Econ 444 Exercise for Wednesday November 19

de Jong, Fall 2003

For Wednesday November 19, answer the following questions that will be discussed in class. In addition, read Chapter 7 of Studenmund entirely, but focus on paragraph 7.4.

Someone has a sample of 4000 individuals on wages and experience. He/she runs a regression of wage $WGE$ on several explanatory variables. The variables that are available are $EXP$ (a measure of experience), $F$ (a dummy that equals 1 if the respondent is a female, 0 otherwise), and the $S$, $W$, and $E$ dummies that are 1 if the respondent lives in the south, west, or east of the US, respectively. The outcome of the regression is

$$W\hat{GE} = 1234 + 56.3 \times EXP - 901 \times F + 341 \times W - 344 \times E - 861 \times S$$

(231) (26) (540) (562) (668) (659)

The numbers between parentheses are estimated standard errors.

Questions:

1. Do the $t$-test for the male-female dummy. Is there any evidence of wage discrimination against women? Use a 5% significance level.

2. What regression would be more desirable to draw conclusions about wage discrimination from, one that includes more variables containing personal characteristics of the individuals, or simply a regression of “wage” on the “female” dummy and a constant? Explain your answer.

3. If we do individual $t$-tests for the coefficients of the regional dummy variables, can we reject the null hypothesis that they are zero for any of them?

4. Suppose now that the $F$-test for joint significance of the dummies rejects the null hypothesis that the three coefficients are all zero. The regression without regional dummies gives a significant $t$-value for the female dummy. What would your conclusion be, would you rely on the shorter or longer equation?
5. Someone claims that “because of the endogeneity problem, we should not include the male/female dummy in this analysis”. What would be implied if there were such an endogeneity problem?

6. Suppose that we would have taken “south” as our reference region. Would the F-test that tested the null that the coefficients for the dummies for “north”, “west” and “east” are zero have given the same outcome as the test from question 3?

7. Someone does the same regression as above, but instead includes a dummy that is 1 if the respondent is a male (i.e. a “male” dummy instead of a “female” dummy). What would be the coefficients and standard errors of such a regression?