**TIME SERIES ANALYSIS. FIRST MIDTERM.**

1. Get an annual time series from the data market, plot it and discuss stationarity and the transformations needed to render the series stationary.

1. Identify possible ARMA(p,q) model for the stationary series. Justify your identification.
2. Simulate a time series process with a cycle (different from the ones in the slides), plot the original, the acf and pacf, and give the period.
3. Give the general expression and the values for ϕ(k) for k=0,1,… and π(k) for k=1,2,… and the following processes:
4. Define the invertibility condition of an MA(q) process. In what sense is similar to the stationarity condition of an AR(p)? Give an example.