Tutorial 5
Difference-in-Difference - Due on 29.06.2020 10:00

Empirical Banking and Finance
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This exercise is based on [Jayaratne and Strahan, 1996] who study the effects of intra-state bank branching deregulation on GDP growth. The dataset contains the year of when bank branching deregulation was allowed in a given US state and state-level GDP data from the Bureau of Economic Analysis Regional Data. The dataset contains, among others, the following variables:

- *ind_dereg* A dummy variable that equals 1 once a state has lifted bank branching regulation
- *ind_deregYear* A dummy variable that equals 1 only in the year of the bank branching deregulation
- *deregulationInfo* A string variable containing the information about the deregulation timing in that state based on Table 1, column 1 "Year M&A branch restrictions lifted" of the paper

1. Preliminary steps
    a) What is the objective of this study?
    b) How does this study improve over the previous literature?
    c) Write down the regression equation.
    d) Discuss the key identifying assumptions. Refer to the variables included in the regression.
2. Data & Descriptives
    a) Have a look at the dataset, in particular how the variables *ind_dereg* and *ind_deregYear* encode the information of the variable *deregulationInfo*.
    b) How are the years of deregulation distributed over time? Please create a table or a histogram of the number of deregulations per year.
    c) Briefly comment on the distribution of deregulation over time. Does what you find make it more or less likely to find the causal effect of bank branch deregulation on GDP? Explain briefly.
3. Regression 1
    a) Replicate regression 5. in Table II of the paper. Note that you should exlude the deregulation years from the estimation.

b) Compare the sign, size and significance of the coefficient on *ind_dereg* to the one in the paper.

c) Interpret the size of the coefficient on *ind_dereg*.

d) Re-run the regression with standard errors clustered by state and year. Provide a brief comment.

4. Regression 2

a) Run a Granger-Causality test specification including *ind_deregYear*, two lags and two leads of the variable.

b) Comment briefly on the coefficients of the leads. Are the results good or bad news for the paper?

c) Comment briefly on the coefficients of the lags. Are the results good or bad news for the paper?

5. Regression 3

a) Please add state-specific time trends to Regression 1.

b) Which assumption are we trying to test by adding state-specific time trends?

c) Comment on the sign, size and significance of the *ind_dereg* coefficient. How does it compare to Regression 1?

6. Regression 4

a) Please add region-year fixed effects to Regression 1. Exclude states with region code =0 from your estimation.

b) What is the rationale for adding region-year FE?

c) Compare your results to regression 7. in Table II of the paper.

7. Summary

a) How much do you trust the results in the paper?

b) Can you think of other robustness checks than those already in the paper and in this exercise?

References

[Jayaratne and Strahan, 1996] Jayaratne, J. and Strahan, P. E. (1996). The finance-growth nexus: Evidence from bank branch deregulation. *The Quarterly Journal of Economics*, 111(3):639–670.