UNIT 12  DIVIDEND THEORIES

Objective:

The objectives of this Unit are to:

- Explain the nature and significance of Dividend Decisions.
- Familiar with various theories of Dividend Policy

Structure:

12.1  Introduction
12.2  Theories of Dividend
12.3  Relevance Theories of Dividend
    12.3.1  Traditional Theory
    12.3.2  Walter’s Model
    12.3.3  Gordon’s Model
12.4  Irrelevance Theory - MM Hypothesis
12.5  Summary
12.6  Self Assessment Questions/Exercises
12.7  Key Words
12.8  Further Readings

12.1  INTRODUCTION

The major decisions of financial management of any business are investment, financing, and dividend decisions. The dividend decision is also an integral part of financing decision. When a company earns profits, it must decide as to how much of the profit should be distributed by way of dividend to the shareholders and how much to be retained for future purpose. These retained earnings are the internal sources of finance to the company. Thus, the earnings available to shareholders are equal to the dividends plus retained earnings.

The success of any business firm rests not only on the optimal utilization of funds but also on efficient management of income earned from its business operations. The distribution of fair amount of dividend to shareholders, provision for sufficient reserves to finance future opportunities and to absorb the shocks of business and provision of adequate resources for retiring old bonds and redeeming other debts call for effective management of income. The efficient management of income strengthens the financial position of the business enterprise and enables the firm to withstand seasonal fluctuations and oscillations. It also helps in enlisting the support of the shareholders in future and finally facilitates in raising funds from different avenues of capital market.

As such the dividend decision is one of the most important areas of decision making for a finance manager. Now, the issue is how significant is the
dividend decision? Does it affect the value of the firm? Does it affect the cost of capital of the company? If the answer to these two questions is ‘yes’ dividend decision is significant. The actions taken in this area affects the growth of a firm and its value. Nevertheless, opinions of the financial wizards, as evidenced from their theories, are not unanimous in this regard.

### 12.2 THEORIES OF DIVIDEND

You are aware that any theory of finance deals with various variables, which are supposed to have bearing on the value of a business firm. Value of a firm (v) is taken to be a function of:

\[ V = f[I, F, D, T, f - \ldots] \]

Where,

- **I** = Investments which determine the earning power of the firm
- **F** = Debt/Equity mix (capital structure) which decides the cost of capital of the firm
- **T** = Tax rate which partly determines the earnings available either for dividend distribution and or for retention
- **D** = Dividend decision which determines the amount of earnings going to the shareholders and retained by the firm for future purpose
- **f** = Floatation costs or issue costs which are incurred by a firm when it raises funds externally.

You must have seen that in case of capital structure theories, the value of a firm is taken to be a function of capital structure (dept/equity ratio) when other determinants or influencing variables are held constant. Similarly, in a theory of dividend the value of a firm is taken to be a function of dividend decision when other influencing variables are held constant. On the question of influence of dividend decision on the value of the firm and cost of capital there are contradicting views. One view states that the dividend decision does not influence the value of a firm, which means the dividends are irrelevant. Another school of thought is that the dividends are relevant, which means the value of a firm depends on the dividend decision. Therefore, theories of dividend can broadly be classified into two groups:

a) theories which consider divided policy as a relevant variable to enhance shareholder’s wealth, and

b) theories which consider divided policy as of no relevance.

In the next section of this unit, we will discuss the various contributions made by these two schools of thought.

### 12.3 RELEVANCE THEORIES OF DIVIDEND

The relevance dividend theories support the view that the dividend policy has profound impact on the value of a firm. There are three theories under this school of thought. They are:
(a) Traditional Theory
(b) Walter’s Model
(c) Gordon’s Model

12.3.1 Traditional Theory

The traditional theory was expounded by B. Graham and D.L. Dodd. According to them, “..... the stock market is overwhelmingly in favour of liberal dividends as against niggardly dividends”. As per this model the importance attached to liberal current dividends by the shareholder is more. The shareholders give less importance to capital gains that may arise in future. Therefore, firms which pay more current dividends will have higher market value than the firms which pay less dividends.

