weeks.

The final exam will include all contents covered from Week 1 to Week 14.

5.3 Assignment Submission Procedure
The tutorial assignments that contribute to the total assessment should be handed in by the end of the lecture of the due week.

5.4 Late Submission
Late submission will attract a deduction of marks.

6. ACADEMIC HONESTY AND PLAGIARISM
The University regards plagiarism as a form of academic misconduct, and has very strict rules regarding plagiarism. For full information regarding policies, penalties and information to help you avoid plagiarism see: www.my.unsw.edu.au/student/atoz/Plagiarism
Plagiarism is the presentation of the thoughts or work of another as one's own.* Examples include:

- direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied. This includes copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and,
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

Submitting an assessment item that has already been submitted for academic credit elsewhere may also be considered plagiarism.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does not amount to plagiarism.

Students are reminded of their Rights and Responsibilities in respect of plagiarism, as set out in the University Undergraduate and Postgraduate Handbooks, and are encouraged to seek advice from academic staff whenever necessary to ensure they avoid plagiarism in all its forms.

The Learning Centre website is the central University online resource for staff and student information on plagiarism and academic honesty. It can be located at:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle
† Adapted with kind permission from the University of Melbourne.

7. **Student Resources**

7.1 **Course Resources**
Prescribed Textbook:
Cambridge University Press.
This book is written at an introductory level and covers all the material we will
discuss in class. In addition, it describes how to estimate the econometric models
under discussion in the software program EViews.

Reference books:


McGraw-Hill.

Thomson and South-Western,

Tsay's book [1] is at a more advanced level and is a good reference if you wish to
have a deeper understanding of the materials introduced in the lectures.

Diebold's book [3] contains a very nice chapter on ARCH/GARCH models and it
also covers all the standard time series methods we discuss. All the examples in
this text are estimated with EViews. Note that this is the textbook for the course
*Business Forecasting* so if you plan to do that course you may want to purchase
this book in addition to, or as a substitute for, the text by Brooks.

The book by Johnston and Di-Nardo [2] have straightforward expositions of
maximum likelihood estimation.

Journal Articles:
The ARCH/GARCH modeling strategy was originally developed in the following
classic articles:


the Short-Term Interest Rate” *Journal of Financial and Quantitative Analysis
Vol* 31, 85-107

Estimates of the Variance of United Kingdom Inflation”, *Econometrica*, Vol. 50,
No.4, 987-1008.


Engle (2001) is a nice expository discussion of ARCH/GARCH type modeling and its application to value-at-risk (VaR), which is highly recommended for your reading.

Engle (1982), Bollerslev (1986) and Engle et al (1987) are classic articles that originally developed the ARCH/GARCH modeling strategy.


7.2 Other Resources, Support and Information

The University and the Faculty provide a wide range of support services for students, including:

- Learning and study support;
- Counselling support;
- Library training and support services;
- Disability support services;

In addition, it is important that all students are familiar with University and Faculty policies and procedures in relation to such issues as:

- Examination procedures and advice concerning illness or misadventure;
- Supplementary Examinations;
- Occupational Health and Safety policies and expectations.

8. Continual Course Improvement

Each year feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW’s Course and Teaching Evaluation and Improvement (CATEI) Process [http://www.ltu.unsw.edu.au/ref4-5-1_catei_process.cfm](http://www.ltu.unsw.edu.au/ref4-5-1_catei_process.cfm) is one of the ways in which student evaluative feedback is gathered. Significant changes to courses and programs within the School are communicated to subsequent cohorts of students.
9. COURSE SCHEDULE

Part 1: (Dr Yang, Week 1 - Week 7)

(1) Understanding Financial Data
   (a) Descriptive Statistics
   (b) Predictability of Returns
   (c) Distribution of Returns
   Brooks: Chapter 1; Sections 1.1 - 1.7; Chapter 2; Sections 2.1 - 2.3, 2.5

(2) Linear Regression Tests of Asset Pricing Models
   (a) Tests of the CAPM and Arbitrage Pricing Models
   (b) Diagnostics
   (c) Robust standard errors
   (d) Estimation of the Linear Regression Model by Maximum Likelihood
   Brooks: Chapter 3, Sections 3.1 - 3.18; Chapter 4, Sections 4.1, 4.3 - 4.10
   Chapter 8, Appendix (covers Maximum Likelihood Estimation)

(3) Introduction to Time Series Methods
   (a) Stationarity
   (b) ARMA Processes
   (c) Autocorrelation Function
   (d) Forecast Function
   Brooks: Chapter 5, Sections 5.1 - 5.8, 5.10, 5.12 - 5.13

(4) Modeling Long-run Relationships in Finance
   (a) Spurious regressions
   (b) Unit root processes
   (c) Bivariate cointegration
   (d) Error-correction models and causality
   Brooks: Chapter 7, Sections 7.1, 7.2, 7.4 – 7.6, 7.8, 7.13 pages 420-426.

Part 2: (Prof Bewley, Week 8 - Week 14)

(1) Central limit theorem, normality, annualised standard deviation and mean for return series, probability of loss

(2) Volatility, GARCH model, changes in volatility, testing for breaks in volatility

(3) Forecast volatility using GARCH, monitoring volatility, moving block bootstraps

(4) Measure portfolio performance, efficient frontier, tracking portfolios

The above schedule is an approximate. The exact contents may vary. Further reading materials may be introduced in due course.