DIVIDEND DECISIONS
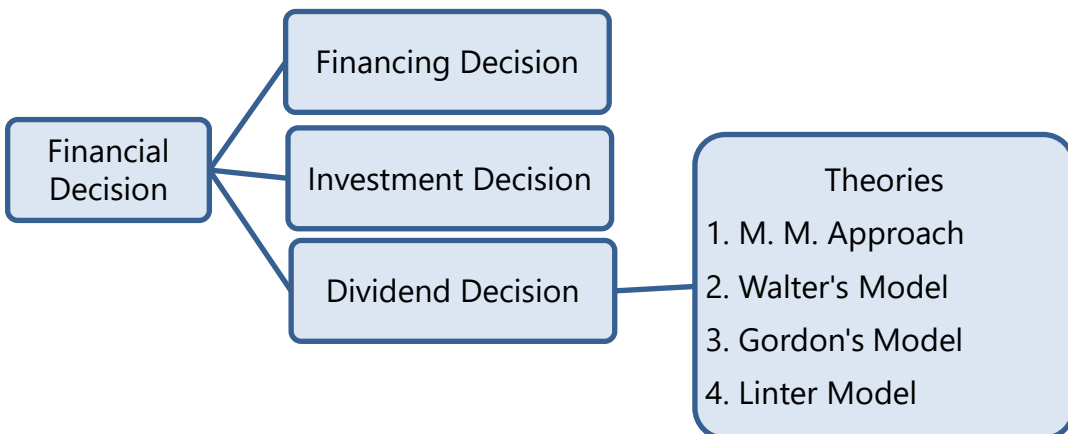
LEARNING OUTCOMES

♦ Understand the Meaning of Dividend Decision.

♦ Understand the importance of Dividend Decision.

♦ Discuss various forms of Dividend.

♦ Discuss various Determinants of Dividend.

♦ Explain various theories of Dividend Decisions.

CHAPTER OVERVIEW

Financial Decision
- Financing Decision
- Investment Decision
- Dividend Decision
  - Theories
    1. M. M. Approach
    2. Walter's Model
    3. Gordon's Model
    4. Linter Model

1. INTRODUCTION

As we had already discussed in Chapter 1 (Scope and Objectives of Financial Management), Financial Management is the process of making financial decisions so as to increase the value of the firm.

Long term Finance function decisions broadly covers three areas:

i. Financing decision

ii. Investment decision

iii. Dividend decision

So far, we had already discussed the first two decisions that are Financing and Investment decisions in earlier chapters. In this chapter, we will discuss the "Dividend decision" which is one of the **most important areas of management decisions.**

Dividend Decision is easy to understand but difficult to implement. Let us understand this with the help of an example, suppose a company, say X limited, which is continuously paying the dividend at a normal growth rate, earns huge profits this year. Now the management have to decide whether it should continue to pay dividend at normal rate or to pay at an increasing rate. Why this dilemma? The reason is that, if the management decides to pay higher dividend, then it might be possible that next year, the company will not achieve such higher growth rate, resulting in lower dividend payment in comparison to previous year. However, if the company decides to stay on the normal rate of dividend, then surplus amount of retained earnings would remain idle which will result in over capitalization, if no other opportunity exist to utilize the idle funds.

Further, there are some other factors also which will affect the dividend decision (will be discussed later).

Furthermore, there are few Dividend theories which put light on the complexities involved in dividend decision. These theories have been discussed under the following two categories:
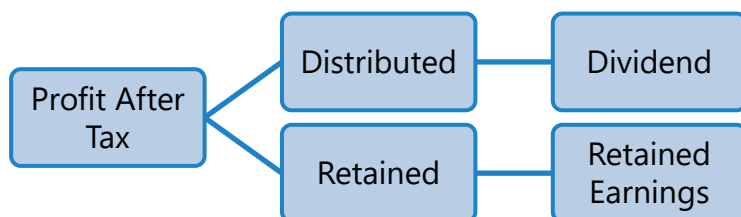
Irrelevance Theory: MM Approach

Relevance Theory: Walter's Model & Gordon's Model

2. MEANING OF DIVIDEND

Dividend is that part of Profit After Tax (PAT) which is **distributed to the shareholders** of the company. Further, the profit earned by a company after paying taxes can be used for:

i. Distribution of dividend, or

ii. Retaining as surplus for future growth

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                        ┌──────────────┐    ┌──────────────┐
                        │ Distributed  │────│   Dividend   │
┌──────────────┐        └──────────────┘    └──────────────┘
│ Profit After │ ──────<
│     Tax      │        ┌──────────────┐    ┌──────────────┐
└──────────────┘        │   Retained   │────│   Retained   │
                        │              │    │   Earnings   │
                        └──────────────┘    └──────────────┘
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One of the important term to understand with regard to dividend is ex-dividend. Ex-dividend refers to shares that no longer carry the right to dividend. Price at which shares trades immediately on next day after declaration of dividend is referred to as Ex-dividend price.

