Homework # 4  
Economics 113  
Professor Spearot  
Winter 2009  
Due Monday, February 23rd, in-class  
Please report all regression output and commands.

Using Wage2.dta from the course website, please run the following regression.

\[
\log(wage) = \beta_0 + \beta_{Educ} Educ + \beta_{Exper} Exper + \beta_{IQ} IQ + \beta_{Order} BrthOrd + u
\]  \hspace{1cm} (1)

Here, \(wage\) is the monthly wage, \(Educ\) is years of education, \(Exper\) is years of experience, \(IQ\) is IQ, and \(BrthOrd\) is the order of birth of the respondent (within their family).

a. What is the \(R^2\) for this regression?

b. Does IQ significantly affect wages? That is, can you conclude that \(\beta_{IQ}\) is significantly different from zero? Test this hypothesis at the 95% level.

c. Please construct a 99% confidence interval for \(\beta_{Educ}\). Please interpret your results.

d. Suppose that I reject the hypothesis that \(\beta_{Order} = 0\) in favor of a two-sided alternative. What does this mean? What is the probability that I’m wrong? Interpret the result. Should we include \(BrthOrd\) in the regression?

e. Suppose that I claim that the effect of a one year increase in education is the same as a one year increase in experience. Derive an equation to test this hypothesis, and estimate the new equation using stata. Am I correct?