NES Master of Arts in Economics

Applied Microeconometrics

Group Assignment #1

Assignment date: November 11th, 2016
Due date: 23:59 November 27th, 2016
Delivery: One copy per group + all codes = zipped together and uploaded to my.nes

The main goal of this assignment is to practice matching and propensity score estimation in a simple setup.

The question to be studied is the following: Do firms that are acquired by foreign owners experience higher growth of sales than domestically-owned firms (at least in the short-run)? To give a framework, potential hypotheses include capturing higher market share as a result of foreign owners giving access to their distribution channels or charging higher prices as a result of producing higher-quality goods due to advanced technologies supplied by foreign parents. If you are interested in the agenda, you may wish to read my paper with Maria Guadalupe and Catherine Thomas (available on the reading list), but it will not help you with the assignment itself, because the question studied and techniques employed are somewhat different.

You are given a dataset on firms located in Spain (that has been altered and modified from the original to fit the needs of this assignment; still you cannot distribute the dataset or use it for purposes other than this assignment). I have turned it into a cross-section with all units treated at the same date, so that you do not have to worry about subtleties that arise in panel data (like different treatment dates, etc) [1].

The variables in the dataset are the following:
Col1: id – firm identifier
Col2: own – treatment indicator (1 if foreign-owned, 0 if domestically-owned)
Col3: Llnsales – pre-treatment logarithm of sales (industry-demeaned)
Col4: Lexport – pre-treatment indicator variable of exporting
Col5: Lavwage – pre-treatment average wage
Col6: Linnovation – pre-treatment indicator variable of being an innovative firm
Col7: Llnkapital – pre-treatment logarithm of capital stock
Col8: LsalesGR – pre-treatment logarithmic sales growth
Col9: FsalesGR – post-treatment logarithmic sales growth, this is the outcome of interest.

You are required to write a mini-paper using your results, with an abstract, details of the empirical strategy mentioning the underlying assumptions behind it, results with coefficient interpretation and nicely organized tables, further robustness checks and discussion, and conclusion (and references, if citing anything). I have excluded introduction from the list, because this usually touches upon your contribution to the literature and the importance of the question studied, and that is not so relevant for your assignment. You can still include it by giving an account of what you do in the paper.

[1] If you need to do matching in panel for your term paper of master thesis, please do not hesitate to consult me on the details.

I expect that the whole paper will be fewer than 10 pages long including tables (Longer doesn't always mean better. Be concise).

The following is the list of issues/tasks that I would like you to address in your paper (it is your turn to decide which section is better suited for each of them, they are not necessarily in the correct order):

1. Provide summary statistics for covariates for treatment and control groups separately. Report normalized differences. Provide some interpretation and what this means for the techniques to be used.

2. Compute propensity scores using the full list of covariates. Recall: the balancing property should be satisfied. If it is not, try including polynomial terms or interactions. Plot the histogram of the propensity scores (by treatment status to compare them visually).

3. Estimate the effect of being foreign-owned on sales growth by comparing treatment and control groups. Provide the following estimators:

a. Difference in means

b. OLS with coefficients (including constant) that are different for the control and treatment groups

c. At least three other methods discussed in class (based on covariates matching and/or propensity score, preferably those that are more robust). Explain some of their pros and cons.

4. Delete observations for which the propensity score is lower than 0.01 or higher than 0.99 from the sample. Redo 1-3 using these restricted data.

5. Discuss the rationale behind using methods in 3c. Is foreign ownership randomly assigned? What is the likely direction of the selection bias when using 3a?

6. Can you assess unconfoundedness based on these data? What is your conclusion? Suppose that your identification-geek friend does not believe unconfoundedness is a reasonable assumption in this setup. What is the likely direction of the selection bias when using your in 3b or 3c?

7. Describe an ideal experiment that could be used to estimate of the effect of interest. Are there any potential problems with internal and external validity of your proposed experimental design?

If you would like to do this assignment in Stata, then you might need to install additional packages (such as pscore and/or nnmatch). Please consult the TA if there are any questions with respect to this software.