APPLIES TO ACADEMIC YEAR 2015/2016

EXC 3610 Empirical Methods in Finance - RE-SIT EXAMINIATION

Programme
Re-sit examination

Responsible for the course
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Department
Department of Financial Economics

Term
According to study plan

ECTS Credits
7,5

Language of instruction
English

Introduction
Welcome to Empirical Methods in Finance. Empirical methods aim 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 introduce students to important econometric techniques that are used in empirical finance and to create awareness with students of how these techniques can be applied. More specifically, on completion of the course the students' acquired knowledge and skills should be as follows:

Acquired knowledge
On completion of the course students should:
- Understand the importance of basic data handling involving different graphical representations, descriptive statistics such as the mean, median, variance, standard deviation, skewness, kurtosis.
- Be able to interpret the above mentioned numerical measures.
- Understand the difference between the unconditional and conditional variance, and what the ARCH effect is.
- Understand the law of large number and central limit theorem, and how they are used in practice
- Understand what a Monte-Carlo simulation is.
- Understand basic concepts of programming: loops ("while" and "for"), if condition ("if") and logical operators ("and" and "or")
- Understand the difference between an econometric model and a financial model.
- Understand what is meant by correlation and regression analysis - and the difference between them.
- Understand that correlation is not causation.
- Understand some of the peculiarities of financial data.
- 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 statistical assumptions that OLS rests upon.

Acquired skills
On completion of the course students should be able to use software like R in order to:
- Perform basic data handling
- Basic programming skills
- Run basic Monte Carlo simulations
- Estimate financial models formulated as linear regression models (Econometric models).
- Test the statistical assumptions underlying OLS.
- Take corrective action if some of these assumptions are violated.

Prerequisites
Basic statistics course
Basic calculus coursee

Compulsory reading

Books:
DeFusco, Richard A. ... [et al.]. 2007. Quantitative investment analysis : Workbook. 2nd ed. Wiley

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:

1. Foundations for empirical methods in finance.
- Probability basics
- Why and when econometrics can work
- Econometrics basics

2. Programming for data analysis
- Data and computer basics
- Introduction to R
- Introduction to programming

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

Depending on the pace of course, more advanced topics can be introduced.

Computer-based tools
The software package R will be available on BI's computers. Other tools include Google, Yahoo finance and It's Learning.

Learning process and workload
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.

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 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/It's learning or in the text book.

A course of 7,5 ECTS credits corresponds to a workload of 200 hours. The following is an indication of the time required for different activities:

Activity	Hours
Lectures	45
Preparation for lectures and plenary tutorials	110
Preparation for the final examination	45
Total recommended use of time	**200**

Use of hours
45 hours total

Examination
Re-sit examination is arranged as a three (3) hours individual written exam.

Examination code(s)
EXC 36101 - Written Examiniation, counts 100% towards final grade in EXC 3610 Empirical Methods in Finance, 7,5 credits.

Examination support materials
BI approved exam calculator. 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).

Re-sit examination
This course was lectured for the last time autumn 2014. Last re-sit examinations will be offered autumn 2015 and spring 2016.
Please note!
Whilst the original examination was a process evaluation, re-sit students shall take the written exam only and this will count 100% towards the final grade.

Additional information