

Cost of capital

Chapter learning objectives

A2. Calculate a weighted average cost of capital (WACC) for an incorporated entity.

- (a) Calculate the cost of equity for an incorporated entity using the dividend valuation model.
 - Cost of equity using the dividend valuation model, with and without growth in dividends.

1 The cost of equity – ke

The cost of equity is the rate of return that ordinary shareholders expect to receive on their investment. The main method of computing ke is the dividend valuation model (DVM).

The dividend valuation model (DVM)

The DVM states that the current share price is determined by the future dividends, discounted at the investors' required rate of return.

$$P_0 = \frac{d}{k_e}$$

where k_e = cost of equity

d = is the constant dividend

P_0 = the ex div market price of the share

This is a variant of the formula for a PV of a perpetuity.

We can re-arrange the formula to get the one below:

The dividend valuation model with constant dividends

$$k_e = \frac{d}{P_0}$$

DVM – further detail

The DVM is a method of calculating cost of equity.

This model makes the assumption that the market price of a share is related to the future dividend income stream from that share, in such a way that the market price is assumed to be the present value of that future dividend income stream.

This is known as the fundamental theory of share valuation.



Cum div and ex div share prices

The ex dividend ('ex div') value of a share is the value just after a dividend has been paid. Occasionally in questions, you may be given a share price just before the payment of a dividend (a 'cum div' price). In this case, the value of the upcoming dividend should be deducted from the cum div price to give the ex div price.

For example, if a dividend of 20 cents is due to be paid on a share which has a cum div value of \$3.45, the ex div share price to be entered into the DVM formula is $\$3.45 - \$0.20 = \$3.25$.



Example 1

The ordinary shares of Jones plc are quoted at \$4 per share. A dividend of 30 cents is about to be paid. There is expected to be no growth in dividends.

Required:

Calculate the cost of equity.



Example 1 answer

$$k_e = \frac{30}{400 - 30} = 8.1\%$$



Test your understanding 1 (OTQ style)

The ordinary shares of Smith plc are quoted at \$12 per share. A dividend of 75 cents per share is about to be paid. There is expected to be no growth in dividends.

Required:

Calculate the cost of equity. Give your answer to 1 decimal place.

Introducing growth

The dividend valuation model with constant growth

$$k_e = \frac{d_1}{P_0} + g \quad \text{or} \quad k_e = \frac{d_0(1+g)}{P_0} + g$$

where g = a constant rate of growth in dividends

d_1 = dividend to be paid in one year's time

d_0 = current dividend



Example 2

The ordinary shares of Jones plc are quoted at \$4 per share. A dividend of 30 cents is about to be paid. The expected growth rate of dividend is 5%.

Required:

Calculate the cost of equity.



Example 2 answer

$$k_e = \frac{30 \times 1.05}{400 - 30} + 0.05 = 13.5\%$$



Test your understanding 2 (OTQ style)

The ordinary shares of Smith plc are quoted at \$12 per share. A dividend of 75 cents per share is about to be paid. The expected growth rate in the dividend is 8%.

Required:

Calculate the cost of equity. Give your answer to 1 decimal place.

Test your understanding answers

Test your understanding 1 (OTQ style)

$$k_e = \frac{0.75}{12 - 0.75} = 6.7\%$$

Test your understanding 2 (OTQ style)

$$k_e = \frac{0.75 \times 1.08}{12 - 0.75} + 0.08 = 15.2\%$$