WWS 508c, Econometrics for Policymakers   **Prof. Tom Vogl**

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PROBLEM SET 5: EFFECT OF MILITARY CONSCRIPTION ON CRIME

DUE 5/1 AT THE START OF CLASS

Many countries require young men to serve in the military. Proponents of these policies cite many benefits, including promoting national security and disciplining otherwise undisciplined young men. In this problem set, we will examine the second of these purported benefits by estimating the effect of military conscription on crime in Argentina.

Military service in Argentina was mandatory for young men throughout most of the twentieth century. The needs of the military varied over time, however, so it held an annual lottery to decide which newly eligible men would serve. The following paragraph (taken from a published source) describes the lottery in detail:

> *The eligibility of young males for military service was randomly determined, using the last three digits of their national IDs. Each year, for the cohort due to be conscripted the following year, a lottery assigned a number between 1 and 1,000 to each combination of the last three ID digits. The lottery system was run in a public session using a lottery drum filled with a thousand balls number 1–1,000. The first ball released from the lottery drum corresponded to ID number 000, the second released ball to ID number 001, and so on. The lottery was administered by the National Lottery and supervised by the National General Notary in a public session. Results were broadcasted over the radio and published in the main newspapers. After the lottery, individuals were called for physical and mental examinations. Later on, a cutoff number was announced. Individuals whose ID number had been assigned a lottery number higher than the cutoff number, and who had passed the medical examination, were mandatorily called to military service. Clerics, seminarians, novitiates, and any individual with family members dependent upon him for support were exempted from military service.*

To produce the dataset (available at http://www.princeton.edu/~tvogl/psets/ps5.zip), researchers started with all men born in 1958-1962, divided them into cells by birth year and last three ID digits, and then calculated crime rates for each of these cells. Thus, each observation in the dataset represents a set of men with the same birth year and last three ID digits. (The data are aggregated in this way to ensure confidentiality.) The following table defines the variables in the dataset:

Variable name	Description
birthyr	Birth year
draftnumber	Draft number (1-1000)
conscripted	Fraction conscripted
crimerate	Fraction with criminal record by 2005
property	Fraction with property crime conviction in 2000-2005
murder	Fraction with murder conviction in 2000-2005
drug	Fraction with drug conviction in 2000-2005
sexual	Fraction with sex crime conviction in 2000-2005
threat	Fraction with threat conviction in 2000-2005
arms	Fraction with weapons-related conviction in 2000-2005
whitecollar	Fraction with white collar crime conviction in 2000-2005
argentine	Fraction non-indigenous Argentinean
indigenous	Fraction indigenous Argentinean
naturalized	Fraction naturalized citizens

Our main outcome variable will be *crimerate*, which reflects the probability of ever having a criminal record. We will also disaggregate by type of crime, although these data are only available for crimes committed starting in the year 2000.

1. Describe the data. Are there differences in conscription rates or crime rates across birth years?

2. Use OLS to estimate the relationship between conscription rates and crime rates, controlling for observable covariates. Run 8 regressions, one for *crimerate* and one for each of the crime types. Do these results reflect causal effects of conscription? Describe possible biases. Are there any biases arising from the fact that data on crime type only become available starting in 2000?

3. The lottery assigned a draft number to each last three ID digit combination, and the military then set a cutoff based on the needs of the military, such that all draft numbers at or above the cutoff were eligible for conscription. Based on the following cutoffs, code a variable that equals 1 if eligible, 0 if not:

Year:	1958	1959	1960	1961	1962
Cutoff:	175	320	341	350	320

4. Estimate the "first stage" effect of eligibility on conscription. Think carefully about the regression specification. Do you need to control for birth year fixed effects? Do you need to control for ethnic composition?

5. Estimate the "reduced form" effect of eligibility on crime rates. As before, estimate 8 regressions, one for *crimerate* and one for each of the crime types. Do these results reflect causal effects of conscription?

6. Based on your results for questions (4) and (5), calculate instrumental variables estimates for the effect of conscription on crime (both *crimerate* and crime types). You need only calculate point estimates, not standard errors.

7. Confirm your calculations by running two-stage least squares regressions. Are there differences between the 2SLS (question 7) and OLS (question 2) results? Why or why not?

8. Given your knowledge of the Argentine draft (from the paragraph on page 1), assess the validity of eligibility as an instrument for conscription. Does it satisfy all the criteria for a valid instrument?

9. Interpret the 2SLS result for *crimerate*. Which population's average treatment effect does it estimate? Is it reasonable to call it a local average treatment effect? Is it reasonable to call it a treatment-on-the-treated effect?

10. Israel also has a military draft. Suppose we wanted to use the results from Argentina to project what would happen to Israeli crime rates if Israel switched from mandatory to voluntary military service. An important distinction between Argentina and Israel is that most Argentines were not eager participants in the military, whereas many Israelis claim that they would enlist in the military even in the absence of a draft, out of a sense of patriotism. (This statement is a gross generalization, but please take it as given in your answer.) Does this distinction affect whether we can use the estimate from Argentina to predict the effect of the repeal of the draft in Israel?