Difference-in-Differences

Exercise 1 The 2x2 DiD Setup

PDHP Workshop, January 2023

Our first exercise is based on Meyer, Viscusi and Durbin (1995), whose dataset is available in the `R` package `wooldridge`, under `injury`. In `Stata`, the dataset can be loaded by using `bcuse injury, clear` (make sure you have installed `bcuse`).

Policy Overview

In 1980, Kentucky raised its cap on weekly earnings that were covered by worker's compensation (worker's compensation is a form of insurance that pays workers who are injured or become disabled as a result of their job). In 1982, Michigan raised its cap, too. The "beauty" of these policy changes was that the cap increase did not affect low-earnings workers, but did affect high-earnings workers. Thus, low-earnings workers can serve as the comparison group for us ($G = \infty$), while high-earnings workers would serve as our treated group ($G = 2$).

As Meyer et al. (1995) argued in the first paragraph of their paper

> "Higher benefit rates may decrease workers' incentives to avoid injuries, may increase the incentives to file for compensation for any given job injury, and may foster more claims for nonwork injuries. In addition, higher benefits may make extending the duration of a claim more attractive."

Thus, our primary goal here is to assess if these changes in weekly benefit amounts affected the duration of time out of work. Given that the implementation of the policy was different in Kentucky and Michigan, we will perform our analysis separately.

All line references below are related to the R codes.

1. Let's open the R script `Exercise1.R`, available to you in PDHP website

2. Lines 8-10 of the code load the libraries we will use for this exercise.

3. Line 14 loads the Meyer et al. (1995) data into **R**. Given this is repeated cross-section data, we observe different units at each point in time. Line 16 creates a "cross-sectional" identifier for the analysis (in this case, since observation has a unique id)

4. Line 21-23 create subsets of the data: one containing observations from Kentucky, another containing observations from Michigan.

5. Let's focus on the Kentucky sample. Assuming (different versions of) Parallel trends, SUTVA and No-Anticipation, let's compute the Average Treatment effect of the policy change among high-earners on the following outcomes:

   (a) Duration of claims;

   (b) log duration of claims;

   Cluster your standard errors at the unit (id) level. Summarize your findings

6. Conduct the same exercise as in Part 5 but focus on the Michigan Sample. What do you find?

References

Meyer, Bruce D., W. Kip Viscusi, and David L. Durbin, "Workers' Compensation and Injury Duration: Evidence from a Natural Experiment," *The American Economic Review*, 1995, *85* (3), 322–340.