

Class Exercise 3
Week 5
February 24, 2020

1. The data in WAGE2.RAW on working men was used to estimate the following equation:

$$\widehat{educ} = 10.36 - 0.094 sibs + 0.131 meduc + 0.210 feduc$$

where $n = 722$, $R^2 = 0.214$, $educ$ is years of schooling, $sibs$ is number of siblings, $meduc$ is mother's years of schooling, and $feduc$ is father's years of schooling.

- (i) Replicate these estimates in Stata (attach your .do file).
- (ii) Calculate the value of \widehat{educ} .
- (iii) Does $sibs$ have the expected effect? Explain. Holding $meduc$ and $feduc$ fixed, by how much does $sibs$ have to increase to reduce predicted years of education by one year? (A noninteger answer is acceptable here.)
- (iv) Interpret the coefficient on $meduc$.
- (v) Interpret the coefficient of determination.
- (vi) Suppose that Man A has no siblings, and his mother and father each have 12 years of education. Man B has no siblings, and his mother and father each have 16 years of education. What is the predicted difference in years of education between B and A?

2. The median starting salary for new law school graduates is determined by

$$\log(\widehat{\text{salary}}) = \beta_0 + \beta_1 \text{LSAT} + \beta_2 \text{GPA} + \beta_3 \log(\text{libvol}) + \beta_4 \log(\text{cost}) + \beta_5 \text{rank} + u$$

where *LSAT* is the median LSAT score for the graduating class, *GPA* is the median college GPA for the class, *libvol* is the number of volumes in the law school library, *cost* is the annual cost of attending law school, and *rank* is a law school ranking (with *rank* = 1 being the best).

(i) Explain why we expect $\beta_5 \leq 0$.

(ii) What signs do you expect for the other slope parameters? Explain.

Using the data in LAWSCH85.RAW, the estimated equation is

$$\log(\widehat{\text{salary}}) = 8.34 + 0.0047 \text{LSAT} + 0.248 \text{GPA} + 0.095 \log(\text{libvol}) + 0.038 \log(\text{cost}) - 0.0033 \text{rank}$$

where $n = 136$ and $R^2 = 0.842$.

(iii) What is the predicted ceteris paribus difference in salary for schools with a median GPA different by one point? (Report your answer as a percentage.)

(iv) Interpret the coefficient on the variable $\log(\text{libvol})$.

(v) Interpret the coefficient of determination.

(vi) Would you say it is better to attend a higher ranked law school? How much is a difference in ranking of 20 worth in terms of predicted starting salary?

(vii) Replicate these estimates in Stata for the full sample and a restricted subsample excluding the top and bottom one percent of reported salaries.