Problem Set IV

MIT (14.32)
Spring 2003

A. From Wooldridge: 7.3, 7.5, 7.6, 7.8

B. The 14.32 web page contains an ASCII data set (PS4.DAT) with observations on log weekly wages, log hourly wages, age, sex (1=male), race (1=White, 2=Black, 3=Amer. Indian, 4= Asian or Pacific Islander, 5=Other), and years of schooling for men and women aged 25-50 in the March 1992 CPS.

1. Besides schooling, a variable that figures importantly in the analysis of individual wage rates is labor market experience. Wages generally increase as we get more experience working, though not necessarily at a constant rate.

a. Construct a measure of potential work experience by computing:

age-education-6.

What is the rationale for this? Why is this "potential" experience and not "actual" experience?

b. Check the distribution of your constructed potential experience variable to see whether the values make sense. Set any implausible values to missing, so that they will be excluded from the statistical analysis in question 2.

2.a. Compute the multivariate regression of log hourly wages on

sex
a full set of race dummies
a quadratic function of potential work experience
years of schooling

a. As we discussed in class, check your regression by computing the multivariate schooling coefficient manually in two steps: (i) regress schooling on all the other covariates and save the residuals (ii) regress the dependent variable on the residuals.

b. Plot the estimated experience profile, and use calculus to compute the level of experience at which earnings reach their peak, according to this model. How old is a high school graduate who reaches this level of experience?

c. Re-estimate the model allowing the relationship between potential experience and wages to differ by sex. Construct an F-test for the null hypothesis that the relationship between potential experience and wages is the same for men and women. What happens to the coefficient on the sex dummy when the effects of potential experience differ by sex? What do you think is going on here?

d. Re-estimate the model in 2a, allowing the relationship between wages and schooling to differ by race. Construct an F-test to test the null hypothesis that the returns to an additional year of schooling are the same for all races.

e. Re-estimate the model in 2a, with a full set of interactions between race and sex. How many new variables do you need to add to your regression? Using your coefficients, calculate the expected log hourly wage in each race-sex category for a 25-year-old worker with 12 years of schooling.