Assignment 4 Write-up

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**Question 1**

The theory asserts that there is a positive causal impact from conviction on future crimes; this would imply that (1) there is a positive correlation between conviction and future crimes and (2) this correlation is not confounded by other covariates such as personal characteristics.

**Question 2**

My friend’s design assumes a linear unconfounded causal model of length of crime to recidivism. However, (1) the relationship between sentence length and recidivism is not likely to be linear (unless one assumes linear crime-learning curve in prison), and (2) the relationship between sentence length and recidivism is likely to be confounded by factors such as severity of crime.

**Question 4**

Table 1: Balance Table for the Instrument



As can be seen, there is no significant differences in severity of crime between treatment and the control group. Judge assignment seems to be random.

**Question 5**

The first stage regression is to estimate the causal impact of our instrument (partisanship of judge) on the length of sentence (x), which establishes the relevance assumption.

Table 2: First stage regression on jail length

|  |  |
| --- | --- |
|  | Jail Length |
| Republican | 3.222\*\*\* |
|  | (8.77) |
|  |  |
| crime severity | 18.15\*\*\* |
|  | (80.21) |
|  |  |
| Constant | -19.47\*\*\* |
|  | (-37.46) |
| Observations | 5000 |

Table 1 presents first stage regression tetsting the relevance assumption using main explanatory variable, length of jail time, as the DV and the instrument, whether the judge is a republican, as IV.

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

**Question 6**

As table 2 shows above, republican partisanship of judges predicts 3.22 years longer jail length on average, holding all other things equal. This gives indication that the relevance assumption is satisfied.

**Question 7**

Table 3: Reduced form regression on recidivism

|  |  |
| --- | --- |
|  | Recidivism |
| Republican | 0.143\*\*\* |
|  | (11.47) |
|  |  |
| crime severity | 0.189\*\*\* |
|  | (24.61) |
|  |  |
| Constant | -0.114\*\*\* |
|  | (-6.48) |
| Observations | 5000 |

Table 3 presents reduced formed regression on recidivism using partisanship of the judges as explanatory variable.

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

**Question 8**

**Question 9**

Table 4: IV regression on recidivism

|  |  |
| --- | --- |
|  | Recidivism |
| Jail Length | 0.0443\*\*\* |
|  | (7.68) |
|  |  |
| Crime Severity | -0.615\*\*\* |
|  | (-5.85) |
|  |  |
| Constant | 0.748\*\*\* |
|  | (7.10) |
| Observations | 5000 |

Table 4 presents the IV regression on recidivism using republican partisanship of judges as instrument for explanatory variable length of jail time.

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001

**Question 10**

According to the regression result, F( 2, 4997) = 164.34 and Prob > F = 0.0000. This is way above the conventional threshold.

**Question 11**

Regression result in the instrumental variable regression is 0.0443, which is very close to the 0.044 calculated from the coefficient ratio method using two separate regressions.

**Question 12**

In the research design above (using randomized judges), the **always-takers** are defendants who always have harsh sentences no matter partisanship of judges.

The **never-takers** are defendants who always have lenient sentences no matter partisanship.

The **compliers** are defendants who have harsher (more lenient) sentences length only if the judge’s partisanship is republican(democrat) compared to the other party.

The **defiers** are defendants who have harsher(lenient) sentences only if their judges are democrat(republican) rather than the other party.

**Question 13**

Monotonicity assumptions says that our treatment of partisanship only increases or decreases sentence length. This is likely to be violated even after controlling for severity of crime. Democratic judges are likely to be lenient on crimes like drug uses but republicans may be more lenient on gun abuses.

**Question 14**

Defendants whose sentence length only increases when the judge is a republican and whose crime only decreases when the judge is a democrat.

**Question 15**

Assuming that severity of crime is the only confounding variable (which is not likely), the cycle of crime is supported as judge’s partisanship-induced increase in jail length does predicts higher recidivism, on average.