VNIVERSITAT DE VALÈNCIA

Course Guide
44334 Econometrics

COURSE DATA

Data Subject	
Code	44334
Name	Econometrics
Cycle	Master's degree
Créditos ECTS	5.0
Academic year	2016 - 2017

Study (s)

Degree	Center	Acad. year	Period
2202 - M.U. en Economía	FACULTY OF ECONOMY	1	First term

Subject-matter

Degree	Subject-matter	Character
2202 - M.U. en Economía	1 - Instrumental subject areas	Obligatory

Coordination

Name	Department
BENEITO LOPEZ, PILAR	10 - ANÁLISIS ECONÓMICO
SERRANO DOMINGO, GUADALUPE	10 - ANÁLISIS ECONÓMICO

SUMMARY

This course introduces the main methods of econometric analysis and their application to economics. The main goal of the course is to teach the students how to become both producers and critical consumers of empirical research. This is achieved by focusing both on the theoretical properties and on the practical implementation of the techniques.

The course starts introducing the classical linear regression model, assumptions about the explanatory variables and disturbances, properties of the least squares estimator and hypothesis tests. This first part of the course tries to provide all the students, those who have some training in undergraduate econometrics and those who have not, with an homogeneous basis. A second part of the course introduces the characteristics of non-spherical disturbances and the generalized least squares model, endogeneity issues and instrumental variables estimation, the generalized method of moments, the method of maximum-likelihood and simultaneous equations estimation.

The course also aims to develop the students' abilities to apply the methods to real data using the econometrics programme STATA.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

Students will benefit greatly from any introductory undergraduate course of econometrics. Nevertheless, the course is orientated also to those without previous knowledge of econometrics. The assumption is that students have some training in basic statistical tools and linear/matrix algebra, which are extensively used in the course.

RESULTADOS DE APRENDIZAJE

On successful completion of the course, the student should be able to:

- discuss basic econometric concepts including, but not restricted to, linear regression, sample, i.i.d. errors and estimators properties;

- explain the method of ordinary least squares (OLS), write the classical linear regression model in matrix form and use it, explain its assumptions and discuss the properties of the estimators;

- demonstrate understanding of measures of goodness of fit including their uses and limitations;

- interpret and critically evaluate econometric results;

- demonstrate understanding of the principles of hypothesis testing and thorough knowledge of statistical distributions, their properties and uses;

- explain linear restrictions and carry out tests of the validity of linear restrictions;

- demonstrate understanding of dummy variables, be able to incorporate them in models and interpret the results;

- demonstrate understanding of spherical and non-spherical disturbances and heteroskedasticity and autocorrelation: its causes, consequences, tests of it and how to make progress in its presence;

- demonstrate understanding of the particular features of maximum-likelihood estimation and its usefuness;

- write a system of equations to represent economic relationships and use of different ways to estimate these models;

- use the course software to implement the econometric methods discussed in the course and demonstrate ability to analyse the output.

DESCRIPTION OF CONTENTS

1. Econometrics

1. LINEAR REGRESSION WITH i.i.d. ERRORS

1.1 Introduction.
1.2 OLS estimation.
1.3 Hypothesis testing.
1.4 OLS Asymptotics.
1.5 Regression estimates as a method-of-moments estimator.
1.6 Further issues: specifying the functional form, choosing between models, prediction and residual analysis, regression with indicator variables.

2. REGRESSION WITH non-i.i.d. ERRORS

2.1 Types of deviations from i.i.d. errors.
2.2 The robust estimator of the VCE.
2.3 The cluster estimator of the VCE.
2.4 The generalized least-squares estimator, GLS (and Feasible GLS).
2.5 Heteroskedasticity in the error distribution.
2.6 Serial correlation in the error distribution.

3. THE METHOD OF MAXIMUM-LIKELIHOOD

5.1 Introduction. Preliminaries and examples.
5.2 General framework for conditional maximum-likelihood estimation (CML).
5.3 Consistency of CML.
5.4 Asymptotic normality and asymptotic variance estimation.
5.5 Hypothesis and specification testing.
5.6 Quasi-maximum likelihood estimation.

4. ENDOGENEITY

4.1 Endogeneity in economics relationships.
4.2 Instrumental variables estimation with 2SLS.
4.3 Identification and testing overidentifying restrictions.
4.4 The GMM estimator.
4.5 Testing overidentifying restrictions in GMM.
4.6 Testing for relevance of instruments.
4.7 Tests for endogeneity in IV estimation.

5. SIMULTANEOUS EQUATIONS MODELS

5.1 The nature of simultaneous equations models.
5.2 Simultaneity bias in OLS.
5.3 Identifying and estimating a structural equation.
5.4 Simulaneous equations models with time series.

Practical sessions: INTRODUCTION TO STATA

- The basics.
- Getting the data into STATA.
- Common data transformations.
- Organizing and handling economic data.
- Application of methods.

WORKLOAD

	Hours
CLASSROOM ACTIVITIES	
Theory classes	40.0
Classroom practices	10.0
Total Classroom activities	**50.0**
NON-ATTENDING ACTIVITIES	
Development of individual work	10.0
Study and independent work	35.0
Preparation of practical classes and problem	25.0
Total Non-attending activities	**70.0**
TOTAL	**120.0**

TEACHING METHODOLOGY

The course is taught two-hour lectures and one and a half-hour tutorial (or practical class) per week.

- The lectures will focus on presentation of the theoretical concepts and models. To this purpose, students will count on material provided by the tearcher in advance to the lectures. Following the text books is also essential to complement the theoretical lectures.

- The practical classes will be orientated to develop students' abilities in applying the theory to real data using the course software STATA. Students will need to solve some exercises (analytical and computer-exercises) both in advance to the class and also during class time.

EVALUATION

Continual assessment counts for 40% of the total final grade and the final exam counts for 60%.

- Homework assignments all through the course count together for 20% of the grade.

- A final applied work counts for 10%, and a critical written report of one of the classmates' work counts for another 10%.

- The final exam grade counts for 60%. Minimum exam grade required for passing the course is 5 out of 10 points.

REFERENCES

Basic

- - Wooldridge, J.M. (2013). Introductory Econometrics: A Modern Approach, 5th edition. Cengage Learning (Previous editions: 2009, 2006, 2003).
- Greene, W.H. (2012). Econometric Analysis, 7th edition. Prentice Hall.
- Baum, Ch. F. (2006). An Introduction to Modern Econometrics Using STATA. STATA-Press.

Additional

- - Wooldridge, J.M. (2008). Econometric Analysis of Cross-Section and Panel Data, 2nd edition.The MIT Press.