The model is expressed in the following way-

\[ P = M \left( D + \frac{E}{3} \right) \]  

Where,

- \( P \) = Market price per share
- \( D \) = Dividend per share
- \( E \) = Earnings per share
- \( M \) = Multiplier

In the above model earnings per share (E) is equal to the sum of dividend per share (D) and retained earnings per share (R)

\[ E = D + R \]  

(2)

Substitute this expression in Equation-1

\[ P = M \left( D + \frac{(D + R)}{3} \right) \]  

(3)

On simplification,

\[ P = M \left[ \frac{4D + R}{3} \right] = \left[ \frac{4}{3} D + \frac{1}{3} R \right] \times M \]  

(4)

The weight attached to dividends is equal to four times the weight attached to retained earnings (R). These weights provided by Graham and Dodd are based on their subjective judgement and not derived from objective analysis. According to their view the liberal payout policy has favourable impact on stock prices.

12.3.2 Walter’s Model

Professor James E. Walter emphasized that dividend policy is a critical factor affecting the firm’s value. According to him, dividend policy hinges on firm’s internal rate of return (r) and the cost of capital (k).
This model is based on the following assumptions:

i) the firm finances new investments through retained earnings only.

ii) the firm’s internal rate of return, and cost of capital are constant.

iii) 100% of earnings is either distributed as dividends or reinvested internally.

iv) The initial earnings and dividends remain constant forever. The earnings per share (EPS) and dividends per share (D) may be changed to determine results, but any given values of EPS, and the D assumed to remain constant forever in determining a given value.

v) The firm has a very long infinite life.

The following is the Walter’s formula to determine the market price (P) per share:

$$P = \left[ \frac{D + (E - D)r}{k} \right] \frac{1}{k}$$

Where,

- $P$ = Market price of an equity share (MPS)
- $D$ = Dividend per share (DPS)
- $E$ = Earnings per share (EPS)
- $r$ = Rate of return on investment
- $k$ = Cost of capital
- $(E - D)$ = Retained earnings
- $(E - D)r$ = Return on retained earnings invested.

The above equation gives the sum of the present value of future stream of dividends ($D/k$), and capital gains resulted by reinvestment of retained earnings (EPS-D) at the firm’s internal rate of return ($r$). The discount value is equal to the firm’s cost of capital ($K$). The effect of dividend policy on the firm’s share value is explained in the following Illustration using the Walter’s model. The basic data and computations are given in Table-12.1 based on formula:

<table>
<thead>
<tr>
<th>Basic Data</th>
<th>Growth Firm</th>
<th>Normal Firm</th>
<th>Declining Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>When payout ratio = 0%</td>
<td>$D=Rs. 0$</td>
<td>$D=Rs. 0$</td>
<td>$D=Rs. 0$</td>
</tr>
<tr>
<td>$P=\frac{0+.16/10(10-0)}{.100}$</td>
<td>$\frac{100}{(10/10)(10.0)}$</td>
<td>$\frac{100}{(10/10)(10.0)}$</td>
<td>$\frac{100}{(10/10)(10.0)}$</td>
</tr>
<tr>
<td>=Rs. 160</td>
<td>=Rs. 100</td>
<td>=Rs. 100</td>
<td>=Rs. 80</td>
</tr>
</tbody>
</table>

Table-12.1: Dividend Policy and the Value of Share
When payout ratio = 30%  
\[
\text{D} = \text{Rs. 3} \\
\text{P} = \frac{(3 + (0.16/10)(10-3))}{100} = \text{Rs. 142}
\]

When payout ratio = 50%  
\[
\text{D} = \text{Rs. 5} \\
\text{P} = \frac{5 + (0.16/10)(10-5)}{100} = \text{Rs. 130}
\]

When payout ratio = 80%  
\[
\text{D} = \text{Rs. 8} \\
\text{P} = \frac{8 + (0.16/10)(10-8)}{100} = \text{Rs. 112}
\]

When payout ratio = 100%  
\[
\text{D} = \text{Rs. 10} \\
\text{P} = \frac{10 + (0.16/10)(10-10)}{100} = \text{Rs. 100}
\]

Thus, the Walter’s model brings out that the dividend policy does help to maximize the shareholder’s value, if used properly depending on its internal rate of return and cost of capital. So, the dividend policy differs depending on whether the firm falls into the category of growth firm, normal firm, or declining firm. The optimum dividend policy for these three firms is as follows:

a) **Growth Firms**: Growth firms have very good investment opportunities with return greater than their respective cost of capital. It can be observed from the Table-12.1 that the firm’s value will be maximized when the firm reinvests 100 percent of earnings, and chooses zero-dividend policy, to maximize the share value. Therefore, in case of the growth firms, shareholders would expect the company to retain earnings and pay less/nil dividends. Hence, the 0% dividends or 100% retention is advisable for growth firms.

