Problem Sheet 2: Univariate Time Series Analysis

Exercise 1

The file INTERESTRATES.XLS contains data on a long term and a short term interest rate (measured as a percentage).

a) Calculate and interpret descriptive statistics for both the long term interest rate and the its change. Do the same for the short term interest rate and its change.
b) For each of these two series individually create an XY-plot between the variable and the variable lagged one period.
c) For each of these variables, calculate r_1.
d) First difference each of these variables and repeat a) and b). How would you interpret the data you have constructed and the correlations and XY-plots?
e) Calculate the autocorrelation function for Y and ΔY with a maximum lag of 4 (i.e. P=4).

Exercise 2

In chapter 9 we have recommended a strategy according to which you begin with an AR(p) with deterministic trend model, choose lag length (p), decide whether the deterministic trend should be included or excluded, and then test for a unit root. Carry out this strategy using the short term and long term interest rate variables in INTERESTRATES.XLS.