CHAPTER FOUR

STOCK AND EQUITY VALUATION

Stock represents part ownership in a firm. **Two main types of stock**

1. Common stock and 2.Preferred stock. In this chapter we focus only on the investment in common stocks.

The main features of the common stock:

1. Typically each common stock owned entitles an investor to one vote incorporate shareholders' meeting.

2. Investor receives benefits in the form of dividends, capital gains or both. But: dividends are paid to shareholders only after other liabilities such as interest payments have been settled; typically the firm does not pay all its earnings in cash dividends; special form of dividend is stock dividend, in which the corporation pays in stocks rather than cash.

3. Common stock has no stated maturity. Common stock does not have a date on which the corporation must buy it back. But: some corporation's pay cash to their shareholders by purchasing their own shares. These are known as share buybacks.

4. Common stocks on the whole historically have provided a higher return, but they also have higher risk. An investor earns capital gains (the difference between the purchase price and selling price) when he / she sell at a higher price than the purchase price.

Main advantages of common stock as investment:

a. The investment income is usually higher;

b. The investor can receive operating income in cash dividends;

c. Common stock has a very high liquidity and can easily be moved from one investor to the other;

d. the costs of transaction with common stocks involved are relatively low;

e. The nominal price of common stock is lower in comparison with the other securities.

Main disadvantages of common stock as investment:

a. Common stock is more risky in comparison with many other types of securities;

b. The selection of these securities is complicated: high supply and difficult to evaluate;

c. The operating income is relatively low (the main income is received from the capital gain change in stock price).

Equity shares can be described more easily than fixed income securities. However, they are more difficult to analyze. Fixed income securities typically have a limited life and a well-defined cash flow stream i.e. maturity period and interest on bonds. Equity share have neither of these features. No limited life and no fixed cash flows. As long as the company continues, you can hold these shares and dividend depends on its profits. That is why analysis of equity shares become little difficult than the valuation of bonds. While the basic principles of valuation are the same for fixed income securities as well as equity shares, the factors of growth and risk create greater complexity in the case of equity shares.

Equity analysts employ two kinds of analysis, viz. fundamental analysis and technical analysis. Fundamental analysts assess the fair market value (intrinsic value) of equity shares by examining the assets, earnings prospects, cash flow projections, and dividend potential; while technical analysts rely on price movement, trends (bullish and bearish), and other market indicators to identify trading opportunities.

This chapter discusses the techniques for fundamental valuation which may broadly be divided into the following three categories:

1. Balance sheet techniques
2. Discounted cash flow techniques
3. Relative valuation techniques

1.Balance sheet valuation:

Analysts often look at the balance sheet of a firm to get a handle on some valuation measures. The measures derived from the balance sheet are: Book value, and Liquidation value.

Book Value: The book value per share is simply the net worth of the company (which is equal to shareholders' equity) divided over the number of outstanding equity shares. The same is given as formula:

$$\text{Book value per share} = \frac{\text{Net worth}}{\text{No.of outstanding equity shares}}$$

Example: Net worth of Zenith Share Company is Birr 37 million and number of outstanding equity shares of Zenith is 2 million. The book value per share is calculated as follows:

$$\text{Book value per share} = \frac{\text{Net worth}}{\text{No.of outstanding equity shares}} = = \frac{37{,}000{,}000}{2{,}000{,}000} = \text{Birr } 18.50$$

How relevant and useful is the book value per share as a measure of investment value? The book value per share is firmly rooted in financial accounting and hence can be established relatively easily. Due to this, its proponents argue that it represents an 'objective' measure of value. On the other hand a more powerful criticism, against the book value measure, is that the historical balance sheet figures on which it is based are often very divergent from the current economic value. Balance sheet figures rarely reflect earning power and hence the book value per share cannot be regarded as a good proxy for true investment value.

Liquidation Value: The liquidation value per share is equal to:

$$\text{Liquidation Value} = \frac{\begin{array}{c}\text{Value realized from liquidating}\\ \text{all the assets of the firm}-\\ \text{Amount to be paid to all creditors and preference shareholders}\end{array}}{\text{No.of outstanding equity shares}}$$

Example: Assume that Pioneer Industries would realize Birr 45 million from the liquidation of its assets and pay Birr 18 million to its creditors and preference shareholders in full settlement of their claims. If the number of outstanding equity shares of Pioneer is 1.5 million, the liquidation value per share works out to:

$$\text{Liquidation value per share} = \frac{45{,}000{,}000-18{,}000{,}000}{1{,}500{,}000} = \text{Birr } 18$$

While, the liquidation value appears more realistic than the book value, there are two serious problems in applying it. **First**, it is very difficult to estimate what amounts would be realized from the liquidation of various assets. **Second**, the liquidation value does not reflect earning capacity. Given these problems, the measure of liquidation value seems to make sense.

