Assignment #5

ECON 5783 — University of Arkansas

Prof. Kyle Butts

These assignments should be completed in groups of 1 or 2 but submitted individually. My preference is for you to use Rmarkdown files to have your code, results, and your answers to the questions intermixed. Since I am not requiring you to code in R for these assignments, you can use latex or microsoft word to write up answers alternatively. Not that in these cases, I would like you to upload your code seperately.

Theoretical Questions

1. In the following examples, give an example why you think the following exclusion restrictions might fail
    i. You regress future wages (y_i) on going to post-secondary school (D_i) with an insatrument of being within a 15-minute drive of a community college (Z_i)
    ii. You regress house prices (y_i) on the town's school quality (X_i) with an instrument for whether a town levied an extra school-funding tax (Z_i)
    iii. You regress a person's happiness (y_i) on their wealth (X_i) with an instrument for the parent's wealth (Z_i)
2. In your own words, why is inference hard on the two-stage least squares coefficient when you have a 'weak' instrument

Coding Exercise: Gerber, Huber, and Washington (2010, APSR)

This exercise will have you work with replication material from Gerber, Huber, and Washington.[1] The dataset can be loaded from `gerber_et_al_2010.csv`. This paper wants to test they hypothesis that registering with a political party (instead of as an 'Independent') changes a person's political beliefs. To do so, they run a randomized experiment in Connecticut for the 2008 election. In Connecticut, you have to be registered with a political party (Democrat or Republican) to vote

1. Full data documentation is available at https://isps.yale.edu/research/data/d055.

in that party's primary election. From a sample of unregistered voters, the authors randomly assigned some voters to receive information (Z = `treat`) that let them know this (so that they register with a political party).

Each voter they contacted was asked questions to gauge which political partyt they most closely aligned with. They then recorded whether the vote registered with their ideological party (D = `pt_id_with_lean`). The outcome of interest is the voter's political ideology a few months after registering with a party, which they measured via a follow-up survey with a similar set of policy questions. They created a varaible (y = `pt_voteevalalignindex`) which has larger values if the person more strongly agrees with *their* political party's stances.

Overview of experiment

- Z_i: Voters are randomly told before the primary (say January) that you must register with a party to vote in the primary
- D_i: Voters (possibly) register to vote with a party before the primary
- y_i: Voters are surveyed later in the year (say July) about their political beliefs. y_i is larger if you are more 'ideologically aligned' with your registered party

Questions

1. First, let's see if the experimental design actually caused some voters to register with their political party. To do so, run the first-stage regression of Z on D. Interpret, using the F-statistic, whether the first-stage is "strong".
2. Second, run the reduced-form regression of y on Z. Then, form the $\beta_{\texttt{2SLS}}$ estimate by hand
3. Estimate the two-stage least squares estimate using `feols`. From this result, interpret whether or not registering with a political party changes a voter's ideology. Is the estimate statistically significant?
4. Now, let's try and characterize compliers using the method highlighted in the lecture slides (2SLS regression of $D_i * X_i$ on D_i instrument by Z_i). For the following variables, compare these complier's means to the overall population means: the voter's age in 2008 (`age`); whether the voter voted in the 2006 midterm elections (`voted2006`); and whether the voter attends church of not (`pt_church`).
    - Given this information, how does this change how you interpret the `LATE` estimate?