Universitat Autònoma de Barcelona

2017/2018

Econometrics I

Code: 102308
ECTS Credits: 6

Degree	Type	Year	Semester
2501572 Business Administration and Management	OB	2	2
2501573 Economics	OB	2	2

Contact

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Use of languages

Principal working language: catalan (cat)
Some groups entirely in English: Yes
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Teachers

Montserrat Farell Ferrer
Maria Dolores Márquez Cebrián
Concepció Piñol Pérez

Prerequisites

It is highly recommended that the student has successfully completed Mathematics I, II and Statistics I, II. Having full command of the materials presented in these courses is essential to succeed in Econometrics I.

Objectives and Contextualisation

Econometrics I presents basic tools for the empirical analysis of relationships between economic variables. The course begins with the simple regression model, already introduced in Statistics II, and continues with multiple regression, including both quantitative and qualitative regressors.

The goal of this course is for students to learn to extract information from economic data using basic regression analysis, being able to rigorously assess the advantages and limitations of this tool. Major emphasis shall be placed on understanding the intuition behind the general theoretical aspects of econometric analysis. Throughout the course numerous applications using real data and econometric software will be presented to help students learn to value the empirical applications of the tools introduced.

This course provides the fundamentals for the analysis of economic data that continues with the courses of Econometrics II and Econometric Models and Forecasting.

Skills

Business Administration and Management

- Apply the basic statistics for improving processes of analysis and systematisation of business information and learn rigorously and scientifically about the company chain of value.
- Capacity for adapting to changing environments.
- Capacity for independent learning in the future, gaining more profound knowledge of previous areas or learning new topics.
- Capacity for oral and written communication in Catalan, Spanish and English, which enables synthesis and oral and written presentation of the work carried out.
- Demonstrate initiative and work individually when the situation requires it.
- Identify and apply econometric methodology to respond to the problems that appear in the empirical study of some economic data.
- Organise the work in terms of good time management, organisation and planning.
- Select and generate the information necessary for each problem, analyse it and take decisions based on that information.
- Take decisions in situations of uncertainty, demonstrating an entrepreneurial and innovative attitude.
- Use of the available information technology and adaptation to new technological environments.

Economics

- Apply the basic statistics for improving processes of analysis and systematisation of business information and learn rigorously and scientifically about the company chain of value.
- Capacity for adapting to changing environments.
- Capacity for independent learning in the future, gaining more profound knowledge of previous areas or learning new topics.
- Demonstrate initiative and work individually when the situation requires it.
- Identify and apply econometric methodology to respond to the problems that appear in the empirical study of some economic data.
- Organise the work in terms of good time management, organisation and planning.
- Select and generate the information necessary for each problem, analyse it and take decisions based on that information.
- Take decisions in situations of uncertainty, demonstrating an entrepreneurial and innovative attitude.
- Use of the available information technology and adaptation to new technological environments.

Learning outcomes

1. A capacity of oral and written communication in Catalan, Spanish and English, which allows them to summarise and present the work conducted both orally and in writing.
2. Capacity to adapt to changing environments.
3. Capacity to continue future learning independently, acquiring further knowledge and exploring new areas of knowledge.
4. Demonstrate initiative and work independently when required.
5. Identify and apply the appropriate econometric methodology to respond to the problems appearing in the empirical study of some economic data.
6. Look for economic information from different sources: databases, Internet, etc.
7. Make decisions in situations of uncertainty and show an enterprising and innovative spirit.
8. Organise work, in terms of good time management and organisation and planning.
9. Prepare the data obtained from the sources for subsequent quantitative analysis.
10. Select and generate the information needed for each problem, analyse it and make decisions based on this information.
11. Use available information technology and be able to adapt to new technological settings.
12. Use information technology programmes to perform a quantitative analysis of the data.

Content

Unit 1: Introduction to econometric analysis

- What is econometrics? Objectives
- The nature of economic data
- Causality versus correlation

- The structure of Economic data

Unit 2: Linear regression analysis: estimation

- The linear regression model: goals
- Least squares estimation. Fitted model
- Goodness of fit
- Numerical properties of the estimator
- Influential observations
- Regression model and functional form
- Qualitative variables as regressors
- Distribution of the estimator under ideal conditions
- The components of the variance of the estimator
- Statistical properties of the estimator
- OLS estimation and the omission of relevant variables
- Applications.

