Assignment 4

STAT317/ECON323

Due 5pm Friday, 22 October 2021

A reminder that graphs help in interpretation and explanation and you are expected to present them properly.

1 Question 1 – 12 Marks

For assignment 3 I have supplied a csv file (3XX Q1 data.csv). This has four ARMA(p,q) time series with $p = 0, 1, 2$ $q = 0, 1, 2$. Do not worry about dates this time.

a For each series decide the p and q values

b Once you have decided on the p and q for each series fit that ARMA model

c Write your fitted ARMA model with your parameter estimates.

d Plot the modelled values on the same graph as the actual values

2 Question 2 – 13 marks

For this question use the time series you selected for the previous assignments. Use the data from the years 2000-2019 only i.e. suppress COVID effects.

a Plot your series

b Take the first differences and plot that series

c For the time series of first differences decide what p and q are. Ignore seasonal P and Q at this stage

d Fit that model to the series and write your fitted ARIMA(p,d,q) model with parameter estimates.

e Are your residuals white noise? Justify your answer.

f Now fit a $ARIMA(p, d, q) \times (0, 1, 1)_{12}$ model using the same p,d,q.

g Is this model better? Justify your reasoning.