Homework 6

Economics 7103

February 26, 2024

1 Hourly Data - Stata

1.1

Generate a Stata time variable using the clock command. Generate a treatment cohort variable and report the number of treated cohorts. Hints: Make sure to create a double precision date variable to not lose precision when working with Stata times. The egen command will probably be most helpful in creating a cohort variable. Finally, it may be helpful to create a simpler time variable that counts up from one each hour using the group function from egen on time-sorted data.
see code

1.2

Install and use the fetwowayweights command to estimate the TWFE weights. Make treatment cohort the group variable and use the feTR option. Report the number of negative weights.
see code, There are 48,547 negative weights and 145,467 positive weights.

1.3

Estimate the following regression
$Y_{i,t} = \alpha_i + \lambda_t + \beta D_{i,t} + \gamma X_{i,t} + \epsilon_{i,t}$
Report the estimated ATT and clustered standard error. What level did you cluster at and why?

I clustered at the household level because that is the level at which treatment is assigned

	Energy Consumption (kWh)
ATT	-0.0434***
	(0.0002)
Temperature (F)	0.0046***
	(0.0000)
Precipitation (in)	-0.0006
	(0.0020)
Relative Humidity	0.0023***
	(0.0000)
Constant	0.5387***
	(0.0011)
Observations	720000
Adjusted R^2	0.663

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 1: Hourly twfe estimates

2 Daily Data - Stata

2.1

Estimate the same TWFE-style regression as above, but on the daily data. Report your new estimate of the ATT and the clustered standard error. How much do these differ?

The ATT and the standard error on the ATT are substantially larger with the daily data. The temperature coefficient switches signs.

	Energy Consumption (kWh)
ATT	-0.9356***
	(0.0056)
Temperature (F)	0.1109***
	(0.0004)
Precipitation (in)	0.0681
	(0.1882)
Relative Humidity (%)	0.0552***
	(0.0002)
Constant	12.8783***
	(0.0341)
Observations	30000
Adjusted R^2	0.971

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Daily twfe estimates

2.2
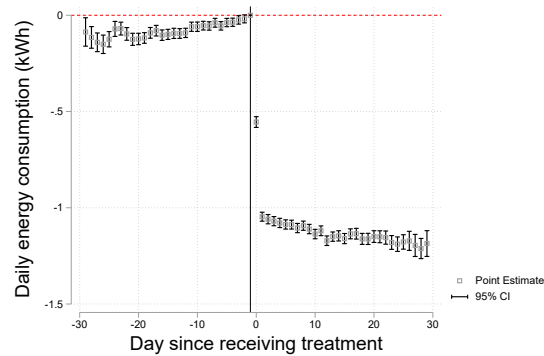
Estimate event-study using reghdfe

Figure 1: Event study using reghdfe

2.3

Replicate your results exactly using the command eventdd. Display the plot automatically generated by the command. Hint: You should specify to eventdd that you would like it to use the hdfe option and the correct standard errors.
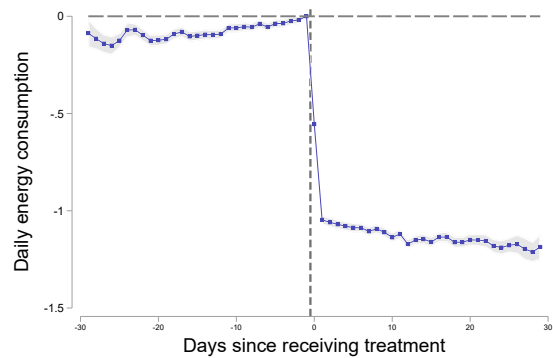
Figure 2: Even study using eventdd

2.4

Implement the Callaway and Sant'Anna estimator using the CSDID package. Use the default doubly robust estimator and 50 bootstrap replications. Plot your results.
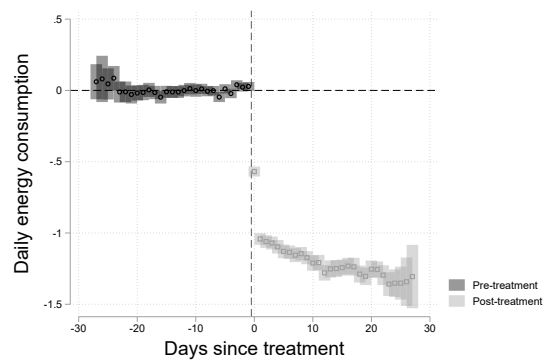

Figure 3: Event Study Callaway & Sant'Anna