Chapter 10: Stock valuation

Discounted free cash flow model

The discounted free cash flow model is a method for estimating a firm's enterprise value by discounting its future free cash flow. We calculated the enterprise value as:

Enterprise value = Market value of equity + Debt - Cash

The free cash flow (FCF) is the cash generated by the firm before any payments to debt or equity holders are considered:

FCF = EBIT x (1 – Tax rate) + Depreciation – CapEx – Increases in NWC

The present value of this free cash flow determines the current enterprise value (V0):

V0 = PV (future FCF)

So the share price will be:
$$P0 = \frac{V0 + Cash0 - Debt0}{shares\ outstanding}$$

Instead of the equity costs of capital rE, we use the weighted average cost of capital (WACC) as the discount rate in the discounted free cash flow model. The WACC is the cost of capital that reflects the risk of the overall business, which is the combined risk of the firm's equity and debt: rWACC.

A constant long-run growth rate, gFCF, implies:

$$VN = \frac{FCF(N + 1)}{rWACC - gFCF} = \left(\frac{1 + gFCF}{rWACC - gFCF}\right) x\ FCF\ N$$

Valuation based on comparable firms

The method of comparables is an estimate of the value of a firm bases on the value of other, comparable firms or other investments that are expected to generate very similar cash flows in the future. If you want to use comparables to value identical firms, you need to adjust for scale differences. This is possible by expressing the value of the firms in term of a valuation multiple: a ratio of a firm's value to some measure of the firm's scale or cash flow.

Valuation multiples:

1. The price-earnings ratio. It's possible to estimate the value of a share by multiplying the current earnings per share by the average P/E ratio of comparable firms. We make a distinction between the trailing P/E and the forward P/E. Trailing P/E uses trailing earnings: earnings over the prior 12 months. The forward P/E uses forward earnings: earnings over the coming 12 months.

$$Forward\ P/E = \frac{P0}{EPS1} = \frac{Div1\ /EPS1}{rE - g} = \frac{dividend\ payout\ rate}{rE - g}$$

2. Enterprise value multiples. These multiples value the entire firm and so they are closely related to the discount cash flow model.

$$\frac{V0}{EBITDA1} = \frac{\frac{FCF1}{rWACC - gFCF}}{EBITDA1} = \frac{FCF1/EBITDA1}{rWACC - gFCF}$$

3. Other multiples.

These valuation multiples also have limitations:

- Because firms are not identical in practice, the usefulness of valuation multiples depends on the nature of the differences between firms and the sensitivity of the multiples to these differences.

- Comparables only provide information regarding the value of a firm relative to other firms.

No valuation model provides a definitive value for the stock. To identify a reasonable range for the value, it is best to use several methods.

Information, competition and stock prices

Stock prices aggregate the information of many investors. Therefor if our valuation disagrees with the stock's market price, it is most likely an indication that our assumptions about the firm's cash flows are wrong.

Competition between investors tends to eliminate positive-NPV trading opportunities. Competition will be strongest when information is public and easy to interpret. Privately formed traders may be able to profit from their information, which is reflected in prices only gradually.

The efficient markets hypothesis states that competition among investors eliminates all positive-NPV trading opportunities, which is equivalent to stating that securities with equivalent risk have the same expected returns. It implies that securities will be fairly priced, based on their future cash flows, given all information that is available for investors.

In an efficient market, investors will not find positive-NPV trading opportunities without some source of competitive advantage. By contrast, the average investor will earn a fair return on his or her investment. And in an efficient market, to raise the stock price, corporate managers should focus on maximizing the present value of the free cash flow from the firm's investments, rather than accounting consequences or financial policy.

Individual biases and trading

Individual investors display many biases, including overconfidence, disposition effect, limited attention and mood affects.

The overconfidence hypothesis is the tendency of individual investors to trade too much based on the mistaken belief that they can pick winners and losers better than investment professionals.

The disposition effect is the tendency to hold on to stocks that have lost value and sell stocks that have risen in value since the time of purchase.

In an efficient market, these biases can lead to trading losses through excessive trading or biases in valuations.