

Problem 1

Answer: Fall

Denote the interest rate by r . To compute the present value, we need to determine the “discount factor”

$$\frac{1}{(1+r)^t}$$

where, for this problem, $t = 5$ years. If the interest rate increases, then the above factor decreases. As a result, the present value also decreases.

Problem 2

Answer: Row A

To decide on the best option, we need to compute the present value for each cash flow. To do so, we have to discount every amount to determine its present value. Recall that the discounted amount decreases as time goes by. Then it's better to receive the largest amounts as soon as possible. This suggests that the best option corresponds to the cash-inflow in **row A**.

Problem 3

Answer: Decrease it

The reasoning behind this answer was explained in the solution to Problem 1. The only difference is that in this case we want the present value to increase. In other words, in comparison with the first problem, now we have the opposite situation. Therefore, for the PV to increase, we need the discount rate to decrease.

Problem 4

Answer: Cash flow

Problem 5

Answer: Cash creation is a better measure of firm value

Problem 6

Answer: Decreasing FCF by any increase in the level of working capital

Problem 7

Answer: Depreciation is a non-cash expense

Problem 8

Answer: The amount of value left in the project at the end of the forecast

Problem 9

Answer: All the above

Problem 10

Answer: 20%

The original price can be seen as a present value: $PV = 26$. Then the selling price is the corresponding future value: $FV = 45$. So, to answer this question, we'll use the formula

$$FV = PV(1 + r)^t, \quad (1)$$

where r represents the rate of return, and $t = 3$ years. Since we need to determine r , let us first solve the above equation for this variable:

$$\begin{aligned} FV &= PV(1 + r)^t \\ \frac{FV}{PV} &= (1 + r)^t \\ \left(\frac{FV}{PV}\right)^{1/t} &= 1 + r \\ r &= \left(\frac{FV}{PV}\right)^{1/t} - 1 \end{aligned} \quad (2)$$

By substituting the known values into the RHS of this equation, we get

$$\begin{aligned} r &= \left(\frac{FV}{PV}\right)^{1/t} - 1 \\ &= \left(\frac{45}{26}\right)^{1/3} - 1 \\ &\approx 0.2. \end{aligned} \quad (3)$$

Therefore, the annual rate of return is 20%.

Problem 11

Answer: Stock market dividends

Problem 12

Answer: \$6,843

To answer this question, we need to compute a future value. We begin by summarizing the information we were given:

- ▷ the present value is $PV = 5000$;
- ▷ the interest rate is $r = 0.04$;
- ▷ the number of time periods is $t = 8$ years.

Recall that the future value can be written as

$$FV = PV(1 + r)^t. \quad (4)$$

By substituting all the known values into the above equation, we get

$$FV = 5000(1 + 0.04)^8 \approx 6843. \quad (5)$$

Therefore, the account balance will be approximately \$6,843.

Problem 13

Answer: All of the above

Problem 14

Answer: All of the above

Problem 15

Answer: 7.71%

In this case, it's possible to show that the IRR satisfies the following quartic equation:

$$5\text{IRR}^4 + 18.5\text{IRR}^3 + 24\text{IRR}^2 + 11\text{IRR} - 1 = 0. \quad (6)$$

This equation has two real solutions. However, only one of them is positive. This root is approximately 0.0771. Therefore, as a percentage, the IRR is approximately 7.71%.

Problem 16

Answer: $\text{NPV} = \$ - 245$; reject the project

I wrote a Python function to compute the net present value. To solve this problem, I simply used this function. For this reason, I'm not presenting a detailed explanation of my solution. However, the result for the NPV is -245.2 . Since this value is negative, the firm should reject this project.

Problem 17

Answer: NPV

Problem 18

Answer: The payback period does not incorporate the time value of money

Problem 19

Answer: All the above

Problem 20

Answer: The minimum rate firms should earn on the equity-financed part of an investment

Problem 21

Answer: Based on the market beta and the equity risk premium

Problem 22

Answer: More risk that cannot be avoided

Problem 23

Answer: The earning per share for the next time period.

Problem 24

Answer: There is more systematic risk involved for the common stock

Problem 25

Answer: 9.12%

We begin by summarizing the information we were given. Denote by A the amount in assets. Then we have the following:

- ▷ the debt is $D = 0.6A$;
- ▷ the equity is $E = 0.4A$;
- ▷ the cost of debt is $R_d = 0.08$;
- ▷ the cost of equity is $R_e = 0.15$;
- ▷ the tax rate is $t = 0.35$.

Next, recall that the WACC is given by

$$\text{WACC} = \frac{E}{E+D}R_e + \frac{D}{E+D}(1-t)R_d. \quad (7)$$

We know all the values on the RHS of this equation. By substituting these values into this formula, we get

$$\begin{aligned} \text{WACC} &= \frac{E}{E+D}R_e + \frac{D}{E+D}(1-t)R_d \\ &= \frac{0.4A}{0.4A+0.6A} \cdot 0.15 + \frac{0.6A}{0.4A+0.6A} \cdot (1-0.35) \cdot 0.08 \\ &= 0.4 \cdot 0.15 + 0.6 \cdot 0.65 \cdot 0.08 \\ &= 0.0912. \end{aligned} \quad (8)$$

Therefore, the WACC for this company is 9.12%.