Advanced methods for impact evaluation

Course programme

22-24 May 2019

Palazzo Loredan, Venice (Italy)

FBK-IRVAPP – Istituto per la ricerca valutativa sulle politiche pubbliche
Fondazione Bruno Kessler
Via S. Croce, 77 - 38122 Trento

Istituto Veneto di Scienze, Lettere ed Arti
Campo S. Stefano, 2945
30124 Venezia

Every day there will be four 90-minute lectures,
9:00-10:30, 11:00-12:30, 14:00-15:30, and 16:00-17:30

Wednesday, 22 May – Instructor: Erich Battistin

Instrumental Variables

<u>Instrumental Variables with Heterogeneous Effects</u>

- A. Abadie, "Bootstrap Tests for Distributional Treatment Effects in Instrumental Variables Models," Journal of the American Statistical Association 97, March 2002, 284-292.
- A. Abadie, "Semiparametric Instrumental Variable Estimation of Treatment Response Models," Journal of Econometrics 113, 2003, 231-263.
- Clement de Chaisemartin, "Tolerating Defiance: LATE Without Monotonicity," Quantitative Economics, 2017.
- T. Kitagawa, "A Test for Instrument Validity," Econometrica 83(5), 2015, 2043-2063.
- M. Huber and G. Mellace, "Testing Instrument Validity for LATE Identification Based on Inequality Moment Constraints", The Review of Economics and Statistics 2015 97:2, 398-411
- I. Mourifié and Y. Wan "Testing Local Average Treatment Effect Assumptions", The Review of Economics and Statistics, 2017, vol. 99, issue 2, 305-313

<u>Marginal Treatment Effects</u>

- Brinch, C.N., Mogstad, M. and Wiswall, M. (2017). "Beyond LATE with a Discrete Instrument", Journal of Political Economy, Volume 125, Issue 4, pp. 985-1039.
- Heckman, James J. and Edward Vytlacil. "Structural Equations, Treatment Effects, And Econometric Policy Evaluation," Econometrica, v73(3,May), 2005, 669-738.
- Kowalski, Amanda. 2016. "Doing More When You're Running LATE: Applying Marginal Treatment Effect Methods to Examine Treatment Effect Heterogeneity in Experiments." NBER Paper 22363.
- P. Carneiro, J. Heckman and E. Vytlacil, "Estimating Marginal Returns to Education", American Economic Review, vol. 101, no. 6, October 2011 (pp. 2754-81)

Discontinuities

Away from the cut-off

- Joshua D. Angrist, and Miikka Rokkanen, 2015, “Wanna Get Away? Regression Discontinuity Estimation of Exam School Effects Away From the Cutoff”, Journal of the American Statistical Association 110 (512): 1331-1344.
- Bertanha M., Imbens G., 2014, “External Validity in Fuzzy Regression Discontinuity Designs”, (No. w20773). National Bureau of Economic Research.
- Dong, Yingying, and Arthur Lewbel, 2015, “Identifying the Effect of Changing the Policy Threshold in Regression Discontinuity Models.” Review of Economics and Statistics 97 (5): 1081–92

Inference and selection of the smoothing parameter

- Calonico, Sebastian, Matias D. Cattaneo, and Rocio Titiunik, 2014, “Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs.” Econometrica 82 (6): 2295–2326
- Calonico, Sebastian, Matias D. Cattaneo, and Rocio Titiunik, 2015, “Optimal Data-Driven Regression Discontinuity Plots.” Journal of the American Statistical Association 110 (512): 1753–69
- Cattaneo, Matias D., Brigham Frandsen, and Rocío Titiunik, 2015, “Randomization Inference in the Regression Discontinuity Design: An Application to Party Advantages in the U.S. Senate.” Journal of Causal Inference 3 (1): 1–24
- Imbens G. and K. Kalyanaraman, 2012, “Optimal Bandwidth Choice for the Regression Discontinuity Estimator.” Review of Economic Studies 79(3):933-959

Multiple cutoffs, multiple running variables

- Cattaneo, Matias D., Luke Keele, Rocío Titiunik, Gonzalo Vazquez-Bare. 2016. “Interpreting Regression Discontinuity Designs with Multiple Cutoffs”, The Journal of Politics, 78, 3
- Keele, Luke J., and Rocío Titiunik. 2015. “Geographic Boundaries as Regression Discontinuities.” Political Analysis 23 (1):127–55
- Wong, Vivian C., Peter M. Steiner, and Thomas D. Cook. 2013. “Analyzing Regression-Discontinuity Designs with Multiple Assignment Variables: A Comparative Study of Four Estimation Methods.” Journal of Educational and Behavioral Statistics 38 (2): 107–41

Kinks

- Card, David, David S. Lee, Zhuan Pei, and Andrea Weber. 2015. “Inference on Causal Effects in a Generalized Regression Kink Design.” Econometrica, 83 (6): 2453–83

Machine learning and policy evaluation

Taxation, insurance, and machine learning.

- Review of optimal tax theory and sufficient statistics
- An introduction to Gaussian Processes for machine learning.
- Combining the two.

Experimental design and machine learning for policy choice.

- Optimal experimental design for estimating treatment effects.
- An introduction to bandit problems.
- Adaptive experimental design for policy choice

- Chetty, R. (2009). Sufficient statistics for welfare analysis: A bridge between structural and reduced-form methods. *Annual Review of Economics*, 1(1):451-488. https://dash.harvard.edu/bitstream/handle/1/9748528/suffstat_ar.pdf
- Williams, C. and Rasmussen, C. (2006). *Gaussian processes for machine learning*. MIT Press, chapters 2 and 7. http://www.gaussianprocess.org/gpml/chapters/
- Kasy, M. (2018). Optimal taxation and insurance using machine learning. *Journal of Public Economics*. https://maxkasy.github.io/home/files/papers/PolicyDecisions.pdf
- Kasy, M. (2016). Why experimenters might not always want to randomize, and what they could do instead. *Political Analysis*, 24(3):324-338. https://maxkasy.github.io/home/files/papers/experimentaldesign.pdf
- Russo, D. J., Roy, B. V., Kazerouni, A., Osband, I., and Wen, Z. (2018). A Tutorial on Thompson Sampling. *Foundations and Trends* R *in Machine Learning*, 11(1):1-96. https://www.nowpublishers.com/article/Details/MAL-070