PhD in Economics

Causal Inference: Theory and Applications
Fall 2024
Instructor: Giovanni Mastrobuoni

Contact Information

giovanni.mastrobuoni@carloalberto.org
Office Hours: by appointment

Course Description

This course covers the basics for conducting sound empirical work at the post-graduate level. It is particularly aimed at students and researchers who plan on doing applied work for their thesis. The identification issue of causal relationship when analyzing experimental and non-experimental data represents the unifying topic of the course. We will cover the most common approaches to identify causal relationships: **conditional independence** assumption, **matching, instrumental variables**, **random assignment**, **regression discontinuity, and synthetic control approach**. The course will also cover some elements of **machine learning** and **text analysis**. I will discuss graphical methods to present the main evidence and learning will be guided by empirical papers that have used these methods. The ideal experimental setting is often going to serve as a benchmark case. Empirical exercises using STATA with real data are going to be part of the module. Some tasks might involve replicating empirical results from published papers.

Textbooks:
- Angrist and Pischke (2009) Mostly Harmless Econometrics.
- Causal Inference: The Mixtape, Scott Cunnigham.
- Wooldridge (2002) Econometric Analysis of Cross Section and Panel Data.
- Cameron and Trivedi (2005), Microeconometrics

Other required and recommended readings (this list will be updated):

- Angrist and Krueger (1999). Empirical strategies in labor economics, The Handbook of labor

economics vol.III cap 23

- Angrist and Krueger (1991) Does Compulsory School Attendance Affect Schooling and Earnings? *Quarterly Journal of Economics*
- Oreopoulos (2006). "Estimating Average and Local Average Treatment Effects of Education when Compulsory Schooling Laws Really Matter." American Economic Review, 96(1): 152-175.
- Lochner and Moretti (2004) "The effect of education on crime: Evidence from prison inmates, arrests, and self-reports." American Economic Review. 94(1): 155-89.
- Ashenfelter and Krueger (1994) . Estimates of the Economic Return to Schooling from a New Sample of Twins. *American Economic Review*, 84, 1157-1173
- Pinotti, Bianchi and Buonanno (2012); Do Immigrants Cause Crime?, Journal of the European Economic Association
- Bruce Meyer (1995). Natural and Quasi-Experiments in Economics, *Journal of Business & Economic Statistics*
- LaLonde (1986). Evaluating the Econometric Evaluations of Training Programs Using Experimental Data, American Economic Review
- Angrist and Lavy (1999). Using Maimonides' Rule to Estimate the Effect of Class Size on Student Achievement, Quarterly Journal of Economics
- Moulton (1990), "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units," RESTAT 72
- ,Wooldridge (2006), "Cluster-Sample Methods in Applied Econometrics: An Extended Analysis", working paper (see his personal website).
- Deaton (1997) . The Analysis of Household Surveys, The Johns Hopkins University Press.
- Pinotti P. (2014) Clicking on Heaven's Door: The Effect of Immigrant Legalization on Crime
- Nunn and Qian (2014) N. U.S. Food Aid and Civil Conflict. American Economic Review; 104(6):1630-1666
- J. Angrist, E. Battistin and D. Vuri (2014), In a Small Moment: Class Size and Moral Hard in the Mezzogiorno," NBER Working Paper 20173.
- Abadie, Alberto, and Javier Gardeazabal (2003) "The economic costs of conflict: A case study of the Basque Country." American economic review: 113-132.
- Fabian Waldinger (2010). "Quality Matters: The Expulsion of Professors and the Consequences for PhD Student Outcomes in Nazi Germany," Journal of Political Economy, University of Chicago Press, vol. 118(4), pages 787-831, 08.
- Miguel and Kremer (2004) Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities, Econometrica
- Athey, Susan and Guido W. Imbens (2015) "Machine learning methods for estimating heterogeneous causal effects." Working Paper, Stanford University
- Varian, Hal R. (2014) "Big data: New tricks for econometrics." Journal of Economic Perspectives. 28(2): 3-28
- Mueller-Smith, Michael (2015) "The criminal and labor market impacts of incarceration." Working Paper, University of Michigan Department of Economics

Course materials
Course materials are made available online.

Assessment
Assessment is based on coursework, a midterm exam and final exam.