2. Discounted Cash Flow Techniques:

Dividend discount model: According to dividend discount model, the value of an equity share is equal to the ***present value of future expected dividends and selling price of equity share when it is sold.***

Single – period valuation model (One year holding period):

In this case, the investor intends to purchase a share now, hold it for one year and sells it off at the end of one year.

The intrinsic value of an equity share is in single-period valuation model is calculated as follows:

$$Po = \frac{D1}{(1+r)} + \frac{P1}{(1+r)}$$

Where:

P_o = Intrinsic value of share

D_1 = Dividend expected a year hence (a year after)

P_1 = Price of the share expected a year hence (a year after)

r = Required rate of return or discount rate

Example:
Prestige Company's equity share is expected to provide a dividend of Birr 2.00 and expected to realize a price of Birr 18.00 a year hence. What is the present value (intrinsic value) of the equity share if investor's required rate of return is 12 percent?

Solution:

$$Po = \frac{D1}{(1+r)} + \frac{P1}{(1+r)}$$

$$= \frac{2.00}{(1+0.12)} + \frac{18.00}{(1+0.12)}$$

$$= \frac{2.00}{(1.12)} + \frac{18.00}{(1.12)}$$

$$= 1.786 + 16.07$$

$$= 17.86 \text{ Birr}$$

Note: If the market price of this share is less than Birr 17.86, the investor should buy the share. If it is more than Birr 17.86, he should not buy.

Example 2:
An investor expects to get Birr 3.50 as dividend from a share next year and hope to sell the share at Birr 45.00 a year hence. His require rate of return is 25 percent. What is the present value of the share? If the market price of the share is Birr 40.00, whether he should buy or not?

Solution:

$$Po = \frac{D1}{(1+r)} + \frac{P1}{(1+r)}$$

$$= \frac{3.50}{(1+0.25)} + \frac{45}{(1+0.25)}$$

$$= 2.80 + 36 = 38.80 \text{ Birr}$$

Since the market value of the share is Birr 40.00, the investor should not buy the share

Multi-Period Valuation Model:

An investor may hold a share for more than a year and sell it off at the end of his holding period. In this case, he would receive annual dividends each year and sale price of the share at the end of the holding period.

The present value (intrinsic value) of the share may be expressed as follows:

$$P_0 = \frac{D1}{(1+r)} + \frac{D2}{(1+r)} + \frac{D3}{(1+r)} + \cdots \frac{Dn}{(1+r)} + \frac{Pn}{(1+r)}$$

Where:

$D_1, D_2,$ D3……..are annual dividends

P_n = Sale price of the share at the end of the holding period

r = required rate of return

Illustration: An investor expects to get Birr 3.50, 4.00 and 4.50 as dividends from a share for next three years respectively and a sale price of Birr 75 at the end of the third year. If his required rate of return is 20 percent, what is the intrinsic value of the share?

Solution:

$$P_0 = \frac{D1}{(1+r)} + \frac{D2}{(1+r)} + \frac{D3}{(1+r)} + \frac{P3}{(1+r)}$$

$$= \frac{3.50}{(1+0.20)} + \frac{4.00}{(1+0.20)} + \frac{4.50}{(1+0.20)} + \frac{75}{(1+0.20)}$$

$$= 2.92 + 2.78 + 2.61 + 43.43$$

$$= \text{Birr } 51.74$$

In order to use the present value model for share valuation, the investor has to forecast the future dividends as well as the selling price of the share at the end of his holding period. It is not possible to forecast these values accurately. Hence, this model is practically infeasible. Modifications of this model have been developed to render it useful for practical purposes of stock valuation. In the case of most equity shares, the dividend per share grows because of the growth in earnings of a company. The growth pattern of the equity dividends have to be estimated based on the past performance and dividends declared in the past.

Constant Growth Model (Gordon Model):

This model is developed by Myron J. Gordon. In this model, it is assumed that dividends will grow at the same rate (g) into the infinite future. By applying the growth rate to the current dividend (D_0), the dividend expected to be received after one year (D_1) can be calculated as follows:

$$D_1 = D_0 (1 + g)^1$$

Where

D_1 = Expected dividend

D_0 = Current year dividend

g = dividend growth rate

Example: If the current year dividend is Birr 3.00 and dividend growth rate is 6 percent, what is the dividend a year hence?

$$D_1 = D_0 (1 + g)^1$$

= 3.00 (1+6/100)

= 3.00 (1+0.06)

= 3.00 (1.06)

= Birr 3.18

Dividend received at the end of second and third years are calculated as follows:

$D_2 = D_0 (1 + g)^2$

$D_3 = D_0 (1 + g)^3$

The intrinsic value of a share for n years is :

$$P_0 = \frac{D0\ (1+g)1}{(1+r)} + \frac{D0\ (1+g)2}{(1+r)} + \frac{D0\ (1+g)3}{(1+r)} + \frac{D0\ (1+g)n}{(1+r)}$$

Simplified formula:

$$P_0 = \frac{D1}{(r-g)} \text{ or } \frac{D0\ (1+g)}{(r-g)}$$

Example: the dividend expected on an equity share of a company a year hence is Birr 2.00. It is expected to grow constantly at 6 percent per annum. What is the intrinsic value of the share if your required rate of return is 14 percent?

