EE 325 STATA Part II November 14th 2012

1. Table 7.11 gives data for the manufacturing sector of the Greek economy for the period 1961-1987
   a. See if the Cobb-Douglas production function fits the data given in the table and interpret the results. What general conclusion do you draw?
   b. Now consider the following model:

$$Output/labor = A(K/L)^{\beta} e^{u}$$

   where the regressand represents labor productivity and the regressor represents the capital labor ratio. What is the economic significance of such a relationship, if any? Estimate the parameters of this model and interpret your results.

2. Table 9.1 Public school teachers' salaries (Dollars) by geographical region. Consider and estimate the following model with the dummy variable:

$$Y_i = \beta_1 + \beta_2 D_{2i} + \beta_3 D_{3i} + u_i$$

Where Y = (average) salary of public school teacher in state i

$D_{2i} = 1$ *if the state is* in *the Northeast or North Central*

$= 0$ *otherwise*

$D_{3i} = 1$ *if the state is* in *the South*

$= 0$ *otherwise*

t = time

D = 1 for observations in 1970-1981

= 0 otherwise

Find the mean salary of public school teacher in the South and the mean salary of public school teacher in the Northeast or North Central.

3. **The Use of Dummy Variables in Seasonal Analysis**

Table 9.4 U.S. Refrigerator Sales (thousands), 1978-1985 (quarterly)

a. Consider and estimate the following model with the dummy variable:

$$Y_t = \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + u_t$$

Where Y = refrigerator sales, thousands

$D_{1t} = 1$ *if in the First quarter*

$= 0$ *otherwise*

$D_{2t} = 1$ *if in the Second quarter*

$= 0$ *otherwise*

$D_{3t} = 1$ *if in the Third quarter*

$= 0$ *otherwise*

$D_{4t} = 1$ *if in the Fourth quarter*

$= 0$ *otherwise*

t = time

b. Instead of assigning a dummy for each quarter and suppressing the intercept term to avoid the dummy variable trap, what should we do?

4. Table 8.9 Savings and Personal Disposable income (billions of dollars), United States, 1970-1995.

a. Given the data in the table, estimate the following linear savings function using personal disposable income

Time period 1970-1981: $Y_t = \lambda_1 + \lambda_2 X_t + u_{1t} \quad n_1 = 12$

Time period 1982-1995: $Y_t = \gamma_1 + \gamma_2 X_t + u_{2t} \quad n_2 = 14$

Time period 1970-1995: $Y_t = \alpha_1 + \alpha_2 X_t + u_{3t} \quad n_1 + n_2 = 26$

b. On the basis of the Chow test that there was a difference in the regression of savings on income between the two periods. Consider and estimate the following model with the dummy variable:

$$Y_t = \alpha_1 + \alpha_2 D_t + \beta_1 X_t + \beta_2 (D_t X_t) + u_t$$

Where Y = Savings

X= Personal disposable income

t = time

D = 1 for observations in 1982-1995

= 0 otherwise

(i) Test the coefficients individually statistically significant at the 5 percent level? From this test, how would you describe the difference in the two regressions (coincident regression, parallel regression, concurrent regression, dissimilar regression)?

(ii) Write down the mean personal savings function for 1970-1981 and the mean personal savings function for 1982-2005.