

# Homework 6

Due Monday April 1st, 2013 by email to Jeffrey Marshall

## 1 Minimum wage and employment

In this question, you will replicate and extend key parts of the canonical study using differences-in-difference to estimate the effect of minimum wage increases on employment. The citation for the paper is:

David Card and Alan B Krueger (Sept. 1994). “Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania”. In: *The American Economic Review* 84.4, pp. 772–793

You will find the data for the paper on the course website and a list of variables descriptions below. Again, remember the key argument in the economics literature: increases in the minimum wage should drive down employment, especially for those who receive wages around the previous minimum wage. Thus, Card and Krueger (1994) look at the effect of the minimum wage change in New Jersey in 1992 to investigate this claim. They look at fast-food restaurants because many of the employees at these businesses are teenagers that make the minimum wage. Thus, we might expect to find the largest effect here.

1. Replicate Table 2 of Card and Krueger (1994) using  $t$ -tests, assuming unequal variance. Can you successfully replicate it? If not, explain why you think you cannot.
2. Explain your replicated Table 2. What is your major finding with regard to FTE before and after the rise of the minimum wage?
3. Replicate Figure 1. Explain what is going on after the minimum wage legislation.

4. Replicate Table 4 by carefully generating relevant variables and running regressions. Interpret your coefficient estimates for the variables of “New Jersey dummy” and “Initial wage gap.” Be sure to interpret the statistical and substantive significance.
5. Match on pre-treatment covariates and (lagged) outcomes (FTE employment during wave 1). Use your favorite matching method (e.g. propensity score, Mahalanobis distance, exact, genetic), with your favorite parameters (bias adjustment choices, number of matches, caliper). You must justify your choice though! Run difference-in-differences regression in matched dataset and report your results. Compare them to those reported in the paper and comment. What is the advantage of using matched units? How does it change your interpretation?
6. Instead of matching, take a propensity score-weighting approach to estimating the effect of the minimum wage laws. Include whichever variables you deem important in the model for the propensity score (no need to bootstrap for standard errors this time). How does your estimates?
7. Explain the DID identification strategy in the context of this example. Do you think it is credible? Why or why not? Be sure to think hard about potential violations, and then decide what you think about how much you’d trust these results. Comment on this and any other potential weaknesses of the paper. How could you improve the study?

## **2 Effect of Indiscriminate Violence**

Read through the Jason Lyall paper on the syllabus and comment on the research design. Do you think that his use of differences-in-differences and matching provides for a compelling estimate of the causal effect of indiscriminate violence on insurgent attacks? Are there possible violations of the key DID assumptions that might cause his analysis to be incorrect? Can you think of some way to improve the study?

Variable Name	Description
co_owned	1 if company owned
southj	1 if in southern NJ
centralj	1 if in central NJ
pa1	1 if in PA, northeast suburbs of Philadelphia
pa2	1 if in PA, Easton etc
wage_st	Starting wage (\$/hr) Before
hrsopen	Hours Open Weekday Before
wage_st2	Starting wage (\$/hr) After
hrsopen2	Hours Open Weekday After
emptot	FTE Employment Before
emptot2	FTE Employment After
nj	1 if NJ; 0 if Pa
pa	1 if Pa; 0 if NJ
bk	1 if Burger King
kfc	1 if KFC
roys	1 if Roy Rogers
wendys	1 if Wendys
pmeal	Price of Full Meal Before
pmeal2	Price of Full Meal After
closed	Closed Permanently After