

VICTORIA INTERNATIONAL APPLIED FINANCE PROGRAMME

School of Economics and Finance

MMAF524 Financial Econometrics

Trimester One 2006

COURSE OUTLINE

Contact Details

The course coordinator is Associate Professor Vance L. Martin. Preferred contact is by email. Email address: vance@unimelb.edu.au.

Block Release Times

Attendance at all sessions for both block releases is compulsory.

- The first block release runs from Saturday 8th April to the morning of Monday 10th April, inclusive.
- The second block release runs from Saturday 10th June to the **afternoon** of Monday 12th June, inclusive.

Course Objectives

Key course objectives consist of applying quantitative tools to model, estimate and forecast financial variables; Analyse the statistical properties of financial prices and returns;

Evaluate models of risk based on the Capital Asset Pricing Model and variants assuming non-normal return processes; Analyse recent advances in unit root and co-integration methods in modelling the term structure of interest rates and asset price bubbles; Describe the strengths and limitations of alternative quantitative methods by reproducing existing results using computer skills and mathematical modelling techniques, in conjunction with a range of financial data sets;

Perform sensitivity analyses on proposed models, which should include the application of alternative distributional specifications to model risk.

Course Content

This course is concerned with the application of quantitative tools to model, estimate and forecast financial variables. Topics considered include: the analysis of the properties of financial data with an emphasis on non-normality and non-stationarity; the application of estimation methods including unit roots and co-integration, to test the rational valuation model of share prices; the application of the GARCH class of models to estimate volatility and to test the capital asset pricing model. The course will also include an introduction to more complex financial econometrics such as artificial neural-networks, generalised method of moments and state-space modelling.

BLOCK RELEASE ONE	BLOCK RELEASE TWO
<p style="text-align: center;"><u>Day One</u></p> <p>Understanding Financial Data and Linear Regression</p> <p style="text-align: center;">Topics</p> <p>Filtering, Predictability, Distributions, the Linear Regression Model</p> <p style="text-align: center;">Applications</p> <p>Stock Market Efficiency, Commodity Returns, CAPM, Arbitrage Pricing</p>	<p style="text-align: center;"><u>Day One</u></p> <p>Modelling Risk and Volatility</p> <p style="text-align: center;">Topics</p> <p>GARCH, MGARCH, TGARCH</p> <p style="text-align: center;">Applications</p> <p>Time-Varying Risk Premia, Time-Varying Beta Models, Leverage Effects</p>
<p style="text-align: center;"><u>Day Two</u></p> <p>Nonstationary Financial Models</p> <p style="text-align: center;">Topics</p> <p>Unit roots, Long-range Dependence, Cointegration, VECMs</p> <p style="text-align: center;">Applications</p> <p>Zero Coupon Rates, Term Structure of Interest Rates</p>	<p style="text-align: center;"><u>Day Two</u></p> <p>Nonlinear Financial Models</p> <p style="text-align: center;">Topics</p> <p>Artificial Neural Networks, Nonparametric Regression and GMM Estimation</p> <p style="text-align: center;">Applications</p> <p>Interest Rates, SDEs, C-CAPM, Contagion</p>
<p style="text-align: center;"><u>Day Three</u></p> <p>Forecasting Financial Models</p> <p style="text-align: center;">Topics</p> <p>Ex Post and Ex Ante Forecasting, Univariate and Multivariate Models, Forecast Statistics</p> <p style="text-align: center;">Applications</p> <p>Share Prices, Interest Rates</p>	<p style="text-align: center;"><u>Day Three</u></p> <p>Computer Assignment - Open-Book</p> <p style="text-align: center;">Topics</p> <p>All material covered in the course</p> <p style="text-align: center;">Applications</p> <p>Unseen problem</p>

Reading and Reference Material

A full set of lecture notes and exercises are included in this folder.

Article Reference Material

1. Chapman, D.A. and Pearson, N.D. (2000), "Is the Short Rate Drift Actually Nonlinear?" *The Journal of Finance*, LV, 355-388.

Finance Textbook References

1. Campbell, J.Y., Lo, A.W. and MacKinlay, A.C. (1997), *The Econometrics of Financial Markets*, Princeton University Press, Princeton, New Jersey.

This is an excellent financial econometrics text which is commonly used in graduate programs.

2. Hull, J.C. (2000), *Options, Futures and Other Derivatives*, Prentice-Hall International, NJ, 4th edition.

This is an excellent finance text which concentrates on derivative securities. It also covers some of the econometric issues covered in the course.

