Econ 444 Exercise for October 13

de Jong, Fall 2004

For the class of October 13, read Chapter 1 of Studenmund. Also, attempt to answer the questions below.

1. Suppose that we have a data set for the 50 states of the USA for various years, and that we have observations on the unemployment rate $Y_i$ and the minimum wage (in real terms) $X_i$. Consider the linear regression of $Y_i$ on $X_i$.

   (a) How does the hypothesis that the minimum wage has no effect on unemployment translate to your expectations of what values you will find for $\hat{\beta}_0$ and $\hat{\beta}_1$?

   (b) Someone suggests that if the minimum wage is zero, unemployment should be zero too. How does this hypothesis translate in your expectations of what values you will find for $\hat{\beta}_0$ and $\hat{\beta}_1$?

   (c) Someone finds a positive value for $\hat{\beta}_1$. Does that mean that we know for certain that the minimum wage and the unemployment rate are positively correlated?

   (d) Suppose now that we have statistical evidence that the unemployment rate and the minimum wage are indeed positively correlated. Does this necessarily imply that raising the minimum wage will increase unemployment? (Think this one over carefully!)

   (e) Suppose that, as the minimum wage increases from say, $5 an hour to $6 an hour, the effect on the unemployment rate will be small, but the increase from $8 to $9 will have a larger effect on the unemployment rate. What will that imply for our linear regression?