PhD course in Econometrics II - Spring 2021

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Course Program (Updated 19/5/21)

1. Dynamic panel data
*AR ch. 6 and 7. Other refs.: **CT** ch. 21, 22. **W** ch. 10,11.*

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

2. Synthetic control
*For diff-in-diff recap: **AP**, ch. 2,5. For synthetic control: papers.*

2.1 A recap of the diff-in-diffs estimator.

2.2 Synthetic control methods.

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

3.1 Clustered data and standard errors. Two-way clustering and panel data. Few clusters.

3.2 Bootstrap and bootstrapped s.e.

4. Nonparametric and semiparametric estimation
CT, ch. 9

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

4.2 Nonparametric regression. Local linear regression.

5. Regression-discontinuity design
Lee and Lemieux (2010); Imbens and Lemieux (2008)

5.1 Regression-discontinuity as an empirical design; assumptions; estimation; advantages and caveats; validation. Fuzzy RDD.

6. Bayesian econometrics
*TL, ch. 1 (full); ch. 3 and 4 (parts); additional reference: **CT**, ch. 13*

6.1 Bayes' rule; likelihoods, priors, and posteriors. Applications.

6.2 Monte Carlo methods for posteriors: Gibbs sampling; Metropolis-Hastings.

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).

6. **TL: T. Lancaster**, *An Introduction to modern Bayesian econometrics* (Blackwell Publishing, 2004)

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.