3. FORMS OF DIVIDEND

Generally, the dividend can be of the following forms (depending upon some factors that will be discussed later):

1. Cash dividend: It is the most **common form of dividend**. Cash here means cash, cheque, warrant, demand draft, pay order or directly through Electronic Clearing Service (ECS) but not in kind.

2. Share repurchases: A share repurchase is transaction in which company buys back its own shares using corporate cash. This is done by lot of corporates these days.

The bought back shares as above can be classified as

a. treasury shares which are kept for re-issuance in future or

b. cancelled shares if they would be retired from issued share capital.

Share repurchases are also viewed as one form dividend distribution

Keeping other things same (such as tax considerations etc), the effect of cash dividend and share repurchases on shareholder's wealth is same.

Following example explains the same:

Suppose HM Ltd has 1 cr of equity shares outstanding and proposes to pay a dividend of ₹ 50 per share totalling ₹ 50 crores of dividend distribution.

Market price of one share is ₹ 200 on the date of declaration of dividend.

As an alternative if company wishes to repurchase ₹ 50 cr equivalent shares then company would be able to purchase 25 lakhs worth of shares.

The impact on shareholder's wealth who holds 10 shares is explained as follows:

Option 1: In case company pays cash dividend

Ex-dividend price would be ₹ 150 (₹ 200 - ₹ 50), shareholder holding 10 shares would be left with ₹ 2000 worth of wealth after dividend is declared in form of cash as ₹ 500 (₹ 50 dividend on 10 shares) and shares worth ₹ 1500 (₹ 150 share for 10 shares).

Option 2: In case share repurchase is done, then in that case 25% (25 lakhs on 1 crore) of the shares would be purchased i.e. 4 shares and amount paid out would be ₹ 800. After share repurchase the revised market price would be ₹ 200 only explained as follows:

Market capitalisation before share repurchase	₹ 200 cr
Less shares repurchased	₹ 50 cr
Market capitalisation after shares repurchased	₹ 150 cr
No of shares left after repurchase	75 lakhs shares
Market price after shares repurchase	₹ 200 per share.

Hence immediately after repurchase exercise done by company investor's wealth would be ₹ 2000 represented by ₹ 800 on account of cash received on shares repurchased and ₹ 1200 on account of market price of 6 shares left after repurchase.

3.   Stock dividend (Bonus Shares): It is a **distribution of shares in lieu of cash dividend**. When the company issues new shares to its existing shareholders without any consideration it is called bonus shares. Such shares are distributed proportionately thereby retaining proportionate ownership of the company. If a

shareholder owns 100 shares at a time and 10% dividend is declared, then he will have 10 (100 × 10%) additional shares thereby increasing the equity share capital and reducing reserves and surplus (retained earnings). The total net worth is not affected by bonus issue as retained earnings are only capitalised.

Conditions of Stock Dividend or Bonus Issue

To issue Bonus shares, a Company needs to fulfil all the conditions given by Security Exchange Board of India (SEBI). As per SEBI, the bonus shares are issued not in lieu of cash dividends. A bonus issue should be authorised by Article of Association (AOA) and not to be declared unless all partly paid-up shares have been converted into fully paid-up shares. The Company should not have defaulted in re-payment of loan, interest and any statutory dues. Bonus shares are to be issued only from share premium and free reserves and not from capital reserve on account of fixed assets revaluation.

Bonus shares are used by companies to prevent investors from selling its shares as short term capital gains is 15% and long term capital gains is 10% and the period of holding for bonus shares starts from date of issue of bonus shares. In such a scenario an investor would not immediately sale bonus shares as they might lose 5% on account of taxation.

This generally helps companies indirectly as their prices would not fall further due selling activity from investor's end.

Advantages of Stock Dividend

There are many advantages both to the shareholders and company. Some of the main advantages are listed as under:

(1) To Shareholders:

(a) No tax is payable by shareholders on stock dividend received from domestic company as it is not treated as dividend but capital asset under Income Tax Act, 1961.

(b) Policy of paying fixed dividend per share and its continuation even after declaration of stock dividend will increase total cash dividend of the shareholders in future.

(c) Bonus shares improves liquidity in the hands of shareholders as bonus shares leads to breaking down of higher priced shares into lower priced

shares and hence give a choice to shareholders to sell some of the lower priced shares and get some liquidity.

(2)   **To Company:**

(a)   Conservation of cash for meeting profitable investment opportunities.

(b)   Suitable in case of cash deficiency and restrictions imposed by lenders to pay cash dividend.

