9 NINE

VALUATION OF EQUITY SHARES

CHAPTER THEME

"Should an investor commit to equity investment or not depends upon the comparative position of the market price (MP) and the intrinsic value (IV). Latter is defined as the present value of all future cash inflows discounted at an appropriate discount rate. In market equilibrium, the current market price should reflect the intrinsic value. If there is a difference, it gives rise to buy or sell opportunities which an investor should be able to capitalise. Correct estimation of intrinsic value, therefore, is of utmost importance to any investor. Number of Models have been suggested to find out the true value of the share."

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The valuation of financial assets is a process to assess the worth of the asset. Several concepts of valuation are there. These valuation concepts are Book Value, Market Value, Going Concern Value, Liquidating Value and Capitalised Value. For an investor, the last valuation method *i.e.*, capitalised valuation method is the relevant one. In capitalised valuation method, the current value of a financial asset is determined by taking the present value of future stream of cash flows. The basic valuation method has been discussed in Chapter 5 with reference to bond valuation. However, the same cannot be applied in the valuation of equity shares for the reason that the future cash flow series was finite and known with certainty in case of fixed income securities, but is neither finite nor certain in case of equity shares. Nonetheless, the valuation of equity shares can be made by applying the basic concept of discounted cash flow technique. Besides, there are other approaches also which can be applied with reference to equity shares valuation. Present chapter discusses different methods of valuation of equity shares in 3 parts. Part I deals with the general background of valuation. The valuation based on dividend has been discussed in Part II. There are still some other methods including the Price-Earnings Ratio, which have been discussed in Part III.

Part I

VALUATION OF EQUITY SHARES

Investors, individual as well as institutional, do invest in equity shares. The motive for investment in equity shares is twofold : To get a dividend income and to earn a capital profit at the time of sale. There are a host of factors affecting the investment decision of an investor with respect to equity investment.

Equity share capital represents the ownership interest. The management bears the responsibility of advancing the interest of the equity shareholders. The decision-making process of the finance manager is directed towards the maximisation of market price of the equity shares. However, in practice the market price of a share is influenced by a host of factors and quite often is unpredictable. So, the management as well as an investor is often concerned with finding out the value of equity shares.

Conceptually, the valuation of the equity share is the most typical of all because of its residual ownership character. The equity shareholders receive the residual profits and the residual assets in case of liquidation. From the point of view of calculation also, the valuation of equity share is difficult for (*i*) the rate of dividend is not given, and (*ii*) unlike rate of interest or rate of preference dividend which remain constant over the life of the security, the rate of dividend on equity shares may vary over the years. So, the normal valuation model (given in Chapter 5) as applied to the bonds and the preference shares cannot be applied for valuation of equity shares.

Equity shares have *features* which are different from the bonds. Some of these are:

1. Uncertainty. The dividends on equity shares are uncertain. A company may or may not pay dividends. If paid, the rate of dividend may fluctuate from one year to another. However, in case of bonds, the rate of interest was fixed and certain.

2. No Redemption. In case of bonds, the terminal inflow is available in terms of redemption value. However, in case of equity shares, there is no redemption value but a terminal value is

considered in terms of the market price at which the equity shares can be sold by the investors in the market.

3. Relation with Earnings of the Company. Bond valuation is not directly related to the fluctuation in earnings of the company because the claim of the bond holders is fixed to the extent of coupon rate. However, in case of equity shares, the return available to equity investors is directly related and depends upon the earnings of the company. Consequently, any expectation of change in earnings will affect the valuation of equity shares.

In case of equity shares, the return available to equity investors is directly related and depends upon the earnings.

Assumptions: While ascertaining the value of equity shares, different assumptions are made regarding the company's future profit, the amount and the timing of the dividends, the required rate of return, *etc.* Therefore, different approaches have been developed for the valuation of equity shares. These different approaches, however, make the following assumptions regarding the basic characteristics of equity shares :

1. Equity shares do not have any redemption date.
2. Equity shares do not have any given redemption or liquidating value. In case of liquidation of the company, their claim is residual in nature and arises in the last (after paying all external liabilities and the preference shareholders).
3. Dividends on equity shares are neither guaranteed nor compulsory. Further, neither the rate nor the timing of dividend is specified. So, the dividend can vary in any direction.

