Subject identification

Subject	21205 - Econometrics
Credits	2.4 in-class (60 hours) 3.6 distance (90 hours) 6 totals (150 hours).
Group	Group 60, 1S, GADE(Campus Extens)
Teaching period	1st semester
Teaching language	English

Lecturers

Lecturers	Timetable for student attention					
	Starting time	Finishing time	Day	Start date	Finish date	Office
Helena Isabel Ferreira Marques helena.ferreira-marques@uib.es	11:30h	12:30h	Tuesday	24/09/2012	25/01/2013	DB255

Degrees where the subject is taught

Degree	Character	Academic year	Studies
Degree in Business Administration	Compulsory	Second course	Degreee

Contextualisation

This subject presents in greater detail some contents already studied in "Analysis of Economic Data", in particular the principles of statistical inference, the concepts of estimator and confidence interval, as well as hypothesis testing. In order to be able to grasp the contents of "Econometrics" more easily, students are strongly advised to review those contents of "Analysis of Economic Data" as soon as the academic year starts.

The main objective of the subject is the detailed study of some econometric techniques commonly used in applied research in the context of Economics and Business. The first part of the course starts with the study of the simple linear regression model and its generalization to multiple regression, considering the relevant methods of hypothesis testing. The second part of the course is centered on the issue of specification of the regression model, in particular specification errors and sample issues, as well as the use of qualitative explanatory variables (known as "dummies"). Finally, the third part of the course studies the failure of the basic hypotheses placed on the error term, with special attention to heteroscedasticity and autocorrelation.

Requirements

A good knowledge of the contents of "Analysis of Economic Data" will facilitate the understanding of the contents of this subject.

In particular, it is highly recommended that students revise the principles of statistical inference, the concepts of estimator and confidence interval, as well as hypothesis testing, as soon as the academic year starts.

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In addition, good knowledge of English is essential.

Skills

The main objective of the subject is the understanding of some econometric techniques commonly used in applied research in the Economics and Business context. It will provide basic training in handling econometric techniques as tools of analysis of economic and business data, using the theoretical frameworks taught in various Economics and Business courses, and in interpreting and explaining the results obtained in the light of those theories. The methods and techniques explained in the "Econometrics" subject are transferable to most Economics and Business datasets that students may come across in their future professional careers.

Specific

1. CE2.1.7 A partir de datos de interés económico-empresarial, ser capaz de aplicar las herramientas estadísticas y econométricas adecuadas para el análisis de la empresa y su entorno.
2. CE2.3.7 Conocer las fuentes de datos estadísticos y económicos relevantes así como las herramientas de análisis adecuadas para preparar la toma de decisiones en empresas y organizaciones, especialmente en los niveles operativo y táctico.
3. CE2.4 Defender las soluciones propuestas de una manera articulada a partir de los conocimientos teóricos y técnicos adquiridos.

Generic

1. CG3 Capacidad para comunicarse en inglés.
2. CG4 Capacidad para usar habitualmente una variada gama de instrumentos de tecnología de la información y las comunicaciones.
3. CG5 (CB3) Tener la capacidad de reunir e interpretar datos relevantes para emitir juicios que incluyan una reflexión sobre temas relevantes de índole social, científica o ética.

Content

Theme content

Topic 1. Statistical inference
1. Basic concepts
2. Parameter estimation
3. Hypothesis testing

Topic 2. The simple linear regression model
1. Specification of the simple linear regression model
2. Statistical hypotheses on the classical regression model
3. Estimation by Ordinary Least Squares (OLS)
4. Model testing, validation and selection
5. Prediction

Topic 3. The multiple linear regression model
1. Specification of the multiple linear regression model
2. Statistical hypotheses on the classical regression model

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3. Estimation by Ordinary Least Squares (OLS)
4. Model testing, validation and selection
5. Prediction

Topic 4. Qualitative explanatory variables (dummies)
1. Specification with dummies
2. The various dummy groups and interactions
3. OLS estimation with dummies
4. Dummies and seasonality