Unit 3: Linear regression analysis: inference and prediction

- Inference under ideal conditions
- Hypothesis testing with the t statistic.
- Individual significance test
- Confidence intervals for a regression parameter
- Hypothesis testing using the F statistic
- Global significance test
- Testing for structural change
- Inference under the presence of collinearity
- Prediction
- Applications

Unit 4: Regressions with time series data

- The components of a time series
- Regression models with time series data
- Trends
- Seasonality
- Prediction
- Applications

Methodology

The course will be structured as follows:

1. Lectures

During lectures, key concepts and methods will be presented using many examples to facilitate a clear understanding of the materials presented. An exercise list will be provided for each unit. Students will be asked to work on them, as an independent activity, in small groups or on their own. The instructor will select some exercises from the list to be discussed in class, although students are expected to complete the entire exercise list in their own time. The instructor might select some of the exercises to be discussed in class.

2. Sessions in computer room

In order to better grasp the different econometric concepts and methods, some of the sessions will take place in the computer room. Some of the lab sessions might take place during additional extra sessions officially programmed for Econometrics I. The econometric package Gretl, an open source software program already used in Statistics II, will be used extensively.

3. Office hours

Students can use instructor's office hours to get help on specific questions. Office hours will be announced in either the intranet (Campus Virtual) or in the instructor's webpage.

4. Studying

It is expected that the activities described above, take about one a fraction of the time that the student is supposed to dedicate to Econometrics I. The rest of the time should be filled with students' independent work (studying, reading the course textbook, problem solving,...). In order to succeed in this course, students should anticipate spending an additional 100 hours or more of independent work in problem solving and studying. This activity is crucial to assimilate the theoretical aspects and the applications of the tools presented.

Important:

-To successfully pass this course, class attendanceis critical.
-For a good class environment: Everybody should arrive on time and plan on staying for the entire class.

Activities

Title	Hours	ECTS	Learning outcomes
Type: Directed			
Lectures	30	1.2	2, 5, 7, 10, 11
Sessions in the computer room (labs)	15	0.6	6, 5, 9, 12
Type: Supervised			
Problem solving during office hours	8	0.32	2, 5, 4, 8, 7, 9, 10, 11, 12
Type: Autonomous			
Studying and problem solving	90	3.6	6, 2, 1, 3, 4, 5, 8, 7, 9, 10, 11, 12

Evaluation

1. Midterm exam

There will be a midterm covering the contents of Unit 1 and 2. It will be a closed book exam. Grades will be given on a scale of 0 to 10. This exam will represent 20% of the overall course grade.

2. Final exam

There will be a final exam covering the contents of Unit 1, 2, 3 and 4. It will be a closed book exam. Grade will be given on a scale of 0 to 10. This exam will represent 60% of the overall course grade.

3. Problem solving in the computer room

Students will be asked to solve 2 sets of exercises during laboratory sessions: LAB 1(Unit 1 and 2) and LAB 2 (Unit1, 2, 3 and 4). Both labs will be held in the computer room and exercises will be solved by each student individually. Grades for each lab will be given on a scale of 0 to 10 and will represent 10% of the overall course grade.

Grading Policy

a. After the final exam grade is available, a course grade will be given to assigned to each student. As explained, the course grade is calculated according to the following expression:

COURSE GRADE=0.1*LAB1+0.1*LAB2 + 0.2* MIDTERM + 0.6*FINAL

b. To pass the course the course grade should be at least 5.

c. All students must take exams on their specified dates. No exceptions possible.

Assessment Calendar

The exam dates for both midterm and final are set by the academic calendar of the Facultat d'Economia i Empresa. No excepcions allowed. Each instructor will publish the dates of the lab tests well in advance. It is each student's responsibility to be aware of these dates.

Grades and Exam Review

After each grading activity, grades will be posted either in Campus Virtual or in the instructor's webpage. The date and place for each exam review will also be posted in the same manner.

Post-assessment

For those students who have obtained a course grade greater or equal to 4 but smaller than5, therewill be a post-assessment exam. The date of this post-assessment exam is establishedby the Facultat of Economiai Empresa and included in the exam calendar list. This post-assessment exam is of the PASS/NOPASS form. Students who get a PASS, will pass the course and will get a course grade equal to 5. Students who get a NO PASS, will fail the course and their course grade will remain unchanged.

Honor Code

Aside from other disciplinary measures that are considered appropriate, and according to the present academic rules, students that copy from another's examination, solicit or give unpermitted collaboration during grading activities will be awarded with a zero. Furthermore, it will not be possible for them to sit for any further grading activity during the same academic year.

Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Exam (Midterm and Final)	80%	5	0.2	2, 1, 4, 5, 8, 7, 10, 12
Problem solving in the computer room	20%	2	0.08	6, 3, 9, 11

Bibliography

Course textbooks:

- Stock,J.H. & Watson, M.M., Introduction to Econometrics. Pearson Education. 3 ed.

- Wooldridge, J. M., Introductory Econometrics: A Modern Approach. South-Western Cengage learning. 6ed. 2015.

- Uriel Jiménez, E., Introduction to Econometrics. Electronic book. Universidad de Valencia.