# Econometrics 441 | 871

## Time Series Exercise 1 – Box Jenkins analysis

In this exercise, you are expected to apply the Box-Jenkins methodology to find the best univariate model of two series   
(in the Matlab file Econometrics 441 871 - TS exercise 1 data.xlsx):

1. A simulated stationary ARMA(p,q) process (named y in the data file)
2. The spread between a 1 year and a 3 month US Treasury bill (named spread in the data file)

For each, I would like you to present the basic first step analysis (plot, ACF and PACF with interpretations/conclusions).

Then investigate the following models: AR(1), AR(2), MA(2), ARMA(1,1), ARMA(2,1).

For each estimated model, compute the AIC and BIC and find the best one according to this measure. Then evaluate whether the selected model is congruent and parsimonious (i.e. you have to do all the “usual” steps only for one model per series for this exercise – this not what you would do in a full study, just to cut the repetition for this exercise).

Present the estimated results of the best model (coefficients with measures of their significance) and all necessary specification tests for congruency.

You need not bother much about layout, but try for a concise presentation of only the necessary.

My LiveScript is not the ideal structure for this analysis, so it would be worth it to think about how to streamline the analysis as an exercise in coding. I will share a simple script version of the tut we did with the explanatory text omitted which you can use as a starting point.

You are welcome to also do this all in a LiveScript if you prefer, but you will just have to write your own text to explain what you are presenting, as I am asking for things in a different order.

You may use any other statistical program if you are not comfortable with learning Matlab.

You may work in groups of up to three members, please just give your names and student numbers clearly in the submission.