



Academic year	2017-18
Subject	20623 - Macroeconometrics
Group	Group 40, 1S, GECO
Syllabus	B
Language	English

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Subject

Name	20623 - Macroeconometrics
Credits	1.8 in-class (45 hours) 4.2 distance (105 hours) 6 total (150 hours).
Group	Group 40, 1S, GECO (Campus Extens)
Period	First semester
Language	English

Lecturers

Lecturers	Office hours for students					
	Starting time	Finishing time	Day	Start date	End date	Office
Tomás Del Barrio Castro tomas.barrio@uib.es	10:00	12:00	Monday	11/09/2017	30/06/2018	DB226

Context

Macroeconometrics is a compulsory subject within the basic training module on Quantitative Economic Methods. The course is organized in six subjects, organized in two parts. The first part is devoted to the three following topics, time-series models, dynamic models and VAR models. The second part is also devoted to three topics, in particular deterministic and stochastic trends, unit root and stationarity and spurious and cointegration relationships. The course is particularly useful to introduce students to some of the tools used in empirical macroeconomic research when time series data it is used.

In the context of quantitative economic methods, the Macroeconometrics course extend the basic econometric and statistical training that has been provided in the Data Analysis courses and Introduction to Econometrics, with special focus to time series data. Specifically, the course introduces the student to econometric tools to analyze the aggregate time series economic data. To this end, the course combines Time Series econometric techniques and macro topics such as hysteresis, purchasing power parity... Where the techniques discussed in this course are used.

Requirements

Recommended

In order to properly follow the contents of Macroeconometrics, we recommended to previously take the subjects Economics Data Analysis (Análisis de datos económicos) and Introductory Econometrics.

Skills

After following this course, students should acquire a basic knowledge of the econometric tools for the treatment of time series data and their applications to Macro data. All the topics of the course will be also



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analyzed from an applied approach. Hence students should be familiar with the main econometric techniques in this field, and all the topics will be illustrated with empirical applications to real economic indicators such as IPI, GDP, consumption,... from different countries.

The student will learn how to use econometrics time series tools for macro data, in order to solve real problems they may face in their professional future. Specifically, the student will acquire the basic theoretical knowledge about different techniques, to determine their applicability if each situation and finally to be able to analyze the results of its application.

Specific

- * CE3 To contribute with rationality to the analysis and the description of any aspect of the economic reality..
- * CE1 and CE2 Contribute to the good administration and allocation of resources (in both private and public environments). To identify and anticipate relevant economic problems regarding the general resource allocation..

Generic

- * CG3 To apply to the analysis of the problems professional criteria based on the handling of technical instruments..
- * CG5. Analyzing problems with critical reasoning, without prejudices, with accuracy and rigor..
- * CG7 Capacity of synthesis..

Basic

- * You may consult the basic competencies students will have to achieve by the end of the degree at the following address: <http://www.uib.eu/study/grau/Basic-Competences-In-Bachelors-Degree-Studies/>

Content

Part 1. Time series models (3 items)

In this first part, students will deepen in the treatment of economic time series. Specifically the treatment univariate time series from a stochastic point of view, dynamic models tipology, how to properly compute multipliers and estimate dynamic models and finally VAR models and Granger causality.

Part 2: Non-stationarity and cointegration (3 items)

In the second part the student is introduced to aspects of non-stationarity, deterministic and/or stochastic trends, unit root and cointegration tests and also spurious regressions.

Theme content

Item 1. Univariate Time Series Models

- .1 Stochastic process, and stationary time series.
- 1.2 Autocovariance function, Autocorrelation function and Partial Autocorrelation function.
- 1.3 White Noise and Random Walk processes.
- 1.4 linear processes, MA, AR and ARMA
- 1.5 ARIMA Processes
- 1.6 Box-Jenkins methodology.
- 1.7 Forecasting

Item 2. Dynamic Models

- 2.1 Causes leading to dynamic models.
- 2.2 Distributed lags Models.
- 2.3 Autoregressive Models.

- 2.4 AD Models.
- 2.5 ARMAX Models.
- 2.6 Multipliers and Structural Analysis.
- 2.7 Estimation of dynamic models. Mann-Wald theorem. Instrumental variables.
- 2.8 Economic assumptions that result in dynamic models.

item 3. VAR models

- 3.1 Relationship with Simultaneous Equation Models, reduced and structural form.
- 3.2 Specification and Representation.
- 3.3 Estimation and determination of the order.
- 3.4 Representation VMA and transmitting shocks.
- 3.5 Granger Causality.

