

# Homework

## Econometrics I

Fall 2004

### Instructions

Using the 526 observations on workers available from Wooldridge's site <http://fmwww.bc.edu/ec-p/data/wooldridge/WAGE1.dta>, answer each of the following. Remember, you can use the USE command in STATA, e.g.,

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

#### Variables:

1. wage	average hourly earnings
2. educ	years of education
3. exper	years potential experience
4. tenure	years with current employer
5. nonwhite	=1 if nonwhite
6. female	=1 if female
7. married	=1 if married
8. numdep	number of dependents
9. smsa	=1 if live in SMSA
10. northcen	=1 if live in north central U.S
11. south	=1 if live in southern region
12. west	=1 if live in western region
13. construc	=1 if work in construc. indus.
14. ndurman	=1 if in nondur. manuf. indus.
15. trcompu	=1 if in trans, commun, pub ut
16. trade	=1 if in wholesale or retail
17. services	=1 if in services indus.
18. profserv	=1 if in prof. serv. indus.
19. profocc	=1 if in profess. occupation
20. clerocc	=1 if in clerical occupation
21. servocc	=1 if in service occupation
22. lwage	log(wage)
23. expersq	exper <sup>2</sup>
24. tenursq	tenure <sup>2</sup>

## Questions

Consider the following linear model of log wages:

$$\ln(wage) = \beta_1 + \beta_2 educ + \beta_3 exper + \beta_4 tenure + u \quad (1)$$

1. Estimate the model's parameters using least squares.
2. In tabular form, present the estimated estimates and standard errors.
3. At the 5% level, test the hypothesis that education has a positive effect on wages? Are any other variables significantly positive at this level?
4. Form a 90% confidence interval for  $\beta_3$ . What does this indicate?
5. Obtain the predicted values from this regression and plot these, along with actual log wages, against education. (You'll need to sort the data using *educ* or the graph won't make sense). Could you have guessed what the graph would look like from the estimated coefficient? Why?
6. In terms of the wage (not log wage) what is the return to an additional year of schooling for someone who already making \$6.00 per hour?