

Computer assignment 6b – Econometrics I – due October 10, 12.45pm, 2017

THIS IS A GROUP EXERCISE. PLEASE SUBMIT PDF THROUGH BLACKBOARD TIMELY. PLEASE INCLUDE YOUR NAMES.

Goal of the assignment

In the previous computer assignment you learned how to analyze treatment-by-covariate interactions. Now you are on your own. For this assignment, use the data set provided on Blackboard: `ca6b.dta`. The data set is very similar to the one you used for Computer Assignment 5a. First tell STATA the structure of your data:

```
xtset route week
```

Setting

As discussed in Computer Assignment 5a, these data are taken from a field experiment conducted in the city of Tilburg during December 2014-July 2015. Goal of the treatment was to stimulate households to separate their waste. The intervention comes down to a threat that incorrect separation of waste can lead to a hefty fine. Main outcome variable is the weight of residual waste collected per garbage collection route per calendar week `residual_weight` (the Department of Sanitation defines its own neighborhoods and calls them garbage collection routes). Each of the routes counts some 1,000 households. The timing of the treatment was randomized at the level of 5 or 10 garbage collection routes. For simplicity, the dataset contains one treatment variable (`treatment`), which is 1 as of the first week that the first part of the treatment (the announcement letter) started.

Task

You should do the following:

First, run a regression of the fully interacted model. Do this for the interaction between the treatment and the pre-treatment level of unseparated waste (`sorting`). Interpret the regression output: how is the marginal treatment effect affected by this pre-treatment characteristic of routes? Does your regression output make sense in terms of how different people respond to the treatment?

Second, create a marginal effect plot based on the `marginsplot` command for the interaction between the treatment and the pre-treatment level of unseparated waste. What do the results suggest?

Third, similar to what you did in Computer Assignment 6a, part III (d) and (e), relax the assumption of a linear relationship between the conditional average treatment effect and the interaction term.

Choose indicator variables for four ranges of values of `sorting`, estimate these interaction terms and plot the values.¹

Are your results very different from the marginal effect plot created above? What do these new results imply about the true relationship between the treatment and this interaction variable? Is it likely to be linear or not?²

Note on submitting

What you should submit is one PDF file containing the points we asked for above and a copy and paste of your STATA do file (do not attach a separate .do file).

¹ One way of determining the four 'bins' is to look at the percentiles of `sorting`, with the STATA command `summ sorting if week==11, detail`. You could take the 25 percentile, the 50, the 75, and the rest.

² I just heard about a new STATA command (and R package) that simplifies this task. It was released just a couple of months ago. For those of you eager to learn the latest, install the command first: `ssc install interflex`. In addition: `ssc install reghdfe`. Then type the following command: `interflex residual_weight treatment sorting, fe(route week) cluster(route) nbins(4)`. You should still do what you are asked, but you can compare your results with the results from this command. This new command is not part of this year's material.