PHD in Public Policy – ECONOMETRICS FOR POLICY ANALYSIS

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Aim of the course: introducing the main tools used for data analysis and applied empirical research, focusing in particular on the estimation of causal relationships. The methods covered will allow students to address questions that are relevant from a social, economic, and political perspective. The course is inherently applied, the students will implement the methods during computer lab sessions. By the end of the course, students should be able to go through the multiple stages of empirical research: searching for interesting questions, devising an appropriate research design, collecting the data, and implementing the analysis.

Exam: written final exam (70%) and research project (30%). All the material relevant for the exam is covered in my slides, which will be posted on dropbox. The papers listed below do NOT constitute material for the exam and most of them are only suggestions for further reading. You are, however, strongly encouraged to read at least those marked with a * (you may skim through technical details), as the exam will consist in interpreting the results of empirical analyses similar to those presented therein – though not the same ones. As to the research project, separate instructions will be sent before the start of the course.

DETAILED SYLLABUS

Date	Topics	Readings
01/02/2021 15:00-16:30	**TA session 1. Stata recap**	
03/02/2021 10:20-11:50	**Overview of the course and introduction to causal analysis.** Potential outcomes, selection bias, the ideal experiment, randomization and non-compliance with random assignment	*Angrist & Pischke (2010), Burtless (1995), Pritchett (2019)
05/02/2021 15:00-16:30	**Experiments in Italian schools.** Educational segregation and discrimination of immigrants in Italian schools	*Carlana et al. (2020), Alesina et al. (2019)
08/02/2021 15:00-16:30	**TA session 2.** Introduction to machine learning methods for estimating heterogeneous treatment effects, prediction and causal forests.	Mullainathan & Spiess (2017), Davis & Heller (2017)
10/02/2021 10:20-11:50	**Natural experiments**	*Drago et al. (2009), Drago e Galbiati (2011), Cipollone and Rosolia (2007)

12/02/2021 15:00-16:30	**Instrumental variables.** Instrumental variables for history, recent critiques of empirical analyses of historical persistence	*Acemoglu et al. (2001), Kelly (2019), Voth (2020)
15/02/2021 15:00-16:30	**TA session 3.** Matching	Balbo & Arpino (2016)
17/02/2021 10:20-11:50	**Regression discontinuity designs.** Sharp and fuzzy designs, graphical analysis, parametric and non-parametric estimation, the bias-variance trade-off	*Lee & Lemieux (2010), Anelli (2020)
19/02/2021 15:00-16:30	**Regression discontinuity designs.** Additional examples	Carpenter & Dobkin (2009), *Pinotti (2017)
22/02/2021 15:00-16:30	**TA session 4.** Stata packages for RDD estimation	Meyersson (2014)
24/02/2021 10:20-11:50	**Regression discontinuity designs.** Extrapolation away from the cutoff	Angrist & Rokkanen (2015), Cattaneo et al. (2020)
26/02/2021 15:00-16:30	**Difference-in-Differences.** Parallel trends assumption, standard error issues	Donohue (2015), Dinas et al. (2019), *Marie and Zolitz (2017)
01/03/2021 15:00-16:30	**TA session 5.** RDD estimation away from the cutoff, introduction to the estimation of difference-in-differences designs	Cattaneo et al. (2020)
03/03/2021 10:20-11:50	**Difference-in-Differences.** Estimation of dynamic treatment effects, staggered treatments	Baker (2019), *Britto et al. (2020)
05/03/2021 15:00-16:30	**Synthetic control methods.** Relationship with difference-in-differences, testing through placebos	Abadie and Gardeazabal (2003), Abadie et al. (2010), *Pinotti (2015)
08/03/2021 15:00-16:30	**TA session 6.** estimation of difference-in-differences designs (continued) and synthetic control methods	Dinas et al. (2019)
TBD	**Students' presentation of research projects**	
TBD	**Students' presentation of research projects and final remarks**	Brodeur et al. (2016), Scheiber (2007)

Papers

Abadie, A., Diamond, A., & Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. *Journal of the American statistical Association*, *105*(490), 493-505.

Abadie, A., and Gardeazabal, J. (2003), The Economic Costs of Conflict: A Case Study of the Basque Country. *American Economic Review*, 93(1): 113-132

Acemoglu, D., Johnson, S., & Robinson, J. A. (2001). The colonial origins of comparative development: An empirical investigation. American economic review, 91(5), 1369-1401.

