Review of Equity Valuation

Stock valuation

Suppose you want to invest in a stock that trades at a certain price and as an investor, you are wondering how much you should be paying for this stock. Or put differently, what is the fundamental value of this stock given its cash flows?

Remember, to value any financial asset, we need to find (i) the promised or the expected cash flows, (ii) the relevant risk-adjusted discount rate, and finally, the fundamental value of the financial asset is given simply by the present value of the cash flows discounted at the appropriately risk-adjusted discount rate.

Stocks, unlike fixed-income instruments, do not have any promised cash flows. Companies may or may not pay out dividends to their shareholders. Nevertheless, we can still value stocks as the present value of the expected cash flows using the Dividend Discount Model:

$$P_0 = \frac{Div_1}{(1+r)} + \frac{Div_2}{(1+r)^2} + \frac{Div_3}{(1+r)^3} + \cdots = \sum_{t=1}^{\infty} \frac{Div_t}{(1+r)^t}$$

Notice that the cash flows extend to infinity as there is no maturity date for stocks. Valuing stocks using this model boils down to coming up with the expected dividend payments.

Suppose that the expected dividends are assumed to be constant, $Div_t = Div$, as might be the case for a preferred stock. Then, valuing a stock that is expected to make constant dividend payments becomes similar to valuing a perpetuity with a constant cash flow:

$$P_0 = \frac{Div}{(1+r)} + \frac{Div}{(1+r)^2} + \frac{Div}{(1+r)^3} + \cdots = \sum_{t=1}^{\infty} \frac{Div}{(1+r)^t} = \frac{Div}{r}$$

What if we assume that expected dividends will grow at a constant growth rate g? For example, suppose that

$$Div_1 = Div$$
$$Div_2 = Div \times (1+g)$$
$$Div_3 = Div \times (1+g)^2$$
$$\ldots$$

Then valuing a stock that is expected to make dividend payments that grow at a constant growth rate becomes similar to valuing a growing perpetuity:

$$P_0 = \frac{Div}{(1+r)} + \frac{Div \times (1+g)}{(1+r)^2} + \frac{Div \times (1+g)^2}{(1+r)^3} + \cdots = \frac{Div}{r-g}$$

This is also called the Dividend-Growth Model.

Suppose you would like to find the fundamental value of a stock that is currently trading in the market at $75 per share. You know the company has just paid $5 in dividends per share this year, and you expect the dividends to grow by 2% per year in the future. Suppose the required rate of return on equity is 8%. We can find the fundamental value of this stock using the Dividend-Growth Model:

$$P_0 = \frac{\$5 \times (1.02)}{8\% - 2\%} = \$85$$

This means that given the expectations about future dividends and the required rate of return on equity, the fundamental value of this stock is $85, and the current market price is undervalued.

Note, however, that this model is extremely sensitive to these assumptions. What would happen if the expected growth rate is 1%?

$$P_0 = \frac{\$5 \times (1.01)}{8\% - 1\%} = \$72.14$$

Alternatively, you can use the Dividend-Growth model to find the implied growth rate assuming that the market correctly prices the stock.

$$P_0 = 75 = \frac{\$5 \times (1+g)}{8\% - g} \rightarrow g = 1.25\%$$