Panel Data

Trinity Term 2016

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Course description:

This course will examine the application of panel data methods in social science. We will pay particular attention to the relationship between the most common methods (fixed effects and random effects models) and analogous approaches in experimental and quasi-experimental research (randomized experiments of various kinds and difference-in-differences methods).

Assessment:

Students taking the course for credit will submit an essay of not more than 2500 words, due at noon on Friday of 6th week (5 June) in the Courses of Office of DPIR.

I welcome three kinds of essays:
a) A critical review of 2-5 papers using methods discussed in the course (possibly including replication)
b) An in-depth replication and extension of a single paper using methods discussed in the course
c) An original analysis using methods from the course
If you want to suggest another approach please contact me.

Student engagement:

This course is designed for students who are actively engaged in the material.

Before the first course meeting, every student should identify a dataset and a research question (ideally from her own research) of the type we will be examining in this course. In particular, the dataset should include observations of an outcome for the same units at different points in time; the research question should be about the effect of a "treatment" that varies over time within units, but not in the same way for all units. (Alternatively, the dataset could include observations for different units at different points in time; for example, it could be an annual survey where the subjects differ from year to year.) It is useful but not necessary for the treatment to be binary. *Students will be asked to briefly introduce their dataset and research question in the first course meeting.*

In the first three weeks, students will be asked to carry out exercises to solidify their understanding of the material. The exercises will involve a combination of
- creating simulated datasets and carrying out analysis on them
- carrying out analysis on datasets provided
- carrying out analysis on the dataset corresponding to the student's own question

Students are free to use whatever software they prefer. In lectures and worksheets I will try to provide guidance on applying the techniques we learn in R and Stata, but students will have to be active in this as well.

In the last week students will present analysis and/or research designs based on their own datasets that we will discuss in class.

Readings

I am assigning large parts of two books by Angrist and Pischke: *Mostly Harmless Econometrics* and *Mastering Metrics. MM* is aimed at a more basic level than *MHE* but I expect most students will be able to learn a lot from both books. Both are characterized by a very practical approach and a focus on causal inference that will also guide this course. (Also they are cheap as textbooks go.)

Week 1: From randomized controlled trials to difference-in-differences

Readings:

Chapters 1 and 2 of Angrist and Pischke, *Mastering Metrics* (2015)
and/or
Chapters 2 and 3 of Angrist and Pischke, *Mostly Harmless Econometrics* (2009).

Chapter 5 of *Mastering Metrics*

Marianne Bertrand, Esther Duflo, and Sendhil Mullainathan (2004), "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics* 119 (1): 249-275.

For a more formal & rigorous treatment: Section 6.5 of Wooldridge, *Econometric Analysis of Cross Section and Panel Data* (2010)

Application readings:

Lyall, Jason (2009). "Does Indiscriminate Violence Incite Insurgent Attacks? Evidence from Chechnya." *Journal of Conflict Resolution* 53 (3): 331-62.

Card, David and Alan B. Krueger (1994). "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania," *American Economic Review* 84 (4): 772-793.

Bechtel, Michael M. and Jens Hainmueller (2011). "How Lasting Is Voter Gratitude? An Analysis of the Short- and Long-Term Electoral Returns to Beneficial Policy," *American Journal of Political Science* 55 (4): 852-868.

Week 2: From randomized controlled trials to two-way fixed effects

Readings:

Chapter 5 and Section 8.2 of Angrist and Pischke, *Mostly Harmless Econometrics* (2009).
For a more formal & rigorous treatment: Chapter 10 of Wooldridge, *Econometric Analysis of Cross Section and Panel Data* (2010)

Application readings:

Levitt, Steven D. (1994), "Using repeat challengers to estimate the effect of campaign spending on election outcomes in the US House", *Journal of Political Economy*, 777--798.

Fowler, Anthony (2015), "Do elections select better representatives?", unpublished working paper available at
https://dl.dropboxusercontent.com/u/21176039/Fowler_ElectoralSelection.pdf

Ladd, Jonathan McDonald, and Gabriel S. Lenz (2009), "Exploiting a Rare Communication Shift to Document the Persuasive Power of the News Media", *American Journal of Political Science* 53 (2): 394-410.

Berrebi, Claude. and Esteban F. Klor (2008), "Are Voters Sensitive to Terrorism? Direct Evidence from the Israeli Electorate", *American Political Science Review* 102 (3): 279-301.

Ross, Michael (2006), "Is Democracy Good for the Poor?" *American Journal of Political Science*, Vol. 50, No. 4.

Week 3: Synth, random effects, and multilevel models

Readings:

Chapters 8 and 9 of Cameron and Trivedi, *Microeconometrics Using Stata* (2010)*.*

Abadie, Diamond, and Hainmueller (2015), "Comparative Politics and the Synthetic Control Method", *American Journal of Political Science*.

Clark, Tom and Drew Linzer (2015), "Should I use fixed effects or random effects?" *Political Science Research and Methods*.

Bell, Andrew and Kelvyn Jones (2015), "Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data" *Political Science Research and Methods.*

Week 4: Student presentations and discussions