Universitat Autònoma de Barcelona

2020/2021

Econometrics II

Code: 102307
ECTS Credits: 6

Degree	Type	Year	Semester
2501572 Business Administration and Management	OT	4	0
2501573 Economics	OB	3	1

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

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

Concepció Piñol Pérez

Prerequisites

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

Objectives and Contextualisation

Econometrics II progress in the study and application of the linear regression model introduced in Econometrics I. After a brief review, the course introduces three deviations from the standard assumptions of the lineal model: heteroskedasticity , autocorrelation of the error terms and endogeneity of the explanatory variables. The students should learn the limitations of the classical model and how adapt this model and these methods for processing data associated with more general characteristics. For the same purpose it is introduced the maximum likelihood estimation method to allow the study of non-linear models, such that Logit and Probit Models. Throughout the course numerous examples using real data will be presented to help students to apply the introduced tools. We will put special emphasis to present the theoretical aspects in the most intuitive way. The main goal of this course is to provide students a deeper knowledge of the main econometric methods.

Competences

Business Administration and Management

- Apply the basic statistics for improving capacity for work in situations of risk, understanding their origins and developing possible strategies for reducing or mitigating their effects.
- 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 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.
- 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.
- Value ethical commitment in professional practice.
- Work well in a team, being able to argue proposals and validate or reject the arguments of others in a reasoned manner.

Economics

- Apply the basic statistics for improving capacity for work in situations of risk, understanding their origins and developing possible strategies for reducing or mitigating their effects.
- 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.
- 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.
- 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.
- Value ethical commitment in professional practice.
- Work well in a team, being able to argue proposals and validate or reject the arguments of others in a reasoned manner.

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. Analyse the performance of economic time series and make forecasts.
3. Assess ethical commitment in professional activity.
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. Make decisions in situations of uncertainty and show an enterprising and innovative spirit.
7. Select and generate the information needed for each problem, analyse it and make decisions based on this information.
8. Specify models, estimation methods and inference.
9. Use available information technology and be able to adapt to new technological settings.
10. Use information technology programmes to perform a quantitative analysis of the data.
11. Work as part of a team and be able to argue own proposals and validate or refuse the arguments of others in a reasonable manner.

Content

Unit 1: Case studies to review the linear regression model

- Main results
- Heteroskedasticity and Autocorrelation

Unit 2: Regression analysis with Panel Data

- Panel Data with two time periods

- The fixed effects model
- Case Studies

Unit 3: Endogeneity and the Instrumental Variables Estimator

- Models with Endogenous Explanatory Variables
- The Instrumental variable Estimator
- Case Studies: experiments and quasi-experiments

Unit 4: Time Series Models

- Characteristics of Time Series
- Estimation Methods and Inference
- Case Studies

Methodology

Teaching will be offered on campus or in an on-campus and remote hybrid format depending on the number of students per group and the size of the rooms at 50% capacity.

The course activities will be structured as follows:

1. Lectures

In the lectures, the key concepts and methods will be presented by professor, using examples to facilitate a clear understanding of the materials presented.

2. Computer room activities

In order to better grasp the different econometric concepts and methods some lectures will take place in the computer room. The econometric package *Gretl*, an open source software program already used in *Econometrics I*, will be used extensively. Students will learn additional advanced menu options and estimation methods..

3. In class problem solving

There will be problems set for each unit and it is expected that students will work on them in groups or on their own. This activity is crucial to assimilate the theoretical aspects and the applications of the tools presented. The instructor will select some exercises from the problems set list to be discussed in class, although students are expected to complete the entire problems set in their own time.

4. Office hours

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

5. Studying

It is expected that activities 1 to 4, described above, take about one third of the time that the student is supposed to dedicate to *Econometrics II*. In order to succeed in this course, students should anticipate spending additional hours of The proposed teaching methodology may undergo some modifications according to the restrictions imposed by the health authorities on on-campus courses.independent work in problem solving and studying.

