Econ 444 Elementary Econometrics

Fall 2007

HOMEWORK EXERCISE: 6

Due at the beginning of class on Wednesday, November 14

1 HOMEWORK EXERCISE: 6

2 Important Rules for the Computer Homework

- OWN WORK: Group discussion of the exercises is fine, but each student must type in her/his spreadsheet or do the Eviews work. You must not supply a computer file of your spreadsheet to any other student. In case that any wrongdoing is suspected, the case will be reported to the Board of Academic Misconduct.
- OUTPUT WITH YOUR NAME: Output with the student's own name as part of the spreadsheet output (for Excel) and the equation titled with your name (for Eviews) must be submitted to receive any credit.
- LATE EXERCISES are not accepted. If you have special circumstances, discuss with me before the due date.

3 Homework Exercises

Download the production data file for on my homepage

http://economics.sbs.ohio-state.edu/ogaki/index.html

Let Q_i be output, L_i be labor, K_i be capital, and M_i be materials in the data. Consider two regressions:

$$log(Q_i) = \beta_0 + \beta_1 log(L_i) + \beta_2 log(K_i) + \beta_3 log(M_i) + \epsilon_i \quad (1)$$

$$log(Q_i) = \beta_0 + \beta_1 log(L_i) + \beta_2 log(K_i) + \epsilon_i^* \quad (2)$$

where all logs are natural logs.

(a) Using the Data Analysis tool of Microsoft Excel (or an equivalent tool in another spreadsheet program), run Regression (1). Note that you can run a multiple regression by specifying the range of variables for the "Input X range." For example, if you transform data by taking log and put the data for the explanatory variables in rows 2-51 in columns G-I, then you can write "G2:I51" as the input X range. Submit your output with your name as part of the output. of paper. [100]

(b) Using Eviews, run Regression (1). Submit your computer output. Your name should appear as part of the Equation name in your output. [150]

(c) Using Eviews, run Regression (2). Submit your computer output. Your name should appear as part of the Equation name in your output. [150]

(d) Are your results in Part (a) and Part (b) the same? If not, why?

(e) Report the regression results for Regression (1), using our class format.

(e) Report the regression results for Regression (2), using our class format.

(f) Interpret the point estimates of the regression coefficients in Regression (1).

(e) Establish a 90% confidence interval for β_1.

(f) Test the hypothesis $H_0 : \beta_1 = 0$ at the 10% significance level in Regression (1), using a two-tailed test. Explain.

(g) Establish a 95% confidence interval for β_3.

(f) Test the hypothesis $H_0 : \beta_3 = 0$ at the 5% significance level in Regression (1), using a two-tailed test. Explain.

(g) Discuss which alternative hypothesis makes more sense; $H_A : \beta_3 > 0$ or $H_A : \beta_3 < 0$ for Regression (1). Then test the hypothesis $H_0 : \beta_3 = 0$ at the 5% significance level. Explain.

(h) Compute the adjusted R^2 for regression (1) and regression (2). Based on the adjusted R^2, which regression do you prefer?

(i) Discuss whether or not $log(M_i)$ belongs to the regression.