SYLLABUS: BAVARIAN GRADUATE PROGRAM IN ECONOMICS

Causal Effects in Applied Economics: March 13-18, 2022

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Goal: Familiarize participants with the theory and application of modern econometric evaluation techniques, including guided lab sessions (Stata). [I do not mind if you want to use R, but I will illustrate things in Stata.]
Applications shown in class will be mainly drawn from Economic History, Political Economy and Labour Economics. But the methods are useful across the full range of Economics sub-fields.

LECTURE NOTES will be provided

Background: I will assume a working knowledge of probability and statistics – including manipulations involving conditional expectations and the basic limit theorems, such as the law of large numbers and the central limit theorem. Underlying the statistical properties is matrix algebra and multivariable calculus, including how these are combined with probability. I will not emphasize derivations but some of the material is easier to follow if you have facility with matrix algebra. I will also assume that are familiar with ordinary least squares (OLS) regressions and have same very basic idea of instrumental variables (IV) estimation.

Sunday, March 13, 2022

19:00 Welcome Meeting/Dinner

Monday-Thursday Daily Schedule:

8:00-9:00 Breakfast

9:00-10:30 First Session (Lecture)

10:30-11:00 Coffee Break

11:00-12:30 Second Session (Lecture)

12:30-14:00 Lunch

14:00-15:30 Third Session (Lecture)

15:30-16:00-Coffee Break

16:00-17:30 Fourth Session (Lecture/Problem Session)

17:30 -19:00 Free Time

19:00 Dinner

Friday 18th March Schedule:

8:00-9:00 Breakfast

9:00-10:30 First Session (Lecture)

10:30-11:00 Coffee Break

11:00-12:30 Second Session (Lecture)

12:30-13:30 Lunch

13:30-15:00 Third Session (Lecture/Problem Session)

Format of sessions:

Some sessions will review the theoretical background, other sessions will deal with (re-) estimation of published papers and understanding the identification strategy and how it is implemented in Stata code.
We will re-estimate some classical papers as well as more recent work, some of which covers less commonly used material (e.g. synthetic control groups, basic machine learning) which turns out to be useful in various contexts. A potential list of papers to be covered, sorted by "method":

Instrumental-variables estimation:

main paper for Stata analysis:
Becker, Sascha O. and and Ludger Woessmann (2009) Was Weber Wrong? A Human Capital Theory of Protestant Economic History. *Quarterly Journal of Economics* 124(2), 531–596.
http://qje.oxfordjournals.org/content/124/2/531.short

additional reading(s):
Ashenfelter, Orley and Alan Krueger (1994) Estimates of the Economic Return to Schooling from a New Sample of Twins, *American Economic Review*, 84(5), 1157-1173.
http://www.jstor.org/stable/2117766

Card, David (1995) Using Geographic Variation in College Proximity to Estimate the Return to Schooling, in Louis N. Christofides, E. Kenneth Grant, and Robert Swidinsky, eds., *Aspects of labour market behaviour: Essays in honour of John Vanderkamp*, Toronto, Buffalo and London: University of Toronto Press, 1995, pp. 201–222.
http://www.nber.org/papers/w4483

Difference-in-differences:

main paper for Stata analysis:
Redding, Stephen J. and Daniel M. Sturm (2008) The Costs of Remoteness: Evidence from German Division and Reunification, *American Economic Review* 98(5), 1766–1797.
http://www.jstor.org/stable/29730152

Card, David and Alan Krueger (1994) Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania, *American Economic Review* 84(4), 772–793. http://www.jstor.org/stable/2118030

More recent developments (still need to decide how much to cover):
https://asjadnaqvi.github.io/DiD/docs/reading/04_literature/

Propensity Score Matching:

main paper for Stata analysis:
Becker, Sascha O. and Andrea Ichino (2002) Estimation of average treatment effects based on propensity scores. *Stata Journal* 2(4), 358–377.
http://www.stata-journal.com/article.html?article=st0026

additional reading(s):
Dehejia, Rajeev H. and Sadek Wahba (1999) Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs. *Journal of the American Statistical Association* 94(448), 1053–1062. http://www.jstor.org/stable/2669919

Regression-Discontinuity Design:

main paper for Stata analysis:
Angrist, Joshua and Victor Lavy (1999) Using Maimonides' rule to estimate the effect of class size on scholastic achievement. *Quarterly Journal of Economics* 114(2), 533–575.
http:// www.jstor.org/stable/2587016

additional reading(s):
Becker, Sascha O., Peter H. Egger and Maximilian von Ehrlich (2013) Absorptive Capacity and the Growth Effects of Regional Transfers: A Regression Discontinuity Design with Heterogeneous Treatment Effects. *American Economic Journal: Economic Policy*, 5(4): 29-77.
http://dx.doi.org/10.1257/pol.5.4.29

Lee and Lemieux (2010) Regression Discontinuity Designs in Economics. *Journal of Economic Literature* 48(2): 281–355.
http://www.aeaweb.org/articles.php?doi=10.1257/jel.48.2.281

Synthetic Control Groups:

main paper for Stata analysis:
Billmeier, Andreas and Tommaso Nannicini (2013) Assessing Economic Liberalization Episodes: A Synthetic Control Approach. *Review of Economics and Statistics* 95(3): 983-1001.
http://dx.doi.org/10.1162/REST_a_00324

additional reading(s):
Abadie, Alberto, Alexis Diamond and Jens Hainmueller (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.
http://dx.doi.org/10.1198/jasa.2009.ap08746

Basic machine learning:

main paper for Stata analysis:
Becker, Sascha O., Thiemo Fetzer, and Dennis Novy (2017) Who Voted for Brexit? A Comprehensive District-Level Analysis, Economic Policy 32(92): 601-650. https://doi.org/10.1093/epolic/eix012

(If time permits) Bounding:

bounding for regression analysis:
Altonji, Joseph G. Altonji, Todd E. Elder, and Christopher R. Taber (2005) Selection on Observed and Unobserved Variables: Assessing the Effectiveness of Catholic Schools, *Journal of Political Economy* 113 (1): 151-184.

Bellows and Miguel (2009) [Online Appendix]: Bellows, John and Edward Miguel (2009) War and local collective action in Sierra Leone, *Journal of Public Economics* 93 (11-12): 1144-1157.

bounding for matching estimates:
Becker, Sascha O. and Marco Caliendo (2007) Sensitivity Analysis for Average Treatment Effects. *Stata Journal* 7(1), 71–83.
http://www.stata-journal.com/article.html?article=st0121