

Homework 6

Environmental Economics II
Maghira Ramadhani

February 25, 2024

Problem 1 Hourly data - Stata

1. The cohort group indicator can be generated using line 70 to 80 in the `0_run_code.do`
2. The number of negative weights is 48,547.
3. The regression estimates is show in Table 1.

Table 1: TWFE regression on hourly data

	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

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

Problem 2 Daily data - Stata

1. The regression estimates is show in Table 2. The coefficient does not change much from the hourly data, i.e. $ATT_{daily} = -0.9356 \approx 24 \times ATT_{hourly} = 24 \times -0.0434 = -1.04$. The small difference may be due to the hourly seasonality that is not captured in the daily data. However the R-squared is higher when using the daily data indicating there is a lot of noise in the hourly electricity consumption.

Table 2: TWFE regression on daily data

	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

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

2. The event-study regression is the following:

$$Y_{i,t} = \alpha_i + \sum_{\tau=-30}^{-2} \beta_{\tau}^{pre} 1(R_{i,t} = \tau) + \sum_{\tau=0}^{30} \beta_{\tau}^{post} 1(R_{i,t} = \tau) + \gamma X_{i,t} + \varepsilon_{i,t}$$

Note that I am not adding the time fixed effect in the regression as in the instruction as it will adsorb the time variation that we want to observe in the lead and lag coefficient. The event study estimates is shown in Figure 1 which gives similar result with the canned event study in Figure 2.

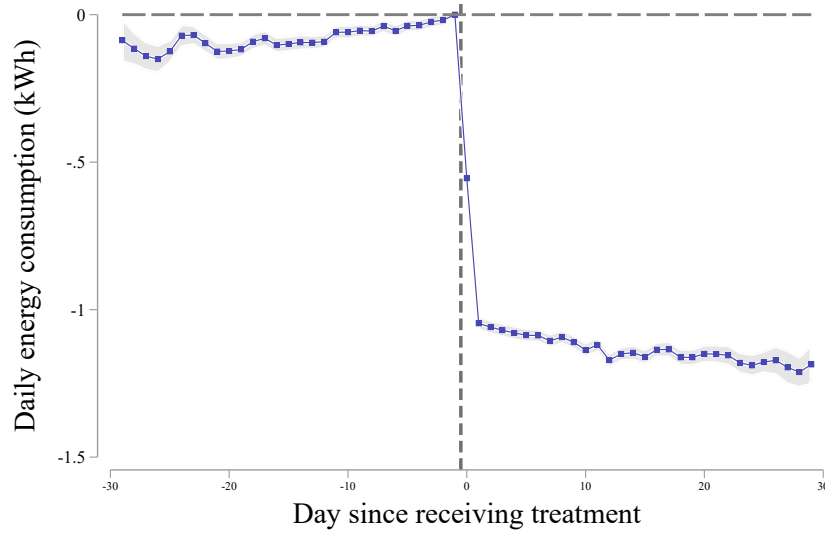


Figure 1: Event study of daily data

3. Figure 2 show the event study estimates using the `eventdd` package.

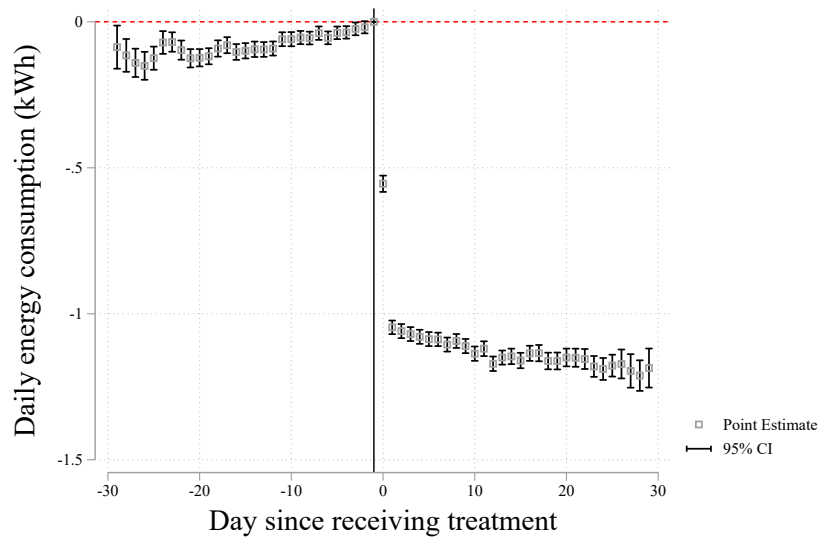


Figure 2: Event study of daily data using eventdd

4. Using the CSDID package the ATT is -1.132823. Figure 3 show the event study estimates from using the csdid package.

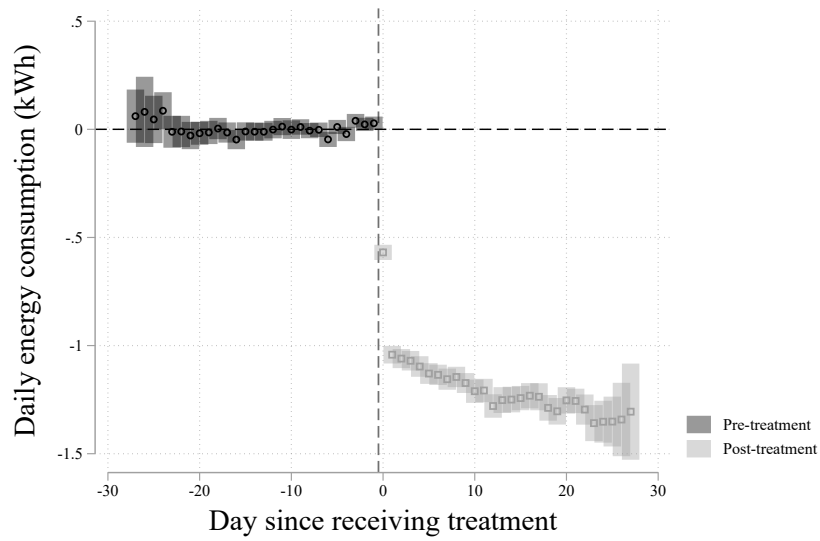


Figure 3: Event study of daily data using csdid