b) **Normal Firms**: Over a period, firms may not find unlimited investment opportunities with return higher than their cost of capital. They may have investments with return equal to cost of capital. As a result, it can be noted from Table-12.1 that the share value remains constant, despite varying payout ratios. These firms can be indifferent to any dividend payout ratio, as there is no optimum policy. In this case, they prefer dividend rather than retention. Hence, 100% dividend payout ratio is preferable.

c) **Declining Firms**: These firms may not have investment opportunities giving return at least equal to the cost of capital. Such firms can at best declare 100% dividend payout to enhance shareholders’ value, because the shareholders can reinvest at a higher rate than the return available to the firm. The data in Table-12.1 too supports this proposition. In this
situation, the shareholders would like to receive whole of the earnings as dividends. Retention of earnings would lead to lowering of share prices as the cost of capital is greater than the rate of return on investment.

**Criticism of Walter’s Model:** Though Walter’s model has been successful in highlighting the role of a firm’s return and the cost of capital in determining the dividend policy, the model was criticized for its following un-realistic assumptions:

i) **No External Financing:**

Walter’s model is mixing both dividend policy and investment policy by assuming that investment opportunities will be financed only with retained earnings, without resorting to either debt or new equity. With these restrictions the firm’s dividend policy, and investment policy will be sub-optimal.

ii) **Constant Rate of Return:**

Walter’s Model assumes a constant rate of return, which is in the real life may not hold good. Because firms choose from among the most profitable to less profitable projects if their respective rate of return is more than or equal to the firm’s cost of capital.

iii) **Constant Opportunity Cost of Capital:**

Another assumption of Walter’s model, which may not hold good is constant opportunity cost of capital. However, the firm’s cost of capital changes with its risk, and with the macro-economic changes in the economy. Further, the present value of the firm’s income changes inversely with its cost of capital. By assuming the discount rate as constant, Walter’s model ignores the effect of risk on the firm’s value.

**Illustration-12.1**

From the following details, calculate the market value of equity shares of a firm by using Walter’s model:

Earnings per share (E) = Rs.5;
Dividend per share (D) = Rs.3;
Rate of return on Investment (r) = 10%;
Cost of capital (k) = 10%

Will there be any change in the market value of equity share if the dividend payout ratio is 100% in the place of present rate of 60%?

**Answer:** Using Walter’s model, the market value of the share is calculated as:

\[
V = \left[ \frac{D + (E - D)r}{k} \right] = \frac{3 + (5 - 3) \cdot 10}{10} \cdot \frac{10}{10} \cdot 10
\]

\[
= \frac{3 + 2}{10} \cdot \frac{5}{10} = Rs.50.
\]
If the dividend payout ratio is 100% in the place of present rate of 60%, Dividend per share (D) will be Rs.5. The market value of the share will be:

\[ V = \frac{5 + [5 - 5] \cdot \frac{10}{.10}}{.10} = \frac{5}{.10} = Rs.50 \]

There is no change in the market value because return on investment (r) is equal to cost of capital (k). This is a case of normal company; dividend payout ratio has no bearing on the value of the share. That is why dividend decision is irrelevant in such cases.

**Illustration-12.2:**

From the following details, calculate the market value of equity share of a company by using Walter’s model:

| Earnings per share (E) | = Rs.5 |
| Dividend per share (D) | = Rs.3 |
| Rate of return on Investment (r) | = 15% |
| Cost of capital (k) | = 10% |

Will there be any change in the value, if 100% dividends are paid instead of present 60%?

**Answer:** Market value of the share as per the Walter’s Model is:

\[ V = \frac{D + (E - D) \cdot \frac{r}{k}}{\frac{k}{0.10}} = \frac{3 + (5 - 3) \cdot \frac{15}{0.10}}{0.10} = \frac{3 + 2 \cdot \frac{0.15}{0.10}}{0.10} = Rs.60 \]

If 100% of the earnings are paid by way of dividends, the dividend per share would be Rs.5, then the value is:

\[ V = \frac{5 + (5 - 5) \cdot \frac{15}{0.10}}{0.10} = \frac{5}{0.10} = Rs.50 \]

If no dividends are paid, the value would be:

\[ V = \frac{0 + (5 - 0) \cdot \frac{15}{0.10}}{0.10} = \frac{5 \cdot \frac{0.15}{0.10}}{0.10} = Rs.75 \]

When the dividend payout ratio is 100%, the value of the share is the lowest at Rs.50 and when dividend payout ratio is 0%, the value of the share is the highest at Rs.75. This is because the company is earning 15% rate of return on investment, when the shareholders expected rate of return (k) is 10%.

