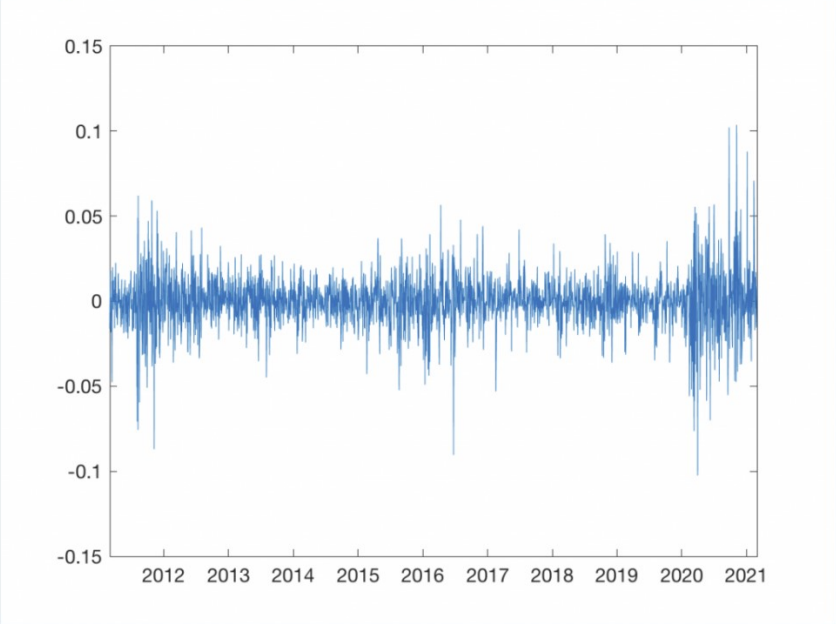
QUESTION 1

Not yet answered Marked out of 14.00 Flag question

Exercise 1 (consists of Questions 1 and 2)



The graph shows a typical realization of [ ] of daily [ ] of stock prices [ ]. We observe that there are [ ] with a [ ] and also periods with [ ], for instance in the second half of 2012 and in the period starting in spring 2020. This means that we observe [ ].

a time series | portfolio allocations

returns | values

observed in the market | simulated in the log-normal model fitted to market data

time periods | traders

high frequency of relatively small changes | high frequency of trades

high frequency of changes in the trade volume | high frequency of small trade volume

relatively high frequency of relatively large changes | smaller frequency of trades

high frequency of large trade volumes

volatility clustering | no volatility clustering | spikes | no spikes | no autocorrelation

positive autocorrelation | negative autocorrelation

QUESTION 2

Not yet answered Marked out of 10.00 Flag question

Describe a further characteristic that you observe in the graph. What is this characteristic? How do you observe it? How do you interpret it? Use no more than 50 words.

QUESTION 3

Not yet answered Marked out of 8.00 Flag question

EXERCISE 2 (consists of Question 3, 4 and 5)

The following three exercises do belong together. Assume that we have five assets. The first one has expected return $\mu_1 = 20\%$ and standard deviation of return equal to $\sigma_1 = 10\%$. The second has expected return $\mu_2 = 40\%$ and standard deviation of return equal to $\sigma_2 = 20\%$.

Assume that the third asset has expected return $\mu_3 = 10\%$. What is the range of the standard deviation σ_3 of the third asset so that the three assets form an efficient set?

Select one:

- a. The standard deviation of the third asset needs to be below 10%.
- b. The range is the empty set, as it is not possible that all three assets are efficient in this case.
- c. The standard deviation of the third asset needs to be above 10%.
- d. The standard deviation of the third asset needs to be below 20%.
- e. The standard deviation of the third asset needs to be above 20%.
- f. The standard deviation of the third asset needs to be between 10% and 20%.

