UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

BUSINESS SCHOOL
Te Kura Pakihi

COURSE OUTLINE

FINC406 – Advanced Financial Econometrics

Semester One, 2021

Contents

Paper Description and Aims

The aim of the course is to acquaint the students with applying financial econometrics for empirical research in finance. Econometrics helps us to empirically test theories; understand relationships between variables that are of interest for businesses and financial institutions. Major topics covered in this course include regression analysis, time series modelling, unit root analysis, cointegration and error correction models, vector autoregression (VAR), volatility modelling with ARCH/GARCH, simultaneous equation model, Logit/Probit models, and modelling with panel data. The statistical package STATA will be used intensively in the course and the students are expected to use STATA on their own in analysing the data. An introductory lecture on STATA software will be given at the beginning of the course to teach the basics and other procedures will be introduced during the lectures.

Learning Outcomes

Upon successful completion of this paper, you should be able to:	Graduate attributes and Learning outcomes mapping
LO1. Understand the types and forms of data and how to use them in an econometric analysis to answer either day-to-day or research questions in Finance.	LO 1.1
LO2. Identify the sources of financial data (Bloomberg, Capital IQ, Compustat, Yahoo Finance, etc.) that can be used to extract the necessary data for an econometric analysis.	LO 1.1, LO 4.3
LO3. Demonstrate the knowledge on econometric techniques such as regression analysis, univariate and multivariate time series analysis, and panel data analysis.	LO 1.1, LO1.2
LO4. Apply appropriate econometric techniques in solving financial problems that arise in real life and research using the STATA software.	LO 2.1, LO 4.3
LO5. Demonstrate the ability to report, interpret and present the results obtained from a statistical analysis.	LO3.1, LO3.2, LO4.2

Teaching Staff

Paper Coordinator and Lecturer: Dr. **Duminda** Kuruppuarachchi

Office: OBS Room 3.38
Email: duminda.ka@otago.ac.nz
Phone: 03 479 5609
Office Hours: Tuesday 11.00-11.50 and Wednesday 14.00-14.50

You should contact the paper coordinator on any administrative enquiries about the paper, e.g. tutorial changes, or requests for late submission of assignments.

Course Delivery

Lectures (Venue): **Tuesday** 9:00-10:50 (NCAL) and **Thursday** 15:00-16:50 (NCAL)

Every week, students must attend two lectures of 2 hours duration in each. During the lectures, the students will learn the econometric and time series theory required for real life problem-solving using the statistical package STATA. STATA will be available for the students via Student Desktop planform (See https://blogs.otago.ac.nz/studentit/student-desktop/introduction-to-student-desktop/ for details). All the course materials and notices will be posted on Blackboard regularly and it is the responsibility of the student to regularly check the Blackboard.

It is essential to participate all the lectures. Students who miss a lecture are expected to catch up on missed material on their own. Lecture materials mainly consists of presentation slides and case studies along with sample datasets. Relevant textbook chapters are indicated in the course calendar for each topic being taught. Additional materials will be provided in case the recommended textbook does not cover the corresponding topic of a week. Class preparation and reading are expected as a part of the course workload.

Semester Workload Breakdown of the Course

Lectures	52 hours
Class preparation / reading	42 hours
Projects / presentations	75 hours
Final exam preparation	71 hours

Course Learning Resources

Recommended Textbook (available in the central library):

[RT] Principles of econometrics by R. Carter Hill; William E. Griffiths; G. C. Lim , 5th ed. Hoboken, NJ : Wiley 2018.

Supplementary Reading (available in the central library and online):

[SR1] Using STATA for Principles of Econometrics by Lee C. Adkins; R. Carter Hill; 5th ed. NY: Wiley 2018.

[SR2] The Basics of Financial Econometrics: Tools, Concepts, and Asset Management Applications by Frank J. Fabozzi; Sergio M. Focardi; Svetlozar T. Rachev; Bala G. Arshanapalli: Wiley 2014.

Blackboard

https://blackboard.otago.ac.nz provides you with access to course materials such as lecture notes, case studies, class notices, and resources. Blackboard email facility is used to email the whole class so it is important that you check your student email and *Blackboard* regularly.

Further information about student support, learning support and information, academic integrity and other University resources for students is available on the COMMERCE_UG_2020: Commerce Undergraduate Students site on Blackboard.

Student Webmail

We will use your student email account to email you information relevant to your programme. To forward your University email address to an email address that you use regularly take the following steps:

1. Log into your StudentMail account (http://www.otago.ac.nz/smlanding/) using your student username and password.
2. Click the **Cog** button (top right corner).
3. Click on **Mail** under **Your App Settings**.
4. Under **Accounts** on left hand side, select **Forwarding**.
5. Under the Forwarding heading, type in the email address you want your email to be forwarded to. You can also choose to have a copy of these emails kept on your StudentMail account, so please check the box if you would like this.
6. Click the **Save** button.

