

**LESSON – 14**

# DIVIDEND THEORIES

**14.0 Objective :**

The objective of this lesson are to :

- \* Explain the nature and significance of dividend decision
- \* make the readers familiar with various theories of dividend policy

**STRUCTURE :**

- 14.1      Introduction**
- 14.2      Theories of Dividend**
- 14.3      Traditional Theory**
- 14.4      Walter Model**
- 14.5      Gordon Model**
- 14.6      MM Hypothesis**
- 14.7      Summary**
- 14.8      Self Assessment questions / exercises**
- 14.9      Keywords**
- 14.10     Further Readings**

**14.1      Introduction**

Major decisions of financial management are investment decision, financing decision and dividend decision. Dividend decision is also an integral part of financing decision. When a company earns profits (earnings after tax and dividend on preference share capital), it has to decide as to how much of the profit should be distributed by way of dividend to the shareholders. Dividends are paid out of earnings available to the shareholders. The remaining portion of earnings are retained by the company for future purpose. These retained earnings are the internal sources of finance to the company. The policy related to dividends also indirectly means a policy related to retention of earnings.

Earnings available to shareholders are equal to dividends plus retained earnings. Dividend decision is taken by the Board of Directors of the company and recommended for formal approval by the shareholders in the Annual General Body Meeting. How significant is the dividend decision? Does it affect the value ( $v$ ) of the company? Does it affect the cost of capital ( $k$ ) of the company? If the answer to these two questions is 'yes' dividend decision is significant.

**14.2      Theories of Dividend**

You are already aware that any theory of finance deals with various variables which are supposed to have a bearing on the value of the company.

Value of a company ( $v$ ) is taken to be a function of:

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

$$\therefore V = f [ I, F, D, T, f - \dots ]$$

A theory states the relationship between a dependent variable and one independent variable when other independent variables are held constant.

You must have seen that in case of capital structure theories, the value of a company 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 company 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 company and cost of capital there are the contradicting views. One view states that the dividend decision does not influence the value of a company. This school of thought holds that the dividends are irrelevant. Another school is of the view that dividends are relevant which means that the value of a company depends on the dividend decision.

Therefore, theories of dividend are two types:

- i) Dividend Relevance theory
- ii) Dividend Irrelevance theory

In the next part of the lesson we will look into various contributions made to these two schools of thought.

#### 14.2.1 Relevance and irrelevance of dividend theories

Relevance of dividend policy supports the view that the dividend policy has profound impact on the value of a company. There are three theories under this school of thought.

- a) Traditional view
- b) Walter model
- c) Gordon model

Irrelevance dividend policy supports the view that the dividend policy has no impact on the valuation of a company.

- d) Merton Miller and France Modigliani (MM Theory)

### 14.3 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. Shareholders give less importance to capital gains that may arise in future. Therefore, companies which pay more current dividends will have higher market value than companies which pay less dividends.

The model is expressed in the following way.

$$P = M \left[ D + \frac{E}{3} \right] \quad (1)$$

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)

$$\therefore E = D + R \quad (2)$$

Substitute this expression in equation, 1

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

On simplification,

$$P = M \left[ \frac{4D + R}{3} \right] = \left[ \frac{4}{3} D + \frac{1}{3} R \right] \quad (4)$$

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 model liberal payout policy has favourable impact on stock price.

#### 14.4 Walter Model

James Walter also supported the view that the dividend policy of a company has an impact on the share value.

The model is based on the following assumptions:

- \* The company is an all – equity financed entity.
- \* It depends on retained earnings only to finance future investment projects.
- \* Return on investment is constant
- \* The company has perpetual life.

Model:

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

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.

This model leads us to three situations:

- \* When return on investment (r) is greater than cost of capital (k) ( $r > k$ ) [growth company]
- \* When return on investment (r) is less than cost of capital (k) ( $r < k$ ) [declining company]
- \* When return on investment (r) is equal to cost of capital (k) ( $r = k$ ) [normal company]

Under the first situation the return earned on retained earnings (r) is more than the return expected by the shareholders (k). Therefore, shareholders would expect the company to retain earnings and pay less/nil dividends. 0% dividend/100% retention is advisable. Under the second situation the return earned on retained earnings (r) is less than the return expected by the shareholders (k). Therefore, they prefer dividend rather than retention. Hence 100% dividend payout ratio is preferable. In the third situation, the return earned on retained earnings (r) and rate expected by the shareholders (k) are equal. Therefore, shareholders would be indifferent between payment of dividends or retention of earnings. In this situation the dividend policy is irrelevant.

#### Illustration : 1

From the following information calculate the market value of equity shares of a company using Walter's model.

