**Tutorial 3**

**Week 4**

1. R revision – data frames.
2. Consider the problems given in slides 37 and 46 in lecture notes for week 3.
3. You obtain the following estimates for an AR(2) model of some returns data.

where is a white noise error process. By examining the characteristic equation, check the estimated model for stationarity.

1. (a) You obtain the following sample autocorrelations and partial autocorrelations for a sample of 100 observations from actual data:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lag | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| SACF | 0.632 | 0.381 | 0.268 | 0.199 | 0.205 | 0.101 | 0.096 | 0.082 |
| SPACF | 0.420 | 0.104 | 0.032 | -0.206 | -0.138 | 0.042 | -0.018 | 0.074 |

Can you identify the most appropriate time series process for this data?

(b) Use the Ljung–Box Q∗ test to determine whether the first three autocorrelation coefficients taken together are jointly significantly different from zero.