

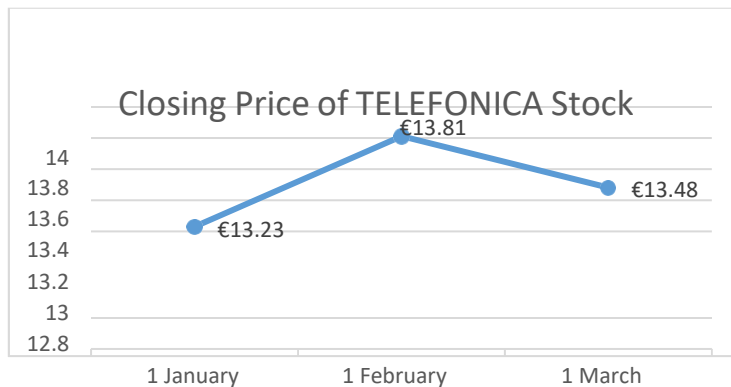
UNIT 6: FINANCIAL ASSET RISK AND RETURN

EXERCISE 1

The Banco Santander share price was €8.37 on 31 October 2022 and €6.4 on 28 November (the last trading day of the month) of the same year. On 3 November, Banco Santander distributed a dividend of €0.1 per share. Calculate the return on Banco Santander shares for the month of November 2022.

EXERCISE 2

At the beginning of January, Mr. Vallés bought 10 shares of TELEFONICA stock at €13.23 per share. The price of the stock rose to €13.81 per share at the beginning of February, then fell to €13.48 per share at the beginning of March.



Compute the realised return if Mr. Vallés held the investment for:

- a) One month (from 1 January to 1 February).
- b) Two months (from 1 January to 1 March).

EXERCISE 3

The table below contains BME (Bolsas y Mercados Españoles) share prices and dividends. All prices are subsequent to dividend payment. If you had bought BME stock on 1 January and sold it on 31 December, what would your realised return be?

<i>Date</i>	<i>Price</i>	<i>Dividend</i>
1 January	29.01	
9 May	31.8	0.65
12 September	31.21	0.4
23 December	32.54	0.6
31 December	32.14	

EXERCISE 4

Using the following returns, calculate the average returns, the variances and the standard deviations of the shares of companies X and Y.

Year	Return for X	Return for Y
1	11%	36%
2	6%	-7%
3	-8%	2%
4	28%	-12%
5	13%	43%

EXERCISE 5

What are the portfolio weights in a portfolio comprising 70 shares in company A, bought for €40 each, and 110 shares in company B, bought for €22 each?

EXERCISE 6

You have €40,000. You invest 25% of your money in each of four stocks, whose expected returns are as follows:

Stock A: $E(R_A) = 20\%$

Stock B: $E(R_B) = 10\%$

Stock C: $E(R_C) = 12\%$

Stock D: $E(R_D) = 9\%$

a) Compute your portfolio's expected return.

b) Compute your portfolio's expected return if you had invested €15,000 in stock A, €20,000 in stock B, €4,000 in stock C, and the rest of your money in stock D.

PROBLEMS

PROBLEM 1

A stock's returns for the last four years are as follows:

Year 1	Year 2	Year 3	Year 4
-4%	28%	12%	4%

- What is the average annual return?
- What is the variance of the stock's returns?
- What is the standard deviation of the stock's returns?

PROBLEM 2

Calculate the 95% prediction intervals for the four different investments shown in Figure 1 and Figure 2.

FIGURE 1 Average annual returns of US small stocks, large stocks (S&P 500), corporate bonds and treasury bills