Earnings per share = Rs.5; Dividend per share = Rs.3  
 Return on investment = 10%; Cost of Capital = 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:

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

$$= \frac{3 + 2}{.10} = \frac{5}{.10} = \text{Rs.}50.$$

If the dividend payout ratio is 100% in the place of present rate of 60% dividends per share (D) will be Rs.5. The market value of the share will be

$$V = \frac{5 + [5 - 5] \cdot .10}{.10} = \frac{5}{0.1} = \text{Rs.}50$$

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 policy is irrelevant in such cases.

### Illustration 2:

From the following information, calculate the market value of equity share of a company using Walter's model.

$$E = \text{Rs.}5; \quad D = \text{Rs.}3; \quad r = 15\%; \quad k = 10\%$$

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 Walter's Model is :

$$V = \frac{D + (E - D) \frac{r}{k}}{k} = \frac{3 + (5 - 3) \frac{.15}{.10}}{.10} = \frac{3 + 2 \left[ \frac{0.15}{0.10} \right]}{.10} = \text{Rs.}60$$

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

$$V = \frac{5 + (5 - 5) \cdot \frac{.15}{.10}}{0.10} = \frac{5}{0.10} = \text{Rs.}50$$

If no dividends are paid, the value would be

$$V = \frac{0 + (5 - 0) \cdot \frac{.15}{.10}}{0.10} = \frac{5 \left( \frac{0.15}{0.10} \right)}{0.10} = \text{Rs.}75$$

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 companies.

### **Illustration 3 :**

From the following information find out the market value of equity share of a company 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 = Rs.5)

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

$$V = \frac{D + (E - D) \frac{r}{k}}{k} = \frac{3 + (5 - 3) \left( \frac{.075}{.10} \right)}{0.10} = \frac{3 + 2 \left[ \frac{0.075}{0.100} \right]}{0.10} = \text{Rs.}45$$

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:

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

You can observe 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 company 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.

Nature of the Company	Dividend policy relevancy
i. Growth company ( $r > k$ )	0% Dividend payment
ii. Declining company ( $r < k$ )	100% Dividend payment
iii. Normal company ( $r = k$ )	Dividend policy is irrelevant

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.

## 10.5 Gordon Model

Myron Gordon proposed a model of stock valuation which is supporting the relevance dividend policy in case of a growth company [when  $r > k$ ] and in case of a declining company [when  $r < k$ ] and irrelevance dividend policy in case of a normal company [when  $r = k$ ].

The model is based on the following assumptions.

- \* retained earnings represent the only source of financing
- \* return on investment is constant
- \* the growth rate of the company is the product of retention ratio (b), and return on investment (r) [ $\therefore g = r.b$ ]. This assumption follows the first two assumptions.
- \* cost of capital (k) is constant and greater than the growth rate [ $\therefore k > g$ ]
- \* company has perpetual life
- \* there are no taxes.

**Model :**  $P = \frac{E(1 - b)}{k - br}$

Where

P = Market price of a share  
E = Earnings per share

b = Retention ratio (percentage of earnings retained by the company)

(1-b) = Dividend payout ratio

k = Cost of capital [rate of return expected by the shareholders]

r = return on investment

(b.r) = growth rate (g) of earnings and dividends

The Gordon model is similar to Walter's model.

### 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 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 policy implications as that of the Walter model.

### 10.6 M-M Model :

Merton Miller and Franco Modigliani supported the view that the value of a company is determined by its basic earning power and its risk class. According to them, the value of a company depends on asset investment policy, but not on how the company's earnings are split between dividends and retained earnings. This view, referred to as the MM "Dividend Irrelevance" theorem.

The model is based on the following assumptions.

- \* Capital market is perfect.
- \* Investors are rational
- \* Information is freely available
- \* Transaction costs are nil
- \* Securities are divisible
- \* No investor can influence the capital market
- \* There are no floatation costs
- \* There are no corporate taxes
- \* Company's investment policy is independent of its dividend policy
- \* Investment opportunities and future profits of companies are known with certainty.

**Model :**

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  $P_0$  = Market Price per share at time 0

$D_1$  = Dividend per share at time 1

$P_1$  = Market Price per share at time 1

$K$  = 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)

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

If the company sells 'M' number of 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.

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

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

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 company'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:

Sources of funds	Uses of funds
New Share Capital ( $MP_1$ )	New Investment (I)
Net Income (X)	Dividends ( $ND_1$ )

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

$$NP_0 = \frac{ND_1 + (N+M)P_1 - [I + ND_1 - X]}{(I+k)} \quad (7)$$

$$NP_0 = \frac{ND_1 + (N+M)P_1 - I - ND_1 + X}{(I+k)} \quad (8)$$

$$NP_0 = \frac{(N+M)P_1 - I + X}{(I+k)} \quad (9)$$

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 cost of capital. But the value is not influenced by the dividends.

