COURSE: Panel Data

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COURSE DESCRIPTION

The aim of the course is to provide a detailed discussion of static and dynamic generalized linear models for longitudinal data, giving a particular emphasis on their practical applications. To this aim, several empirical session implemented in R will be discussed.

LEARNING OUTCOMES

- ✓ Understand static and dynamic panel data models;
- ✓ Ability to apply panel data models regardless the nature of the outcome variable;
- ✓ Ability to estimate causal effects in panel data settings.

METHODOLOGY

Theoretical lectures (18 hours) and practice classes (9 hours) using R.

ASSESSMENT

Written exam; weighting: 80%;
Project; weighting: 20%.

OUTLINE

- Static linear models:
  1. Main assumptions
  2. Pooled OLS, Fixed-effects and Random-effects estimation
  3. Hypothesis testing and comparison of estimators
- Dynamic linear models:
  1. Main assumptions
  2. GMM and system-GMM estimation
  3. Hypothesis testing
- Estimating causal effects:
  1. Difference-in-Differences estimation
  2. Matrix completion methods for causal panel data models
- Static and dynamic nonlinear models:
  1. Binary and multinomial outcomes
  2. Count outcomes
  3. Censored and truncated outcomes (*optional*)

TEXTBOOKS

Wooldridge J.M., (2010), Econometric Analysis of Cross-Section and Panel Data, 2nd ed., MIT Press, Cambridge (MA).

ADDITIONAL SUGGESTED READING

Arellano M., Bond S., (1991), Some tests of specification for panel data: Monte carlo evidence and an application to employment equations, *Review of Economic Studies*, 58:277-297.

Athey S., Bayati M., Doudchenko N., Imbens G., and Khosravi, K., (2018), Matrix Completion Methods for Causal Panel Data Models, *NBER Working Paper Series*, 25132, (downloadable at http://www.nber.org/papers/w25132).

Blundell R., Bond S., (1998), Initial conditions and moment restrictions in dynamic panel data models, *Journal of Econometrics*, 87:115-143.

Bond S., (2002), Dynamic panel data models: A guide to micro data methods and practice, *Portuguese Economic Journal*, 1(2):141-162

Roodman D.M., (2009). A note on the theme of too many instruments, *Oxford Bulletin of Economics and Statistics*, 71:135-158.

Roodman D.M., (2009), How to do xtabond2: An Introduction to Difference and System GMM in Stata, *The Stata Journal*, 9(1):86-136.

Wooldridge, J.M. (2005), Simple solutions to the initial conditions problem in dynamic, nonlinear panel data models with unobserved heterogeneity, *Journal of Applied Econometrics*, 20: 39-54.

Petersen K.B., and Pedersen M.S., (2012), The Matrix Cookbook, mimeo (downloadable at https://www.math.uwaterloo.ca/~hwolkowi/matrixcookbook.pdf).