Universidad Zaragoza

Academic Year/course: 2024/25

27454 - Forecasting Techniques

Syllabus Information

Academic year: 2024/25
Subject: 27454 - Forecasting Techniques
Faculty / School: 109 - Facultad de Economía y Empresa
Degree: 417 - Degree in Economics
ECTS: 3.0
Year: 4
Semester: Second semester
Subject type: Optional
Module:

1. General information

The main objective of this subject is that the student learns the different econometric techniques to obtain forecasts and business cycle analysis. The approach of the subject is essentially practical. It is intended that the student acquires the development capacity for the analysis of the economic situation, through the study of parametric forecasting techniques with seasonal component and non-parametric methods.

These approaches and objectives are aligned with the Sustainable Development Goals (SDGs) of the 2030 Agenda of the United Nations (https://www.un.org/sustainabledevelopment/es/), specifically, the activities planned in the subject will contribute to the achievement of goals 4 (Quality Education), 5 (Gender Equality) and 8 (Decent Work and Economic Growth).

2. Learning results

The student will acquire knowledge and practice to develop and estimate regular and seasonal univariate ARIMA models of time series to obtain short-term forecasts, also with non-parametric techniques. It is also intended to learn how to build multivariate models, estimate them and check them in order to obtain predictions with the appropriate model.

The student understands, through the econometrics subjects, the connection between theory and empirical reality. Part of that reality is to try to approximate what may happen in the future. This is precisely the objective of the subject Prediction Techniques, since it provides the student with the necessary tools for decision making.

3. Syllabus

Topic 1. Introduction

- Introduction.
- Fundamentals of prediction.
- Types of predictions
- Assessment of the prediction.

Topic 2. Non-parametric prediction methods

- Introduction
- Basic components, types of series and methods.
- Contrasts of trend and seasonality.
- Moving averages and smoothing.
- Filters: Hodrick-Prescott.

Topic 3: Parametric methods: Seasonal ARIMA

- Basic concepts
- Regular and seasonal differences
- Pure seasonal methods
- Multiplicative seasonal methods

Topic 4: Prediction and regression with autocorrelation problems

- Concept and causes
- Detection methods
- Estimation of autocorrelated models.

4. Academic activities

Master classes: 15 hours

Practical classes: 15 hours

Personal Study: 30 hours

Teaching assignments and evaluation: 15h

3 ECTS = 75 hours

In principle, the teaching methodology and its evaluation is planned to be based on face-to-face classes . However, if circumstances so require, they may be carried out online.

5. Assessment system

Continuous evaluation: Students can choose to take the exam in the two possible exam calls In the first call, students have two evaluation options: continuous evaluation or global exam of the subject. In the continuous evaluation option, the practical work is the fundamental axis of the subject and is based on the work done by each student during the term. For this purpose, attendance to theoretical classes and practical classes is recommended, and the final grade is based on the written presentation of a paper covering the block of univariate analysis. Specifically, a series chosen by each student will be worked on in which the implementation of parametric and non-parametric instruments will be demonstrated.

Global Assessment

Students who do not opt for continuous assessment or who do not pass the subject by this procedure or who wish to improve their grade, will have the right to sit the overall test, with the best of the grades obtained prevailing. This global test consists of a final exam with several theoretical and theoretical-practical questions on the theoretical contents of the subject and a computer exam on a practical exercise that each student will have to solve with the help of the econometric software Gretl

Assessment Criteria:

It is foreseen that these tests will be carried out in person, but if health circumstances require it, they will be carried out in a semi face-to-face mode or online

6. Sustainable Development Goals

4 - Quality Education
5 - Gender Equality
8 - Decent Work and Economic Growth