

Homework 6. Due Tuesday April 19.

1. Assume that random variables y_i for $i=1,\dots,20$ are independent with $E(y_i) = \alpha + \beta x_i$, $Var(y_i) = \sigma^2 x_i^2$, where $x_i = i$ and $\sigma^2 = 2$.

a) If you estimate α and β by OLS, what is the variance of $\hat{\beta}$?

b) If you estimate α and β by GLS, what is the variance of $\hat{\beta}$?

2. Greene (7th ed.), question 9.1 (page 286).

3. Greene (7th ed.), question 9.8 (page 287).

4. In Gauss or Matlab, download real per capita U.S. exports, consumption, GDP, and personal income from the Bureau of Economic Analysis (BEA). Using vectors and matrices (i.e., do not use the built-in regression commands, except to check your results, if you want) regress exports on the other variables.

Calculate and print the estimated coefficients (next week, we will add a lot more, using the same data). Include your code with your answers.