PhD course in Econometrics II - Spring 2020

Luca Repetto (luca.repetto@nek.uu.se)
Problem sets: Maxi Sosa (maximiliano.sosa_andres@nek.uu.se)

Course Program (Updated 5/3/20)

1. Generalized method of moments (GMM)
AR Appendix A and B. Other refs.: CT ch. 6, W ch. 8

  1.1 Moment problems and generalized moment problems. Analogy principle. IV and 2SLS in the GMM framework. Estimation. Asymptotic distribution of GMM estimators in the 2SLS and in the general case. Optimal weighting matrix.

  1.2 Measurement error and how to instrument for it. Optimal instruments. 2SLS in nonlinear models.

2. Panel data methods
AR ch. 2, 3, 4, 6 and 7. AP, ch. 5. Other refs.: CT ch. 21, 22. W ch. 10,11.

  2.1 Fixed effects panel data models. First differences and within-groups. Interactive fixed effects.

  2.2 Random effects and Hausman test. Measurement error in panels.

  2.3 Dynamic panels and internal instruments. Arellano-Bond. Predetermined variables.

3. Difference-in-differences and synthetic control
AP, ch. 2,5. Papers.

  3.1 Diff-in-diffs estimator. Testing for parallel trends.

  3.2 Synthetic control methods.

4. Standard errors topics: clustering and bootstrap
CM. AP ch. 8. CT ch. 11

  4.1 Clustered data and standard errors. Two-way clustering and panel data. Few clusters. Bootstrap and bootstrapped s.e.

5. Nonparametric and semiparametric estimation
CT, ch. 9, papers

  5.1 Nonparametric and semiparametric models: advantages and drawbacks. Kernels. Problems with multivariate extensions.

  5.2 Nonparametric regression. Local linear regression and RDD.

List of references

1. **AR**: **M. Arellano**, *Panel Data Econometrics* (Oxford University Press, 2003).

2. **CT** : **C. Cameron and P. Trivedi**, *Microeconometrics* (Cambridge University Press, 2005)

3. **W**: **J. Wooldridge**, *Econometric Analysis of Cross Section and Panel Data* (MIT Press 2nd ed. 2010)

4. **CM**: **C. Cameron and D. Miller**, *A Practitioner's Guide to Cluster-Robust Inference* (paper, Journal of Human Resources 2015).

5. **AP**: **J. Angrist and J.S. Pischke**, *Mostly Harmless Econometrics* (Princeton University Press, 2008).

List of papers for the nonparametric and synthetic control classes

- David S. Lee and Thomas Lemieux (2010). Regression Discontinuity Designs in Economics, *Journal of Economic Literature 48 (June 2010): 281–355*

- Imbens, Guido W., and Thomas Lemieux (2008). "Regression discontinuity designs: A guide to practice." *Journal of Econometrics* 142.2: 615-635.

- Hahn, Jinyong, Petra Todd, and Wilbert Van der Klaauw (2001). "Identification and estimation of treatment effects with a regression-discontinuity design." *Econometrica* 69.1: 201-209.

- Abadie, Alberto, and Javier Gardeazabal. "The economic costs of conflict: A case study of the Basque Country." *American economic review* 93.1 (2003): 113-132.

- Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. "Comparative politics and the synthetic control method." *American Journal of Political Science* 59.2 (2015): 495-510.

- Alberto Abadie, Alexis Diamond, and Jens Hainmueller "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program", *Journal of the American Statistical Association*, 105:490, (2010) 493-505.