If the company is a growth company, 0% dividend payout ratio is the optimum dividend policy for such firms.
Illustration-12.3:

From the following details, find out the market value of equity share of a company by using Walter’s model:

\[ E = \text{Rs. 5}; \quad D = \text{Rs. 3}; \quad \text{if} \ r = 7.5%; \quad k = 10\% \]

Will there be any change in the value, if the dividend payout ratio is 100% (that is, if \( D = \text{Rs.5} \))?

**Answer:** Market value of the share as per the Walter’s model, when the dividend payout ratio is 60%.

\[
V = \frac{D + (E - D) \frac{r}{k}}{k} = \frac{3 + (5 - 3) \left( \frac{0.075}{0.10} \right)}{0.10} = \frac{3 + 2 \left( \frac{0.075}{0.100} \right)}{0.10} = \text{Rs.45}
\]

If 100% of the earnings are paid by way of dividends, the dividends per share would be Rs.5, then the value is,

\[
V = \frac{5 + (5 - 5) \left( \frac{0.075}{0.100} \right)}{0.10} = \frac{5}{0.10} = \text{Rs.50}
\]

If 0% dividends are paid, the value would be:

\[
V = \frac{0 + (5 - 0) \left( \frac{0.075}{0.100} \right)}{0.10} = \frac{5 \left( \frac{0.075}{0.100} \right)}{0.10} = \text{Rs.37.50}
\]

It can be observed from the above calculations that the value is the lowest at Rs.37.50, when dividend payout ratio is zero and the highest at Rs.50, when the payout ratio is 100%. This is because the firm is earning 7.5% on its investments, a rate less than the shareholders expected rate of return \([k=10\%]\). This is a case of declining company in which 100% dividend payment is advisable.

<table>
<thead>
<tr>
<th>Nature of the Firm</th>
<th>Dividend policy Relevancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Growth Firm ((r &gt; k))</td>
<td>0% Dividend Payment</td>
</tr>
<tr>
<td>(ii) Declining Firm ((r &lt; k))</td>
<td>100% Dividend Payment</td>
</tr>
<tr>
<td>(iii) Normal Firm ((r = k))</td>
<td>Dividend Decision is Irrelevant</td>
</tr>
</tbody>
</table>

Thus, the Walter’s model puts emphasis over return on retained earnings \((r)\) relative to cost of capital \((k)\) as the critical determinant of dividend policy. Though the model suggests extreme policies like 100% dividend payout, 0% dividend payout, the model is useful under varying profitability assumptions.

12.3.3 Gordon’s Model

Myron Gordon proposed a model of stock valuation, which is supporting the dividend relevance decision in case of a growth firm \([\text{when} \ r > k]\), and in case of a declining firm \([\text{when} \ r < k]\) and dividend irrelevance decision in case of
Dividend Theories

a normal firm \([\text{when } r = k]\). This theory relating dividend policy and the firm’s value, based on the following assumptions:

- The firm has only equity capital, and no debt.
- Only retained earnings will be used for financing expansion. This assumption mixes dividend and investment policy, similar to Walter’s model.
- Firm’s internal rate of return is constant, which is not correct in practice.
- Firm’s discount rate is constant. Even this assumption is also incorrect, as is the case with Walter’s model.
- The firm and its stream of earnings are perpetual.
- The corporate taxes are nil.
- The retention ratio, once decided, remains constant, leading to a constant growth rate of earnings.
- The discount rate is higher than growth rate.

According to the Gordon’s model, the market value of a firm’s share will be equal to the present value of future stream of dividends payable for that share. Accordingly, the value of share can be obtained by the following equation:

$$P_0 = \frac{E_1(1-b)}{k - br}$$

Where,
- \(P_0\) = Market price of a share at the end of year 0
- \(E_1\) = Earnings per share at the end of year 1
- \(b\) = Retention ratio (% of earnings retained by the firm)
- \((1-b)\) = Dividend payout ratio
- \(k\) = Cost of capital [rate of return expected by the shareholders]
- \(r\) = return on investment
- \((br = g)\) = growth rate of earnings and dividends

The above equation highlights the relationship of earnings, dividends policy, internal rate of return, and the firm’s cost of equity in deciding the value of the share. The influence of dividend decision on the value of share and therefore on the firm’s value can be understood by observing the following Table 12.2, in which the implication of dividend policy for growth, normal, and declining firms, is explained.

