

## Financial Econometrics (F000723)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 4.0**

**Study time 120 h**

**Course offerings and teaching methods in academic year 2024-2025**

A (semester 1)

English

Gent

group work

lecture

seminar

**Lecturers in academic year 2024-2025**

Everaert, Gerdie

EB21

lecturer-in-charge

**Offered in the following programmes in 2024-2025**

**crdts**

**offering**

Master of Science in Teaching in Science and Technology(main subject Mathematics)

4

A

Master of Science in Business Engineering (Double Degree)(main subject Finance)

4

A

Master of Science in Business Engineering(main subject Finance)

4

A

Master of Science in Mathematics

4

A

Master of Science in Banking and Finance

4

A

**Teaching languages**

English

**Keywords**

Econometrics, financial data

**Position of the course**

The aim of this course is to provide students with the ability to recognise problems in financial economics and to analyse these problems within the existing scientific literature. To this respect, students are acquainted with a number of modern econometric techniques commonly employed in the financial literature.

An important accent in this course is to provide students with the ability to translate the acquired knowledge to real problems, i.e. students are required to be able to provide solutions to practical problems in a scientifically well-founded and creative way.

Furthermore, they should be able to present the obtained results both orally and in written.

**Contents**

The most important topics covered are:

- 1 Properties of OLS under alternative assumptions
- 2 Autoregressive moving average (ARMA) models
- 3 Vector autoregressive (VAR) models
- 4 Unit roots and cointegration
- 5 Monte Carlo simulation and bootstrapping
- 6 Maximum likelihood (ML) estimation
- 7 Modelling volatility (ARCH and GARCH)

**Initial competences**

Introduction to Statistics (2 semesters); Econometrics (1 semester):

A thorough knowledge and understanding of the classical linear regression model and of the statistical properties (biasedness, efficiency, distribution) of the ordinary least squares estimator. Ability to correctly interpret the estimation results and perform hypothesis tests. Being able to test whether the basic assumptions of the classical linear regression model hold in practice. Knowing the implications of

violations (multicollinearity, autocorrelation, heteroscedasticity and endogeneity) of the basic assumptions, being able to select and implement alternative estimation methods to deal with these violations and knowing the statistical properties of these estimators.

### **Final competences**

- 1 Identify problems in financial economics, select and implement the appropriate econometric methodology to solve these problems and know its statistical properties and limitations given the theoretical framework and properties of the data.
- 2 Use advanced software (R) to implement and adjust econometric methods to solve real financial economic problems.

### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

### **Teaching methods**

Group work, Seminar, Lecture

### **Extra information on the teaching methods**

Ex cathedra theoretical lectures.

During the group assignment and the tutorials students have to apply the theory to real problems.

Lectures and tutorials are in English.

### **Study material**

Type: Slides

Name: Slides financial econometrics

Indicative price: Free or paid by faculty

Optional: no

Language : English

Available on Ufora : Yes

### **References**

- Walter Enders, Applied Econometric Time Series, John Wiley & Sons, 1995.
- William H. Greene, Econometric Analysis (fifth edition), Prentice Hall, 2003.
- Richard Harris, Cointegration Analysis in Econometric Modelling, Prentice Hall, 1995.
- Jack Johnston and John Dinardo, Econometric Methods (fourth edition), McGraw-Hill, 1997.
- Marno Verbeek, A Guide to Modern Econometrics, John Wiley & Sons, 2000.
- Chris Brooks, 2002, Introductory Econometrics for Finance, Cambridge University Press.

### **Course content-related study coaching**

Concerning the content of the course, students can appeal to the support of the lecturer and the assistants.

Study material (slides, assignments, solutions to the assignments, ...) are available on Ufora.

### **Assessment moments**

end-of-term assessment

### **Examination methods in case of periodic assessment during the first examination period**

Oral assessment, Written assessment

### **Examination methods in case of periodic assessment during the second examination period**

Oral assessment, Written assessment

### **Examination methods in case of permanent assessment**

**Possibilities of retake in case of permanent assessment**

not applicable

**Extra information on the examination methods**

Written and oral exam (with written preparation) exam during which the knowledge of the econometric techniques discussed during this course and the ability to use these techniques to analyse real problems are evaluated.

Practical assignment (in preparation of the written exam) in which the acquired knowledge is applied to real problems. The main part of the written exam evaluates the correct interpretation of the student's solution (R output) of this case study.

The solution of the case is not evaluated as such.

**Calculation of the examination mark**

Written exam (15), oral exam (5)