Alesina, A., Carlana, M., Ferrara, E. L., & Pinotti, P. (2018). Revealing stereotypes: Evidence from immigrants in schools. Working paper

Anelli, M. (2020). Returns to elite college education: a quasi-experimental analysis. *Journal of European Economic Association*, forthcoming

*Angrist, J. D., & Pischke, J. S. (2010). The credibility revolution in empirical economics: How better research design is taking the con out of econometrics. *Journal of economic perspectives*, 24(2), 3-30.

Balbo, N. & Arpino (2016), B. The role of family orientations in shaping the effect of fertility on subjective well-being: A propensity score matching approach. *Demography*. 53, 955-978

Baker, A. (2019). Difference-in-differences methodology, available at https://andrewcbaker.netlify.app/2019/09/25/difference-in-differences-methodology/

*Britto, D., Pinotti, P., & B. Sampaio (2020). The effects of job loss and unemployment insurance on crime in Brazil. Working paper

Brodeur, A., Lé, M., Sangnier, M., & Zylberberg, Y. (2016). Star wars: The empirics strike back. *American Economic Journal: Applied Economics*, 8(1), 1-32

Burtless, G. (1995). The case for randomized field trials in economic and policy research. *Journal of economic perspectives*, 9(2), 63-84.

*Carlana, M., La Ferrara, E. & P. Pinotti (2020). Goals and gaps: The Educational Careers of Immigrant Children, *Econometrica*, forthcoming

Carpenter, C., & Dobkin, C. (2009). The effect of alcohol consumption on mortality: regression discontinuity evidence from the minimum drinking age. *American Economic Journal: Applied Economics*, 1(1), 164-182

Cattaneo, M. D., Keele, L., Titiunik, R., & Vazquez-Bare, G. (2020). Extrapolating treatment effects in multi-cutoff regression discontinuity designs. *Journal of the American Statistical Association*, 1-12.

Cipollone, P., & Rosolia, A. (2007). Social interactions in high school: Lessons from an earthquake. *American Economic Review*, 97(3), 948-965.

Davis, J., & Heller, S. B. (2017). Using causal forests to predict treatment heterogeneity: An application to summer jobs. *American Economic Review Papers & Proceedings*, 107(5), 546-50.

Dinas, E., Matakos, K., Xefteris, D., & Hangartner, D. (2019). Waking up the golden dawn: does exposure to the refugee crisis increase support for extreme-right parties? *Political analysis*, 27(2), 244-254

Donohue III, J. J. (2015). Empirical evaluation of law: The dream and the nightmare. *American law and economics review*, 17(2), 313-360

*Drago, F., Galbiati, R. and Vertova, P. (2009) "The Deterrent Effects of Prison: Evidence from a Natural Experiment," *Journal of Political Economy*, vol. 117(2)

Drago, F., & Galbiati, R. (2012). Indirect effects of a policy altering criminal behavior: Evidence from the Italian prison experiment. *American Economic Journal: Applied Economics*, 4(2), 199-218.

Kelly, M. (2019). The standard errors of persistence. Working paper

*Lee, D. S., & Lemieux, T. (2010). Regression Discontinuity Designs in Economics. *Journal of Economic Literature*, 48, 281-355

*Marie, O., & Zölitz, U. (2017). "High" achievers? Cannabis access and academic performance. *The Review of Economic Studies*, 84(3), 1210-1237

Meyersson, E. (2014). Islamic Rule and the Empowerment of the Poor and the Pious. *Econometrica*, 82(1), 229-269

Mullainathan, S., & Spiess, J. (2017). Machine learning: an applied econometric approach. *Journal of Economic Perspectives*, 31(2), 87-106.

*Pinotti, P. (2015). The economic costs of organized crime: Evidence from Southern Italy. *Economic Journal*, 125(586), F203–F232

*Pinotti, P. (2017). Clicking on heaven's door: The effect of immigrant legalization on crime. *American Economic Review*, 107(1), 138-168

Pritchett, L. (2019). Randomizing Development: Method or Madness?

Scheiber, N. (2007). Freaks and Geeks; How Freakonomics is ruining the dismal science, article appear in the New Republic

Voth, H. J. (2020). Persistence: myth and mystery. Working paper