Economics 406: The Economics of Education
Homework #2

This homework is due on Thursday, April 26th.

1.   Open the data set entitled "Wage2 Data" from the "Data Resources" page on my website. This data was compiled by Jeffrey Wooldridge, an econometrician at Michigan State University. Interestingly, this data makes a number of non-standard observations of individuals including IQ, siblings, birthorder, and the score on a test entitled "The Knowledge of the World of Work (KWW)."

a. Use this data to estimate the regression:
$$lnwage = \beta_0 + \beta_1 Educ$$
How do you interpret β_1? What potential problems arise that might make this estimate of β_1 invalid?

b. One potential missing variable from the equation in (a) is an individual's IQ. What happens to the coefficient on education when you add IQ to the regression of (a)? Why does this happen? How do you interpret the coefficient on IQ? Is this what you would expect?

c. One might claim that an individual's unobserved ability to earn wages transcends IQ. For instance, tenaciousness or hard work might raise wages of both the high and low IQ individual and, simultaneously, this ability might be correlated to education. One method of dealing with this omitted variable problem is to use an instrument. Use the number of siblings as an instrument and re-estimate the impact of education on wages. What do you find?

d. Another possible instrument would be birthorder of the observation (i.e. firstborn, second born, etc.). Comment on birthorder as an appropriate instrument.

2.   On my "Data Resources" webpage, I have loaded a number of other datasets that simultaneously observe both wages and education. Among these are the April 2004 CPS, Angrist and Krueger Data, Mroz Data, and the Wage2 Data.

a. Choose one of my provided data sets and estimate the impact of education on wages. Be sure to add other variables to reduce the omitted variable problem. What do you find?

b. Given that some type of omitted variable bias exists, pick a potential instrumental variable from the data set you've used and re-estimate the returns to education. Please provide an evaluation of your instrument (i.e., does it fit the two requirements for an instrument?) and contrast your findings using the instrument with your findings in part a.

3.   Outline your final project for me. If possible, discuss the data you will use and the theory you are investigating.