CES Lecture Series

Causal Inference, Regression Discontinuity, and Peer Effects

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This course will start by exploring the idea of causal inference and how it relates to identification. It will explain Rubin's potential outcomes framework, alternative viewpoints within the profession, and how other disciplines outside of economics define causality. The theory of regression discontinuity will then be discussed, providing an example of how to obtain causal estimates when there is selection on unobservables. The discussion will not concentrate on formal proofs or derivations, but rather explore the advantages and limitations of the method. The final lecture will provide an in-depth example of how to implement regression discontinuity, using an application which aims to identify peer effects in program participation.

Topic 1: Causal Inference

Topic 2: Regression Discontinuity

Topic 3: Peer Effects Application

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Reading List

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Angrist, Joshua and Jorn-Steffen Pischke, 2008. "Getting a Little Jumpy: Regression Discontinuity Designs," *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton University Press, 251-268.

Angrist, Joshua and Jorn-Steffen Pischke, 2010. "The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics," *Journal of Economic Perspectives*, vol. 24 (2): 3-30.

Calonico, Sebastian, Matias Cattaneo, and Rocio Titiunik, 2014. "Robust Nonparametric Confidence Intervals for Regression Discontinuity Designs," *Econometrica*, vol. 82 (6): 2295-2326.

Card, David and Gordon Dahl, 2011. "Family Violence and Football: The Effect of Unexpected Emotional Cues on Violent Behavior," *Quarterly Journal of Economics*, vol. 126 (1): 103-143.

Card, David, David Lee, Zhuan Pei, and Andrea Weber, 2015. "Inference on Causal Effects in a Generalized Regression Kink Design," *Econometrica*, vol. 83 (6): 2453-2483.

Dahl, Gordon, Katrine Løken and Magne Mogstad, 2014. "Peer Effects in Program Participation," *American Economic Review*, vol. 104 (7): 2049-2074.

Deaton, Angus and Nancy Cartright, 2016. "Understanding and Misunderstanding RCTs," *NBER WP,* No. 22595.

Frandsen, Brigham, 2017. "Party Bias in Union Representation Elections: Testing for Manipulation in the Regression Discontinuity Design when the Running Variable is Discrete," *Advances in Econometrics*, vol. 38: 281-315.

Granger, Clive, 1969. "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods," *Econometrica*, vol. 37 (3): 424–438.

Hahn, Jinyong, Petra Todd and Wilbert Van Der Klaauw, 2001. "Identification and Estimation of Treatment Effects with a Regression-Discontinuity Design," *Econometrica*, vol. 69 (1): 201-209.

Heckman, James, 2008. "Econometric Causality," *International Statistical Review*, vol. 76 (1): 1–27.

Heckman, James and Sergio Urzua, 2009. "Comparing IV with Structural Models: What Simple IV Can and Cannot Identify," *Journal of Econometrics*, vol. 156 (1): 27-37.

Hill, Austin, 1965. "The Environment and Disease: Association or Causation?" Proceedings of the Royal Society of Medicine, vol. 58 (5): 295-300.

Imbens, Guido and Jeffrey Wooldridge, 2009. "Recent Developments in the Econometrics of Program Evaluation," *Journal of Economic Literature*, vol. 47 (1): 5–86.

Lee, David, 2008. "Randomized Experiments from Non-Random Selection in U.S. House Elections," *Journal of Econometrics*, vol. 142 (2): 675-697.

Lee, David and Thomas Lemieux, 2010. "Regression Discontinuity Designs in Economics," *Journal of Economic Literature*, vol. 48 (2): 281-355.

Rubin, Donald, 1974. "Estimating Causal Effects of Treatments in Randomized and Nonrandomized Studies," Journal of Educational Psychology, vol. 66 (5): 688-701.