HW 4 Outputs

1. What implicit claim about causality does Obama's "cycle of crime" theory assert?

In the cycle of crime theory, there is an implicit claim that harsh sentencing cause longer time in jail with comes with an increase of opportunity of being recruited to criminal activity or the difficulty of finding a job defaulting to more criminal activities for the.

2. Your friend has an ingenious idea. He/she has detailed case data about criminal sentencing in a large jurisdiction for everyone charged with a felony. The data includes the length of the prison sentence (in days), and whether the person was convicted of a *second* crime after he/she was out ("recidivism"). This seems to be what the "cycle of crime" theory is talking about.   
  
The proposed research design is: Run a regression whose outcome is recidivism and whose main explanatory variable is the length of the prison sentence. React your friend's research design.

The implicit claim was regarding harsh sentencing cause the length of time, which ultimately leads to the increased odds of recidivism. One may receive a fair sentence relative to the degree of crime, and serve the fair amount in prison. Thus, using merely the length of the prison sentence does not explain whether the cycle of crime theory is correct.

3. Perform a balance test. Does the judge's party really seem to be randomly assigned?

**Table 1: Balance Test of Variables Based on Democratic or Republican Judge**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Democratic Judge | Republican Judge | Difference |
| Severity of Crime | 1.979 | 1.966 | 0.014 |

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

Here we see that between democratic judge and republican judge, the severity of crime they presided over is not different. Thus, we see that between the democratic judges and republican judges they were randomly assigned to the defendant without a skew towards republican judges presiding over a more severe crime or democratic judges presiding over less severe crime and vice versa.

4. Describe in words the ``first stage'' of the IV design. Then, create a publication-quality table for the first stage only.

* Find the variable you want to make a causal statement about. Let's call this ``x.''
* Use this as the outcome of your first stage regression.
* As the main explanatory variable, use your instrument (``z'').
* Control for other variables that might explain x besides z (as long as they are not downstream of z).

For the first stage of regression we would want to create a causal statement that harsh sentencing comes from republican judges. Here we use x as being the months in jail while the main explanatory variable is whether or not the judge is a democrat of republican. Here we would want to control for the severity of the crime as the severity of the crime can also explain the months the defendant will go to prison for.

6. Interpret the coefficient on your instrument from the first stage.

**Table 2: First Stage Regression**

|  |  |
| --- | --- |
|  | Months in Jail |
| Republican Judge | 3.22\*\*\* |
|  | (.367) |
| Observations | 5000 |
| *R*2 | 0.565 |

Standard errors in parentheses

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

**Notes**: Here we see that republican judges are more severe in their sentencing after controlling for the severity of the defendant’s crime. On average, the republican judges give 3.22 months more in jail compared to the democratic judge keeping constant the severity of the defendant’s crime. This coefficient was also significant.

7. Calculate the "reduced form." Your reduced form regression will be…

**Table 3**: **Second Stage Regression**

|  |  |
| --- | --- |
|  | Recidivates |
| Predicted Months in Jail | .154\*\*\* |
|  | (.0107) |
| Observations | 5000 |
| *R*2 | 0.141 |

Standard errors in parentheses

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

**Notes**: Again, having controlled for the severity of the crime, we see that the reduced form regression results in a significant coefficient for months in jail. Here we interpret the table as that the **compliers** of the nudge (republican judge) are more likely to recidivate.

8. Calculate the ratio of the reduced form

* The coefficient on z from the reduced form.
* ... divided by ...
* The coefficient on z from the first stage

9. Now complete the IV regression and make a publication quality table of the second stage. Use the setup below.

Note that the F-stat is reported in the above regression output.

**Table 4: IV Regression Through Package**

|  |  |
| --- | --- |
|  | Recidivates |
| Months in Jail | .0443\*\*\* |
|  | (.00576) |
| Observations | 5000 |
| *R*2 | -0.944 |

Standard errors in parentheses

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

10. State the F-stat in your writeup. It does not need to go into your table (although, in an actual publication it would). Is it above the conventional threshold?

The F-Stat is F(2,4997) = 164.34 and is above the conventional threshold.

11. Compare your answer to question #8 (above) to the IV coefficient in #9.

The result of the two coefficients are very similar with a slight difference of ~.003.

12. Complete these sentences.

* In the research design above (using randomized judges), the always-takers are the defendants who are always going to recidivate no matter which camp of judge they get.
* The never-takers are the defendants who are always going to not recidivate no matter which camp of judge they get.
* The compliers are the defendants who are going to recidivate only if they get a republican judge.
* The defiers are the defendants who are going to be less likely to recidivate if they get a republican judge.

13. Comment on the monotonicity assumption and the possibility of "defiers" in this setting.

The possibility of defiers are present in this setting as there might be defendants who might realize find the harsh sentencing of a republican judge to be something that causes them to rethink their actions and stop their criminal activity. However, if they were given a democratic judge and therefore less time in jail, they may not necessarily realize the wrong doings and continue their criminal activity. Thus, in this case, we cannot assume monotonicity as there can be both increasing and decreasing based on levels of treatment and defendants.

14. In your dataset, what types of defendants are compliers?

The defendants that are given a republican judge and end up recidivating are those who would be compliers in the dataset.

15. Does the cycle of crime hypothesis appear to be true for the compliers?

The cycle of crime hypothesis appears to be true at least for compliers as the treatment (republican judge) was ultimately significant where the coefficient of recidivating was positive.