



School of Economics and Finance

Quan 304 FINANCIAL ECONOMETRICS

Trimester 1 2005

COURSE OUTLINE

Contact Details

In Quan 304, we study the econometrics dealing with financial time series models, and their applications. Emphases will be given to the analysis of stationary and basic non-stationary time series data. The first six weeks are contributed to the analysis of linear econometric models as extension of Quan 202. The second six weeks will be spent for non-linear models for stationary data and some basic linear models for non-stationary data.

Every week has four-hour classes: three-hour regular classes and one-hour optional tutorial. The three-hour classes will be taking place in the classrooms mentioned below, and the one-hour tutorial will be used for data analyses using computers. For the computer manipulation, we use statistical package called *Eviews*, available at the Cybercommon room. Although the tutorials are optional, attendances are highly recommended. Assignments, test and examination will cover the course materials taught in tutorials as well as in the regular classes. Further, if necessary, there will be extra problem-solving classes just before the due day of assignments. They are also optional but intended for students unfamiliar with mathematics.

Finally, other course information will be announced via Blackboard, and personal advice can be given by e-mail notification. If one's e-mail address in the Blackboard is incorrect, then students are advised to rectify it as soon as possible.

Course Objectives

Our main objective is given to the quantitative approach so that students can be familiar with data manipulations together with their relevant econometric theories. For this goal, we introduce relevant theories whenever they are required for a better understanding of the course materials, though not covered in the textbook.

Class Times and Room Numbers

Classrooms: RH LT3
RH LT3

Tutorial room: TBA

Class time: Tuesday 2:40 to 4:30
Friday 2:40 to 3:30

Tutorial time: TBA

Tutorial room and time will be arranged at the first week, and they will be announced at Blackboard.

Instructors

Name: John Owens,
Room: RH309
Phone: 463-5451
E-mail: John.Owens@vuw.ac.nz
Office Hours: TBA

Jin Seo Cho
RH303
463-6149
JinSeo.Cho@vuw.ac.nz
TBA

Course Contents

- 1st week: Preliminaries: Statistics, Mathematics and Theory of Probability
 Lab 1: Introduction to *Eviews*
- 2nd week: OLS and the CAPM model
 Lab 2: International CAPM with real data on *Eviews*
- 3rd week: Multivariate regression with matrices and models of trading costs
 Lab 3: Modelling the trading costs of Dow Jones Industrial Average stocks with *Eviews*
- 4th week: Theory and Estimation of ARMA models
 Lab 4: Modelling high-frequency returns and trade volumes of Dow Jones Industrial Average stocks with *Eviews*
 Assignment 1: Assignment 1 due (March 18)
 (Solution Provided on March 18)
- 5th week: Forecasting ARMA models
- Easter Break: March 30 to April 10
- 6th week: Testing the efficient market hypothesis
 Exam: Midterm (April 15)
 Assignment 2: Assignment 2 due (April 12)
 (Solutions provided on April 12)
- 7th week: Introduction to MLE (handout)
 Lab 5: MLE with *Eviews*
- 8th week: Statistical properties of MLE and inference.
 Lab 6: MLE with *Eviews* (continued)
- 9th week: Standard (G)ARCH processes: estimating, testing and forecasting
 Lab 7: GARCH process estimating with *Eviews*
 Assignment 3: Assignment 3 due (May 7)
 (Solution Provided on May 10)
- 10th week: (G)ARCH processes: estimating, testing and forecasting (continued)
 Lab 8: GARCH process estimating with *Eviews* (continued)
- 11th week: Regime switching processes: estimating and testing
 Lab 9: reserved for problem solving
- 12th week: Non-stationary processes¹
 Unit root test and simulations
 Assignment 4: Assignment 4 due (May 28)
 (Solution Provided on May 31)

¹ If time permits, we may cover these topics.

Readings

- Chris Brooks, (2002), *Introductory Econometrics for Finance*, Cambridge University Press.
- Handouts

Mathematics and Statistics Requirements

The prerequisites for Quan 304 are basic knowledge on probability, differentiation, algebra and basic statistics covered in Quan 201 and Quan 202. If there is any unfamiliar terminology in the following box, then extra efforts are required from students. Whenever facing with unfamiliar mathematics or statistics, consulting instructors *instantly* is highly recommended. From the prior experience, absence or reluctant meeting with instructors accumulates workloads at the final, and results in poor performance.

Limit	Expected value
Sum (Σ) and product (Π)	Variance
Univariate and multivariate normal distributions	Conditional expectation
Probability density function (PDF)	Hypothesis test
Cumulative distribution function (CDF)	First-order condition

Assessment Requirements

There are two examinations. The first is test, and the second is final. The test will be made during the first two hours of the sixth week, and the final exam will be taken in the place and at the time announced by the university authority (11 to 26 June, 2005). Assessment will be made by the following formula:

$$FM = 0.3 \text{Asg} + 0.4 \text{Tst} + 0.4 \text{Fin},$$

where FM = final mark, Asg = assignments, Tst = test, Fin = final exam. In case without taking Test, zero score will be endowed.

Mandatory Course Requirements

The midterm and the final exam are mandatory course requirement.

Communication of Additional Information

Quan 304 has a course home page at Blackboard as mentioned above. Any course announcement and course handouts will be available at the course homepage.

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.