Econometrics 883-03 : Special Topics- Causal Inference and Treatment Effects
SPRING 2015

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Office Hours: By appointment.

Time and location: SS 327 M, 7:30- 9:55 PM

Textbook No specific textbook- this is more of a handbook chapter and a "papers" class. Will be referring to specific papers as well as some lengthy manuscripts. A few books we will be referring to from time to time are:


IW Imbens, Guido and Jeffrey Wooldridge (2007). Whats New In Econometrics, NBER Summer Course.

Grading: There will be bi-weekly assignments, a research paper and final.

Scheme:

- Assignments : 25%
- Paper/Proposal: 45%
- Take home final: 30%
Course Objectives

Economics 883 is part of the second-year sequence in econometric methodology. It will represent quite the break from Econometrics 1, 2, and 3 in the sense that it is designed to be more specialized and encourage students to start thinking about their dissertation and what topics to work on. Consequently, it will be less about answering problem set and exam questions and more about discussing recent research papers from a critical perspective. This particular specialized module will be about the notion/concept of causal effects and treatments, which in a general sense can be viewed as the analysis of nonlinear models with endogeneity. As we will see, methods we studied for dealing with endogeneity in linear models, such as instrumental variables and 2 or 3 stage least squares are unfortunately not applicable when we have nonlinear models such as binary choice or censored regression, motivating the need for completely new methods to identify and estimate the parameters of interest. These new methods will include "matching", propensity score weighting, regression discontinuity designs (RDD), and the use of control functions. To that end, for many models we will study, point identification of the parameters of interest will not be attainable, so we will have to look at partial identification approaches to conduct meaningful inference.

Needless to say, the two areas of nonlinear models and endogeneity show up in many empirical settings in empirical work in labor, public, i.o. and development, so this class is particularly relevant for those interested in those areas as well as econometrics in its own right.

Course Outline


Pagan and Ullah (1999), Chapters 1-3.

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**Treatment Effects**: Average Treatment Effects (ATE), Selection on Observables, Local Average Treatment Effects (LATE), Propensity Score Weighting.

Wooldridge, 18.


Angrist and Pischke, 3,4.

**Regression Discontinuity Design**: Quasi-experimental, running variable, local average treatment effect.

(CT Chapter 25.6. AP Chapter 6. IW Lecture 3.)


**Endogeneity**: Instrumental variables, control function, nonlinear models, completeness.
http://www.ucl.ac.uk/~uctp39a/Blundell-Powell-Chpt8.pdf


**Panel Data Models** Fixed Effects Models, Differences-in Differences, Nonlinear Differences in Differences.

(CT Chapters 21 and 22. AP Chapter 5.1 - 5.2. IW Lecture 10.)


**Dynamic Treatment Effects** Dynamic discrete choice, time to treatment.
