RECITATION 10

IDENTIFICATION TECHNIQUES

REVIEW
SESSION FOR
THE FINAL
EXAM

THEORY
PROBLEM

- What are identification techniques used for?

- What are the identification techniques that we discussed in class?

ORDINARY LEAST SQUARES

- Suppose we want to identify the causal impact of X on Y

- OLS: $Y_i = \alpha + \beta X_i + \epsilon_i$

- What are the identification assumptions?
  - ϵ is assumed to be uncorrelated with X. If X is a dummy, $E[\epsilon|X=0] = E[\epsilon|X=1]$
  - what if we include a control variable W?

- When do we use IV?
  - We want to estimate the causal impact of X on Y but believe that X is endogenous:
    - reverse causality: Y also explains X
    - missing variable correlated with X
  - We have an instrument Z

- Suppose Z is a dummy variable.
  - What is the first stage?
    $E[X_i|Z_i = 1] - E[X_i|Z_i = 0]$
  - What is the reduced form?
    $E[Y_i|Z_i = 1] - E[Y_i|Z_i = 0]$

- What are the identification assumptions?
  - There must be a first stage: Z must affect X
  - Exclusion restriction: $E[\epsilon|Z = 0] = E[\epsilon|Z = 1]$

- What is the Wald estimator?

FIXED EFFECTS

- When do we put fixed effects?

- Equation we estimate: $Y_{i,c} = \alpha_c + \beta X_{i,c} + \epsilon_{i,c}$ where α_c are (for instance) country fixed effects.

- What variation is then used to measure the impact of X on Y?

- $T_i = 1$ if $Z_i \geq c$ and $T_i = 0$ if $Z_i < c$

- Identification assumption:
  $lim_{x \downarrow c} E\left[Y_i(0)|Z_i = x\right] = lim_{x \uparrow c} E\left[Y_i(0)|Z_i = x\right]$. What's $Y_i(0)$?

- What equation do we estimate?
  $Y_i = \alpha + \beta \mathbf{1}_{Z_i \geq c} + \epsilon$

REVIEW
SESSION FOR
THE FINAL
EXAM

THEORY
PROBLEM

- Suppose we come up with a identification strategy to regress growth on a dummy equal to 1 if the country is democratic. We add controls for disease environment and whether the country is landlocked

- Results

	Growth
Democracy	0.037
	(0.014)
Disease environment	0.09
	(0.39)
Landlocked	0.02
	(0.12)

- Test H_o: democracry does not affect growth. What do you conclude?

REVIEW
SESSION FOR
THE FINAL
EXAM

THEORY
PROBLEM

- Results

	Growth
Democracy	0.037
	(0.014)
Disease environment	0.09
	(0.39)
Landlocked	0.02
	(0.12)

- What is your estimate of the impact of democracy on growth? **MAKE A SENTENCE!!!!** What if the outcome was ln(Growth) instead of Growth?

- What is a confidence interval? What is the confidence interval for the estimate of the impact of democracy on growth?

- Can we conclude that democracy is the only factor affecting growth?

8

THEORY PROBLEM

14.75 Political Economy and Economic Development
Fall 2012