

PhD course in Econometrics II - Spring 2022

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Course Program (Updated 18/5/22)

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 Practitioners 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): 281355
- 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 Californias Tobacco Control Program", *Journal of the American Statistical Association*, 105:490, (2010) 493-505.