QUESTION 4

Not yet answered Marked out of 10.00 Flag question

Next we want to determine the range of μ_4 and σ_4 such that Asset 4 dominates Asset 2, but does not dominate Asset 1. After careful calculation, and checking our result by drawing a graph (please take this as a hint how to work to obtain the solution), we know that Asset 4 dominates Asset 2 and not Asset 1 if and only if the expected return of Asset 4 is [ ] and the standard deviation of the return of Asset 4 is [ ] and the pair (μ_4, σ_4) is not equal to the pair (μ_2, σ_2).

larger than or equal to the expected return of Asset 2.

smaller than or equal to the expected return of Asset 2.

smaller than the expected return of Asset 2.

larger than the expected return of Asset 2.

larger than that of Asset 1 and smaller than that of Asset 2.

larger than or equal to that of Asset 1 and smaller or equal to that of Asset 2.

larger than or equal to the expected return of Asset 1.

smaller than or equal to the expected return of Asset 1.

larger than the expected return of Asset 1.

larger than or equal to that of Asset 1 and smaller or equal to that of Asset 2.

larger than that of Asset 1.

larger than or equal to that of Asset 1.

smaller than or equal to that of Asset 2.

smaller than that of Asset 2.

is larger than that of Asset 1 and smaller than to that of Asset 2.

smaller than or equal to that of Asset 1.

smaller than that of Asset 1.

larger than that of Asset 2.

larger than or equal to that of Asset 2.

QUESTION 5

Not yet answered Marked out of 12.00 Flag question

Assume that the covariance between the returns R_5 of Asset 5 and the returns R_1 of Asset 1 is 0.018, while the correlation between those returns is smaller than 0.9. We would like to understand in what case Asset 2 dominates Asset 5.

We can derive the standard deviation of the returns of Asset 5 using the relation between covariance, [ ], namely the correlation equals the covariance between both returns [ ]. We rearrange that identity to obtain the standard deviation of the returns of Asset 5. We find that it is [ ] the standard deviation of the returns of Asset 2. Thus Asset 2 dominates Asset 5 if [ ].

correlation and standard deviations | variance and mean | correlation and mean

devided by the product of their standard deviations | multiplied by the product of their standard deviations

multiplied by the product of their variances | plus their standard variances

plus their standard variances

larger than | equal to | smaller than

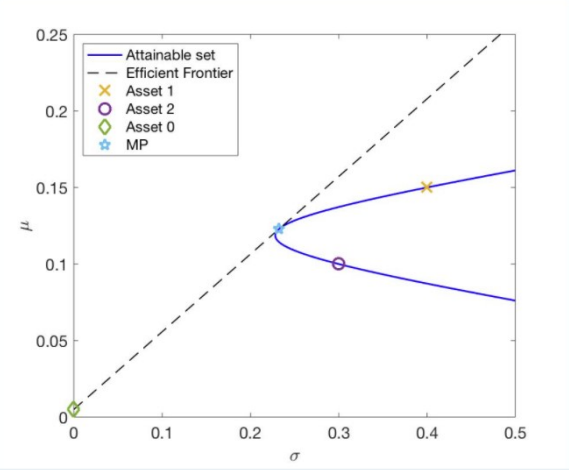
its expected return is larger than or equal to that of Asset 5 | its standard deviation is larger than or equal to that of Asset 5

its standard deviation is smaller than or equal to that of Asset 5 | its expected return is smaller than or equal to that of Asset 5

QUESTION 6

Not yet answered Marked out of 10.00 Flag question

EXERCISE 3 (consists of Question 6 and 7)



The efficient frontier represents [ ] by investing [ ] in the risky Assets 1 and 2 and in the riskless asset. Investors who would like to maximise profit in terms of [ ] for each specific risk level, measured in the [ ], prefer portfolios which are represented by [ ].

all efficient portfolios that we can obtain | all efficient portfolios that we can not obtain | all portfolios that we can obtain

all portfolios that we can not obtain

any portions be it positive or negative | equally | positive portions

positive portions between 0 and 1

expected returns | possible returns | likely returns | likely returns

standard deviation of returns | largest possible loss (worst case scenario) | most likely loss

value-at risk | shortfall probability

the dashed line | the blue star MP | the blue curve | the area above the dashed line

the area below the dashed line

QUESTION 7

Not yet answered Marked out of 10.00 Flag question

Describe in your own words the portfolios represented on the blue line. Use no more than 50 words.

