



APPLIES TO ACADEMIC YEAR 2016/2017

## EXC 3672 Analyses of Financial Data

### Programme

Bachelor of Business Administration - BBA (3. year), Exchange Program

### Responsible for the course

Bogdan Stacescu

### Department

Department of Finance

### Term

According to study plan

### ECTS Credits

7,5

### Language of instruction

English

### Introduction

The course aims at taking advantage of the information contained in data for decision-making. We are all prone to different kind of biases such as "overconfidence" or "recency." Quantitative empirical methods help us to discipline decision making process. More specifically, they allow to test the existence of a relation between variables (e.g., does inflation affect nominal interest rates?), quantify this relation (e.g., a one percent increase in inflation should lead to how much increase in nominal interest rate?) and forecast the evolution of variables (e.g., which interest rate should we expect in six month from now?).

### Learning outcome

The aims of this course are to i) introduce students to important empirical quantitative techniques that are used in finance and more generally in business, ii) make students able to apply them appropriately, and iii) prepare students for subsequent course work in finance and business. More specifically, on completion of the course the students' acquired knowledge and skills should be as follows:

On completion of the course students should:

- Understand basic measures of location, tendency and dispersion such as the expectation, median, variance, standard deviation, skewness, kurtosis.
- have learned to interpret the above mentioned numerical measures.
- Understand at a basic level the notion of conditional expectation and conditional variance.
- Understand basic measures of association such as covariance and correlation.
- Understand what is meant by correlation and regression analysis - and the difference between them.
- Understand some of the peculiarities of financial data.
- Understand at basic level what a programming language is.
- Understand the difference between an estimated model and "true" model.
- Understand what is meant by Ordinary Least Squares (OLS) - the estimation technique used in order to estimate our econometric model.
- Understand how to interpret the estimated model.
- Understand the practical implications of the assumptions on which OLS rely.

### Acquired skills

On completion of the course students should be able to use software like R in order to:

- Perform basic data handling
- Estimate financial models formulated as linear regression models
- Test the statistical assumptions underlying OLS.

### Prerequisites

EXC 2910 Mathematics, EXC 2904 Statistics, EXC 3506 Research Methods and Econometrics, or similar

### Compulsory reading

#### Books:

DeFusco, Richard Armand ... [et al.]. 2015. Quantitative investment analysis. 3rd ed. Wiley. Chapter 3 - 9

### Recommended reading

### Course outline

This course introduces students to empirical techniques that are relevant for finance and business in general. More specifically, the outline of the course is as follows:

**Foundations for empirical methods in finance.**

- Probability basics
- When and why econometric can work
- Econometric basics

**Introduction to programming for data analysis**

- Data and computer basics: data in finance, what is a programming language
- Introduction to R: Basic data manipulation with R
- Introduction to programming with R: Control structures in R, Monte Carlo simulation

**Linear regression analysis**

- Simple regression analysis
- Regression analysis with multiple explanatory variables
- Limits and assumptions of regression analysis

**Computer-based tools**

The software package R will be available on BI's computers. Other tools include Google, Yahoo finance and itslearning.

**Learning process and workload**

Each topic will be accompanied by a hands-on practical application of an empirical finance topic.

The software package R will be an integral part of the coursework. R is a software program that has become a standard for data analysis inside academia and corporations, especially in the finance industry. It is an open source software available free of charge on internet. The use of R will introduce students to some of the basics of programming. Programming is a skill typically required in the financial industry.

If a student misses a class, it is her/his responsibility to obtain any information provided in class that is not included on the course homepage/itslearning or in the text book.

The following is an indication of the time required:

| Activity                                             | Workload   |
|------------------------------------------------------|------------|
| Lectures and other plenary sessions                  | 39         |
| Computer sessions                                    | 3          |
| Review of the slides every evening after the lecture | 133        |
| Group project and home assignments                   | 5          |
| Preparation for the final exam                       | 20         |
| <b>Total recommended workload</b>                    | <b>200</b> |

**Use of hours**

A class will typically consist of a review of the last class, a lecture introducing new material and exercises that are solved on the white board by students.

39 hours - Lectures

3 hours x n - Computer sessions

3 hours - Coordinating learning activities

$42 + 3xn$  - hours in total

**Examination**

This is a course with continuous assessment (several exam components) and one final exam code. Each exam component is graded by using points on a scale from 0-100. The components will be weighted together according to the information below in order to calculate the final letter grade for the examination code (course). Students who fail to participate in one/some/all exam elements will get a lower grade or may fail the course.

The final grade in the course will be based on the following components and weightings:

- 10% (if positive contribution to the final grade) class participation
- 10% R assignments
- 15% Pop quizzes/quizzes
- 15% R in-class exam
- 50% 3 hour written final exam.

You will find detailed information about the point system and the cut off points with reference to the letter grades on the course site on itslearning. Specific information regarding student evaluation beyond the information given in the course description will be provided in class. This information may be relevant for requirements for term

papers or other hand-ins, and/or where class participation can be one for several elements of the overall evaluation.

**Examination code(s)**

EXC 36721 – Process evaluation, counts 100% towards final grade in EXC 3672 Analysis of Financial Data, 7,5 credits.

**Examination support materials**

At written examinations:

- A BI approved exam calculator and
- One bilingual dictionary

Examination support materials at written examinations are explained under examination information in the student portal @bi. Please note use of calculator and dictionary in the section on support materials ([https://at.bi.no/EN/Pages/Exa\\_Hjelpemidler-til-eksamen.aspx](https://at.bi.no/EN/Pages/Exa_Hjelpemidler-til-eksamen.aspx)).

**Re-sit examination**

Re-sit examination is offered at the next scheduled course.

At re-sit it will be required that the entire evaluation process is conducted again, and that students who do not achieve points in one or more exam components will get a lower grade or fail the course. Previously conducted examination components will not be part of the assessment for a new character.

**Additional information**