

Homework Assignment #4 (Due Monday 10/19/09, in class)

1. (page 135) 6.2
2. Consider the following model:

$$y = \beta_0 + x_1\beta_1 + x_2\beta_2 + (x_2 * x_1) \beta_3 + u$$

where both x_1 and x_2 are dummy variables.

(1) Show that an estimate of β_3 :

$$\hat{\beta}_3 = (\bar{y}_{x_1=1, x_2=1} - \bar{y}_{x_1=1, x_2=0}) - (\bar{y}_{x_1=0, x_2=1} - \bar{y}_{x_1=0, x_2=0})$$

is consistent and unbiased. Note $\bar{y}_{x_1=1, x_2=1}$ indicates the average of those observations such that $x_1=1$ and $x_2=1$.

(2) What is the standard error of the estimator $\hat{\beta}_3$?

3. (page 136) 6.6
4. (page 138-139) 6.11
 - f. Run the log(wage) regression separately from 1978 and for 1985. Obviously the year dummies can no longer be included. Compare the returns to education and the gender gap in the pooled regression and in the separate regressions. Are there any differences and why?
5. (page 139) 6.12