

ECON 753 Homework 3

Jesús Lara Jáuregui

10/24/2020

```
load("panel_1.Rdata")
load("panel_2.Rdata")
load("panel_3.Rdata")
```

Part 2: Replication of Card & Krueger (1994)

In this part I replicate the first three rows of Table 3 of Card & Krueger(1994), in which they present the basic Diff-in-Diff results of the effect of the increase in minimum wage in New Jersey in employment in the fast-food sector. I present the results of the three panels in three different tables. The variable analyzed is Full-Time Equivalent employment (FTE), which, at the store level is defined by the equation:

$$FTE_i = FullTimeEmployees_i + Managers_i + \frac{1}{2}PartTimeEmployees_i$$

I create that variable and then group the data by state and period (after en before the treatment) to build Panel 1 of Table 3

```
library(knitr)
kable(panel_1, caption="Panel 1 of Table 3 Card and Krueger: Stores by state", digits=2)
```

Table 1: Panel 1 of Table 3 Card and Krueger: Stores by state

Variable	PA	NJ	NJ-PA
FTE before	23.33 (1.35)	20.44 (0.51)	-2.89 (1.44)
FTE after	21.17 (0.94)	21.03 (0.52)	-0.14 (1.08)
Change in mean FTE	-2.17 (0.73)	0.59 (1.65)	2.75 (1.34)

The standard errors are shown in parenthesis. This table shows the main results of the study, where can be seen that:

- (1) Before the treatment stores in PA were, on average, bigger in terms of FTE than those of New Jersey
- (2) That difference became smaller after the treatment
- (3) FTE fell in PA after the treatment, while that of NJ remained constant or slightly increased
- (4) Most importantly, the diff-in-diff estimate, which under the Conditional Independence Assumption (or parallel trends) is a estimation of the causal effect of minimum wage on FTE, is non-negative (2.75 in our results)

In this part, I am getting different standard errors in the first two cells of bottom-row (that compare the mean within each state). In all this exercise I obtained the standard errors of the difference in means by conducting a t-test (where the null hypothesis is that the means are equal) and then extracting the associated standard errors. The difference may come from the way t.test manages missing values. I conclude that because I get

the correct results for the standard errors of FTE for each group and also in mean comparisons between states.

Then I group NJ data by wage category before the treatment: Low (Minimum wage=\$4.25), Midrange (\$4.26-\$4.99), and High (>\$4.99). Below is the replication of Panel 2:

```
library(knitr)
kable(panel_2, caption="Panel 2 of Table 3 Card and Krueger: Stores in New Jersey", digits=2)
```

Table 2: Panel 2 of Table 3 Card and Krueger: Stores in New Jersey

Variable	Wage=\$4.25	Wage=\$4.26-\$4.99	Wage>\$4.99
FTE before	19.56 (0.77)	20.08 (0.84)	22.25 (1.14)
FTE after	20.88 (1.01)	20.96 (0.76)	20.21 (1.03)
Change in mean FTE	1.32 (1.13)	0.87 (1.53)	-2.04 (1.27)

In the panel we can see that, in general, stores with a high starting wage are bigger in terms of FTE than the rest before the treatment. However, this changes after the increase in minimum wage since stores with a high starting wage before the treatment are the only ones whose average FTE falls after the increase in minimum wage.

Again, my results are different in the standard errors that compare the difference in the means within state and wage category over time. I finally present the results of Panel 3, that compares FTE between wage categories and over time

```
library(knitr)
kable(panel_3, caption="Panel 3 of Table 3 Card and Krueger: Differences within New Jersey", digits=2)
```

Table 3: Panel 3 of Table 3 Card and Krueger: Differences within New Jersey

Variable	Low-high	Midrange-high
FTE before	-2.69 (1.37)	-2.17 (1.41)
FTE after	0.66 (1.44)	0.74 (1.27)
Change in mean FTE	3.36 (1.3)	2.91 (1.22)

There, in the bottom row, we can see that the difference between Low wage and High wage stores