Different approaches to the valuation of the equity shares can be analysed as follows:

(*a*) Accounting concept of valuation.

(*b*) Valuation based on Dividend (based on Discounted Cash Flow technique).

(*c*) Valuation based on Earnings (also known as Relative methods).

VALUATION OF EQUITY SHARES BASED ON ACCOUNTING INFORMATION

The accounting information and the financial statements, particularly the balance sheet, can provide sufficient data to find out the value of equity shares. Two popular valuation models based on accounting information are as follows:

(*i*) *Book Value or Balance Sheet value (BV)* . The BV of an equity share is simply the value of firm's ownership (based on balance sheet values) divided by the number of equity shares. So, the BV is equal to sum of all the items given as equity shareholders funds in the balance sheet (*i.e.*, equity share capital + accumulated profits – all accumulated losses) divided by the number of equity shares. An implied assumption in the BV valuation is that all assets are expected to realise an amount equal to their value stated in the balance sheet.

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The BV of an equity share is based upon accounting information and thus can be easily calculated. However, it ignores the profitability of the firm. The BV also lacks sophistication as it is based upon the balance sheet which incorporates the historical figures, most of which might have become outdated. So, the BV fails as an objective measure of valuation of equity shares.

(*ii*) ***Liquidation Value (LV)*** . The LV of an equity share is the amount of cash that would be received from the company if all its assets are sold and the liabilities (including preference shares, if any) are paid. The remaining amount will then be distributed among the equity shareholders. If there is no remaining/residual amount after payment to liabilities, then equity shareholders receive no payment and hence the LV will be zero.

The concept of LV seems to be better and more realistic than the BV, as the former is based upon the current realisable values instead of historical book values. However, the LV also lacks consideration of profitability of the firm. Further, the LV requires finding out the realisable value all the assets which is not an easy task.

The concept of LV seems to be better and more realistic than the BV, as the former is based upon the current realisable values instead of historical book values.

So, both these methods based on accounting information are not objectively giving the value of equity shares. However, these methods do provide an idea of worth of a share to a shareholder who is more cautious about his capital investment in the shares, rather than the return he is expected to receive on his investment.

Part II

VALUATION OF EQUITY SHARES BASED ON DIVIDENDS

An investor buys or acquires an equity share in expectation of (*i*) a stream of future dividends from the company, and (*ii*) resale price of the equity share after some time when he is no longer interested in holding the share. The owner of a share receives dividends as a compensation for investing in the firm. So, as long as, the firm is operating profitably and the investor holds the shares, he would be expecting to receive a dividend from the company. So, the dividend plays a crucial and important role in determining the value of equity shares. ***Though there is no legal compulsion to pay dividend on equity shares, still most companies prefer to pay dividends in order to satisfy the expectations of their shareholders.***

Assumptions. Valuation of equity shares based on dividends requires the following assumptions :

1. The dividends are payable annually.
2. The first dividend is received after one year from the date of acquisition/purchase.
3. Sale of equity share, if any, occurs only at the end of a year and at the ex-dividend terms.

The value of an equity share applying the basic valuation model (Chapter 5) may be defined as equal to the present value of all future benefits which the share is expected to provide in the form of dividends over an infinite period. The future selling price and capital gain/loss, if any, is ignored because theoretically speaking, what is sold is the right to all futures/subsequent dividends. So, from valuation point of view, only the stream of dividends is relevant.

The value of equity share is the sum of the present values of future cash flows (in the form of dividends) discounted at the required rate of return of the investors. By modifying the basic model, the valuation of equity shares may be ascertained with the help of Equation 9·1.

