SYLLABUS DEL CORSO

Analisi delle Serie Economiche Temporali e Longitudinali M

2122-1-F8204B001

Learning objectives

This course (12 CFU) aims at providing students with advanced instruments, both theoretical and empirical, to estimate **microeconometric** and **time series** models. In particular: i) models for panel data (static and dynamic); ii) models for qualitative response variables; iii) models for limited dependent (i.e. censored and truncated) variables; iv) models for count data and duration models; v) ARMA and ARIMA models; vi) stationary vector models (VARMA); vi) non-stationary and cointegrated models (VECM); vii) state space models and the Kalman filter.

At the end of the course, students will be able to apply the techniques illustrated during lectures and classes to real situations, since they have developed adequate critical skills to choose the appropriate instruments of investigation an to interpret the empirical findings.

Contents

Part on "Microeconometrics"

- Introduction, motivation and definitions
- Models for pooled time series
- Models for longitudinal data
- Panel data and two-way models
- Dynamic panel data models

- Models for qualitative dependent variables: binary choices
- Models for qualitative dependent variables: multiple choices
- Models for limited dependent variables: censoring and truncation
- Count data models
- Duration models

Part on "Economic time series"

- Revision of ARMA and ARIMA models
- Non-stationarity in univariate time series
- Stationarity tests
- Stationary vector models (VARMA)
- Cointegration in VAR models
- State space models and the Kalman filter

Detailed program

Part on "Microeconometrics"

- Summary of introdutory estimation techniques (OLS, GLS, IV)
- Cross-sectional heteroskedasticity and autocorrelation
- Fixed effetcs (OLS estimator with dummy variables, within transformation)
- Random effects, uncorrelated with the regressors (GLS estimator, between transformation)
- Random effects, correlated with some regressors (IV estimator)
- Two-way panel data models: fixed and random effects
- Dynamic panel data models: first differences, IV and GMM estimators
- Models for qualitative dependent variables: binary choices (Logit and Probit)
- Models for qualitative dependent variables: multiple choices (Multinomial and Conditional Logit, Nested Logit)

- Models for limited dependent variables: censoring and truncation (Tobit)
- Count data models (Poisson and Negative Binomial)
- Duration models

Part on "Economic time series"

- Revision of ARMA and ARIMA models
- Stationary dynamic models
- The non-stationarity problem
- Analysis of non-stationary variables
- Short-run and long-run fluctuations
- Stochastic and deterministic trends
- Stationary and non-stationary tests
- Integrated linear processes
- The logics of vector autoregressive models (VAR)

- Stationary vector models (VARMA)
- Cointegrated models
- Error Correction Mechanism
- Granger's representation theorem
- The Johansen's procedure
- Cointegration tests
- Latent variables models: Kalman filter and Hamilton filter
- Structural models and VAR models

Prerequisites

None. Nevertheless, introductory notions of econometrics, micro economics and macroeconomics are taken for granted.

Teaching methods

Front-lectures (both in standard lecture rooms and in computer labs).

Assessment methods

The final exam consists of a written part and an oral part (interpretation of empirical results obtained from econometric and statistical models).

Textbooks and Reading Materials

Part on "Microeconometrics"

- W. Greene, Econometric Analysis, Prentice Hall International, 4th edition, 2002
- G.S. Maddala, Limited-Dependent and Qualitative Variables in Econometrics, Cambridge University Press, 1983
- M. Manera, M. Galeotti, Microeconometria, Metodi e Applicazioni, Carocci, 2005
- J.M. Wooldridge, Econometric Analysis of Cross Sections and Panel Data, The MIT Press, 2002

Part on "Economic time series"

- J.D. Hamilton, Econometria delle Serie Storiche, Monduzzi, Bologna, 1995
- A.C. Harvey, Time Series Models, 2nd ed., Harvester Wheatsheaf, New York, 1993
- H. Lutkepohl, Introduction to Multiple Time Series Analysis, Springer Verlag, New York, 1991
- Instructor's lecture notes published online.

Semester

Second semester.

Teaching language

Italian.