THE UNIVERSITY OF CHICAGO
Graduate School of Business
Business 41202, Spring Quarter 2002, Mr. Ruey S. Tsay

Homework Assignment #2

Due Date: April 9 (campus) & April 11 (evening)

1. Problem 10 of Chapter 2. In addition, compute the average period of business cycles if they exist?

2. Problem 6 of Chapter 2.

3. The file “m-ge.n.dat” contains monthly log returns, in percentage, of GE stock from 1926 to 1999 for 888 observations. [See Coure website for the data.]
   - Find the sample mean and sample standard deviation of the series. Is the sample mean different from zero at the 5% significance level?
   - Compute the PACF of the series to confirm that lags 1 and 3 are significant at the 5% level.
   - Fit an AR(3) model to the series. What is the fitted model? What is the expectation of the series implied by the model?
   - Compute the ACF of the series to confirm that lag 1 and lag 3 are significant at the 5% level.
   - Fit a MA(3) model to the series. What is the fitted model? What is the expectation of the series implied by the model?

4. Revisit the file “d-hwp3dx8099.dat”.
   - Compute the first 100 lags of ACF of the absolute daily log returns of equal-weighted index. Is there evidence of long-range dependence? Why? [If you use SCA, use the command “y=abs(x)” to obtain the absolute series of x. Use “acf y. maxl 100” to compute the first 100 ACF of variable y.] Note that long memory means ACF decays slowly.
   - Compute the first 100 lags of ACF of the squared daily log returns of value-weighted index. Is there any evidence of long-range dependence? Why? [In SCA, use “y=x**2” to obtain the squared series of x.]

Reading assignments: Chapter 2 of the textbook.