Prerequisites to Enroll

The participants of this course should be familiar with basic concepts of statistics and econometrics that are usually covered in an undergraduate degree in economics. They should also have followed the course Econometric Methods I in the first term of the year.

Overview and Objectives

This course builds on and further extends the econometric and statistical content studied in the first term, with a special focus on techniques relevant to the specific field studied and their empirical applications. The course deals with the econometric issues related to the use of micro data (individual, household or firm data) in empirical analysis. We will discuss the most important microeconometric methods and their applicability in contexts typically encountered by empirical researchers. The course combines both theoretical and empirical aspects. The theoretical part of the course will be complemented with practical exercises to be solved by the students using real data sets and Stata.

Course Outline

Part I: Alessandro Tarozzi


2. Estimation of Causal Effects, Randomized Controlled Trials and More (10 hours)
   a) Difference-in-Differences (DD)
   b) RCTs and causal estimation
   c) Heterogeneity in treatment effects
   d) Power calculations, standard errors and intra-cluster correlation
   e) Pitfalls of multiple equations testing in RCT (and elsewhere)
   f) Imperfect compliance, IV and the Local Average Treatment Effect
   g) Estimation of externalities

3. Weak Instruments (2 hours)

4. Non-parametric Estimation of Densities and Regressions (2 hours)
5. Regression Discontinuity Design (2 hours)

6. Selection on Observables and Matching (2 hours)

Part II: Albrecht Glitz

1. Panel Data Models (Albrecht Glitz, 10 hours)
   a. Basic linear models
   b. Random/fixed effects models
   c. Dynamic models
   d. GMM methods in panel data
   e. Applications

2. Discrete Choice Models (Albrecht Glitz, 4 hours)
   a. Binary choice models
   b. Multinomial choice models
   c. Ordered response models
   d. Applications

3. Tobit and Selection Models (Albrecht Glitz, 4 hours)
   a. Censoring and Truncation
   b. Tobit model
   c. Sample selection models
   d. Applications

4. Duration Models (Albrecht Glitz, 2 hours)
   a. Basic theory
   b. Parametric models with observed heterogeneity
   c. Models with unobserved heterogeneity
   d. Applications

Required Activities

The course will comprise 4 hours of lectures per week. In addition, the students will have to hand in weekly problem sets that are discussed in a weekly tutorial.
Quantitative and Statistical Methods II: Development

Evaluation
Exam (70%) and problem sets (30%).

Competences
☒ Capacity of utilization of the theoretical instruments of the to analyze situations of coherent form.
☒ Ability to use the appropriate (statistical and numerical) techniques.
☒ Ability to make independent judgments and defend them dialectically.
☒ Acquire a solid knowledge base for the study of quantitative issues.
☒ Ability to recognize and know how to use the principles of econometrics and statistics.
☒ Ability to work with microeconomic analysis tools and their empirical and theoretical applications.

Learning Outcomes
☒ Students should get an overview of economic and financial theory.
☒ Students must be able to recognize theories and present arguments with precise examples.
☒ Students will acquire the technical tools that will allow them to perform the advanced analytics required in the second module as econometric methods.
☒ Students will know what the appropriate inference for each situation is.
Materials

Panel Data Models


Models with Qualitative Variables & Tobit and Selection Models


Duration Models


Lancaster, T. (1990), The Econometric Analysis of Transition Data, Cambridge University Press. (The modern classic)


**Estimation and Inference with Complex Survey Design and non-iid Data**


**Randomized Experiments**


Pitfalls of Weak Instruments


Regression Discontinuity Designs


Selection on Observables


Nonparametric Estimation of densities and regressions