

Homework

Econ 5213

November 7, 2005

Problems

Consider the following model of wages:

$$\ln(\text{wage}_i) = \beta_1 + \beta_2 \text{educ}_i + \beta_3 \text{exper}_i + \beta_4 \text{expersq}_i + \beta_5 \text{female}_i + u_i \quad (1)$$

where

wage_i = wages of the ith individual
educ_i = years of schooling for individual i
exper_i = years of experience for individual i
expersq_i = years of experience squared for individual i
female_i = 1 if female, 0 otherwise

also included in the data set is:
married_i = 1 if married, 0 otherwise

1. Using the data

use <http://fmwww.bc.edu/ec-p/data/wooldridge/WAGE1>

estimate the model using least squares.

- (a) Is the regression significant at the 5% level?
- (b) What is R^2 ?
- (c) What does inclusion of *exper* and *expersq* accomplish? Do these have the anticipated signs?
- (d) What effect does an additional year of schooling have on wages?

- (e) Using equation (1), perform the RESET test at the 5% level. Is there evidence that the model is misspecified? Create a new variable, $educsq$ as the square of $educ$. Augment the model by including this variable and repeat the RESET test. Does this improve things?
- (f) Jethro Bodean of Beverly Hill, California has a 6th grade education. What is the estimated impact of this on his log wage? Using the model that includes $educsq$, is there any incentive for Jethro to finish the 7th grade?
- (g) What is the estimated return to another year of schooling for someone who has finished high school ($educ = 12^{th}$) and college ($educ = 16^{th}$).
- (h) Is there evidence of gender discrimination in the model?
- (i) Suppose you believe that married women suffer more discrimination than single women. Reformulate the model to account for this and test the hypothesis at the 5% level.
- (j) Suppose you believe that single women earn the same wages as men, but that only married women are victims of discrimination. Reformulate the model in terms of this belief and test the hypothesis at the 5% level. Is this model ‘better’ than that in (f) above?
- (k) By now you have estimated 4 models i.e., (a), (e), (i), and (j). Put the results into a table and state which you prefer to base your conclusions on.