Assessment

All material presented in the class is examinable (except where stated otherwise) by assignments and the final examination. All important assessment information such as due dates and times, content, guidelines and so on will be discussed in the class, and where appropriate detailed on Blackboard. *Students are responsible for ensuring that they are aware of this information, keeping track of their own progress, and catching up on any missed classes.*

Assessment	*% of final grade*
In-class Assignment (Week 13)	20
Project Report (Week 20)	20
Presentations on Project Report (Week 21)	10
Final Written Examination	50
Total	**100**

In-class assignment is a 1 ½ -hour practical exercise which students are required to select and apply suitable analytical techniques for given mini-cases, and to report the results adhering to specified guidelines in the assignment. Soft copies of the completed assignment are required to be submitted at the end of the corresponding session (see course calendar) with the student's ID number and the name printed on the front page of the document. The accuracy, quality and timely submission of assignments will be the basis for scoring them. Late assignments are not allowed unless permission is given under special circumstances.

Project Report is a group work which will be based on a given set of instructions. The objective of this project is to provide students with the experience in downloading data, organizing datasets, analysing, and reporting results for a real-life financial market issue. **Presentations** will be based on the group project reports and all group members are required to present. A group mark will be allocated for the project report whereas an individual mark will be given for the presentations. A detailed set of guidelines of the project will be posted on Blackboard two weeks prior to the report submission date (refer course calendar for the due dates).

Final Written Examination (2-hour) will mainly be based on explaining concepts and interpretation of provided results. A sample set of questions will be discussed during the review session in the final week (see course calendar).

The grading scheme used at Otago is:

A+	90-100	**C+**	60-64
A	85-89	**C**	55-59
A-	80-84	**C-**	50-54
B+	75-79	**D**	40-49
B	70-74	**E**	<40
B-	65-69		

Course Requirements

1. In order to pass the FINC406 paper you must: (i) pass the final examination with a minimum of 40% grade. The final exam will be a 2-hour close-book exam which is embargoed, and (ii) get an overall mark of at least 50% for the course. If you fail to score at least 40% in the final examination, your overall mark will be returned as *Failed Compulsory Assessment* regardless of your internal assessment marks (i.e., marks for assignments and the project).

2. Students who are unable to sit for the In-class Assignment, or contribute and participate for the Project due to illness or other special circumstances, must provide the course coordinator with documentary evidence (such as a medical certificate) along with the special consideration form for appropriate actions to be taken. Failing to do so may result in a zero mark for the corresponding assessment. Please see the Blackboard for guidelines and application form on the special consideration for internal assessments.

Referencing Style and Style Guide
For this paper the referencing style is ***Harvard***. Here is a link to the style guide: click here. Style guides are also available on the University Library website:
http://www.otago.ac.nz/library/quicklinks/citation/index.html

Learning Outcomes-Assessments Mapping

Learning Outcome	In-class Assignment	Project Report	Presentations on Project Report	Final Exam
LO1. Understand the types and forms of data and how to use them in an econometric analysis.	√	√		
LO2. Identify the sources of financial data (Bloomberg, Capital IQ, Compustat, Yahoo Finance, etc.) that can be used to extract the necessary data for an econometric analysis.		√		
LO3. Demonstrate the knowledge on econometric techniques such as regression analysis, univariate and multivariate time series analysis, and panel data analysis.	√	√	√	√
LO4. Apply appropriate econometric techniques in solving financial problems that arise in real life and research using the STATA software.	√	√		√
LO5. Demonstrate the ability to report, interpret and present the results obtained from a statistical analysis.		√	√	
Total	**20%**	**20%**	**10%**	**50%**

Course Calendar

Session	Week	Date	Topic	Reading	Lecture Materials
1	9	Tuesday, 02 March	Introduction to Econometrics, Data Types, Sources of Data	[RT] Chapter 1	Lecture slides
2	9	Thursday, 04 March	Introduction STATA software, Descriptive Analysis using STATA	[SR1] Chapter 1	Lecture slides, Case 1
3	10	Tuesday, 09 March	Linear Regression Analysis, Diagnostics Tests, Predictions	[RT] Chapter 2,3	Lecture slides, Case 1
4	10	Thursday, 11 March	Regression Analysis with Indicator Variables, Testing model equivalence, Testing for interactions between variables	[RT] Chapter 7	Lecture slides, Case 1
5	11	Tuesday, 16 March	Non-linear Regression Models (Polynomial Models, Log-Linear Models, Log-log Models)	[RT] Chapter 4,5	Lecture slides, Case 1
6	11	Thursday, 18 March	Goodness-of-fit, Detecting outliers, Specification tests, Joint tests, and other modeling issues in Regression Analysis	[RT] Chapter 4,6	Lecture slides, Case 1
7	12	Tuesday, 23 March	Quantile Regression Analysis	[SR2] Chapter 7	Lecture slides, Case 1
8	12	Thursday, 25 March	Heteoskedastic Cross-sectional Regression	[RT] Chapter 8	Lecture slides, Case 1
9	13	Tuesday 30 March	Models with Binary and Multinomial Dependent Variables	[RT] Chapter 16	Lecture slides, Case 2
10	13	Thursday, 01 April	Models with Ordinal and Count Dependent Variables	[RT] Chapter 16	Lecture slides, Case 2
Mid Semester Break 05 April – 09 April					
11	15	Tuesday, 13 April	Limited Dependent Variable Models—Tobit Regression	[RT] Chapter 16	Lecture slides, Case 2
12	15	Thursday, 15 April	Generalized Least Squares Regression, and Simultaneous Equation Models	[RT] Chapter 8, 11	Lecture slides, Case 3
13	16	Tuesday, 20 April	In-class Assignment		
14	16	Thursday, 22 April	Holiday (Good Friday)		
15	17	Tuesday, 27 April	Regression with Stationary Time-Series Data, Finite Distributed Lags, Serial Correlations	[RT] Chapter 9	Lecture slides, Case 4
16	17	Thursday, 29 April	Univariate Time Series Models and their applications	[RT] Chapter 9	Lecture slides, Case 4
17	18	Tuesday, 04 May	Instrumental Variables, Models with Random Regressions (dealing with Endogeneity)	[RT] Chapter 10	Lecture slides,