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Important:

-To successfully pass this course, class attendance is 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			
Laboratory Sessions	13	0.52	2, 8, 5, 6, 7, 11, 9, 10
Lectures	33	1.32	2, 8, 5, 7, 9
Type: Supervised			
Problem solving in tutorials	3.5	0.14	2, 8, 5, 4, 6, 7, 11, 9, 10
Type: Autonomous			
Studying and problem solving	93	3.72	2, 1, 4, 8, 5, 6, 7, 11, 9, 10, 3

Assessment

1. Midterm exam covering Unit 1 and 2

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 30% 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 50% of the overall course grade.

3. Submission of exercises

Occasionally, each student will be asked to submit some exercises. The instructor might ask students to solve these exercises during class, during an evaluation session or in the way he sees fit. Grades will be given on a scale of 0 to 10. Exercise solving will represent 20% 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=0.2*EXERCISES + 0.3* MIDTERM + 0.5*FINAL

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

c. All students must take exams and turn in assignments on their specified dates. No exceptions possible.

d. If a student has not participated in any of the evaluations activities(midterm exam, final exam, submission exercises) recive a grade of "No avaluable"

Calendar of evaluation activities

The dates of the evaluation activities (midterm exams, exercises in the classroom, assignments, ...) will be announced well in advance during the semester.

The date of the final exam is scheduled in the assessment calendar of the Faculty.

"The dates of evaluation activities cannot be modified, unless there is an exceptional and duly justified reason why an evaluation activity cannot be carried out. In this case, the degree coordinator will contact both the teaching staff and the affected student, and a new date will be scheduled within the same academic period to make up for the missed evaluation activity." ***Section 1 of Article 115. Calendar of evaluation activities (Academic Regulations UAB)***. Students of the Faculty of Economics and Business, who in accordance with the previous paragraph need to change an evaluation activity date must process the request by filling out an Application for exams' reschedule
https://eformularis.uab.cat/group/deganat_feie/application-for-exams-reschedule

Grade revision process

After all grading activities have ended, students will be informed of the date and way in which the course grades will be published. Students will be also be informed of the procedure, place, date and time of grade revision following University regulations.

Retake Process

"To be eligible to participate in the retake process,itis required for students to have been previously been evaluated for at least two thirds of the total evaluation activities of the subject." Section 3 of Article 112 ter. The recovery (UAB Academic Regulations). Additionally, it is required that the student to have achieved an average grade of the subject between 3.5 and 4.9.

The date of the retake exam will be posted in the calendar of evaluation activities of the Faculty. Students who take this exam and pass, will get a grade of 5 for the subject. If the student does not pass the retake, the grade will remain unchanged, and hence, student will fail the course.

Irregularities in evaluation activities

In spite of other disciplinary measures deemed appropriate, and in accordance with current academic regulations, *"in the case that the student makes any irregularity that could lead to a significant variation in the grade of an evaluation activity, it will be graded with a 0, regardless of the disciplinary process that can be instructed. In case of various irregularities occur in the evaluation of the same subject, the final grade of this subject will be 0"*. ***Section 10 of Article 116. Results of the evaluation. (UAB Academic Regulations).***

The proposed evaluation activities may undergo some changes according to the restrictions imposed by the health authorities on on-campus courses.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final Exam	50%	2	0.08	2, 1, 4, 8, 5, 6, 7, 3
Midterm exam	30%	1.5	0.06	2, 1, 4, 8, 5, 6, 7, 3
Submission of exercises	20%	4	0.16	2, 1, 4, 8, 5, 6, 7, 11, 9, 10, 3

Bibliography

Recommended book:

Stock J.H. & Watson M.W., *Introduction to Econometrics*. 3 edition , In Spanish: I*ntroducción a la Econometría*, Pearson Education. 3 edición

Other books:

Wooldridge, J. M., *Introductory Econometrics: A Modern Approach*. In Spanish: I*ntroducción a la Econometría*, Cengage Learning.

Gujarati, D., *Basic Econometrics*. 5 ed, 2010. McGraw-Hill. Latest version in Spanish: *Econometria*. Quarta edició. 2004.

Maddala, G.S., *Introduction to Econometrics*. 4ed, 2009. Wiley. Latest version in Spanish: *Introducción a la econometría*, 2ed, 1996. Prentice Hall

Verbeek, M. *A Guide to Modern Econometrics*. 3ed, 2008. Wiley.