Problem Set 5

This problem set is due in lecture on **Monday, May 3rd**. No late problem sets will be accepted. **Be sure to show your work** (that is, do not use a spreadsheet or statistical program to generate your answers), and to write your name, ID number, as well as the name of your Teaching Assistant, on your problem set.

Answer all these problems. They are from the textbook, with the exception of Problem W which is written out.

- 10.10
- 10.28
- 10.46
- 10.58

Problem W. Below are plotted data for the GDP growth rates for the developing countries and the G-7 countries over the 1980 to 2003 period. In graph 1, time series are graphed. In Figure 2, a scatterplot is presented, along with a bivariate regression line. Finally, regression results are presented.
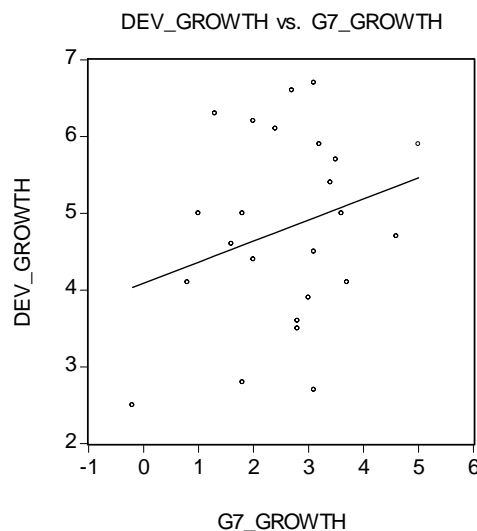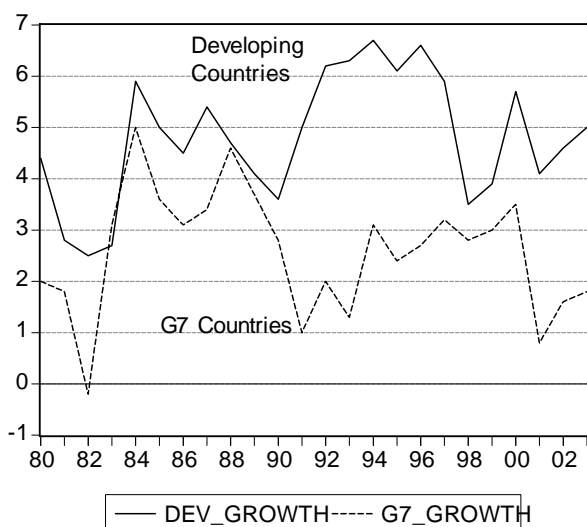

Figure 1: Time series for growth rates   **Figure 2:** Scatter plot of growth rates

Dependent Variable: DEV_GROWTH
Method: Least Squares
Date: 04/24/04   Time: 22:09
Sample: 1980 2003
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.089626	0.603467	6.776887	0.0000
G7_GROWTH	0.274541	0.212348	1.292881	0.2095

R-squared	0.070614	Mean dependent var		4.800000
Adjusted R-squared	0.028369	S.D. dependent var		1.240266
S.E. of regression	1.222547	Akaike info criterion		3.319406
Sum squared resid	32.88168	Schwarz criterion		3.417577
Log likelihood	-37.83287	F-statistic		1.671541
Durbin-Watson stat	0.823556	Prob(F-statistic)		0.209466

a. In words, interpret the coefficient on *G7_GROWTH*.

b. Conduct a two-sided t-test using a 5% significance level.

c. Calculate the standard error of the regression, using the statistics reported in the output (show your work!).

d. Calculate the value of the "S.E. of regression" using the "Sum of squared resid" (also termed the Sum of Squared Errors in the textbook).

e. Calculate the R-squared using the values for SSE and the "S.D. dependent var" (which is the standard deviation of the dependent variable).

Suppose you believe that not only does G7 growth, but also the real interest rate (*US_TB3MSREAL*), as well as the amount of lending to the emerging markets, divided by developing country GDP (*CAPFLOWS_GDPRATIO*). Then the following regression might be estimated:

Dependent Variable: DEV_GROWTH
Method: Least Squares
Date: 04/24/04   Time: 22:14
Sample: 1980 2003
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.697784	0.586123	4.602762	0.0002
G7_GROWTH	0.727934	0.173438	4.197094	0.0004
US_TB3MSREAL	-0.314391	0.102988	-3.052700	0.0063
CAPFLOWS_GDPRATIO	1.326314	0.349157	3.798619	0.0011

R-squared	0.591234	Mean dependent var	4.800000
Adjusted R-squared	0.529919	S.D. dependent var	1.240266
S.E. of regression	0.850357	Akaike info criterion	2.664690
Sum squared resid	14.46213	Schwarz criterion	2.861033
Log likelihood	-27.97628	F-statistic	9.642593
Durbin-Watson stat	1.712981	Prob(F-statistic)	0.000382

f. Interpret the coefficient on *G7_GROWTH*.

g. Calculate the standard error of the regression, using the statistics reported in the output (again, show your work!).

h. Form a 95% confidence interval around the coefficient on (*US_TB3MSREAL*).