

Econ 174, Section 101/103

Week 7

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1. Results of informal evaluation:

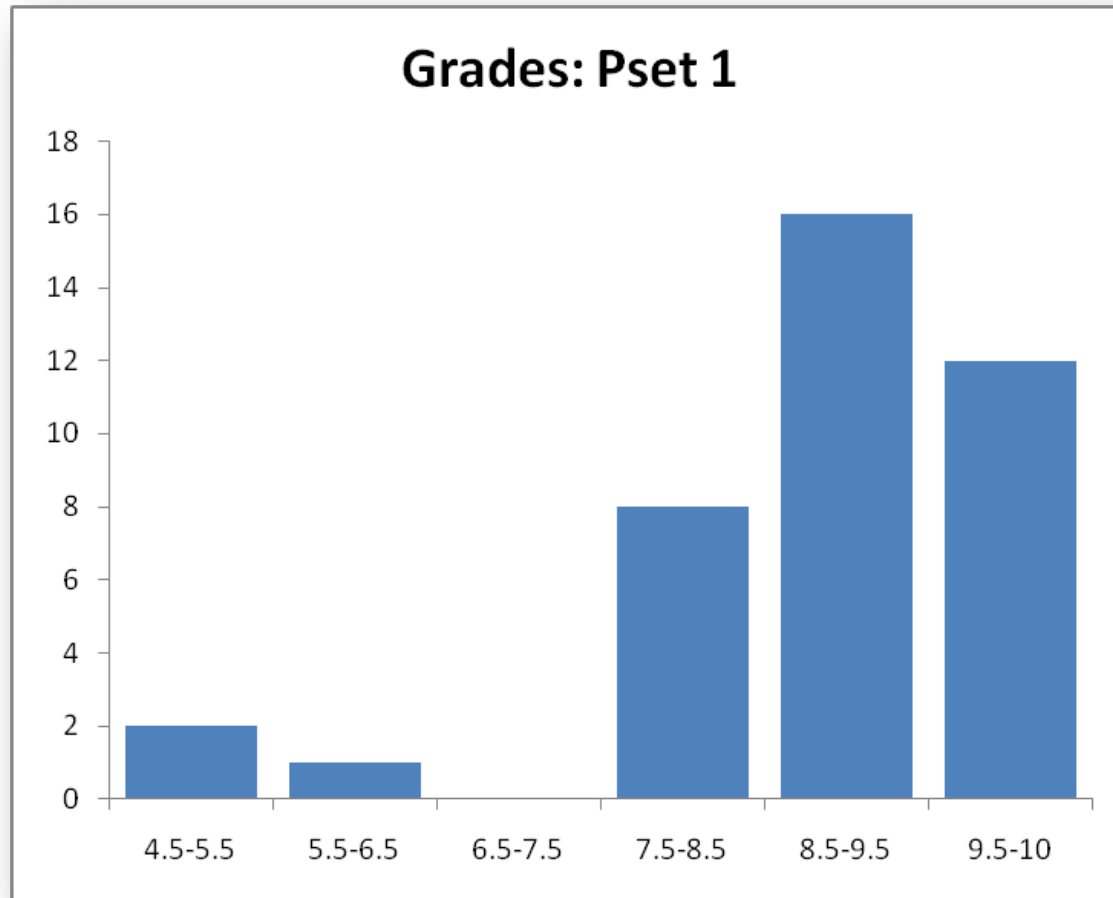
- Pace: most people think section is about right
 - 2 people rated 3 (too slow)
 - 6 people rated 7-8 (too fast)
- Material:
 - lots of requests for more stata review (2 requested less)
 - Especially as related to problem sets
 - Mixed requests for going over papers
 - People want a review of equations/math

Today

- Questions?
- Review of PSET 1
- Review of instrumental variables
- Attrition

- Next week
 - Fixed effects
 - Duflo's IV strategy
 - Doing IV in STATA

PSET 1 review



Instrumental variables

$$Y_i = \alpha + \beta D_i + \delta X_i + \epsilon_i$$

- Example 1: Y=wages, D=education
- Example 2: Y=Health, D=wages
- Example 3: Y=Rent, D=house price, Z=family income (bad)

- “First Stage”

$$D_i = a_1 + b_1 Z_i + c_1 X_i + u_i$$

- IV (2SLS)

$$Y_i = a_2 + b_2 \underline{D}_i + c_2 X_i + v_i$$

- “Reduced form”

$$Y_i = a_3 + b_3 Z_i + c_3 X_i + w_i$$

Instrumental variables

- Assumptions
 - $\text{Cov}(Z_i, X_i) \neq 0$
 - $\text{Cov}(Z_i, \epsilon_i) = 0$
- 4 ways to estimate:
 - Using predicted values of D from first stage
 - `ivregress Y (D=Z) X`
 - Including residuals from first stage in “second stage”
 - Direct computation: b_3 / b_1

Instrumental Variables: Stata

- <http://www.stata.com/support/faqs/stat/ivreg.html>
- Help “ivregress”
- Google “Stata 2sls”

Attrition

- Context:
 - Differential attrition by treatment assignment
 - Threatens internal validity
 - How to test?
 - ttest, regressions, ...
 - Differential attrition by type
 - Primarily threatens external validity
 - In certain circumstances, internal validity also an issue
 - How to test?
 - reg missing treatment controls treatmentXcontrols