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \ldots\ldots\ldots + \frac{D_\infty}{(1+k_e)^\infty} \quad \ldots (9.1)$$

where P_0 = Value of the Equity Share.

D_i = Expected dividends over the years.

k_e = Required rate of return of the equity investors.

Equation 9.1 states that share price equals the present value of all expected future dividends into perpetuity. The model is also known as 'Dividend Discount Model' (DDM).

This valuation model for the valuation of equity shares is just the same as it is for the present value of any other asset. In this case, the dividend stream is discounted by the rate of return that can be earned in the capital market on other securities of comparable risk. The rationale for this model lies in the present value rule : **The value of any asset is the present value of expected future cash flows, discounted at a rate appropriate to the riskiness of the cash flows being discounted.**

In order to apply the DDM, two basic ingredients are required. These are (*i*) The required rate of return, and (*ii*) The series of expected cash flows.

Required Rate of Return. In order to induce an investor to purchase equity shares, it must be able to provide a return to the investor. The expected rate of return from a particular share would depend upon the risk attached with that share. The expected rate of return is also defined as the 'opportunity cost' or minimum required rate of return of the investor. This rate is used as the discount rate in the DDM to find out the value of the share.

Expected Cash Flows : In the DDM, the series of cash flows (in terms of dividend and a terminal price) is used to find out the value of the share. With reference to these cash flows, two questions are to be answered.

(*i*) What are the expected amounts of cash flows, and

(*ii*) When are these cash flows expected to occur.

First one of these questions *i.e.,* expected amounts of cash flows is taken up in the following discussion and for the second question, the assumption of annual dividends has already been stated.

The Equation 9.1 (as a valuation model of equity shares) on the face of it, appears to ignore the future selling price of equity shares. Many investors buy equity shares only for capital gains at a later stage. Some investors buy shares even if there is no current dividend being paid on them. Does it mean that the above valuation model (Equation 9.1.) is not appropriate? No, the above model does not ignore the selling price and the capital gain/loss. Instead, it incorporates the selling price indirectly. This can be substantiated as follows :

Say, an investor buys an equity share and plans to hold it for 2 years. His cash flows would comprise 2 dividends and a selling price. In terms of general valuation model, the value of the equity share is

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \frac{P_2}{(1+k_e)^2} \quad \ldots (9.2)$$

where P_2 = Expected selling price at the end of year 2

Now, the value of the equity share at the end of year 2, *i.e.*, P_2 depends upon the future dividends after year 2. In other words, the value of the equity share at the end of the year 2, P_2, depends upon the subsequent dividends. The investor buying the share at the end of year

2 plans to hold the share for another 3 years. The price he would be ready to pay, *i.e.*, P_2 is equal to

$$P_2 = \frac{D_3}{(1+k_e)^1} + \frac{D_4}{(1+k_e)^2} + \frac{D_5}{(1+k_e)^3} + \frac{P_5}{(1+k_e)^3} \quad \ldots (9.3)$$

Similarly, $$P_5 = \frac{D_6}{(1+k_e)^1} + \frac{D_7}{(1+k_e)^2} + \ldots\ldots\ldots\ldots + \frac{P_n}{(1+k_e)^{n-5}} \quad \ldots (9.4)$$

Now, putting the Equations 9.3 and 9.4 in Equation 9.2, the position is

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \ldots\ldots\ldots\ldots + \frac{D_7}{(1+k_e)^7} + \ldots\ldots + \frac{P_\infty}{(1+k_e)^\infty}$$

This is nothing but Equation 9.1 itself. Therefore, Equation 9.1 does not include the selling price explicitly but it definitely includes it implicitly. Thus, the value of an equity share is (*i*) the present value of all future dividends expected to be paid by the company over an infinite horizon or, (*ii*) a combination of dividends for some period and an expected terminal price. As the price at any point in future is a function of the dividends to be received after that day, the price today can be best taken as the discounted value of all expected dividends in future. Further, that the total value of firm's equity shares must be equal to the discounted value of future dividends paid by the firm. But a word of caution is here. The above model includes only those dividends which will be paid on the existing shares. If the firm decides to issue additional equity shares at any time in future, then these new shares will also be entitled to subsequent dividend stream. So, the value of firm's equity shares is equal to the discounted value of that portion of total dividends stream which will be paid on the equity shares outstanding today.

