

12E007

Econometric Methods I

Fall Term - 6 ECTS

Mandatory Course

Prof. Geert Mesters

Prerequisites to Enroll

The students are assumed to be familiar with undergraduate level linear algebra, statistics and probability as well as the Introduction to Econometrics textbook by Stock and Watson (at least up to chapter 15).

Overview and Objectives

This is an introductory course in econometrics. The course is designed to cover the basic procedures of econometrics. This material will be extensively covered in the following courses of the econometric sequence. The approach of the course is to introduce econometric methods and discuss its statistical foundations. The course deals with the statistical underpinnings of econometrics and emphasizes applications and interpretation of the results. The final objective is for students to know what method to apply in each case, and what assumptions are needed for correct inference in each situation.

Course Outline

- Linear regression: introduction
- Linear regression: numerical properties
- Linear regression: statistical properties
- Linear regression: hypothesis testing
- Linear regression: confidence intervals
- Heteroskedasticity and generalized least squares
- Nonlinear least squares
- Instrumental variables estimation
- Maximum likelihood estimation

Required background

The students are assumed to be familiar with undergraduate level statistics and probability as well as the Introduction to Econometrics textbook by Stock and Watson (at least up to chapter 15).

Required Activities

There will be a weekly take home problem set. You may work in small groups (3-4 people) but every student has to hand in an individual set of solutions.

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Evaluation

Grades will be based on the problem sets (25%) and a final exam (75%)

Competences

Ability to use the appropriate (statistical and numerical) techniques.

Acquire a solid knowledge base for the study of quantitative issues.

Ability to Recognize and know how to use the principles of econometrics and statistics.

Learning Outcomes

Students will acquire the technical tools that will allow them to perform the advanced analytics required in the second module as econometric methods.

Students will know what the appropriate inference for each situation is.

Materials

The core of the course concerns Chapters 1-8 and 10 of Davidson, R. & MacKinnon, J. G. (2004), *Econometric Theory and Methods*, Oxford University Press, New York. In addition there are slides

More Material

Additionally students may wish to consult:

White, H. (2001), *Asymptotic Theory for Econometricians: Revised Edition*, Academic Press, New York

Gallant, A. R. (1997), *An Introduction to Econometric Theory*, Princeton University Press, New Jersey

Hayashi, F. (2000), *Econometrics*, Princeton University Press, New Jersey

Hansen, B. (2014), *Econometrics*, available from
<http://www.ssc.wisc.edu/~bhansen/econometrics/Econometrics.pdf>