Econometric Textbook References

The following books provide additional background econometric material for the course.

1. Pindyck, R.S. and Rubinfeld, D.L. (1998), *Econometric Models and Economics Forecasts*, 4th edition, McGraw-Hill, New York.

This is an intermediate level text which is commonly used in introductory PhD econometric courses. It covers most of the basic topics in econometrics.

2. Kawakatsu, H. (1998), *A Computer Handbook Using Eviews*, McGraw-Hill, New York.

This is a companion text for the Pindyck and Rubinfeld textbook which provides Eviews worked examples. The data files are available from the Eviews website.

<http://www.eviews.com>

3. Patterson, K. (2000), *An Introduction to Applied Econometrics: A Time Series Approach*, Macmillan Press Ltd, London.

This is a new text which provides an excellent introduction to time series models with a strong emphasis on application. This book provides the necessary extensions of nonstationary time series models not covered by Pindyck and Rubinfeld.

4. Greene, W.H. (1999), *Econometric Analysis*, 4th edition, Macmillan, New York.

This is an intermediate level text which is commonly used in introductory PhD econometric courses. It represents an extension of many of the topics covered in

Pindyck and Rubinfeld. It covers both times series and cross-sectional methods with special attention given to the latter class of models.

5. Hamilton, J.D. (1994), *Time Series Analysis*, Princeton University Press, Princeton, New Jersey.

This is an advanced econometric text which is commonly used in higher level PhD econometric courses. The book specialises in time series models with an emphasis on theory, although a number of applied examples are presented to motivate the models and to show how the theory is implemented.

Materials and Equipment

A calculator may be useful for the tests.

Assessment Requirements

1. Theoretical assignment worth 30% of marks.
This assignment is based on the first block of material held in April. No computing is required but you will need to be able to interpret Eviews output. The assignment will be handed out at the end of the first block and the answers will be due on May 1st 2006.
2. Theoretical assignment worth 30% of marks.
This assignment is based on the second block of material held in June. No computing is required but you will need to be able to interpret Eviews output. The second assignment will be handed out just before the start of the second block and the answers will be due on June 26th 2006.
3. Empirical open-book computer assignment worth 40%
This assignment is based on an unseen applied problem which requires Eviews output. The computer assignment is based on all material covered in the course, Blocks 1 and 2, and will be held on 12th June 2006 afternoon.

Penalties

Each of the assignments will be marked out of a maximum that diminishes by 5% for every day late, with a weekend counting as one day. The date of submission shall be taken as the date of delivery or the day of postmark, if by post. There will be a final cut off date, one week after the due date for each assignment, after which no assignment can be accepted.

The assignments will each carry a specified word limit. If an assignment exceeds the word limit, credit will be given only from the beginning of the assignment up to the word limit. No credit will be given for the portion of work extending beyond the word limit.

Mandatory Course Requirements

To pass, a student must: (i) attend all sessions of both block release courses; (ii) obtain an average mark of at least 50% over total course assessment; (iii) obtain at least 50% in the test.

Communication of Additional Information

Additional information including assignment questions, details of the block course schedule, feedback on course assessments, etc will be provided by email or by post. Students are responsible for ensuring

that the VIAF Programme Senior Administrator, Bun Wong, has their up to date email and postal addresses.

If you have, or become aware of, any health condition that could prevent you attending a VIAF compulsory block release, then you should notify the Acting Programme Director immediately, preferably by email, roger.bowden@vuw.ac.nz.

Faculty of Commerce and Administration Offices

Railway West Wing (RWW) - FCA Student Administration Office

The Student Administration Office is located on the ground and first floors of the Railway West Wing. The ground floor counter is the first point of contact for general enquiries and FCA forms. Student Administration Advisers are available to discuss course status and give further advice about FCA qualifications. To check for opening hours call the office on (04) 463 5376.

Easterfield (EA) - FCA/Law Kelburn Office

The Kelburn Campus Office for the Faculties of Commerce & Administration and Law is situated in the Easterfield Building - it includes the ground floor reception desk (EA005) and offices 125a to 131 (Level 1). The office is available for the following:

- Duty tutors for student contact and advice.
- Information concerning administrative and academic matters.
- FCA Student Administration forms (e.g. application for academic transcripts, requests for degree audit, COP requests).
- Examinations-related information during the examination period.

Check with the Student Administration Office for opening times (04) 463 5376.

General University Policies and Statutes

Students should familiarise themselves with the University's policies and statutes, particularly those regarding assessment and course of study requirements, and formal academic grievance procedures.