Limitations of Stock Dividend

Limitations of stock dividend to shareholders and company are as follows:

1.   **To Shareholders:** Stock dividend does not affect the wealth of shareholders and therefore it has no value for them. This is because the declaration of stock dividend is a method of capitalising the past earnings of the shareholders and is a formal way of recognising earnings which the shareholders already own. It merely divides the company's ownership into a large number of share certificates. James Porterfield regards stock dividends as a division of corporate pie into a larger number of pieces. Stock dividend does not give any extra or special benefit to the shareholder. His proportionate ownership in the company does not change at all. Stock dividend creates a favourable psychological impact on the shareholders and is greeted by them on the ground that it gives an indication of the company's growth.

2.   **To Company:** Stock dividends are costlier to administer than cash dividends. It is disadvantageous if periodic small stock dividends are declared by the company as earnings.

🕐 4.   SIGNIFICANCE OF DIVIDEND POLICY

Dividend policy of a firm is governed by:

(i)   **Long Term Financing Decision:**

As we know that one of the financing options is 'Equity'. Equity can either be raised externally through issue of new equity shares or can be generated internally through retained earnings. For Equity, retained earnings are preferable because they do not involve any floatation costs (issue expenses).

But whether to retain or distribute the profits, forms the basis of this decision. Further, payment of cash dividend reduces the amount of funds required to

finance profitable investment opportunities thereby restricting its financing options.

In this backdrop, the decision is based on the following:

1.　Whether the organization has opportunities in hand to invest the profit, if retained?

2.　Whether the return on such investment (ROI) will be higher than the expectations of shareholders i.e. K_e?

(ii)　Wealth Maximization Decision:

Under this decision, we are facing the problem as to what amount of dividend shall be distributed i.e. the Dividend Payout ratio (D/P) in relation to Market price of the shares (MPS)? This decision is based on the following:

1.　Because of market imperfections and uncertainty, shareholders give more importance to near dividends than future dividends and capital gains. Payment of dividends influences the market price of the share directly. Higher dividends increase the value of shares and low dividends decrease it. A proper balance has to be struck between these two approaches.

2.　When the firm increases its retained earnings, shareholders' dividends decreases and consequently market price is affected. Use of retained earnings to finance profitable investments increases the future earnings per share. This is because, shareholders expect that profitable investments made by the company may lead to higher return for them in future. On the other hand, increase in dividends may cause the firm to forego investment opportunities for lack of funds and thereby decrease the future earnings per share.

Thus, management should develop a dividend policy **which divides net earnings into dividends and retained earnings** in an optimum way so as to achieve the objective of wealth maximization for shareholders. Such a policy will be influenced by investment opportunities available to the firm and value of dividends as against capital gains to shareholders.

5. RELATIONSHIP BETWEEN RETAINED EARNINGS AND GROWTH

It can be illustrated with the help of the following equation:

$$\text{Growth (g) = br}$$

Where,

g   = Growth rate of the firm

b   = Retention ratio

r   = Rate of return on investment

Let us understand this relationship between retained earnings and growth with the help of following example:

Example – 1

Suppose there are two companies namely A Ltd. & B Ltd. having capital employed of ₹ 50,00,000 in terms of Equity shares (₹ 100 each are earning @ 20%. Both have same capital structure and same ROI but different dividend policy.

A Ltd. distributes 100% of its earnings whereas B Ltd. distributes only 50%.

Now, considering the other things to remain same, the position of both the companies during the next year will be:

A Ltd	(₹)	B Ltd	(₹)
Previous year		**Previous year**	
Earnings @ 20%	₹ 10,00,000	Earnings @ 20%	₹ 10,00,000
Dividend	₹ 10,00,000	Dividend	₹ 5,00,000
Retained Earnings	Nil	Retained Earnings	₹ 5,00,000
Current year		**Current year**	
Existing capital	₹ 50,00,000	Existing capital	₹ 50,00,000
Existing Retained Earnings	Nil	Existing Retained Earnings	₹ 5,00,000
Total capital employed	₹ 50,00,000	Total capital employed	₹ 55,00,000
Earnings @ 20%	₹ 10,00,000	Earnings @ 20%	₹ 11,00,000

Hence with the help of above example, it is easy to understand that how retained earnings lead to growth.

6. DETERMINANTS OF DIVIDEND DECISIONS

The dividend policy is affected by the following factors:

1. **Availability of funds:** If the business is in requirement of funds, then retained earnings could be a good source. The reason being the saving of floatation cost and prevention of dilution of control which happens in case of new issue of equity shares to public.

2. **Cost of capital:** If the financing requirements are to be executed through debt (relatively cheaper source of finance), then it would be preferable to distribute more dividend. On the other hand, if the financing is to be done through fresh issue of equity shares, then it is better to use retained earnings as much as possible.

