

10 minutes

Your answers must be based on the CAPM and the Constant Growth Dividend Discount Model.

1) If the expected dividends for company A are larger than the expected dividends for company B, then the share price of A is larger than the share price of B.

- always true
- impossible to tell without knowing the risk of the two companies

Questions 2 to 5: Company ABC current price (at $t=0$) is € 50 per share. The dividend policy for this company is to distribute 80% of earnings to shareholders in the form of dividends. What remains of the earnings is reinvested at a ROE of 10%. The cost of capital for Company X is 10%.

2) What is the growth rate of dividends for company ABC?

- 1%
- 2%
- 3%
- 4%
- 5%
- 7%

3) What is the next year's expected dividend?

- € 1.0
- € 1.5
- € 2.0
- € 2.5
- € 3.0
- € 4.0

4) What is next year's expected stock price (at $t=1$) for company ABC?

- € 10
- € 26
- € 36
- € 51
- € 120
- € + ∞

5) If the covariance between company ABC's returns and the market portfolio decreases what happens to the stock price of company ABC holding everything else constant?

- it increases
- it decreases
- it does not change

ANSWER KEY

Your answers must be based on the CAPM and the Constant Growth Dividend Discount Model.

1) If the expected dividends for company A are larger than the expected dividends for company B, then the share price of A is larger than the share price of B.

- | |
|--|
| <input type="checkbox"/> always true |
| <input type="checkbox"/> <u>impossible to tell without knowing the risk of the two companies</u> |

Questions 2 to 5: Company ABC current price (at $t=0$) is € 50 per share. The dividend policy for this company is to distribute 80% of earnings to shareholders in the form of dividends. What remains of the earnings is reinvested at a ROE of 10%. The cost of capital for Company X is 10%.

2) What is the growth rate of dividends for company ABC?

- | | |
|-----------------------------|------------------------------------|
| <input type="checkbox"/> 1% | <input type="checkbox"/> <u>2%</u> |
| <input type="checkbox"/> 3% | <input type="checkbox"/> 4% |
| <input type="checkbox"/> 5% | <input type="checkbox"/> 7% |

3) What is the next year's expected dividend?

- | | |
|--------------------------------|---------------------------------------|
| <input type="checkbox"/> € 1.0 | <input type="checkbox"/> € 2.5 |
| <input type="checkbox"/> € 1.5 | <input type="checkbox"/> € 3.0 |
| <input type="checkbox"/> € 2.0 | <input type="checkbox"/> <u>€ 4.0</u> |

4) What is next year's expected stock price (at $t=1$) for company ABC?

- | | |
|-------------------------------|--------------------------------------|
| <input type="checkbox"/> € 10 | <input type="checkbox"/> <u>€ 51</u> |
| <input type="checkbox"/> € 26 | <input type="checkbox"/> € 120 |
| <input type="checkbox"/> € 36 | <input type="checkbox"/> € + ∞ |

5) If the covariance between company ABC's returns and the market portfolio decreases what happens to the stock price of company ABC holding everything else constant?

- | |
|--|
| <input type="checkbox"/> <u>it increases</u> |
| <input type="checkbox"/> it decreases |
| <input type="checkbox"/> it does not change |

Answers with reasoning:

1) Dividend Discount Models $V_0 = D_1/(1+k) + D_2/(1+k)^2 + D_3/(1+k)^3 + \dots$

So even as A's dividends > B's dividends, it could be that $k_B < k_A$ so that $V_0^B > V_0^A$: you need to know both D's and k's

2) Retention ratio $b = 1 - \text{payout ratio} = 1 - 0.80 = 0.20$

$$g = \text{ROE} \times b = 0.10 \times 0.20 = 0.02 = 2\%$$

3) $V_0 = D_1 / (k - g) \rightarrow D_1 = V_0 \times (k - g) = 50 \times (0.10 - 0.02) = 4.0 \text{ €}$

4) $E(P_1) = V_1 = D_2 / (k - g) = [D_1 \times (1+g)] / (k - g)$
 $E(P_1) = V_1 = 4 \times 1.02 / (0.10 - 0.02) = 51.00 \text{ €}$

5) If the covariance between company ABC's returns and the market portfolio decreases, then CAPM beta goes down (check your CAPM-beta formula), which means k (the required rate of return on the company shares) goes down (check your CAPM formula), which means stock price increases.