The results in the illustration can be explained as:

(a) If the firm’s internal rate of return is less than its discount rate, retaining earnings is not useful for the shareholder’s value maximization. Because, by retaining earnings in the firm to invest at a lower rate of return, the shareholders are denied the opportunity to invest at higher or at least at rates equal to the discount rate. In such situation, the 100 percent pay out will maximize the shareholder’s wealth. The promoters can even think of partial or full dis-investment, if the firm’s discount rate is less than the
prevailing rate of return in the market, to boost the shareholder’s wealth. For normal firms, whose discount rate is equal to their internal rate of return, the dividend policy is of no significance, as each firm’s value remains the same irrespective of any payout ratio adopted.

b) The growth firms do well by retaining maximum portion of their earnings to increase the shareholders’ value, because the opportunities available to the shareholders are less attractive when compared to those available to the growth firm. The conclusions drawn by Gordon’s Model are akin to those of Walter’s Model, essentially due to the similar assumptions made by both.

However, Gordon adds that uncertainty increases with futurity. When dividend policy is considered in this context, the discount rate cannot be assumed to be constant. Due to uncertainty, the investors may be willing to pay higher price for the share that pays higher early dividends, other things remaining constant. Therefore, Gordon concludes that dividend policy does affect the firm’s value. Then even those firms having the rate of return equal to their respective discount rates cannot be indifferent to the dividend policy. The investors prefer dividend to capital gains because dividends are easier to predict, less risky, and do not involve timing decisions.

**Implications:**

* When the rate of return \( (r) \) is greater than cost of capital \( (k) \) \( (r > k) \), the value of a share increases as the dividend payout ratio decreases. Therefore, optimum dividend payout ratio is 0%.
* When the rate of return is equal to cost of capital \( (r=k) \), the value of a share remains unchanged in response to changes in dividend payout ratio. Therefore, dividend policy is irrelevant.
* When the rate of return is less than the cost of capital \( (r<k) \), the value of a share increases as the dividend payout ratio increases. Therefore, 100% dividend payout ratio is optimum.

Thus, the basic Gordon model leads to dividend decision implications as that of the Walter model.

In the following Table-12.2 the implications of dividend policy are shown under Gordon’s Model for Growth, normal, and declining firms.

**Table-12.2: Dividend Policy and the Value of Share**

<table>
<thead>
<tr>
<th>BASIC DATA</th>
<th>Growth Firm</th>
<th>Normal Firm</th>
<th>Declining Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>( (r &gt; k) )</td>
<td>( (r = k) )</td>
<td>( (r &lt; k) )</td>
<td></td>
</tr>
<tr>
<td>( r = .16 )</td>
<td>( r = .12 )</td>
<td>( r = .09 )</td>
<td></td>
</tr>
<tr>
<td>( k = .12 )</td>
<td>( k = .12 )</td>
<td>( k = .12 )</td>
<td></td>
</tr>
<tr>
<td>EPS= Rs. 12</td>
<td>EPS= Rs. 12</td>
<td>EPS= Rs. 12</td>
<td></td>
</tr>
<tr>
<td>Pay-out ratio ( (1-b) = 30% ), Retention Ratio, ( b = 70% )</td>
<td>( G = br = .7 \times .16 =.112 )</td>
<td>( G = br = .7 \times .12 = .084 )</td>
<td>( G = br = .7 \times .09 = .063 )</td>
</tr>
<tr>
<td>( P_o = \frac{12(1-.7)}{.12-.112} =Rs. 450 )</td>
<td>( P_o = \frac{12(1-.7)}{.12 -. .084} =Rs. 100 )</td>
<td>( P_o = \frac{12(1-.7)}{.12 -. .063} =Rs. 63 )</td>
<td></td>
</tr>
</tbody>
</table>
Dividend Theories