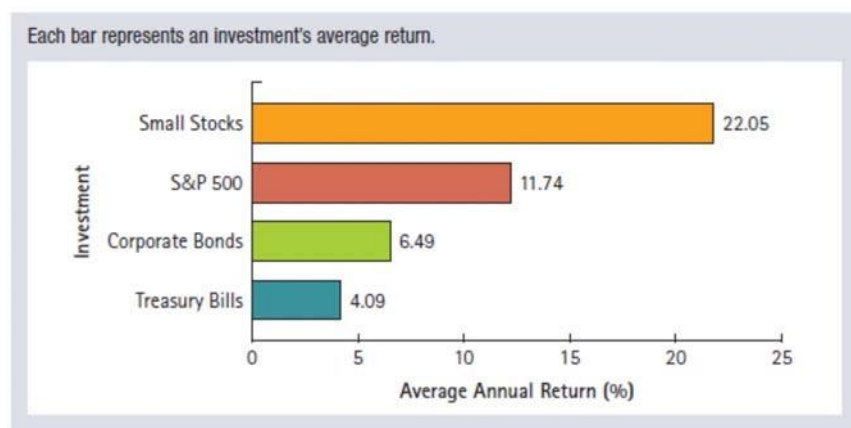
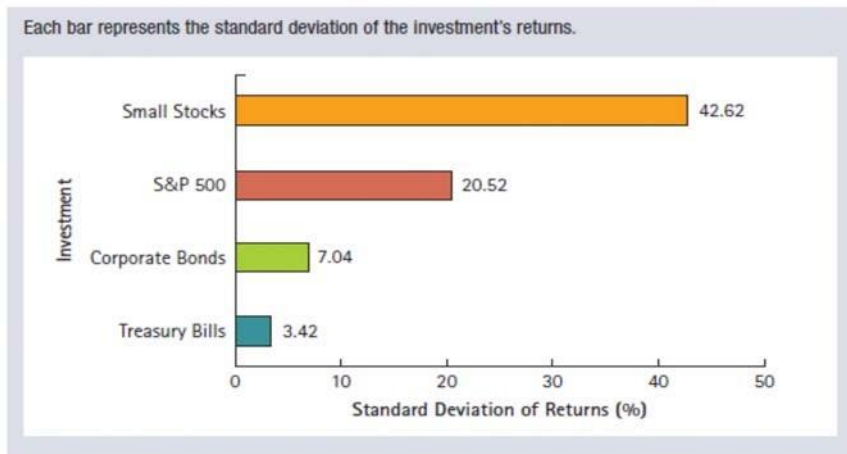


FIGURE 2 Volatility (standard deviation) of US small stocks, large stocks (S&P 500), corporate bonds and treasury bills



You are choosing between the four stocks from exercise 6 and want to be 95% certain that you will not lose more than 8% of your investment. Which stocks should you choose?

PROBLEM 3

You are considering how to invest part of your retirement savings. You have decided to put \$200,000 into three stocks: 50% into GoldFinger (currently \$25/share), 25% into Moosehead (currently \$80/share), and the remainder into Venture Associates (currently \$2/share). If GoldFinger stock rises to \$30/share, Moosehead stock drops to \$60/share and Venture Associates stock rises to \$3/share:

- What is the new value of the portfolio?
- What return did the portfolio earn?
- What are your new portfolio weights, if you do not buy or sell any shares after the price changes?

QUESTIONS

1. What does the historical relationship between volatility and return tell us about investors' attitude towards risk?
2. How does the relationship between the average return and the historical volatility of individual stocks differ from the relationship between the average return and the historical volatility of large, well-diversified portfolios?
3. Consider two local banks. Bank A has 100 loans outstanding, each for \$1 million, which it expects will be repaid today. Each loan has a 5% probability of default, in which case the bank will not be repaid anything. The probability of default is independent across all the loans. Bank B has only one loan outstanding, for \$100 million, which it also expects will be repaid today. This loan has a 5% probability of default too. Explain the difference between the type of risk each bank faces. Assuming you are averse to risk, which bank would you prefer to own?
4. Which of the following risks to which a stock is exposed are likely to be unsystematic, diversifiable risks and which are likely to be systematic, non-diversifiable risks? Which will affect the risk premium that investors will demand?
 - a. The risk of the firm's founder and CEO retiring.
 - b. The risk of oil prices rising, increasing production costs.
 - c. The risk of a product design being faulty and the product having to be recalled.
 - d. The risk of the economy slowing, reducing demand for the firm's products.
 - e. The risk of the firm's best employees joining competitors.
 - f. The risk of a new product the firm's R&D division is expecting to produce not materialising.
5. What is the difference between systematic and unsystematic risk?
6. Why does a stock's risk premium not depend on its diversifiable risk?
7. Your spouse works for Southwest Airlines and you work for a grocery store. Is your company or your spouse's company likely to be more exposed to systematic risk?

Berk, J., DeMarzo, P. and Hardford, J. (2019): *Fundamentals of Corporate Finance*. Ch. 11. Ed. Pearson