UNIVERSITY of STIRLING
Management School

BFIP13 Quantitative methods in finance Autumn 2014

***PLEASE NOTE**: In addition to the detail contained within this hand out, it is your responsibility to read and understand the information provided within the programme's Succeed site. In particular, please pay close attention to the plagiarism documents.*

SCQF Level 11 – 15 credits
Pre-requisites: -

TEACHING STAFF

Module Co-ordinator

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Teaching Staff

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MODULE INTRODUCTION, AIMS AND OBJECTIVES

The aim of this module is to provide students with the statistical and computing skills which are necessary to understand modern finance literature and to operate in a commercial finance environment. After the completion of this course students should be able to conduct basic econometric analysis and use it in their master thesis. This module also covers the learning outcomes highlighted in the Chartered Financial Analyst (CFA) Institute Quantitative Methods syllabus at levels 1-3.

LEARNING OUTCOMES AND SKILLS DEVELOPED

Upon completion of the module, you will have knowledge and understanding of:

- The nature of econometrics and economic data
- probability, descriptive statistics and inference
- how to run a simple and multiple linear regression and draw inference connecting the statistical results with economic theory
- the violations of the basic assumptions of simple and multiple regression models. How these can be detected and tackled and what are the consequences for the estimates
- time series analysis; why stationarity of the variables is important
- the use of STATA software to estimate linear models
- introduction to panel data analysis (subject to time availability)

Quantitative Methods in Finance is based on the following content and lecture programme:

1. Review of introductory statistics (covered in the Flying Start Programme)
2. Simple Regression Analysis – Estimation
3. Simple Regression Analysis – Inference
4. Multiple Regression Analysis: Estimation and Inference
5. Multiple Regression Analysis with Qualitative Information: Binary (or Dummy) Variables
6. Heteroskedasticity
7. Basic Regression Analysis with Time Series Data
8. Further Issues in Using OLS with Time Series Data
9. Serial Correlation and Heteroskedasticity in Time Series Regressions
10. Panel Data Analysis (subject to time availability)

LECTURES AND CLASS WORK

Lectures:

The first lecture is schedule to take place on Monday 29th of September, at 09:00-11:00 in C.LTLogie.

Lectures in weeks 3-6 will take place on Monday, 9-11am, C.LTLogie.

The class test will take place on in week 8, on Monday, 3rd of November, 9-11am, locations C.LTA4 and C.LTLogie.

Lectures in weeks 9-12 will take place on Monday 9-11am and Thursday 5-6pm at C.LTLogie.

Seminars:
Seminars begin in week 3, starting on 29/09/2014. Details of dates, seminar times and locations will be posted on Succeed.

Lecture Timetable

Week	Topic	Tutor
3	**Simple Regression Analysis**	**SL**
4	**Simple Regression Analysis**	**SL**
5	**Properties of the Regression Coefficients and Hypothesis Testing**	**SL**
6	**Properties of the Regression Coefficients and Hypothesis Testing**	**SL**
9	**Multiple Regression Analysis**	**MG**
9	**Nonlinear Models and Transformations of Variables**	**MG**
10	**Dummy Variables, Specification of Regression Variables**	**MG**
10	**Heteroskedasticity**	**MG**
11	**Models Using Time Series Data, Autocorrelation**	**MG**
11	**Introduction to Nonstationary Time Series**	**MG**
12	**Introduction to Nonstationary Time Series, Introduction to Panel Data Models**	**MG**
12	**Introduction to Panel Data Models (subject to time availability)**	**MG**

Seminar Timetable

Week	Topic	Tutor
3	**Review: Random Variables, Sampling and Estimation (material delivered in induction period)**	
4	**Simple Regression Analysis**	
5	**Simple Regression Analysis**	
6	**Properties of the Regression Coefficients and Hypothesis Testing**	
9	**Multiple Regression Analysis**	
10	**Dummy Variables, Specification of Regression Variables, Heteroskedasticity**	
11	**Models Using Time Series Data, Autocorrelation**	
12	**Introduction to Nonstationary Time Series**	

REQUIREMENTS

It is essential that you:

- Attend lectures and seminars;
- Actively participate in lectures / seminars, taking notes as appropriate;
- Read prior to lectures the main textbook and suggested literature. These readings are not exhaustive of the topics but serve to provide you with a background to facilitate understanding and discussion during lectures;
- Engage actively in all sessions of the class, especially group work;

Specific requirements for seminars

- As a preparation for each seminar you should attempt the specified exercises *in advance.* **Do not attend the seminars unless you have done this.**
- Solutions to the seminar exercises **WILL ONLY be discussed at the seminars.**
- **Please note that solutions to the seminar exercises WILL NOT be posted on Succeed.**
- Where applicable use Stata for all the computations. This is available in all University computing labs. The aim of the seminars is to allow you to get help with any computing or other problems presented by the exercises, and help with any difficulties associated with the lecture material or reading. **If you do the work on your own computer, make sure that you have access to the work in the computing lab**, e.g. transfer it in advance to the university network or bring it with you on a memory stick.
- For help on the econometric techniques required, look at the lecture notes. For help on how to use the particular features of Stata relevant to this module look at the Stata commands provided with each exercise sheet.
- Full attendance at seminars is an essential requirement of the programme – **please note that attendance will be recorded at the seminars**.
- Students who do NOT attend seminars place themselves at very high risk of failure. If you cannot attend a seminar, it is your responsibility to keep up to date with the material covered in the seminar.
- You will need to know your **username** and **password**. If you need help with this, please contact the Information Centre in the University Library. You will also need to keep your **Printer Account** in credit.
- The room used for the tutorials may be used at any other times when there is no class scheduled - see the bookings list posted outside the room.

ASSESSMENT

This module is assessed by: 20% class test and 80 % examination.

The class test will take place on in week 8, on Monday, 3rd of November, 9-11am, locations C.LTA4, and C.LTLogie.

Further details on assessment will be provided in lectures and on Succeed.

SUCCEED INFORMATION

Refer to the Succeed website for complementary information about:

- How to submit your essay via Turn-It-In;
- What is meant by plagiarism at Stirling (also check your student Handbook for comprehensive explanations on how to reference work properly);
- Your responsibilities as a student;
- Workload;
- Marking and retention of assessed work;
- Grading scheme.

ALL NOTICES ABOUT THIS MODULE WILL BE POSTED ON *SUCCEED* OR SENT BY EMAIL, SO CHECK SUCCEED AND YOUR EMAIL REGULARLY.

RECOMMENDED READING LIST

The core text book for this module is:

Dougherty, C. (2011) Introduction to Econometrics, Fourth edition, Oxford University Press, Oxford.

MARKING SCHEME

Details of the Common Marking Scheme can be found here

ACADEMIC MISCONDUCT

The University has an agreed policy setting out procedures for dealing with academic misconduct. Details can be found here.

Students' should familiarise themselves with "The Little Book of Plagiarism" and "The Little Book of Academic Misconduct", which can be found in the Succeed site for this module.