EXERCISES

EXERCISE 1

A coupon bond will pay a coupon of 50 euro 3 months from now, another coupon of 50 euro 9 months from now, and final coupon of 50 euro plus the face value of 1000 euro 15 months from now. The yield to maturity is 2% and the current price of the bond is 1123.34 euro. Compute the Macaulay duration.

EXERCISE 2

The log-return of the four assets included in an equally weighted portfolio is:

$r_1 = 0.1,\ r_2 = -0.06,\ r_3 = 0.07,\ r_4 = 0.05$

What is the return of the portfolio?

EXERCISE 3

The returns of a security over four periods are:

$R_{t=1} = 0.2,\ R_{t=2} = -0.1,\ R_{t=3} = 0.08,\ R_{t=4} = 0.04$

If we invested 1000 euro in this asset at t=0, how much is our investment worth at t=4?

EXERCISE 4

The vector of weights and the covariance matrix of a portfolio with three assets are:

$$\boldsymbol{w} = \begin{bmatrix} 0.5 \\ 0.7 \\ -0.2 \end{bmatrix} \quad \boldsymbol{\Sigma} = \begin{bmatrix} 0.004 & 0.006 & 0.003 \\ 0.006 & 0.008 & 0.007 \\ 0.003 & 0.007 & 0.005 \end{bmatrix}$$

Compute, using matrix form, the variance of the portfolio.