Student Conduct and Staff Conduct

The Statute on Student Conduct together with the Policy on Staff Conduct ensure that members of the University community are able to work, learn, study and participate in the academic and social aspects of the University's life in an atmosphere of safety and respect. The Statute on Student Conduct contains information on what conduct is prohibited and what steps can be taken if there is a complaint. For queries about complaint procedures under the Statute on Student Conduct, contact the Facilitator and Disputes Advisor. This Statute is available in the Faculty Student Administration Office or on the website at: www.vuw.ac.nz/policy/StudentConduct.

The policy on Staff Conduct can be found on the VUW website at:

www.vuw.ac.nz/policy/StaffConduct.

Academic Grievances

If you have any academic problems with your course you should talk to the tutor or lecturer concerned or, if you are not satisfied with the result of that meeting, see the Head of School or the Associate Dean (Students) of your Faculty. Class representatives are available to assist you with this process. If, after trying the above channels, you are still unsatisfied, formal grievance procedures can be invoked. These are set out in the Academic Grievances Policy which is published on the VUW website:

www.vuw.ac.nz/policy/AcademicGrievances.

Academic Integrity and Plagiarism

Academic integrity is about honesty – put simply it means **no cheating**. All members of the University community are responsible for upholding academic integrity, which means staff and students are expected to behave honestly, fairly and with respect for others at all times.

Plagiarism is a form of cheating which undermines academic integrity. Plagiarism is **prohibited** at Victoria.

The University defines plagiarism as follows:

Plagiarism is presenting someone else's work as if it were your own, whether you mean to or not.

'Someone else's work' means anything that is not your own idea, even if it is presented in your own style. It includes material from books, journals or any other printed source, the work of other students or staff, information from the Internet, software programmes and other electronic material, designs and ideas. It also includes the organization or structuring of any such material.

Plagiarism is not worth the risk.

Any enrolled student found guilty of plagiarism will be subject to disciplinary procedures under the Statute on Student Conduct (www.vuw.ac.nz/policy/studentconduct) and may be penalized severely. Consequences of being found guilty of plagiarism can include:

- an oral or written warning
- suspension from class or university
- cancellation of your mark for an assessment or a fail grade for the course.

Find out more about plagiarism and how to avoid it, on the University's website at: www.vuw.ac.nz/home/studying/plagiarism.html.

Students with Disabilities

The University has a policy of reasonable accommodation of the needs of students with disabilities. The policy aims to give students with disabilities an equal opportunity with all other students to demonstrate their abilities. If you have a disability, impairment or chronic medical condition (temporary, permanent or recurring) that may impact on your ability to participate, learn and/or achieve in lectures and tutorials or in meeting the course requirements, then please contact the Course Coordinator as early in the course as possible. Alternatively you may wish to approach a Student Adviser from Disability Support Services to confidentially discuss your individual needs and the options and support that are available. Disability Support Services are located on Level 1, Robert Stout Building, or phoning 463-6070, email: disability@vuw.ac.nz. The name of your School's Disability Liaison Person can be obtained from the Administrative Assistant or the School Prospectus.

Student Support

Staff at Victoria want students' learning experiences at the University to be positive. If your academic progress is causing you concern, please contact the relevant Course Co-ordinator,

or Associate Dean who will either help you directly or put you in contact with someone who can.

The Student Services Group is also available to provide a variety of support and services. Find out more at www.vuw.ac.nz/st_services/ or email student-services@vuw.ac.nz.

VUWSA employs two Education Coordinators who deal with academic problems and provide support, advice and advocacy services, as well as organising class representatives and faculty delegates. The Education Office is located on the ground floor, Student Union Building, phone 463 6983 or 463 6984, email education@vuwsa.org.nz.

Manaaki Pihipihinga Maori and Pacific Mentoring programme (Faculties of Humanities and Social sciences and Commerce and Administration).

- **What:** Academic Mentoring for Maori and Pacific students studying at all levels in the above faculties. Weekly sessions for an hour with a mentor to go over assignments and any questions from tutorials or lectures. Registered students can use the faculty's study rooms and computer suite at any time at Kelburn and Pipitea.
- Mature student and Post grad network

If you would like to register as a mentor or mentee please contact the coordinator.

Where:

Melissa Dunlop
Programme Coordinator
Room 109 D
14 Kelburn Parade: back courtyard
Ph: (04) 463 6015
Email: Maori-Pacific-Mentoring@vuw.ac.nz

Please Note: A mentoring room will also be running at Pipitea Campus starting January. Please contact the Programme Coordinator for details.