UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Serie Storie Economiche

2526-1-F8206B001-F8206B001-1

Learning objectives

The course aims at providing the knowledge needed to analyse economic time series, both univariate and multivariate. This course provides a comprehensive understanding of non-stationary univariate time series and vector autoregressive processes, focusing attention on their use for forecasting and dynamic analysis. It also describes how to test the cointegration relationships between economic variables and to analyse deviations from a long-run equilibrium. By the end of the course, students are expected to acquire:

- the knowledge of advanced statistical methods to analyse time series;
- the ability to analyse univariate and multivariate time series describing economic variables;
- the ability to interpret the results obtained from time series analysis.

Contents

Contents:

- non-stationary univariate time series;
- unit root tests;
- stationary multivariate time series;
- vector autoregressive models (VAR);
- cointegration;
- error correction mechanism (ECM);
- Johansen's procedure;
- cointegration tests.

Detailed program

Detailed program:

- non-stationary economic time series;
- trend-stationary and unit root processes;
- unit root tests;
- vector autoregressive processes (VAR);
- conditions for stationary VAR processes;
- estimation of VAR models;
- use of VAR models: forecasting, the Granger causality test, the impulse-response function;
- spurious regression;
- cointegration;
- error correction mechanism (ECM);
- Granger’s representation theorem;
- Johansen’s procedure;
- cointegration tests.

Prerequisites

A solid knowledge of time series analysis and the statistical software R is recommended.

Teaching methods

The course is held according to the following partition: 30 hours of frontal lessons held in presence; 12 hours of remote learning held with synchronous lessons.

Assessment methods

A written exam which consists of open theoretical questions, exercises and the interpretation of an output provided by the software used in the lab. The open questions and exercises aim at assessing student's ability to present and to apply the concepts and methods described in the course. The analysis of the output assesses student's ability to correctly interpret the results of the software.

Assessment criteria.
The exam score is on a 30-point scale.

Textbooks and Reading Materials

Zavanella, B. (2004) Modelli per le serie storiche non stazionarie e multivariate. Editore: CUSL.

Semester

The course will be held in the first period of the second semester.

Teaching language

Italian

Sustainable Development Goals

QUALITY EDUCATION