Calculation Examples: DDM

Question: The Telstra (TLS) stock price is $**6**. Its next annual dividend of $**0.30** will be paid in exactly one year from now. Dividends are expected to grow by **2**% pa forever.

What is the stock's required return on equity, given as an effective annual rate?

Answer:

$$P_0 = \frac{C_1}{r_{total} - g}$$

$$6 = \frac{0.30}{r_{total} - 0.02}$$

$$r_{total} = \frac{0.3}{6} + 0.02$$

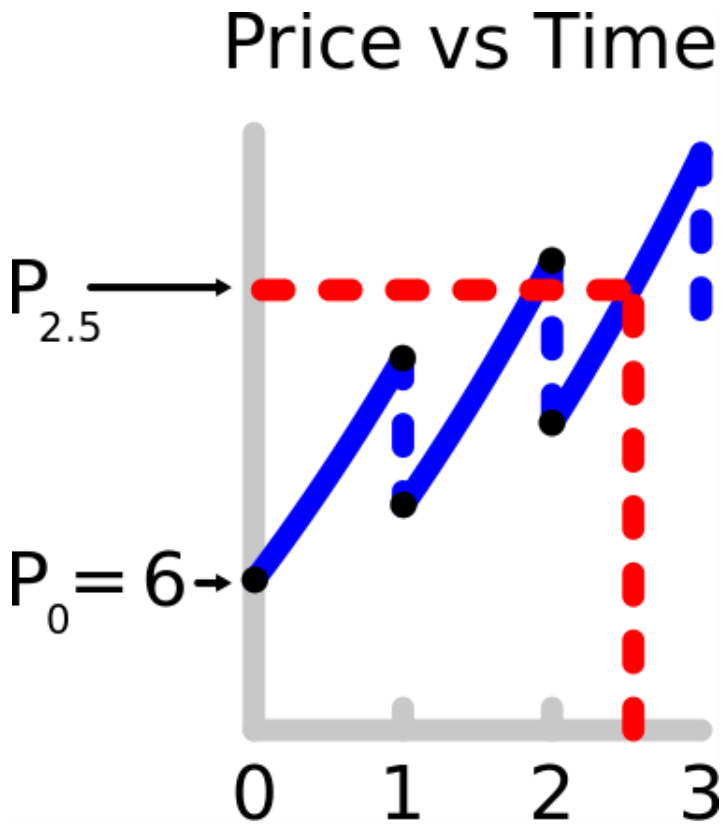
$$= 0.07 = 7\% \text{ pa}$$

Question: Estimate the future stock price in 2 years and 6 months (2.5 years).

Answer: We can use a number of methods to find the price. All are best visualised by following the path of the 'saw tooth' diagram of price versus time.

Method 1: Grow the current price by g from trough to trough for two periods, then by r for half a period from trough to peak.

$$P_{2.5} = P_0(1+g)^2(1+r)^{0.5}$$
$$= 6(1+0.02)^2(1+0.07)^{0.5}$$
$$= 6.457188769$$



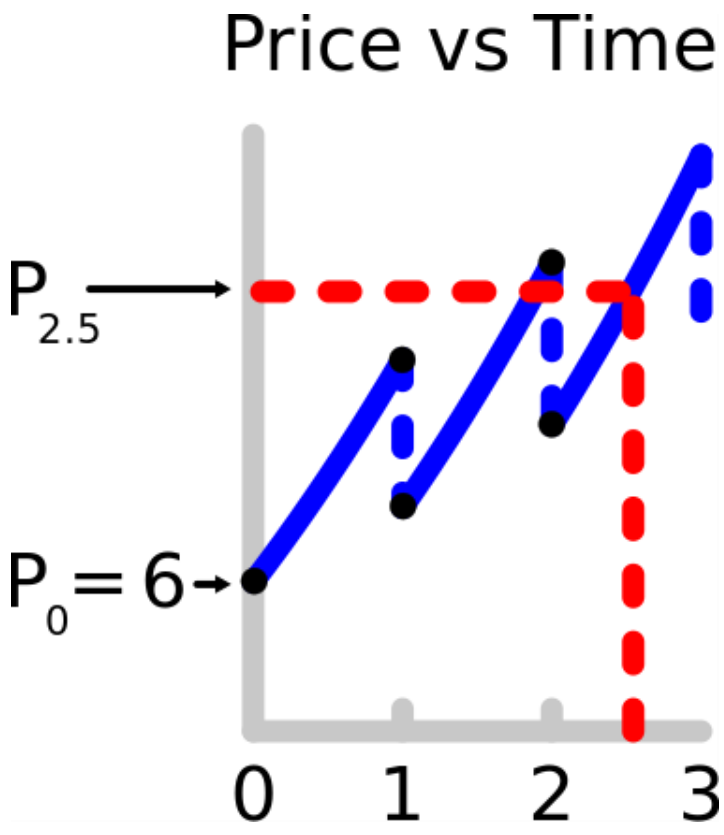
Method 2: Grow the current price by r from trough to peak, then subtract the dividend, and repeat for another one and a half periods. Note that $C_2 = C_1(1+g)^1$.