From the valuation viewpoint, only the expected dividends are relevant. However, the future dividends from a company may show different patterns. The company may pay dividends at a constant rate or constantly growing rate or otherwise. This uncertainty regarding the pattern of dividends is what makes the valuation of equity shares a typical job. Three types of dividends patterns can be assumed and valuation of equity shares under all these three types of patterns can be ascertained. These three assumptions of dividend patterns are :

This uncertainty regarding the pattern of dividends is what makes the valuation of equity shares a typical job.

(*i*) Zero growth in dividends or constant dividends,

(*ii*) Constant growth in dividends, and

(*iii*) Variable growth in dividends.

Valuation Based on One-year Holding Period. If an investor intends to buy a share now and to keep it for a period of one year after which he expects to sell it for a price, the valuation of share depends on the discounted value of expected dividend and expected price after one year. The value of the share is :

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{P_1}{(1+k_e)^1}$$

This is the same as shown by Equation 9.2. For example, a dividend of ₹ 3 and a selling price of ₹ 20 is expected after 1 year. The value of the share today, assuming a required

rate of return of 20%, is :

$$P_0 = \frac{3}{(1.20)^1} + \frac{18}{(1.20)^1}$$
$$= 2.50 + 15.00$$
$$= ₹\ 17.50$$

Valuation Based on Multi-Period Holding Period. After buying a share today, the investor may like to hold it for few years and then selling thereafter. In this case, he would be getting a dividend stream and a terminal price. The dividend stream may take any of the three pattern stated above. The valuation of share under these three dividend patterns may be found as follows :

(*i*) Zero Growth in Dividends or Constant Dividends. This is the simplest type of a dividend pattern in which the dividend amount remains constant over years. The dividend stream, therefore, is a long-term annuity, or almost a perpetuity. Symbolically,

$$D_1 = D_2 = D_3 = D_4 \ldots\ldots\ldots\ldots = D_\infty$$

The value of equity shares under constant dividends assumption is ascertained by dividing yearly dividend by the required rate of return of the equity investors as follows :

$$P_0 = \frac{D}{k_e} \quad \ldots (9\cdot5)$$

where, P_0 = Value of equity share,
D = Annual dividend, and
k_e = Required rate of return of equity investors.

This model requires no estimation of future dividends and no forecast of future selling price and, therefore, is simple to operate. Dividend expected at the end of year 1 will help to find out the value of the equity share. However, the unrealistic assumption of the constant dividends itself is the shortcoming of this method. No company may be expected to pay forever a fixed dividends on equity shares.

However, the unrealistic assumption of the constant dividends itself is the shortcoming of this method.

Example 9·1

A firm pays a dividend of 20% on the equity shares of face value of ₹ 100 each. Find out the value of the equity share given that the dividend rate is expected to remain same and the required rate of return of the investor is 15%.

Solution:

In this situation, the following information is given :

k_e = 15%
D = 20 (*i.e.*, 20% of ₹ 100)

Therefore, $P_0 = \frac{20}{15} = ₹\ 133.33$

(ii) Constant Growth in Dividends. This assumption seems to be a realistic one and that is why this has been the most common valuation model. The assumption is that the dividends will grow constantly at a rate, g, every year. If a firm pays a dividend of D_0 at present, then dividend at the end of year 1 will be D_1, *i.e.*, $D_0(1+g)$ and dividend at the end of year 2 will be $D_2 = D_0(1+g)^2$, and so on. Therefore, dividend payable in any future year can be ascertained with the help of the following :

$$D_t = D_0(1+g)^t$$

or

$$D_t = D_{t-1}(1+g)$$

The valuation model under constant growth rate, g can be stated under the following assumptions :

(*i*) The growth rate, g, is constant and compounding annually;

(*ii*) The growth rate, g, is less than the required rate of return of the equity investors; and

(*iii*) The growth rate, g, is subjective estimate of the investor.

