

# Course Specifications

From the academic year 2015-2016 up to and including the

## Financial Econometrics (F000723)

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

Credits 4.0 Study time 120 h Contact hrs 45.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	English	group work	10.0 h
		seminar: coached	5.0 h
		exercises	
		lecture	30.0 h

Lecturers in academic year 2018-2019

Everaert, Gerdie EB21 lecturer-in-charge

Offered in the following programmes in 2018-2019

	crdts	offering
<a href="#">Master of Science in Business Engineering (main subject Finance)</a>	4	A
<a href="#">Master of Science in Banking and Finance</a>	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 (EViews and Matlab) 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, lecture, seminar: coached exercises

#### 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.

#### Learning materials and price

Cost: 5 EUR

#### 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 Minerva.

#### Evaluation methods

end-of-term evaluation

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

Written examination, oral examination

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

Written examination, oral examination

#### Examination methods in case of permanent evaluation

#### Possibilities of retake in case of permanent evaluation

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 (EViews and Matlab 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)