ECON3360 Causal Inference for Microeconometrics

Tutorial 6: Stata Application of DiDs

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Problem I: the effect of worker compensation on weeks out of work

Background The data for this exercise come from the paper by Bruce D. Meyer, W. Kip Viscusi, David L. Durbin: "Workers' compensation and injury duration: evidence from a natural experiment", published in The American Economic Review, 1995, Vol. 85.

Idea On July 15, 1980, Kentucky raised the cap on weekly earnings that were covered by workers' compensation. An increase in the cap has no effect on the benefit received by low-income workers, but increased the benefit received by high-income workers. Therefore, low-income workers can serve as the control group and high-income workers as the treatment group. High-income workers are defined as those who were subject to the pre-treatment cap. Using random samples before and after the policy change and a difference-in-differences framework, MVD test whether more generous workers' compensation increases the length of time people stay off work (Note that this evaluation does not tell us whether this is a good or bad thing, without any information on future health outcomes of workers for example). $log(durat)$ is the dependent variable. Use the data in injury.dta for the following questions.

(1) Load the data and describe the data.

(2) Estimate the difference-in-differences model with and without robust standard errors for the Kentucky sample. Interpret the coefficient of interest.

(3) Re-estimate (2) using the Kentucky sample adding explanatory variables for: $male$, $married$, a full set of industry and injury type dummy variables. Use robust standard errors. How does the estimate on the interaction term, $afchnge \cdot highearn$ change when these other factors are controlled for? Is the estimate still statistically significant?

(4) What can you say about the small R-squared from parts (2) and (3)?

(5) Estimate (2) using the Michigan sample (and robust standard errors). Compare the estimates on the interaction term for Kentucky and Michigan. Is the estimate for Michigan statistically significant? What do you conclude?

Problem II: the effect of minimum wages on employment

Background The data for this exercise come from the paper by David Card and Alan Krueger: "Minimum wages and employment: a case-study of the fast-food industry in New Jersey and Pennsylvania", published in the American Economic Review, 1994, vol. 84.

Idea Standard microeconomic theory of the firm in competitive markets tells you that factor demand curves slope downwards. This implies that if the minimum wage increases, we expect the demand for labour (and thus employment) to decrease. This conventional wisdom among economists was challenged using this and other data by Card and Krueger. Their research design was based on New Jersey raising its minimum wage from \$4.25 to \$5.05 on 1 April 1992 while the minimum wage in neighboring Pennsylvania remained unchanged. They collected data on wages and employment in 65 fast-food restaurants in Pennsylvania and 284 in New Jersey in Feb/March 1992 (i.e. before the rise in the NJ minimum wage) and in Nov/Dec 1992 (i.e. after the rise). They use a difference-in-difference design to investigate the impact of minimum wages on employment. Use the data in minwage.dta for the following questions.

(1) Load the data and describe the data.

(2) Type the following command. In Stata, type: `tab nj after, su(fte) means` . Derive the difference-in-difference estimate from this table.

(3) Estimate the difference-in-differences model for regressions with and without robust standard errors. Why is the difference in the standard errors sizeable?

(4) Now estimate the DiD model with fixed effects for the store (*sheet*). In Stata, set the unit and time dimension, and `xtreg fte nj after njafter, fe robust`. What is the coefficient of interest? Why has Stata dropped nj?

(5) State key assumption for the DID estimator.

(6) Why is the estimated impact of the minimum wage the same in all these models?