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Master in Economics and Finance

Applied Microeconometrics

Syllabus

Objectives

This course considers methods for empirical research with micro data covering a set of frontier techniques for policy evaluation and for documenting heterogeneity across individuals. The goal is to acquire theoretical and practical tools to conduct policy evaluation and, more broadly, conduct sound empirical research and economic policy advice. The course is divided into two parts. The first part, by **Manuel Bagues**, deals with topics in causal inference. The second part, by **Manuel Arellano**, focuses on the modelling of heterogeneity across households and firms. A more detailed course description for each part is available in the corresponding sections below.

Part I: Causal inference (Manuel Bagues)

Description

The primary goal of Part I is to introduce students to a set of methods that are used in a large literature on design-based causal inference in empirical microeconomics. We will discuss the necessary theory and illustrate it with empirical examples.

Outline

1. Reproducibility, false positives, multiple testing
2. Statistical power and post-study probability
3. Randomized experiments and matching
4. Instrumental variables
5. Regression discontinuity methods
6. Difference-in-differences (DiD)
7. Staggered DiD and synthetic controls

Readings

J. Angrist and J.-S. Pischke (2009): *Mostly Harmless Econometrics*, Princeton University Press.
G. Imbens and D. Rubin (2015): *Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction*, Cambridge University Press.
D. Arkhangelsky, S. Athey, D. Hirshberg, G. Imbens, S. Wager (2021): "Synthetic Difference In Differences," *American Economic Review*, 111, 4088-4118.
A. Gelman, D. Weakliem (2009): "Of beauty, sex, and power", *American Scientist*, 97, 310-316.
J. Roth, P. Sant'Anna, A. Bilinski, J. Poe (2022): "What's trending in difference-in-differences? A synthesis of the recent econometrics literature," *Journal of Econometrics*, 235, 2218-2244.

Part II: Measuring heterogeneity (Manuel Arellano)

Description

Part II will review methods in the econometrics of stratification and clustering, together with recent approaches to deal with unobserved heterogeneity in panel data sets, including random coefficient models, empirical Bayes methods, nonlinear models with latent variables, and the use of subjective expectations data to uncover unobserved heterogeneity.

Outline

1. Stratification, choice-based sampling
2. Clustering, finite-population inference
3. Covariance structures
4. Random coefficient models
5. Deconvolution, empirical Bayes
6. Nonlinear heterogeneity
7. Subjective expectations

Readings

M. Arellano and S. Bonhomme (2012): "Identifying distributional characteristics in random coefficients panel data models," *Review of Economic Studies*, 79, 987-1020.
M. Arellano, R. Blundell, and S. Bonhomme (2017): "Earnings and consumption dynamics: A nonlinear panel data framework," *Econometrica*, 85, 693-734.
A. Deaton (1997): *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*, Johns Hopkins Press.
C.F. Manski (2004): "Measuring expectations," *Econometrica*, 72, 1329–1376.
S. Schennach (2022): "Measurement systems," *Journal of Economic Literature*, 60, 1223-63.