$$P_{2.5} = \left((P_0(1+r)^1 - C_1)(1+r)^1 - C_2\right)(1+r)^{0.5}$$

$$= \left((P_0(1+r)^1 - C_1)(1+r)^1 - C_1(1+g)^1\right)(1+r)^{0.5}$$

$$= \left((6(1+0.07)^1 - 0.30)(1+0.07)^1 - 0.30(1+0.02)^1\right)(1+0.07)^{0.5}$$

$$= 6.457188769$$



Method 3: The price in 2.5 periods will be the price in 2 periods, grown forward from trough to peak by r for half a period.

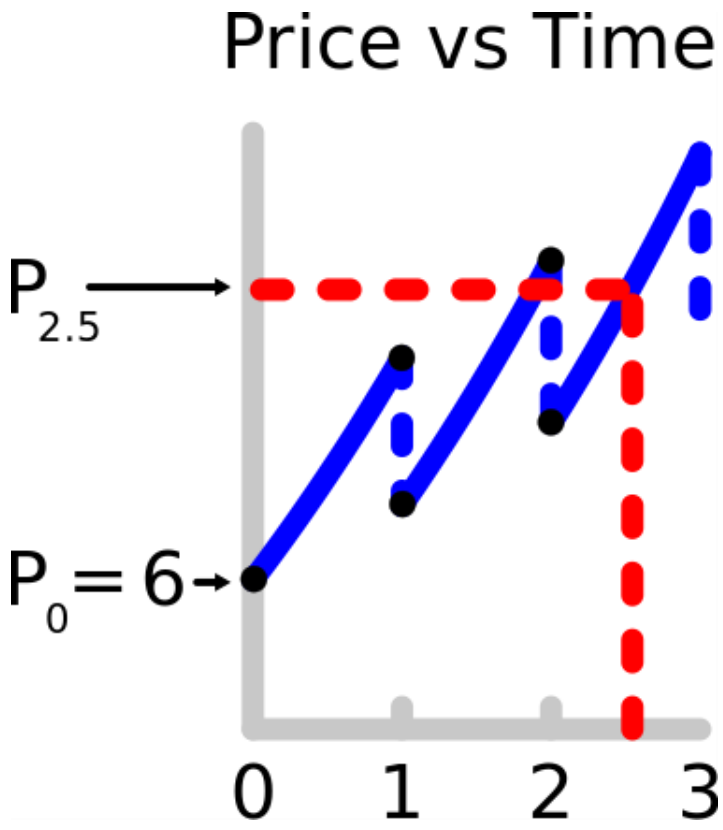
$$P_{2.5} = P_2(1+r)^{0.5}$$

$$= \frac{C_3}{r-g}(1+r)^{0.5}$$

$$= \frac{C_1(1+g)^2}{r-g}(1+r)^{0.5}$$

$$= \frac{0.30(1+0.02)^2}{0.07-0.02}(1+0.07)^{0.5}$$

$$= 6.457188769$$



Questions: Dividend Discount Model

http://www.fightfinance.com/?q=479,3,4,451,7,28,201,216,497,217,264,289,352,31,161,36,39,40,41,148,158,441,51,50,270,488,465,