Homework Assignment 2

Note:

- You may discuss problems with other students, but must hand in your OWN solutions.
- You may use any software to do the empirical analysis even though I use SCA and R in the demonstration.
- The assignment is due in one week once assigned.

1. Consider the data set “de-inv.txt” that consists of West German fixed investment, disposable income, and consumption expenditures in billions of DM from 1960Q1 to 1982Q4. The data were from Deutsche Bundesbank and were quarterly and seasonally adjusted.

   (a) Are the three time series stationary? Why?

   (b) Take the log transformation of the data, then take the first difference of the transformed time series. Are the differenced series stationary? Why?

   (c) Identify a vector AR model for the differenced series. Write down the fitted model and perform model checking to justify its adequacy.

   (d) Discuss the implications of the fitted model.

2. Again, consider the differenced series of Problem 1. Now, focus on the 2-dimensional series of disposable income and consumption expenditure. Build a vector AR model for the 2-dimensional series. Write down the fitted model and perform model checking. Also, compute 1-step to 4-step ahead forecasts for the differenced series.

3. What are the impulse response functions of the vector AR model built in Problem 1? Obtain plots of impulse response functions using the first 10 lags.