Part 0 – Open Stata, and make your own do-file

- Start Stata through the start menu button
- In de white command window type `doedit` to start de do-file editor. Place the Stata screen on the left and the do file editor on the right such that you can easily switch between the two.
- Save the empty do-file as a new do-file under an applicable name such as `ectrcs_w2.do` in a directory that you want to use for this course, for example `H:\ectrcs`
- In the first two lines of the do-file type

```
cls                                 //this clears the screen
clear all                           //this clears the memory
cd "H:/ectrcs"                      //this is your path
```

- If you want to use your own computer type instead:

```
cd "~/ectrcs"                       //this is your MAC path
cd "c:/ectrcs"                      //this is your PC path
```

Part 1 – The effect of concealed weapons laws on violent crimes

This computer exercise is based on Empirical exercise E10.1 from Stock and Watson 4th edition.

Some U.S. states have enacted laws that allow citizens to carry concealed weapons. These laws are known as "shall-issue" laws because they instruct local authorities to issue a concealed weapons permit to all applicants who are citizens, are mentally competent, and have not been convicted of a felony. (Some states have some additional restrictions.) Proponents argue that if more people carry concealed weapons, crime will decline because criminals will be deterred from attacking other people. Opponents argue that crime will increase because of accidental or spontaneous use of the weapons. In this exercise, you will analyze the effect of concealed weapons laws on violent crimes. On Canvas, you will find the data file Guns.dta, which contains a balanced panel of data from the 50 U.S. states plus the District of Columbia for the years 1977 through 1999. A detailed description is given in Guns_Description, also available on Canvas.

1. Download the Guns.dta from Canvas, and put it into your H:\ectrcs folder. Now open the data by typing use Guns.dta. Next, type ssc install estout, replace to install an auxiliary package for obtaining nicely formatted tables.
2. Create a variable which equals the logarithm of the violent crime rate by typing gen ln_vio=ln(vio).
3. Estimate a regression of ln_vio against shall. Store results by typing est sto vio_eq1. Interpret the estimated coefficient on shall. Is this estimate large or small in a real-world sense? Do you think that there are threats to the internal validity of the estimated regression model?
4. Now we include a number of state characteristics as control variables. Estimate a regression of ln_vio against shall incarc_rate, density, avginc, pop, pb1064, pw1064, and pm1029. Store the results by typing est sto vio_eq2. Does adding the control variables change the estimated effect of a shall-issue law as measured by

statistical significance? As measured by the real-world significance of the estimated coefficient?

5. Suggest a variable that varies across states but plausibly varies little—or not at all—over time and that could cause omitted variable bias in the regression model estimated in part 4.
6. You are next going to add state fixed effects by including dummy variables for each state. First, you need to construct a set of binary variables, one for each state. Type tab stateid, gen(Dstate). Next you can include the created dummy variables by typing regress ln_vio shall incarc_rate density avginc pop pb1064 pw1064 pm1029 Dstate*, robust. Alternatively you can create dummy variables and estimate the regression model in one step by typing xi: regress ln_vio shall incarc_rate density avginc pop pb1064 pw1064 pm1029 i.stateid, robust. Why is one binary variable dropped from the regression model?
7. A regression model with fixed effects can also be estimated by within estimation. First, you need to tell Stata which variable indicates the so-called entities by typing xtset stateid. Next you type xtreg ln_vio shall incarc_rate density avginc pop pb1064 pw1064 pm1029, fe robust to estimate the regression model with fixed effect by within estimation. Store the results by typing est sto vio_eq3. Compare your estimation results with the results in part 6.
8. Create dummy variables for each year and include these in the fixed effects regression model. For example by typing: xi: xtreg ln_vio shall incarc_rate density avginc pop pb1064 pw1064 pm1029 i.year, fe robust. Store the results by typing est sto vio_eq4. Do the results change when you add fixed time effects?
9. Type esttab vio_eq*, b(3) se(3) compress title(Logarithm of violent crime rate). Compare the results in the different columns. Which set of regression results is more credible, and why?
10. Repeat steps 2-9 but use the robbery crime rate instead of the violent crime rate. What do you conclude about the effect of shall issue laws on the logarithm of the robbery crime rate?
11. Repeat steps 2-9 but use the murder crime rate instead of the violent crime rate. What do you conclude about the effect of shall issue laws on the logarithm of the murder crime rate?
12. In your view, what are the most important remaining threats to the internal validity of this regression analysis?

References

Stock, J.H. and M. W. Watson (2020). Introduction to Econometrics. Fourth edition, global edition.