<table>
<thead>
<tr>
<th>Pay-out ratio</th>
<th>G = br = .4 × 16</th>
<th>G = br = .4 × 12</th>
<th>G = br = .4 × .09</th>
</tr>
</thead>
<tbody>
<tr>
<td>60%, and Retention Ratio = 40%</td>
<td>= .064</td>
<td>= .048</td>
<td>= .036</td>
</tr>
<tr>
<td>$P_o = \frac{12(1-4)}{.12-.064}$</td>
<td>$P_o = \frac{12(1-4)}{.12-.048}$</td>
<td>$P_o = \frac{12(1-4)}{.12-.036}$</td>
<td></td>
</tr>
<tr>
<td>= Rs. 129</td>
<td>= Rs. 100</td>
<td>= Rs. 86</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pay-out ratio</th>
<th>G = br = .1 × 16</th>
<th>G = br = .1 × 12</th>
<th>G = br = .1 × .09</th>
</tr>
</thead>
<tbody>
<tr>
<td>90%, and Retention Ratio = 10%</td>
<td>= .016</td>
<td>= .012</td>
<td>= .009</td>
</tr>
<tr>
<td>$P_o = \frac{12(1-.1)}{.12-.016}$</td>
<td>$P_o = \frac{12(1-.1)}{.12-.012}$</td>
<td>$P_o = \frac{12(1-.1)}{.12-.009}$</td>
<td></td>
</tr>
<tr>
<td>= Rs. 104</td>
<td>= Rs. 100</td>
<td>= Rs. 97</td>
<td></td>
</tr>
</tbody>
</table>

### 12.4 IRRELEVANCE THEORY- MM HYPOTHESIS

The Irrelevance dividend theory (M.H Miller and F. Modigliani Theory) supports the view that the dividend decision has no impact on the valuation of a firm.

Modigliani and Miller (M-M) proposed an interesting model which concludes that dividend policy does not affect the firm’s value. According to their hypothesis, the firm’s value hinges only on its earnings which result from its investment policy. Given the investment policy, decision of retention and pay-out, they hold, will not affect the firm’s value. M-M’s model is based on the following assumptions:

- The capital markets are perfect and the information is available freely.
- Investors behave rationally and the firms have a fixed investment policy.
- Transaction & floatation costs do not exist, and no investor can influence the capital market.
- Securities are divisible and company’s investment policy is independent of its dividend policy.
- Investment opportunities and future profits of companies are known with certainty.
- Either taxes do not exist or they are same on both dividend income and capital gains so that investors do not prefer one over the other.
- The investors can forecast future prices and dividends with certainty and one discount rate is appropriate for all securities and all time periods.

When the aforesaid assumptions operate in capital market, the rate of return will be equal to the discount rate, which is same for all shares in the long-term. Consequently, the price of each share must adjust so that the rate of return, based on dividends and capital gains, on each share will be equal to its discount rate and it must be identical for all shares. The M-M hypothesis believed that the equality would take place through the process of switching from low yield shares to high yield shares.
According to M-M Model, the rate of return for one period can be computed as follows:

If we take one year period of holding, the value of share $P_0$ will be equal to present value of dividend paid at the end of one year ($D_1$) plus present value of share price at the end of one year ($P_1$)

$$P_0 = \frac{D_1 + P_1}{(1 + k)} \quad (1)$$

Where,

- $P_0 = \text{Market Price per share at time } 0$
- $D_1 = \text{Dividend per share at time } 1$
- $P_1 = \text{Market Price per share at time } 1$
- $K = \text{Discount rate applicable to risk class to which the firm belongs.}$

Total stock value will be equal to $P_0$ multiplied by number of shares ($N$)

$$V = N \times P_0 = \frac{(ND_1 + NP_1)}{(1 + k)} \quad (2)$$

If the firm issues `$M$' number of new shares at price `$P_1$' at the end of one year, it brings $MP_1$ of rupees of capital. These new shares will not receive any dividend.

We can add $MP_1$ and subtract $MP_1$ to the numerator of Equation-2, the value will not change.

$$NP_0 = \frac{ND_1 + NP_1 + MP_1 - MP_1}{(1 + k)} \quad (3)$$

$$NP_0 = \frac{ND_1 + (N + M)P_1 - MP_1}{(1 + k)} \quad (4)$$

The current value of stock is equal to the present value of dividends plus the stock value at the end of one year minus the value of new stock belonging to the new shareholders.

If we assume that the firm’s net income during the year is `$X$’ and its total new investment during the year is “$I$” and it does not use debt, the sources and uses of funds at the end of one year will be as follows:

<table>
<thead>
<tr>
<th>Sources of funds</th>
<th>Uses of funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Share Capital ($MP_1$)</td>
<td>New Investment ($I$)</td>
</tr>
<tr>
<td>Net Income ($X$)</td>
<td>Dividends ($ND_1$)</td>
</tr>
</tbody>
</table>

Sources of funds are equal to uses of funds.