The valuation of the equity share under constant growth model can be ascertained with the help of the following equation :

$$P_0 = \frac{D_0(1+g)^1}{(1+k_e)^1} + \frac{D_0(1+g)^2}{(1+k_e)^2} + \ldots\ldots\ldots + \frac{D_0(1+g)^\infty}{(1+k_e)^\infty} \quad \ldots (9.6)$$

or

$$P_0 = \sum_{i=1}^{\infty} \frac{D_0(1+g)^i}{(1+k_e)^i}$$

The Equation 9.6 indicates an infinite summation. As $k_e > g$, Equation 9.6 can be mathematically transformed into :

$$P_0 = \frac{D_0(1+g)}{k_e - g}$$

and since $D_1 = D_0(1+g)$, therefore

$$P_0 = \frac{D_1}{k_e - g} \quad \ldots (9.7)$$

The Equation 9.7 explains the current price P_0, in terms of expected dividend at the end of year 1, D_1, the projected growth rate, g, and the expected rate of return of the investors, k_e. Alternatively, the Equation 9.7 can be used to find out an estimate of k_e from the given D_1, P_0 and g as follows:

$$k_e = (D_1 / P_0) + g$$

So, k_e , which is also called the market capitalisation rate is equal to the dividend yield, *i.e.*, $(D_1 \div P_0)$ plus the expected growth rate in dividends, g.

Valuation model given in Equation 9.7 can be further generalised as follows :

$$P_n = \frac{D_{n+1}}{k_e - g}$$

Further, Equation 9.7 can be used to find out the equity capitalisation rate, *i.e.*, the required rate of return of the equity investors.

$$P_0 = \frac{D_1}{k_e - g} \quad \ldots (9.7A)$$

$$\text{or} \quad k_e = \frac{D_1}{P_0} + g \quad \ldots (9\cdot7B)$$

The valuation model given in Equation 9.7 is easy to compute, apply and also recognises the infinite stream of dividends with growth rate, g. Moreover, the valuation models given in Equations 9.5 and 9.7 are easier to work with than the general statement that 'price equals the present value of expected future dividends' (Equation 9.1). Suppose, a share having a face value of ₹ 100 is expected to pay a dividend of 12% at the end of year 1 and the growth rate in dividends is estimated is to be 3%. If the investor has a required rate of return of 16%, the value of the equity share is :

$$P_0 = \frac{12}{.16 - .03} = ₹\,92.30$$

One implication of the Constant Growth Model is that the share price is expected to grow at the same rate as dividends. To continue with the same example, the share is selling at its true value of ₹ 92.30. The dividend for next year (year 2) is expected to increase at 3% to ₹ 12.36. The share price after one year from today would be :

$$P_1 = \frac{D_2}{k_e - g} = \frac{12.36}{.16 - .03} = ₹\,95.07$$

The increase in price from P_0 to P_1 (₹ 95.07 – 92.30) *i.e.*, ₹ 2.77 is 3% on the current price of ₹ 92.30. This can also be verified as follows :

$$P_1 = \frac{D_2}{k_e - g} = \frac{D_1(1+g)}{k_e - g} = \frac{D_1}{k_e - g}(1+g)$$
$$= P_0(1+g) = ₹\,92.77\,(1 + .03)$$
$$= ₹\,95.07$$

So, the Constant Growth Model implies that the expected rate of price appreciation in one year will be equal to constant growth rate. The holding period return would be :

$$\text{Rate of Return} = \text{Dividend Yield} + \text{Capital Gain Yield}$$
$$= \frac{D_1}{P_0} + \frac{P_1 - P_0}{P_0} = \frac{D_1}{P_0} + g$$

This is the same as Equation 9.7B given above and can be used to find out the market capitalisation rate.

