Value of Common Stocks.

Henrik Källåker, 2010-10-15

Valuation with Varying Growth Rates.

Task 1.

You are one of the shareholders for Company X which is on the Swedish stock market. You know that the dividend of the stock at the end of the first year will be 1.2 €. The actual stock price is currently 50 €.
Further, the company´s Plowback Ratio is 80% and the Return of Equity, ROE, is 30%. The cost of equity, r, is 10%.
The development of the share for the four coming years is presented in the table below:

Year	**1**	**2**	**3**	**4**
Book Equity/share	20	24,8	31,2	33,2
Earnings per share	6	8	4	4,31
Return on Equity	0,3	0,32	0,13	0,13
Payout Ratio	0,2	0,2	0,5	0,5
Dividend/share	1,2	1,6	2	2,15
Growth rate of dividends	-	33%	25%	8%

*Table 1, Development for the stock of the company X***.**

We assume that the growth, g, of dividend will be 8% in the future, after year 4.

Question A: What is the present value of the share if you would sell the share at the end of year 3?

Question B: What is the present value of the share if you would keep the stock after year 4?

Answer question A:

Use the general discount cash formula

$$Po = \frac{Div1}{1+r} + \frac{Div\ 2}{(1+r)^2} + \frac{Div\ 3+P3}{(1+r)^3}$$

$$27{,}4 \approx \frac{1{,}2}{1{,}1} + \frac{1{,}6}{(1{,}1)^2} + \frac{2+31{,}2}{(1{,}1)^3}$$

The present value is 27.4€

Answer question B:

We know that the growth of dividend in year 4 is 8%. Then we can use the constant growth formula for growing perpetuity, but we also have to discount the dividends for year 1, 2 and 3.

The formula for a growing perpetuity, *from year 4* is:

$Po = \frac{1}{(1+r)^3(r-g)}$ (Chapter 3, page 47 in Principles of Corporate Finance.)

The complete formula is therefore:

$$Po = \frac{Div1}{1+r} + \frac{Div\ 2}{(1+r)^2} + \frac{Div\ 3}{(1+r)^3} + \frac{1}{(1+r)^3}\frac{Div\ 4}{(r-g)}$$

$$6{,}1 \approx \frac{1{,}2}{1{,}1} + \frac{1{,}6}{(1{,}1)^2} + \frac{2}{(1{,}1)^3} + \frac{1}{(1{,}1)^3}\ \frac{2{,}15}{(0{,}1-0{,}08)}$$

The present value is 6.1€, with a growth of the dividend at 8% from year 4 in perpetuity.

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Calculating the Present Value of Growth Opportunities.

Task 2

Suppose you are planning to invest in a certain company but you want to have more information about the stock before you go ahead.

You know that the dividend, Div, will be 8€ the first year and that it will increase with 8% every year in perpetuity.

You have read in the annual report that the company has an Earning per Share, EPS, that is 11.3 € per share and the Return on Equity, ROE, is 20%.

We assume that the Market Capitalization Rate, r, is 15%.

In order to make a correct valuation you need to answer the questions below:

Question A: What is the Present Value of the Stock?

Question B: What is the Present Value of Growth Opportunity, PVGO for the stock?

Question C: How big is the Plowback Ratio?

Answer, Task 2 A:
Since we know that the growth is in perpetuity, we can use the simplified constant growth formula:

$$Po = \frac{Div1}{(r-g)} = \frac{8}{(0{,}15-0{,}06)} = 88{,}9\ €$$

Answer Task 2 B:
The Captalized value of the share *if it had no growth opportunity,* would be:

$$Po = \frac{EPS}{r} = \frac{11{,}3}{0{,}15} \approx 75{,}3\ €$$ (The perpetuity formula)

The share-price is, according to the answer in task 2A, 88.9 €
The formula for the present value of growth opportunities:
Po = Present value of level stream of earnings + Present value of growth opportunities →

$$Share\ price = \frac{EPS1}{r} + PVGO \rightarrow PVGO = Share\ price - \frac{EPS1}{r} = 88{,}9 - 75{,}3 = 13{,}6\ €$$

The present Value of Growth Opportunities is 13.6 €

Answer Task 2 C:
We know that EPS is 11.3 € / share. The payout ratio will be:

$$Payout\ ratio = \frac{Div1}{EPS1} = \frac{8}{11{,}3} \approx 71\ \%$$

71% of the earnings that is paid out to the shareholders; that means that the rest, 29% is reinvested into the company.

In other words, the Plowback Ratio is 29%.