Topic 5. Specification errors and sample issues
1. Structural break testing (Chow test)
2. Omission of relevant variables
3. Inclusion of irrelevant variables
4. Outliers
5. Multicolinearity

Topic 6. Failure of the basic hypotheses on the error term
1. Jarque-Bera's normality test
2. Non-spheric perturbations
3. Consequences of OLS estimation
4. The generalized linear regression model
5. Generalized Least Squares (GLS) estimation and Weighted Least Squares (WLS) estimation

Topic 7. Heteroscedasticity
1. Definition and causes of heteroscedasticity
2. Testing for heteroscedasticity
3. Estimation with heteroscedasticity

Topic 8. Autocorrelation
1. Definition and causes of autocorrelation
2. Testing for autocorrelation
3. Estimation with autocorrelation

Teaching methodology

In-class work activities

Modality	Name	Typ.Gr.	Description
Theory classes	Lectures	Large group (G)	Lectures allow a detailed exposition of the most important aspects of each topic, especially the new concepts. They also allow a special focus on the most difficult issues, where students need more learning support. Finally, they also facilitate the understanding of the context in which each topic is placed, including the relationships between the different topics. Lectures will take up an average of 40 hours per student.
Practical classes	Computer sessions	Medium group (M)	At the end of each topic there will be computer sessions to deepen the understanding of the theory and to alllow the student to apply the theoretical concepts to real world data. An econometric macro for Excel will be used to this end. Of course, the tasks can also be carried out in a variety of statistical packages, but the objective is to familiarize the student

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Modality	Name	Typ.Gr.	Description
			with a tool that is available in most workplaces. Computer sessions will take up an average of 16 hours per student.
Assessment	Final exam	Large group (G)	There will be a final exam in the examination periods defined by the University to assess the understanding of the whole course. The length of the final exam will be at most 2.5 hours.
Assessment	Mid-term exam	Large group (G)	There will be a mid-term exam to assess the understanding of the contents taught until it takes place. The length of the mid-term exam will be at most 1.5 hours.

Distance education work activities

Modality	Name	Description
Group self-study	Self-study	Students should study the lecture material before each lecture and also review the lecture content after each lecture in order to ensure that they have grasped the basics of the subject. Similarly, to deepen the understanding of lecture contents and place them in context it is important to study the bibliography of the course.
Group or individual self-study	Computer-based assignment	Students will receive a dataset accompanied by a question sheet. Their task is to use the econometric macro for Excel to apply the econometric techniques studied in the lectures and computer sessions and present a final report of interpretations and conclusions, along with the results obtained in computer printouts. It is important not just to generate results, but above all to interpret them and draw conclusions from them. The report may be handed in individually or in group, although the maximum number of students in each group is three. By handing in a joint report, students recognize that they will be given a common mark for their work.

Riscs especifics i mesures de protecció

Les activitats d'aprenentatge d'aquesta assignatura no comporten riscs específics per a la seguretat i salut de l'alumnat i, per tant, no cal adoptar mesures de protecció especials.

Workload estimate

Modality	Name	Hours	ECTS	%
In-class work activities		**60**	**2.4**	**40**
Theory classes	Lectures	40	1.6	26.67
Practical classes	Computer sessions	16	0.64	10.67
Assessment	Final exam	2.5	0.1	1.67
Assessment	Mid-term exam	1.5	0.06	1
Distance education work activities		**90**	**3.6**	**60**
	Total	**150**	**6**	**100**

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Modality	Name	Hours	ECTS	%
Group self-study	Self-study	50	2	33.33
Group or individual self-study	Computer-based assignment	40	1.6	26.67
	Total	**150**	**6**	**100**

At the beginning of the semester a schedule of the subject will be made available to students through the UIBdigital platform. The schedule shall at least include the dates when the continuing assessment tests will be conducted and the hand-in dates for the assignments. In addition, the lecturer shall inform students as to whether the subject work plan will be carried out through the schedule or through another way included in the Campus Extens platform.

Student learning assessment

Assessment will be composed of a final exam and two different forms of in-term assessment:

1) The final exam is a written exam taking place in the normal assessment periods defined by the University.