Growth Rate, Rate of Return and Share Value. The value of an equity share is positively correlated with growth rate and negatively correlated with required rate of return. Suppose, a firm is presently paying a dividend of ₹ 1 which is expected to grow at growth rate, g, annually. The value of the share under different growth rates and different required rates of return have been summarised in Table 9.1.

Table 9.1 : Valuation of Shares under Different Combinations

	Required Rates of Return			
Growth Rates	**10%**	**12%**	**14%**	**16%**
2%	₹ 12.75	₹ 10.20	₹ 8.50	₹ 7.29
4%	17.33	13.00	10.40	8.66
6%	26.50	17.67	13.25	10.60
8%	54.00	27.00	18.00	13.50

The values given in Table 9.1 reflect the sensitivity of the growth rate and the required rate of return. The higher the growth rate, higher will be the value for a given required rate of return. Further, the higher the required rate of return, lesser will be value for a given growth rate. Table 9.1 also shows that a small variation in the required rate of return, or in the growth rate can change the estimated value of the share by a large percentage amount. For example, for 8% growth rate, of the required rate of return increased from 10% to 12% (*i.e.*, by 2%), the value decreases by 50% from ₹ 50 to ₹ 25. This suggests as to why the share prices constantly fluctuate as the investors make their buy-sell decisions. Different investors have different valuations because the required rate of return and the estimated growth rate are different from them. That is why, at a particular point of time, some investors are ready to sell and some are ready to buy the same share.

The constant growth model is an extremely useful theoretical model to value the equity shares. However, the basic shortcoming of the model is its assumption of constant growth in dividends forever. Dividends from no company can continue to grow at a constant rate. Eventually, the profitability of every firm will fall and there is an all likely chance that dividends will also decrease. Moreover, the assumption of constant growth rate in dividends is a difficult assumption to meet, especially given the volatility of earnings.

However, the basic shortcoming of the model is its assumption of constant growth in dividends forever. Dividends from no company can continue to grow at a constant rate.

It may also be noted that constant growth model is valid and applicable only when $k_e > g$. But what would happen if the growth rate is faster than equity capitalisation rate *i.e.*, $g > k_e$? In this case, the denominator of the Equation 9.7 would be negative and the value of the share would also be negative ! An absurdity of course. This is not what would happen. Instead, if the growth rate is higher than the equity capitalisation rate, the value of the stock would be very large or infinitely large. The reason being that if growth rate is higher, then the present value of the dividends keeps on increasing. Same is true if growth rate is equal to the equity capitalisation rate. So, the constant growth model need not be used unless the equity capitalisation rate is more than the growth rate.

***(iii)* Variable Growth in Dividends.** The zero growth rate and the constant growth rate assumptions of dividend patterns are extreme assumptions. In a practical situation, the dividend from a company may show one growth rate for few years, followed by another growth rate for next few years and then yet another growth rate for a next few years, and so on. For example, for five years the growth rate in dividends may be 2%, then it may be 3% for next five years, then it may stick to 4% growth rate infinitely. This means that the dividend will grow at 2% annually for years 1 to 5, at 3% annually for years 6 to 10 and at 4% annually from the year 11 onwards. Equation 9.6 can be modified to take care of such growth

situations to find out the value of the equity shares as follows:

$$P_0 = \sum_{i=1}^{5} \frac{D_0(1+g_1)^i}{(1+k_e)^i} + \sum_{i=6}^{10} \frac{D_5(1+g_2)^{i-5}}{(1+k_e)^i} + \sum_{i=11}^{\infty} \frac{D_{10}(1+g_3)^{i-10}}{(1+k_e)^i} \quad \ldots (9.8)$$

where, P_0 = Value of equity share.

g_1, g_2 and g_3 = Different growth rates for different periods, and

k_e = Required rate of return of equity investors.

