PhD in Economics / PhD in Finance

Advanced Econometrics I

ISCTE-IUL, Business School, 2020/2021

Instructor: Joaquim J. S. Ramalho
E-mail: jjsro@iscte-iul.pt
Personal Website: http://home.iscte-iul.pt/~jjsro
Office: D5.10

COURSE DESCRIPTION

The course provides an introduction to the modern econometric techniques used in the analysis of cross-sectional and panel data in the area of microeconometrics. The interaction between theory and empirical econometric analysis is emphasised and students will be trained in formulating and testing economic models using real data.

By the end of the unit, the student should have achieved the following learning goals:

- Know how to specify, estimate, evaluate and interpret microeconometric models
- Recognize and solve endogeneity problems
- Know and apply panel data models
- Know and apply models with limited dependent variables
- Know how to use econometric packages in data analysis

Pre-requisites (recommended): Introductory Econometrics

GRADING

The final grade will be based on two components:

- Two individual problem sets (50%)
- Final (open book) exam (50%)

To get approval, students must fulfil the following criteria:

- Weighted mean of at least 9,5/20
- Minimum grade at the exam of 7,5/20

Re-sit examinations are not available.

COURSE WEBSITES

Web: https://jjsramalho.wixsite.com/advecoi
Fénix: https://fenix.iscte-iul.pt/disciplinas/03089

COURSE OUTLINE

i. Introduction
- i.1. Econometric Methodology
- i.2. The Structure of Economic and Financial Data
- i.3. Dependent Variables and Econometric Models
- i.4. Quantitative and Qualitative Explanatory Variables

1. Linear Regression Analysis

- 1.1. The Linear Regression Model with Cross-Sectional Data
  - 1.1.1. Exogenous Explanatory Variables
  - 1.1.2. Endogenous Explanatory Variables
- 1.2. The Linear Regression Model with Panel Data
  - 1.2.1. Static Models
  - 1.2.2. Dynamic Models

Illustration 1: Determinants of Firm Debt
Illustration 2: Estimating the Returns to Schooling
Illustration 3: Explaining Individual Wages
Illustration 4: Explaining Capital Structure

2. Nonlinear Regression Analysis

- 2.1. Model Estimation
  - 2.1.1. Maximum Likelihood
  - 2.1.2. Quasi-Maximum Likelihood
- 2.2. Model Inference and Evaluation
- 2.3. Panel Data Models

3. Discrete Choice Models

- 3.1. Models for Binary Choices
- 3.2. Models for Ordered Choices
- 3.3. Models for Multinomial Choices

Illustration 5: Modelling the Choice Between Two Brands
Illustration 6: Health Care Expenses and Consultations
Illustration 7: Explaining Firm's Credit Ratings
Illustration 8: Travel Mode Choice

4. Models for Continuous Limited Dependent Variables

- 4.1. Models for Nonnegative Outcomes
- 4.2. Models for Fractional Responses
- 4.3. Models for Discrete-Continuous Responses

Illustration 9: Health Care Expenses and Consultations (revisited)
Illustration 10: Determinants of Firm Debt (revisited)

BOOK REFERENCES

Recommended

Cameron, A. and P.K. Trivedi (2005), *Microeconometrics: Methods and Applications*, Cambridge University Press.

Others

Baltagi, B. (2013), *Econometric Analysis of Panel Data*, John Wiley and Sons (5th Edition).

Davidson, R. and J.G. MacKinnon (2003), *Econometric Theory and Methods*, Oxford University Press.

Greene, W. (2011), *Econometric Analysis*, Pearson (7th Edition).

Verbeek, M. (2017), *A Guide to Modern Econometrics*, Wiley (5th Edition).

Wooldridge, J.M. (2010), *Econometric Analysis of Cross Section and Panel Data*, MIT Press (2nd Edition).

Wooldridge, J.M. (2015), *Introductory Econometrics: A Modern Approach*, South Western (6th Edition).

SOFTWARE

Recommended

Stata - http://www.stata.com

R - https://cran.r-project.org

Others

Gauss - http://www.aptech.com/products/gauss-mathematical-and-statistical-system

Matlab - https://www.mathworks.com/products/matlab