2) During term time there will be computer sessions covering various topics. During the last week of lectures before holidays (in December), a question sheet will be uploaded into Campus Extens together with a dataset. The assignment should be handed in by uploading it also into Campus Extens by the last day of lectures before the exams (in January). This can be done individually or in groups of at most three elements. In the second case, all group members will receive the same mark. Assignments will consist on the application of various econometric techniques to the datasets provided by the lecturers, using an econometric macro for Excel.

3) The second piece of in-term assessment will be an exam with the same format as the final exam but including only the topics studied until it takes place (last week of lectures before the December holidays.

Each piece of assessment will be marked on a 0-10 scale. The final mark will be a weighted average of the marks obtained in the different components.

A student will pass the course with a minimum final mark of 5, independently of the mark obtained in each individual piece of assessment.

Students who do not pass the course at first attempt will keep their computer assignments mark and their mid-term exam mark if they go for a second attempt. That is, the final exam taken at second attempt will be worth only 50% of the final mark.

Students will be considered as absent from examination if the number of in-term assessment activities handed in corresponds to a percentage equal to or less than 35% of the final mark. The justifications accepted by UIB for not participating in assessment activities are the death of a first line direct relative of the student's (for example, father or mother), hospitalization of the student, or participation of the student in a court jury. If one of these situations is proven by a certified document, the student is given an extension of the deadline to hand in those assessment activities that could not be handed in because of that situation.

Final exam

Modality	Assessment
Technique	Extended-response, discursive examinations **(Recoverable)**
Description	There will be a final exam in the examination periods defined by the University to assess the understanding of the whole course. The length of the final exam will be at most 2.5 hours.
Assessment criteria	Set according to the competences described.

Percentage of final qualification: 50% following path A

Mid-term exam

Modality	Assessment
Technique	Extended-response, discursive examinations **(Non-recoverable)**
Description	There will be a mid-term exam to assess the understanding of the contents taught until it takes place. The length of the mid-term exam will be at most 1.5 hours.
Assessment criteria	Set according to the competences described.

Percentage of final qualification: 35% following path A

Computer-based assignment

Modality	Group or individual self-study
Technique	Papers and projects **(Non-recoverable)**
Description	Students will receive a dataset accompanied by a question sheet. Their task is to use the econometric macro for Excel to apply the econometric techniques studied in the lectures and computer sessions and present a final report of interpretations and conclusions, along with the results obtained in computer printouts. It is important not just to generate results, but above all to interpret them and draw conclusions from them. The report may be handed in individually or in group, although the maximum number of students in each group is three. By handing in a joint report, students recognize that they will be given a common mark for their work.
Assessment criteria	Set according to the competences described.

Percentage of final qualification: 15% following path A

Resources, bibliography and additional documentation

Basic bibliography

ARCARONS, J. and CALONGE, S. (2008), "Microeconometría: introducción y aplicaciones con software econométrico para Excel", Delta Publicaciones.
HILL, R. C., GRIFFITHS, W.E. and LIM, G. C. (2012), "Principles of Econometrics", Wiley, 4th edition.
NOVALES, A. (1996), "Estadística y Econometría", McGraw-Hill.
WOOLDRIDGE, J. M. (2006), "Introductory Econometrics: a modern approach", South-Western, 2nd edition.

Complementary bibliography

ASHENFELTER, O., LEVINE, P. B. and ZIMMERMAN, D. J. (2006),"Statistics and Econometrics: methods and applications", Wiley.
GREENE, W. H. (2007), "Econometric analysis", Addison-Wesley / Prentice Hall, 6th edition.

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GUJARATI, D. (2009), "Econometrics", 5th edition, McGraw-Hill.
KENNEDY, P. (2003), "A Guide to Econometrics",MIT Press.
MADDALA, G. S. (1992), "Introduction to econometrics", Prentice Hall, 2nd edition.
NEWBOLD P.,CARLSON, W. andTHORNE, B.(2009), "Statistics for business and economics", Addison-Wesley / Prentice Hall, 7th edition.

Other resources

Date of publication: 04/07/2012