MM argue 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 ( $P_1$ ). MM believe that the share holders received income either by way of dividends ( $D_1$ ) or capital gain which is the difference between current price ( $P_0$ ) and price at the end of the period ( $P_1$ ). According to them the share holders are indifferent between current dividend or capital gain. Therefore, dividend policy is irrelevant.

**Illustration :** A chemical company currently has 1,00,000 equity shares selling at Rs.100 each. The company 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, the company's cost of capital ( $k$ ) is 10%. Illustrate with the help of MM model that payment of dividend does not matter.

**Answer:** We know that current value of stock is  $P_0$ ; the present value of dividends at the end of one year ( $D_1$ ) and price of stock at the end of one year ( $P_1$ ).

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

from this equation we can solve  $P_1$  as follows

$$P_1 = P_0(1+k) - D_1 \quad (2)$$

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

$$NP_0 = \text{old capital} = 1,00,000 \text{ shares} \times \text{Rs.}100 = \text{Rs.}1,00,00,000$$

$$X = \text{Net income} = \text{Rs.}10,00,000$$

$$I = \text{New Investment} = \text{Rs.}20,00,000$$

$$ND_1 = \text{Dividend} = (\text{Rs. } 6) \times 100000 \text{ shares} = \text{Rs.}6,00,000$$

$$MP_1 = \text{New capital required} = \text{Rs.}16,00,000$$

From equation (2) we can find  $P_1$

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

$$\text{Number of new shares} = \frac{\text{New Capital Required}}{\text{Price of New shares}} = \frac{I - (X - ND_1)}{P_1}$$

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

$$\begin{aligned} \text{Value of Stock} &= \frac{(N+M) P_1 - I + X}{1+k} \\ &= \frac{\left[ 1,00,000 + \frac{2,00,000}{13} \right] 104 - 20,00,000 + 10,00,000}{(1+0.1)} \\ &= \text{Rs.}1,00,00,000 \end{aligned}$$

**Situation 2 :** When dividends are not declared

$$N = 100000 \text{ shares. } X = \text{Rs.}10,00,000 \quad I = \text{Rs.}20,00,000$$

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

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

$$\text{Number of New shares (M)} = \frac{I - (X - ND_1)}{P_1} = \frac{20,00,000 - (10,00,000 - 0)}{110} = \frac{10,00,000}{110} = \frac{1,00,000}{11}$$

$$\begin{aligned} \text{Value of Stock} &= \frac{(N+M)P_1 - I + X}{1+k} \\ &= \frac{\left[ 1,00,000 + \frac{1,00,000}{11} \right] 110 - 20,00,000 + 10,00,000}{[1+0.1]} = \text{Rs.}1,00,00,000 \end{aligned}$$

∴ value of stock unaffected by dividend policy.

### 14.7 Summary

In this lesson we have seen the contradicting views on the impact of dividend decisions on the value of a company (v) and its cost of capital (k). Traditional view, which is not supported by any empirical evidence, suggested liberal dividend policy to enhance the value of company. Walter and Gordon models categorised companies into three groups a) Normal b) Growth c) Declining and suggested (i) 100% pay out policy for a declining company, (ii) 100% retention policy (zero dividends) for a growth company, and iii) indifference of dividend policy for normal company. Finally, the MM Model is of the view that the value of a company is independent of its dividend policy. Some empirical studies conducted by Lintner, John Brittain, Purnanandam etc., came up with a conclusion that dividends are relevant in influencing the value of a company.

### 14.8 Self Assessment Questions :

1. Critically examine traditional position of Graham and Dodd – relating to dividend policy.
2. Explain the dividend irrelevance theory of Miller – Modigliani (MM)
3. Explain fully Walter's model of dividend policy.
4. Examine Gordon's views on relevance of dividend policy.
5. A chemical company has a cost of capital of 12%. The current market value of the company is Rs. 30 per share. Earnings are Rs. 5 lakhs. 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 have to ascertain whether the dividend payout 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

[Hints : cost of equity is the reciprocal of P/E ratio,  $K_e = \frac{1}{P/E \text{ Ratio}} = 8\%$ .

$$\text{Return on investment (r)} = \frac{E}{\text{Equity}} = \frac{\text{Rs.}5,00,000}{\text{Rs.}40,00,000} = 12.5\%$$

**14.9 Keywords :**

1. **P/E ratio :** The ratio of market price per share to earnings per share. Reciprocal of P/E ratio is cost of equity (ke).
2. **Dividend :** The portion of company's net earnings which are paid out to the shareholders.
3. **Dividend payout ratio** = Ratio of Dividends to Earnings [ratio of DPS to EPS].

**14.10 Further Readings**

1. Van Horne, James, C : Financial Management
2. Bhalla V.K : Financial Management
3. Prasanna Chandra : Financial Management
4. Khan M.Y, and Jain P.K. : Financial Management

**KHP**

---