QUESTION 8

Not yet answered Marked out of 8.00 Flag question

EXERCISE 4 (consists of Question 8,9,10 and 11)

You are handling a set of assets and delivering customized portfolios. You are given the following estimates. The distribution of the market portfolio's returns R^M is given by

$$R^M = \begin{cases} \mu_1 + \sigma_1, & \text{probability } 50\% \\ \mu_1 - \sigma_1, & \text{probability } 50\% \end{cases}$$

The distribution of the minimum variance portfolio's returns R^{MVP} is given by

$$R^{MVP} = \begin{cases} \mu_2 + \sigma_2, & \text{probability } 50\% \\ \mu_2 - \sigma_2, & \text{probability } 50\% \end{cases}$$

with μ_1 =0.2, μ_2 =0.15, σ_1 =0.2 and σ_2 =0.15.

The expected mean μ_M of the market portfolio's returns equals [ ], and standard deviation σ_M equals [ ]. The expected mean and standard deviation of the minimum variance portfolio's returns equal μ_{MVP} = [ ] and σ_{MVP} = [ ].

0	2.5%	5%	7.5%	10%	12.5%	15%	17.5%	20%	22.5%	25%	27.5%	30%	32.5%	35%	37.5%	40%
42.5%	45%	47.5%	50%													

QUESTION 9

Not yet answered Marked out of 7.00 Flag question

The return of the riskless asset is 1%.

A client demands for a portfolio tailored to his needs. He is willing to invest in any assets available but not to go short in the risky asset (i.e. to invest negative portions in any of the risky assets). Their only restrictions are that the portfolio should be efficient and maximise their expected utility. Their utility function is the logarithm.

What is the weight w_M to invest in the market portfolio?

State the results rounded to two decimals. (So e.g. if your result is 0.0345 then state 0.03.)

Answer:

QUESTION 10

Not yet answered Marked out of 2.00 Flag question

The rest, i.e. 1 − w_M is invested in [ ].

the risk free asset	an arbitrary risky asset
the minimum variance portfolio related to all risky assets	gold

QUESTION 11

Not yet answered Marked out of 9.00 Flag question

Assume that all estimates of expected returns and standard deviation have been obtained solely from time series of asset prices. Which three of the following sentences are correct? (To obtain the full mark you need to select three answers.)

Select one or more:

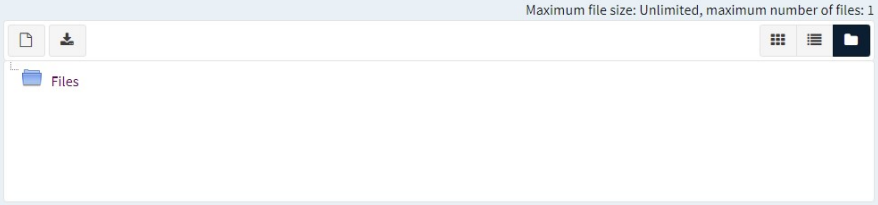
- [ ] a. The resulting portfolio P is efficient.
- [ ] b. The existence of such portfolios does not contradict any of the types of the efficient market hypothesis.
- [ ] c. Portfolio P does not consistently outperform the market.
- [ ] d. The resulting portfolio P is not efficient.
- [ ] e. Portfolio P consistently outperforms the market.
- [ ] f. The existence of such portfolios contradicts the semi-strong form of the efficient market hypothesis.
- [ ] g. The existence of such portfolios contradicts the strong form of the efficient market hypothesis.

QUESTION 12

Not yet answered Not graded Flag question

Upload here your rough work covering all of your calculations in a single file. This is not compulsory.

Maximum file size: Unlimited, maximum number of files: 1



Accepted file types

Document files .doc .docx .epub .gdoc .odt .oth .ott .pdf .rtf