Sources of funds = uses of funds

$$MP_1 + X = I + ND_1 \quad (5)$$

$$MP_1 = I + ND_1 - X \quad (6)$$
Now, substitute Equation-6 into Equation-4

\[ NP_0 = \frac{ND_1 + (N + M)P_1 - [I + ND_1 - X]}{(I + k)} \]  

(7)

\[ NP_0 = \frac{ND_1 + (N + M)P_1 - I - ND_1 + X}{(I + k)} \]  

(8)

\[ NP_0 = \frac{(N + M)P_1 - I + X}{(I + k)} \]  

(9)

Equation-9 presents MM’s basic expression of current value of a company. From the equation we can understand that the value of a company is dependent upon its net income, the investment, the amount of capital and the cost of capital. But the value is not influenced by the dividends.

MM argued that any gain in stock value resulting from an increase in dividends is exactly offset by a decrease in the stock value as a result of fall in the stock end of period value (P1). The MM hypothesis believed that the shareholders received income either by way of dividends (D1) or capital gain, which is the difference between current price (P0) and price at the end of the period (P1). According to them, the shareholders are indifferent between current dividend or capital gain. Therefore, dividend policy is irrelevant.

Illustration-12.4: A chemical company currently has 1,00,000 equity shares selling at Rs.100 each. The firm expects to earn a net income of Rs.10,00,000 during the current year and is contemplating to declare a dividend of Rs. 6 per share at the end of the current year. It has a proposal for a new investment of Rs.20,00,000 and the company’s cost of capital (k) is 10%. Illustrate with the help of the MM model that payment of dividend does not matter.

**Answer:**
We know that current value of stock is P0; the present value of dividends at the end of one year (D1) and price of stock at the end of one year (P1).

\[ P_s = \frac{(D_1 + P_1)}{(1 + k)} \]  

(1)

From this equation we can solve P1 as follows:

\[ P_1 = P_0 (1+k) - D_1 \]  

(2)

**Situation-1:** When dividends of Rs.6 per share are declared-

NP0 = old capital = 1,00,000 shares x Rs.100 = Rs.1,00,00,000

X = Net income = Rs.10,00,000

I = New Investment = Rs.20,00,000

ND1 = Dividend = (Rs. 6) x 100000 shares = Rs.6,00,000

MP1 = New capital required (New Investment – Net Income + Dividends) = Rs.16,00,000
Dividend Decisions

From equation (2) we can find $P_1$.

$$P_1 = P_0 (1+K) - D_1 = 100 (1+10\%) - 6 = Rs.104$$

No. of New Shares ($M$) = \( \frac{\text{New Capital Required}}{\text{Price of New shares}} = \frac{I - (X - ND_1)}{P_1} \)

\[
\left( \frac{\text{Rs.20,00,000} - (\text{Rs.10,00,000} - 6,00,000)}{104} \right) = \frac{16,00,000}{104} \times \frac{8,00,000}{52} = \frac{2,00,000}{13}
\]

Value of Stock = \( \frac{(N + M) P_1 - I + X}{1 + k} \)

\[
\left[ \frac{1,00,000 + \frac{2,00,000}{13}}{104 - 20,00,000 + 10,00,000} \right] = \text{Rs.1,00,00,000}
\]

Situation-2: When dividends are not declared.

$N = 100000$ shares. $X = Rs.10,00,000$ $I = Rs.20,00,000$

$k = 10\%$ $D_1 = 0$

$P_1 = P_0(1+k) - D_1 = 100(1+10\%) - 0 = Rs.110$.

No. of New shares ($M$) = \( \frac{I - (X - ND_1)}{P_1} \)

Value of Stock = \( \frac{(N + M) P_1 - I + X}{1 + k} \)

\[
\left[ \frac{1,00,000 + \frac{100,000}{11}}{110 - 20,00,000 + 10,00,000} \right] = \text{Rs.1,00,00,000}
\]

\[\therefore\text{ value of stock unaffected by dividend policy.}\]

M-M further stated that the firm need not have only equity capital to hold their model true. They concluded that their hypothesis of dividend irrelevance holds good even if the firm raises debt capital instead of equity. For this, they put forth their indifference hypothesis with reference to leverage. These conclusions are based on several restrictive assumptions of M.M. model. The divided policy may affect the value of a share if those assumptions are relaxed and the market imperfections are considered, as discussed under:

i) Tax Differential:

M-M model made a simplistic assumption of no taxes or same tax rate on both dividends and capital gains, but the reality is far from the assumption. In most of the countries both are taxed at different rates.
Normally dividends are clubbed with ordinary income for tax purpose which is taxed at a higher rate when compared to the capital gains.