Item 4. Deterministic and stochastic trends.

- 4.1 Deterministic Trend.
- 4.2 Stochastic Trend.
- 4.3 Temporary and Permanent Memory.
- 4.4 Trend Stationary and Difference Stationary.

Item 5. Unit Root Tests.

- 5.1 unit root.
 - 5.1.1 ADF.
 - 5.1.2 PP.
 - 5.1.3 MSB.
 - 5.1.4 GLS-ADF
- 5.2 Stationarity tests KPSS.

Item 6. Cointegration and spurious regressions

- 6.1 Spurious Regressions.
- 6.2 Cointegration and Commons Trends, Granger Representation Theorem.
- 6.3 Johansen Procedure.

Teaching methodology

Besides theoretical foundation models and techniques discussed during the course, students will be introduced with empirical applications in the use of specific econometric packages.

In-class work activities

Modality	Name	Typ. Grp.	Description	Hours
Theory classes	Lectures	Large group (G)	The lectures give a detailed exhibition of the most important in each subject, including new concepts and examples of calculations. The lectures have a function to teach the most relevant of each section, but also to allow a special approach in more complex topics, where the student in general needs more support in the learning process. Another important function of the lectures is to facilitate the students to see the context of each subject and be able to see relations between the different parts from the course.	20

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Modality	Name	Typ. Grp.	Description	Hours
Practical classes	Presential practices	Large group (G)	When finalizing a theoretical subject the student will make exercises and practices to assimilate and to apply the theory reviewed in class. The practical sessions also include introduction of the use of statistical packages in the computer sessions. In the computer sessions the students will work with real macroeconomic time series data and also use Monte-Carlo experiment to illustrated the contents of the lectures.	20
Assessment	Final exam	Large group (G)	Assess the students' knowledge and capabilities.	2
Assessment	MidTerm Exam (1/2)	Large group (G)	Assess the students' knowledge and capabilities related with the first two sections.	1.5
Assessment	Midterm Exam (2/2)	Large group (G)	Assess the students' knowledge and capabilities related with the sections not considered in the first midterm exam.	1.5

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.

Distance education work activities

Modality	Name	Description	Hours
Group or individual self-study		Study and assimilation of the concepts of the lectures.	55
Group or individual self-study		Solving exercises.	50

Specific risks and protective measures

The learning activities of this course do not entail specific health or safety risks for the students and therefore no special protective measures are needed.

Student learning assessment

Final exam

Modality	Assessment
Technique	Objective tests (retrievable)
Description	Assess the students' knowledge and capabilities.
Assessment criteria	The exam will consist in exercises related with the concepts, techniques and models of the subject.

Final grade percentage: 50%



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MidTerm Exam (1/2)

Modality	Assessment
Technique	Objective tests (non-retrievable)
Description	Assess the students' knowledge and capabilities related with the first two sections.
Assessment criteria	The exam will consist in exercises related with the concepts, techniques and models of the subject.

Final grade percentage: 25%

Midterm Exam (2/2)

Modality	Assessment
Technique	Objective tests (non-retrievable)
Description	Assess the students' knowledge and capabilities related with the sections not considered in the first midterm exam.
Assessment criteria	The exam will consist in exercises related with the concepts, techniques and models of the subject.

Final grade percentage: 25%

Resources, bibliography and additional documentation

Apart from the books in the reference list, additional materials will be available throughout the course. In particular the slides files used in the sessions, complementary exercises, data and code files for the computer sessions etc...

Basic bibliography

Johnston, J and Dinardo, J. (1997): *Econometric Methods*. McGraw-Hill.
Lütkepohl E. and Krätzig N. (eds) (2004) *Applied Time Series Econometrics*. Cambridge University Press
Hamilton J.D. (1994) *Time Series Analysis*. Princeton University Press
Peña D., Tiao, C.G. and Tsay R.S. (2001) *A Course in Time Series Analysis*, John Wiley

Complementary bibliography

Davidson J. (2000) *Econometric Theory*. Blackwell Publishers.
Hendry D.F. (1995) *Dynamic Econometrics*. Oxford University Press.

