

Assignment 4

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Response

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

The theory asserts that harsh sentencing practices cause individuals with a history of crimes to be more likely to commit crimes again in the future.

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.

This research design can only test the correlational relationship between the length of prison sentences and a person's subsequent criminal activity, but it fails to infer any causation. The length of a prison sentence is not randomly assigned; rather, it is associated with several factors that can also directly influence future criminal behavior. For example, individuals who committed more severe crimes in the first place may be more likely to commit another crime. Additionally, factors such as location, family background, and macroeconomic environments can confound the relationship between sentence length and subsequent crime rates.

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

According to the balance table below, there is no significant difference in the severity of crimes between cases adjudicated by Republican and Democratic judges. However, Republican judges are associated with imposing longer jail sentences. This implies that Democratic judges may be more lenient than their Republican counterparts.

Interpret the coefficient on your instrument from the first stage.

As shown in Table 2, Republican judges significantly and positively predict the length of jail sentences (measured in months), even when holding the severity of the crime constant. This means that Republican judges tend to issue longer jail sentences than Democratic judges do for crimes of the same level of severity.

Calculate the ratio of the reduced form

The ratio of the reduced form is calculated as $0.143/3.222$, which equals 0.045.

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 of excluded instrument is 76 in the 2SLS model, which exceeds the conventional threshold of 10. This indicates that the IV (republican judge) is strongly predictive of the independent variable (months in jail).

Fill in the blank

In the research design above (using randomized judges), the always-takers are the individuals who always receive longer jail sentences no matter which judge they are assigned to.

The never-takers are the individuals who always receive shorter jail sentences no matter which judge they are assigned to.

The compliers are the individuals who receive longer jail sentences only if they are assigned to a Republican judge.

The defiers are the individuals who receive longer jail sentences only if they are assigned to a Democratic judge.

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

Under monotonicity, the effect of being assigned to a Republican judge can be interpreted without worrying about individuals reacting oppositely to the treatment. Assuming that neither defendants nor judges can influence the assignment process, the likelihood of defiers is minimal. However, certain scenarios could challenge the monotonicity assumption. For example, If the randomization process is flawed or if there is non-compliance (e.g., judges refuse assignments based on certain criteria), it might introduce defiers. Also, if external factors like political pressure influence judges to deviate from their typical sentencing patterns based on non-assigned characteristics, it could also lead to the violation of monotonicity assumption.

Conclusion

The results confirms the cycle of crime hypothesis, showing that longer prison sentences can lead to a 4.4% increase in the likelihood of defendants recidivating.

Table 1: Balance Table

	Control	Treatment	Difference
Severity of Crime	1.979	1.966	0.014
Months in Jail	16.453	19.429	-2.975***

Notes: This table compares democratic and republican judges across two dimensions: the length of sentences and severity of crime.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2: First Stage

	Months in Jail (1)
Republican Judge	3.222*** (0.367)
Severity of Crime	18.15*** (0.226)
Observations	5000

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Reduced Form

	Recidivates (1)
Republican Judge	0.143*** (0.0124)
Severity of Crime	0.189*** (0.00766)
Observations	5000

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$