ii) Floatation Costs:
M–M model assumes that the cost of retained earnings and external financing are same. But the process of raising fresh capital from the capital market involves significant expenses in terms of floatation costs which may be in the range of 6 to 10 percent of capital raised. Thus, the higher cost of external financing, makes the retention of earnings a favourable option. However, companies tend to maintain dividend payments, despite changing earnings, as a policy, unless the earnings change by a significant proportion.

iii) Transaction and Monitoring Costs:
MM model assumes that transaction costs do not exist. They also assume that the shareholders can sell a small portion of their shares in lieu of dividend, when they are indifferent between dividend and capital gains. But reality is far from that assumption. The shareholders have to pay brokerage and often incidental costs to sell their shares. As a percentage, the transaction costs vary inversely with the sale value of shares i.e., higher the value of shares sold lower the percentage of transaction costs and vice versa.

iv) Existence of Perfect Capital Market:
MM model assumes that there exists a perfect capital market where information is freely available and future share prices are known with certainty. In practice, companies do not share complete information with shareholders. The process of monitoring the company and the manager’s performance involves significant costs and also leads to uncertainty in future share prices. Therefore, timing of selling the share to encash the capital gains in lieu of dividend income becomes difficult. As a result, shareholders may prefer dividend income to capital gains.

To disseminate information to the shareholders about the future earnings a company can make statements to create a favourable impression. These statements attract greater attention if they are accompanied by dividend announcement. For example, if a firm’s earnings are expected to grow in the future and if the firm does not announce increase in the dividend payment, shareholders may not attach enough importance to such views of growth in future earnings. Therefore, the share value may not reach realistic value.

v) Uncertainty and Preference for Dividend:
MM model professes that the dividend policy continues to be irrelevant even under the conditions of uncertainly, because the share value of two firms with identical investment policies, business risk and future earnings can not be different. These views are not convincing to many researchers. According to them, investors try to reduce uncertainty to some extent through dividends. Their views are akin to the bird in-hand argument of Gordon who argues that the discount rate increases with
uncertainty, suggesting the preference of shareholders for higher dividend payment. The preference for a steady stream of income in the form of dividends by a section of investors also strengthens this argument.

vi) Diversification:

Even under the conditions of certainty, the argument of same discount rate for all firms may not hold good because of investors’ preference for a diversified portfolio of securities. To fulfil their desire, shareholders like the firm to distribute the earnings to invest in other firms. As such, the investors may use higher discount rate for firms with high retention ratios compared to firms which pay high dividends by accessing external financing to meet their requirements. Therefore, the value of the firm may increase if it pays higher dividends instead of retaining them.

12.5 SUMMARY

In this unit, we have seen the contradicting views on the impact of dividend decision on the value of a firm and its cost of capital. Traditional view, which is not supported by any empirical evidence, suggested liberal dividend policy to enhance the value of firm. The Walter’s and Gordon’s models categorized the firms into three groups: (a) normal (b) growth (c) declining and suggested that (i) 100% pay out policy for a declining firm, (ii) 100% retention policy (zero dividends) for a growth firm, and (iii) indifference dividend policy for normal firm. Finally, the MM model is of the view that the value of a firm is independent of its dividend decision.

12.6 SELF ASSESSMENT QUESTIONS / EXERCISES

1. Explain the traditional view of Graham and Dodd relating to dividend decision.
2. Do you agree with Walter’s dividend model? Discuss its relevance and limitations.
3. Examine the Gordon’s view on the relevance of dividend decision.
4. Examine the MM’s irrelevance hypothesis. Critically evaluate its assumptions.
5. A chemical company has a cost of capital of 12%. The current market value of the firm is Rs. 30 per share. The earnings are Rs. 5 lakhs. The new investment is Rs. 9 lakhs. Dividends are Rs.3 lakhs.
   Show that [under MM assumption] the payment of dividend does not affect the value of the company.
6. You are provided with the following particulars related to a company. You must ascertain whether the dividend pay out ratio of the company is optimal (Using Walter’s model).
   Equity Capital = Rs.40,00,000 (number of shares 4,00,000)
Earnings of the company = Rs.5,00,000
Dividends paid = Rs.2,75,000
Price-Earnings (P/E) ratio = 12.5

The company is expected to maintain its current rate of earnings on investment.

12.7 **KEYWORDS**

**P/E Ratio:** The ratio of market price per share to earnings per share. The reciprocal of P/E ratio is cost of equity.

**Dividend:** The portion of company’s net earnings which are paid out to the shareholders.

**Dividend Payout Ratio:** Ratio of Dividends to Earnings [ratio of DPS to EPS].

12.8 **FURTHER READINGS**