

Homework 6

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1. (a) $\alpha = 0.103166450633522$

$$\beta = 0.881976744972055$$

$$\sigma = 0.0114628854683139$$

$$\sigma_1 = 0.115663813335945$$

(b) $\alpha = 0.102440331464433$

$$\beta = 0.882200857073194$$

$$\sigma = \text{sample standardized deviation} = 0.0112908528295314$$

$$\sigma_1 = 0.115859398348621$$

(c) $\alpha = 0.102907457864527$

$$\beta = 0.88236947861 \text{ return standard deviation } 4249$$

$$\sigma = 0.0114730162060151$$

$$\sigma_1 = \text{sample standardized deviation} = 0.0112908528295314$$

(d) $\alpha = 0.102413155324757$

$$\beta = 0.882242172546685$$

$$\sigma = \text{sample standardized deviation} = 0.0112908528295314$$

$$\sigma_1 = \text{sample standardized deviation} = 0.0112908528295314$$

(e) Forecasts of the return standard deviation:

$$\sigma_{F1} = 0.0076668882066959$$

$$\sigma_{F2} = 0.00765877937952968$$

$$\sigma_{F3} = 0.00766630049039375$$

$$\sigma_{F4} = 0.0076585416845424$$

2. (a) Forecasts of the realized variance:

$$\text{variance}_1 = 0.12201428573187$$

$$\text{variance}_2 = 0.120733234311984$$

$$\text{variance}_3 = 0.122309881133401$$

$$\text{variance}_4 = 0.120761254140376$$

Square root of above:

$$\text{std}_1 = 0.349305433298524$$

$$\text{std}_2 = 0.347466882324034$$

$$\text{std}_3 = 0.349728296157748$$

$$\text{std}_4 = 0.347507200127388$$

(b) Square root of annualized variance:

$$\text{std}_1 = 1.21002951566581$$

$$\text{std}_2 = 1.20366058826557$$

$$\text{std}_3 = 1.21149435557943$$

$$\text{std}_4 = 1.20380025323328$$

3. (a) No, it only estimates α , β , ω

$$\alpha = 0.1029253$$

$$\beta = 0.8822816$$

$$\omega = 1.944093\text{e-}06$$

$$\sigma = 0.0115$$

(b) No, it only estimates α , β , ω

$$\alpha = 0.1029239$$

$$\beta = 0.8822854$$

$$\omega = 1.943908\text{e-}06$$

$$\sigma = 0.0115$$

4. $\alpha = 0.0907763035622853$

$$\beta = 0.815135506036667$$

$$\sigma = 0.0388076199378618$$

$$\sigma_1 = 0.0493797779220644$$

$$\theta = 1.01056496122436$$