While applying Equation 9.8, it is reasonable to assume that at the some point in future, the company's growth can be described in terms of a constant growth rate. The valuation of share may be considered as consisting of the present value of dividends during varying growth rate plus the present value of a terminal price (which is a function of all subsequent dividends at constant growth rate). This can be stated as follows (for Equation 9.8):

$$P_0 = \sum_{i=1}^{5} \frac{D_0(1+g_1)^i}{(1+k_e)^i} + \sum_{i=6}^{10} \frac{D_5(1+g_2)^{i-5}}{(1+k_e)^i} + \frac{D_{10}(1+g_3)}{(k_e-g)} \times \frac{1}{(1+k_e)^{10}} \quad \ldots (9.9)$$

In Equation 9.9, the first and second terms on the right-hand side define dividend for 10 years at two different growth rates and the third term is the constant growth model, discounted back to time period zero at the appropriate discount rate.

To find out the value of equity shares under varying growth rates as per Equation 9.9, the following procedure may be adopted:

Step 1. Find the value of cash dividend at the end of each year during the period over which the growth rate is changing. In the above example, the growth rate is changing over 10 years (2% growth rate for first five years and 3% growth rate for next five years).

Step 2. Find out the present value of these cash dividends for different years by discounting at the required rate of return, k_e. For this purpose, the cash dividend is to be multiplied by the respective discounting factor to find out the present value. Add up all these present values.

Step 3. Find out the value of the equity share at the end of the last year of the varying growth period, *i.e.*, the 10th year, when constant growth starts, as follows :

$$P_{10} = \frac{D_{11}}{k_e - g_3}$$

This value P_{10} represents the present value of all expected dividends from year 10 onwards at a constant growth rate in dividends, g_3. Find out the present value of this figure by discounting to period 0.

Step 4. Sum of the figures arrived in Steps 2 and 3 is the value of the equity share. If there are more breaks in growth rates, then the similar procedure may be adopted.

Example 9·2

A firm is paying a dividend of ₹ 1.50 per share. The rate of dividend is expected to grow at 10% for next three years and 5% thereafter infinitely. Find out the value of the share given that the required rate of return of the investor is 15%.

Solution:

For this situation, the following information is available :

$k_e = 15\%$ $\quad D_0 = ₹\ 1.50$

$g_1 = 10\%$ (for 3 years) $\quad g_2 = 5\%$ (infinitely)

Now, the value may be calculated as follows:

End of Year	Div. Amt. (₹)	$PVF_{(15\%, n)}$	PV
1	1.65	.870	₹ 1.44
2	1.82	.756	1.38
3	2.00	.658	1.32
			₹ 4.14

₹ 4.14 is the present value of dividends expected from the company for first three years. The value of the equity shares at the end of year 3 will be as follows:

$$P_3 = \frac{D_3 (1 + g)}{k_e - g}$$

$$P_3 = \frac{2 (1.05)}{.15 - .05} = ₹\ 21$$

The value of the share at the end of the year 3 will be ₹ 21. The present value of ₹ 21 is :

$$₹\ 21 \times (PVF_{15\%, 3y})$$
$$= ₹\ 21 \times (.658)$$
$$= ₹\ 13.82$$

The value of the share at present is ₹ 4.14 + ₹ 13.82, *i.e.*, ₹ 17.96.

Example 9·2. has been presented in Figure 9·1.

