Homework 3

Calibrate and evaluate the following models for the price of a commodity at your choice:

1. Random walk with drift and without drift.
2. Average of the last 5 years, average of the last 10 years.
3. ARIMA(1,1,0), ARIMA(0,1,1), ARIMA(1,1,1).
4. AR(1), AR(2), AR(3).
5. α constant, $\psi = 1$ and δ follows a random walk.
6. $\psi = 1$, $\delta = 0$ and α follows a random walk.
7. α constant, δ and ψ follow random walks with independent innovations.
8. $\delta = 0$, α and ψ follow random walks with independent innovations.
9. α constant, $\delta = 0$ and ψ follows a random walk.
10. α, δ, and ψ follow random walks with independent innovations.
11. α constant, $\delta = 0$ and ψ follows an AR(1).
12. α and δ constant, ψ follows an AR(1).

For the models 5 to 12, please consider the following equation:

$$p_t = \alpha_t + \delta_t \mathrm{Tend}_t + \psi_t p_{t-1} + \varepsilon_t$$

where Tend_t is a temporal tendency.