

Economics 312
Optional Daily Problem #18

Spring 2014
March 3

This daily problem was about half of the in-class midterm exam a few years ago. Consider both a daily problem that we will discuss in class, and also a preview of the kind of question you're likely to see on the in-class exam.

Consider the regressions whose results are presented below. Standard errors are in parentheses below the coefficient estimates. The dependent variable in each regression is the final-exam score in a microeconomics course. The range of scores is 10 to 39, with a mean of 25.9 and a standard deviation of 4.7. (ACT is a test score like the SAT, but with a top score of 36.)

Variable	Coeff	Mean	S.D.	(1)	(2)	(3)	(4)
ACT score	β_1	22.51	3.49	0.357*** (0.0489)	0.401*** (0.0528)	0.399*** (0.0533)	0.385*** (0.0519)
GPA in prior courses	β_2	2.59	0.54	2.354*** (0.330)	1.915*** (0.397)	1.906*** (0.402)	2.052*** (0.376)
% of classes attended	β_3	81.7	17.0		0.0254** (0.0112)	0.0139 (0.0141)	
% of homework submitted	β_4	87.9	19.3			0.0183 (0.0122)	0.0243** (0.0101)
Constant	β_0			11.76*** (1.172)	9.834*** (1.395)	9.226*** (1.456)	9.785*** (1.394)
<i>p</i> value for <i>F</i> test of $\beta_3 = \beta_4 = 0$				0.027			
Observations				680	680	674	674
R-squared				0.195	0.201	0.206	0.205

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

- Do students who have done better in prior courses also do better in this one, given their admission-test scores? (You should answer this both with reference to statistical significance and also economic significance.) Explain precisely how you arrived at your conclusions.
- (a) What does the evidence from these regressions say about the importance of class participation through attendance and submission of homework?

(b) Why are the statistical conclusions for these variables difficult to interpret? What might be causing this difficulty?

(c) The regressions in columns (3) and (4) have fewer observations. Speculate on why this might be and under what conditions it would affect the regression results in an important way.

3. Suppose that Professor Peter Pompous argues that knowing a student's prior college performance makes pre-college admission credentials such as ACT scores irrelevant.

(a) How would you formulate a test of the Pompous Hypothesis based on column (1)?

(b) What would you conclude?

(c) Based on the table, is this result sensitive to the inclusion or exclusion of variables measuring actual class participation?