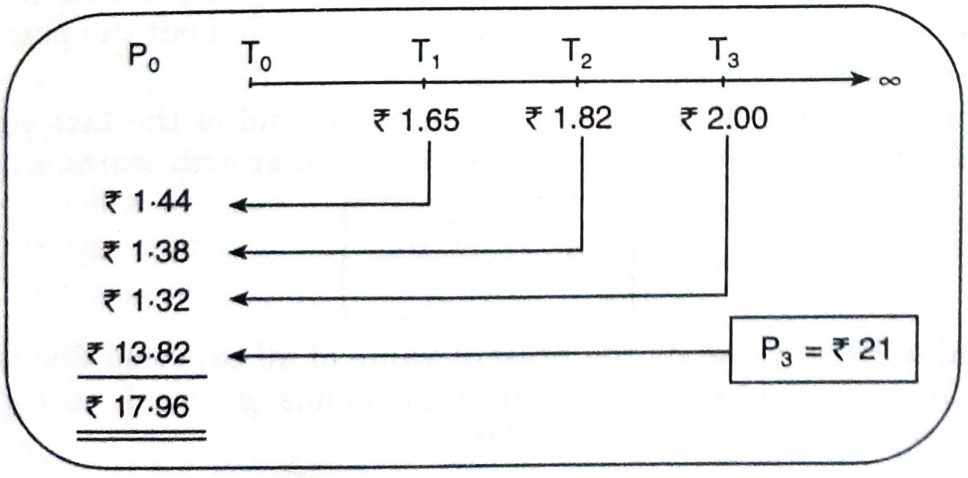

Fig. 9·1 : Valuation of Equity Shares under Varying Growth Rate

VALUATION OF THE SHARES CURRENTLY NOT PAYING DIVIDENDS

There may be numerous cases where the firm is not able to pay any dividend on equity shares because of insufficient profits during early years or gestation period or otherwise. Some of the firms may not like to pay early dividends because they require funds for growth

purposes. The dividend valuation models discussed above can take care of this type of situations also. For example, a firm is not expected to pay any dividend for first 3 years but thereafter will be paying a dividend of ₹ 2 growing at 10% p.a. forever. The value of the share, given the required rate of return 15%, can be calculated as follows:

As per the constant growth rate model, the value of the share at the end of year 3 will be :

$$P_3 = \frac{D_4}{k_e - g}$$
$$= \frac{2}{.15 - .10} = ₹ 40$$

Now, this is the value of the share at the end of year 3. This value should now be discounted at 15% to find out the present value.

$$P_0 = P_3 \times (PVF_{15\%, 3y})$$
$$= ₹ 40 \times (.658) = ₹ 26.32$$

So, the value of the share is ₹ 26.32.

The discounted cash flow technique discussed above shows that the value of equity shares can be obtained either by discounting (*i*) the stream of dividends, or (*ii*) a combination of dividend for some period and expected terminal price. The value so calculated is also known as Intrinsic Value (IV). The IV is based on the discounted cash flow methodology and is the end objective of this method. It implies that IV is the estimated value of the share at present. It should be compared with the current market price (MP) to make investment decisions as follows:

(*i*) If IV < MP, the equity share is overvalued in market and need not be bought, rather may be sold, if held by the investor.

(*ii*) If IV > MP, the share is undervalued and should be purchased or be held if already purchased.

(*iii*) If IV = MP, the MP is representative of true value and the investor may be indifferent.

So, the discounted cash flow methodology can help an investor to identify the overvalued or undervalued equity shares.

Valuation Based on Finite Holding Period

Dividend Discount Models under assumption of no-growth, constant-growth or variable-growth rates involve discounting all dividends that are expected infinitely in future. Such procedure implies that the dividend discount model is relevant only for an investor who plans to hold a share forever because only such an investor expects to receive the infinite stream of dividends. However, not all investors have this type of investment idea. What happens if an investor plans to sell a share in, say, two years time. In such a case, his cash flows would include (*i*) dividend expected in two years time, and (*ii*) the expected selling price after two years. Value of the share can be found by discounting these cash flows for two years at a rate equal to the required rate of return of the investor.

In order to apply this methodology, one must estimate the expected market price of the share after two years. However, it may be noted that the market price after two years would

be equal to the discounted value of dividends to be paid after that day. This can be generalised by saying that valuing a share by discounting its dividends up to some point in future and its expected selling price at that time is equivalent to valuing share by discounting its all future expected dividend. This is exactly the same as already given in terms of Equations 9·1, 9·2, 9·3 and 9·4.