Assignment 2

Applied Financial Econometrics
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Autumn 2022

1. Select two assets from two different sectors and download the last-year historical daily prices. Using the first 11 months (train data), calibrate 2-3 ARIMA models and examine the mean forecasting performance for each one of the approaches using the last-month data (out-of-sample or test data) by means of the mean squared error.

2. Consider that the random variable x_t is described by following process:

$$x_t = \varepsilon_t$$

with:

(a) $\varepsilon_t \sim N(0,1)$

(b) $\varepsilon_t = \sigma_t w_t, \quad w_t \sim N(0,1), \quad \sigma_t^2 = \alpha + \beta \varepsilon_{t-1}^2$

(c) $\varepsilon_t = \sigma_t w_t, \quad w_t \sim N(0,1), \quad \sigma_t^2 = \alpha + \beta \varepsilon_{t-1}^2 + \gamma \sigma_{t-1}^2$

- Comment on each specification (main features).
- Simulate a path (1000 values) for x_t using each specification and compare the models empirically.

  - *Hint:* Consider a for-loop cycle. Alternatively, the fGarch package could be used.

**You should deliver R code + Answers (for example Power Point)
via IS by the end of the seminar**