Lecture 25

11-19-2021

Announcements

There is no section on 11/24

There is no class on 11/29

WP10 and Checkpoint 13 are due on Friday

PS5 will be available on Thursday

Applications: Card (1995)

Card is interested in estimating the returns to schooling

Problem: schooling is almost certainly associated with unobservables

Strategy: instrument by using college in the county

Applications: Card (1995)

Why does this instrument work?

Does this represent a LATE or an ATE?

Is the parameter interesting?

Applications: Card (1995)

Card finds that the 2SLS is larger than the OLS estimate. Should we be worried about this?

What story could we tell that justifies this pattern?

Lotteries

Lotteries are a highly common instrumental variables strategy

Baicker *et. al* (2013) use a randomized lottery of Oregon's Medicaid program as an instrument for being on Medicaid. Why does this work?

In Oregon, for five weeks in the early 2000s people were allowed to sign up for Medicaid. The state than randomly drew 30,000 out of a list of 85,000 and gave the winners a chance to apply.

Out of the original 30,000 only 10,000 people were enrolled.

Lotteries

When studying the Oregon Medicaid experience the model of interest is:

$$I_{ihj} = \beta_0 + \beta_1 (L)_{ih} + CONTROLS + ERROR$$

$$Y_{ihj} = \delta_0 + \delta_1 I_{ih} + CONTROLS + ERROR$$

Applications: Examiner Designs

In some situations there exists a specific path that all individuals must pass through where randomly assigned decision maker assign a treatment to individuals and the decision maker has discretion.

This situation has been used to get at what are often known as "Judge fixed effects design"

Mueller-Smith (2015) uses the fact that in Harris County, Texas (where Houston is located) uses a bingo machine to assign defendants to one of dozens of courts

Applications: Examiner Designs

We would like to estimate the equation

$$Y_i = \beta_0 + \beta_1(D) + \mathbf{X}\beta + ERROR$$

The concern is that people who get longer prison sentences might be different than those who are given shorter sentences and these differences are unmeasureable.

However, if judges are randomly assigned and some are harsher than others we can use judge leniency as an instrument for prison sentence

This requires A LOT of data.

Applications: Examiner Designs

Bankruptcy and future financial events (Dobbie, Goldsmith-Pinkham, and Yang 2017)

Racial Bias among bail judges (Arnold, Dobbie, and Yang 2018)

Pretrial detention and recividism (Stevenson 2018)

Summarizing IVs

IV is an old and powerful design for identifying causal effects in situations where you have selection on unobservables

IV only identifies the LATE under HTE which may or may not be interesting

IV assumptions are strict. The best instruments come from situations where we can plausibly claim randomness.