Ec317 Labour Economics Problem Set 10

- 1. Download the data set "schooling.dta" from the course web-site. The data set contains observations on 3,010 men age 24 to 34 in 1976 and is taken from the National Longitudinal Survey of Young Men. A description of the variables in the data set can be found in the file "schooling.txt". The data were used in an article on the returns to schoooling by David Card.
 - (a) OLS Estimates of the Returns to Schooling. Run an OLS regression of the log of hourly wages (*lwage76*) on years of education (*ed76*), a quadratic in years of experience (*exp76 exp762*), a black dummy, a city dummy (*smsa76*) and a south dummy. What is your interpretation of the coefficient on the education variable? Interpret the coefficients on the experience variables. At what point do they peak and how much do they grow?
 - (b) Age or Experience? Is Mincer's Specification the Best? Generate the variable $age762=age76^2$. Estimate the same earnings equation as before but replace experience and its square by age and its square. Compare the two sets of results. Since experience is defined a exp76 = age76 ed76 6, show that both of the above models are special cases of the more general model:

 $lwage76 = \beta_0 + \beta_1 age76 + \beta_2 age762 + \beta_3 ed76 + \beta_4 ed762 + \beta_5 aged + \beta_6 black + \beta_7 smsa + \beta_8 south$

where aged = age76 * ed76. Estimate this general model. Perform an F-test of the restrictions imposed by the Mincer specification using the **test** command in STATA. Interpret your result.

- (c) **IV Estimates of the Returns to Schooling.** We might be worried that unobserved ability is an important determinant of earnings and that ability is correlated with the level of schooling.
 - 1. Explain what the effect of ability bias is on the OLS estimate of the return to schooling. One solution to this problem is to use an instrumental variable. Which two conditions must an instrument satisfy for its use to lead to a consistent estimate of the return to schooling? Card proposed using a dummy variable for whether the individual grew up near a 4-year college (*nearc4* in the data set) as an instrument. Why might this be a good instrument for the level of schooling?
 - 2. As experience and its square also depend on schooling, we need to instrument these variables as well. Card proposed using age and its square. Why do you think he did this?
 - 3. Run the first-stage regression

reg ed
76 age
76 age
76 age
76 black smsa
76 south
76 nearc4

What do the results suggest about whether the instruments are any good?

4. Now estimate the earnings function by instrumental variables. The command for this in STATA is

reg lw ed
76 exp 76 exp 762 black smsa 76 south 76 (age 76 age 762 black smsa 76 south 76 nearc
4)

Comment on your results.