Solution: $P_0 = \frac{D1}{(r-g)}$

$= \frac{2.00}{(0.14-0.06)}$

= Birr 25

Example 2: A company has declared a dividend of Birr 2.50 per share for the current year. The dividend of the company is expected to grow at 10 percent per annum. If the required rate of return is 15 percent, what is the present value of the share?

Solution:

$P_0 = \frac{D0\ (1+g)}{(r-g)}$

$= \frac{2.50\ (1+0.10)}{(0.15-0.10)}$ $= \frac{2.50\ (1.10)}{(0.05)}$ = Birr 55

Earnings Multiplier Approach to Share Valuation:

Many investors and analysts value shares by estimating an appropriate multiplier for the share. The price-earnings ratio (P / E ratio) is the most popular multiplier used for the share valuation.

The price-earnings ratio is given the following expression:

$$\text{P/E ratio} = \frac{\text{Share Price}}{\text{Earnings per share}}$$

The intrinsic value of a share is taken as current earnings per share times the appropriate P/E ratio. The same is shown as below:

Share Price = EPS x P/E ratio

Example: A company's Earnings per Share (EPS) is Birr 8.00. If the P/E ratio is 12, then what is the intrinsic value of the share?

Solution:

Share Price = EPS x P/E ratio

= 8.00 x 12 = Birr 96

The major difficulty for the analyst using the multiplier approach to share valuation is the determination of an appropriate price-earnings ratio for the share. Different approaches may be adopted for the determination of the appropriate P/E ratio. It may be arrived at by the analyst on a subjective basis based on his evaluation of various fundamental factors relating to the company. The major factors considered would be growth rate in earnings and risk factor. The higher the expected growth and the lower the risk, the greater would be the appropriate price-earnings ratio for the share.

Another approach would be to use the historical P/E ratios of the company itself or P/E ratios of other companies in the industry. In the first case, the mean of the historical P/E ratios of the company in the past may be taken as the appropriate P/E ratio for share valuation. In the latter case, the median P/E ratio of companies in the same industry may be taken as the appropriate P/E ratio.

Present Value of Operating Free Cash Flow

In this model, you are deriving *the value of the total firm because you are discounting the operating free cash flows prior to the payment of interest to the debt holders but after deducting funds needed to maintain the firm's asset base (capital expenditures).* Also, because you are discounting the total firm's operating free cash flow, you would use the firm's weighted average cost of capital (WACC) as your discount rate. Therefore, once you estimate the value of the total firm, you subtract the value of debt, assuming your goal is to estimate the value of the firm's equity. The total value of the firm is equal to:

$$Vj = \sum_{t=1}^{n} \frac{OFCFt}{(1+WACC_j)^t}$$

Vj= value of firm j

n = number of periods assumed to be infinite

OFCF t= the firm's operating free cash flow in period t

WACC=firm j's weighted average cost of capital.

Similar to the process with the Dividend Discount Model (DDM), it is possible to envision this as a model that requires estimates for an infinite period. Alternatively, if you are dealing with a mature firm whereby its operating cash flows have reached a stage of stable growth, you can adapt the infinite period constant growth DDM model as follows:

$$Vj = \frac{OFCF\ t}{WACC - g_{OFCF}}$$

OFCF t = operating free cash flow in period 1 equal to OFCF0 (1+ g_{OFCF}

g_{OFCF} = long-term constant growth rate of operating free cash flow

Present Value of Free Cash Flows to Equity

The third discounted cash flow technique deals with "free" cash flows to equity, which would be derived after operating free cash flows, have been adjusted for debt payments (interest and principle).Also, these cash flows precede dividend payments to the common stockholder. Such cash flows are referred to as "free" because they are what is left after meeting all obligations to other capital suppliers (debt and preferred stock) and after providing the funds needed to maintain the firm's asset base (similar to operating free cash flow).Notably, because these are cash flows available to equity owners, the discount rate used is the firm's cost of equity (k) rather than the firm's WACC.

$V_j = \sum_{t=1}^{n} FCFE/(1+k)t$

Where:

V_j = value of the stock of firm j

n = number of periods assumed to be infinite

k = cost of equity

FCFE= the firm's free cash flow to equity in period t.