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Economics 741
Homework #4 Assignment)
Due 27 Nov 2017

For this homework, you will be answering the following questions from Chapters 7, 8 and 9. Up to 5 bonus points for LaTeX.

Please turn in the following:

- A write up
  - If I ask you to compare some numbers, please show me the numbers in the write up.
  - If you are using LaTeX, print output in table form when it is more than just one number
  - If you are not using LaTeX, paste things into some sort of table
- All code (Stata .do file)
- All output (Stata .log file)

Use the "HW4.dta" file that I have posted on my website at http://sorensen.coba.unr.edu/741/HW4.dta.

For this assignment, you are allowed to work either in your original group, or on your own.

1. **Immigration and Employment: (60 Points)**
   Here you will answer questions related to panel data and IV. You will need to construct a dataset with the share of immigrants in each state and year. Here are my hints on how to do this:

   - Drop immigrants and observations from 1980 from the data and save the dataset, this will be the main dataset that you will use for analysis (call this for example "ind.dta").
   - Next, go back to the original data, and create an indicator variable for someone being foreign born using the bpld command.
   - Use the "collapse" command and its "by" option to find share foreign born in each state and year.
   - Save this dataset for example as "shares.dta" and then merge it with "ind.dta". If you load the ind.dta into memory, you will want to merge on statefip and year, merging as m:1. You will now have all the data that you need to complete the questions below, other than the questions on IV.
   - To construct the instrument, you will need to find the share of immigrants who would be in each state and year if immigrants had chosen U.S. states in year t the same way they did in 1980. To do this, I would first load the original data into memory and, using the same commands above, find "λ", the probability that an immigrant lived in a given state in 1980. Save this dataset as lambda.dta
   - Using the original dataset, I would then use the collapse command to find the total number of natives and immigrants in each state and year. I would then use egen to find the total number of immigrants across all states in a given year.
   - Merge with the lambda data, and you will now be able to construct an alternate number of immigrants in each state and year with the lambda.
   - Finally, collapse this data to create an alternative share.dta. Merge your main data with this, and you will now have two measures of share. One is your X, one is your Z.

With this data, please answer the following questions:

(a) Using the data from 2005-2016, run the following regressions, and present the results in a table: (Table 1) (4 points)

- OLS of a dummy for an native born worker being employed on the share foreign born.
- Same as above, using time dummies.
- Same as above, using state fixed effects with xtreg.
- Using both state fixed effects and time dummies.

(b) Interpret the results of the regression. (8 points)

(c) Repeat this analysis using data only on native workers younger than 30. (Table 2) (4 points)

(d) Interpret the results of the regression. (8 points)

(e) Repeat this analysis using data only on native workers age 30 or older. (Table 3) (4 points)

(f) Interpret the results of the regression. (8 points)

(g) Repeat Table 1, this time using IV. (8 points)

(h) Interpret the results of the regression. Specifically, discuss relevancy, validity, and a local average treatment effects interpretation of your model. Also discuss bounding your estimates if the IV is not valid. (16 points)

2. **Probits and Logits**

(a) Using only individuals in 2016 in Nevada, program a probit model in the ML environment to show how age effects employment (1 is employed, 0 is not employed). Show that this matches the results from the "probit" command in Stata. (20 points)

(b) Give the marginal effect of age at the mean of age and the mean of the marginal effect of age. Do this by calculating the effects without using margins or similar commands. (10 points)

(c) Display a graph showing how the estimated probability of employment changes with age using results from both a logit and a linear probability model. (10 points)