18	18	Thursday, 06 May	Applications and Specifications tests for Models with Random Regressors	[RT] Chapter 10	Lecture slides, Case 5
19	19	Tuesday, 11 May	Nonstationary Variables—Detection and their Impact, Cointegration and Error Correction	[RT] Chapter 12	Lecture slides, Case 5
20	19	Thursday, 13 May	Multivariate Time Series Modelling with Vector Autoregression (VAR/VECM)	[RT] Chapter 17	Lecture slides, Case 5
21	20	Tuesday, 18 May	Modelling Conditional Volatility—ARCH/GARCH/MV-GARCH models	[RT] Chapter 14	Lecture slides, Case 5
22	20	Thursday, 20 May **(Project Report Due Date)**	Panel Data Analysis (Fixed Effects and Random Effects Estimators)	[RT2] Chapter 15	Lecture slides, Case 6
23	21	Tuesday, 25 May	Project Presentations		
24	21	Thursday, 27 May	Project Presentations		
24	22	Tuesday, 1 June	Panel Data Analysis contd. (Dynamic Panel Data Models)		Reading 2, Case 6
25	22	Thursday, 3 June	Review Session		

Lectures end Friday 04 June 2021
University Exam Period 09 June - 23 June 2020

Class Representatives

The class (or student) representative system is an avenue for encouraging communication and consultation between staff and students. It provides you with a vehicle for communicating your views on the teaching and delivery of the paper and provides staff with an opportunity to communicate information and gain constructive feedback from students. It contributes to the development of a sense of community within a department and it adds a further dimension to the range of support services offered to students.

Volunteers for the role of class representatives will be called early in the semester. The OUSA invites all class representatives to a training session, conducted by OUSA, about what it means to be a class representative and some of the possible procedures for dealing with issues that arise. They also provide information on the services that OUSA offers and the role OUSA can play in solving problems that may occur. The OUSA provides support to class representatives during the semester. Departmental staff will also meet with class representatives during the semester to discuss general issues or matters they wish to have considered.

Academic Integrity

Students should ensure that all submitted work is their own. Any student found responsible for dishonest practice (e.g. copying the work of others, use of unauthorized material in tests) in relation to any piece of work submitted for assessment shall be subjected to the University's Dishonest Practice regulations. This may result in various penalties, including forfeiture of marks for the piece of work submitted, a zero grade for the paper, or in extreme cases, exclusion from the University.

Plagiarism is a form of dishonest practice. Plagiarism is defined as the copying or paraphrasing another's work, whether intentionally or through failure to take proper care, and presenting it as one's own. In practice, this means plagiarism includes any attempt in any piece of submitted work to present as one's own work, the work of another (whether another student or published authority) http://www.otago.ac.nz/administration/policies/otago003145.html . Any student found responsible for plagiarism shall be subject to the University's Dishonest Practice Regulations as outlined above. http://www.otago.ac.nz/study/plagiarism/

Concerns about the Course

We hope you will feel comfortable coming to talk to us if you have a concern about the course. The course co-ordinator will be happy to discuss any concerns you may have. Alternatively, you can report your concerns to the class representative who will follow up with departmental staff. If, after making approaches via these channels, you do not feel that your concerns have been addressed, there are University channels that may aid resolution. For further advice or more information on these, contact the departmental administrator or head of department.

Disclaimer

While every effort is made to ensure that the information contained in this document is accurate, it is subject to change. Changes will be notified in class and via Blackboard. Students are encouraged to check Blackboard regularly. It is the student's responsibility to be informed.

Duminda Kuruppuarachchi
Dept. of Accountancy & Finance
22-02-2020