3. **Capital structure:** An optimum Debt Equity ratio should also be considered for the dividend decision.

4. **Stock price:** Stock price here means market price of the shares. Generally, higher dividends increase market value of shares and low dividends decrease the value.

5. **Investment opportunities in hand:** The dividend decision is also affected if there are investment opportunities in hand. In that situation, the company may prefer to retain more earnings.

6. **Trend of industry:** The investors depend on some industries for their regular dividend income. Therefore, in such cases, the firms have to pay dividend in order to survive in the market.

7. **Expectation of shareholders:** The shareholders can be categorised into two categories: (i) those who invests for regular income, & (ii) those who invests for growth. Generally, the investor prefers current dividend over the future growth.

8. **Legal constraints:** Section 123 of the Companies Act, 2013 which provides for declaration of dividend sates that Dividend shall be declared or paid by a company for any financial year only:

    (a) out of the profits of the company for that year arrived at after providing for depreciation in accordance with the relevant provisions , or

(b)   out of the profits of the company for any previous financial year or years arrived at after providing for depreciation in accordance with the relevant provisions and remaining undistributed, or

(c)   out of both, or

(d)   out of money provided by the Central Government or a State Government for the payment of dividend by the company in pursuance of a guarantee given by that Government.

It may be noted that, while computing the profits for payment of dividends any amount representing unrealised gains, notional gains or revaluation of assets and any change in carrying amount of an asset or of a liability on measurement of the asset or the liability at fair value shall be excluded.

9.   **Taxation:** Before 1st April 2020, as per Section 115-O of Income Tax Act, 1961, dividend was subject to dividend distribution tax (DDT) in the hands of the company. Dividend on which DDT was paid, was to be exempted in the hands of the shareholder u/s 10(34). However, as per amendment made by the Finance Act 2020, the exemption u/s 10(34) shall not apply to dividend received on or after 1st April 2020 and the dividend income from shares held as investment shall be taxable under the head of 'Other income' at the applicable slab rate. In nutshell dividend would be taxable in the hands of investor.

7.   PRACTICAL CONSIDERATIONS IN DIVIDEND POLICY

A discussion on internal financing ultimately turns to practical considerations which determine the dividend policy of a company. The formulation of dividend policy depends upon answers to the following questions:

•   Whether there should be a stable pattern of dividends over the years? or

•   Whether the company should treat each dividend decision completely independent?

The practical considerations in dividend policy of a company are briefly discussed below:

(a)   Financial Needs of a Company: Retained earnings can be a source of finance for creating profitable investment opportunities. As we discussed earlier, when rate

of return of a company is greater than return required by shareholders, it would be advantageous for the shareholders to re-invest their earnings.

Risk and financial obligations increase if a company raises capital through issue of new shares where floatation costs are involved.

In this respect, a comparison between growth companies and mature companies has been given as follows:

Mature Companies	Growth Companies
1. Mature companies having few investment opportunities will show high payout ratios;	1. Growth companies have low payout ratios. They are in need of funds to finance fast growing fixed assets.
2. Share prices of such companies are sensitive to any changes in dividend payout.	2. Distribution of earnings reduces the funds of the company. They retain all the earnings and declare bonus shares to offset the dividend requirements of the shareholders.
3. A small portion of the earnings is kept to meet emergent and occasional financial needs.	3. These companies increase the amount of dividends gradually as the profitable investment opportunities start falling.

(b) Constraints on Paying Dividends

(i) *Legal*: Please see point no. (9) under the heading, "Determinants of Dividend Decisions".

(ii) *Liquidity*: Payment of dividends means outflow of cash. Ability to pay dividends depends on cash and liquidity position of the firm. A mature company does not have much investment opportunities, nor its funds tied up in permanent working capital and, therefore has a sound cash position. A growth oriented company in spite of having good profits need funds to expand its operations and permanent working capital and therefore it is less likely to declare dividends.

(iii) *Access to the Capital Market*: By paying large dividends, cash position is affected. So, if new shares have to be issued to raise funds for financing investment programmes and if the existing shareholders cannot buy additional shares, then their control is diluted. In such a situation, payment of dividends may be withheld and earnings are utilised for financing firm's investment opportunities.

(iv)   ***Investment Opportunities***: If investment opportunities are inadequate, it is better to pay dividends and raise external funds whenever necessary for such opportunities.

(c)   **Payout policies:** Payout policies can be maintained by fixing the amount or rate of dividend irrespective of the earnings of the company. The policies may include:

(i)   ***Constant Dividend Policy***: Shareholders are given fixed amount of dividend irrespective of actual earnings. The amount of dividend may increase or decrease later on depending upon the financial health of the company but it is generally maintained for a considerable period of time.

Fig. 1 Constant Dividend per share policy
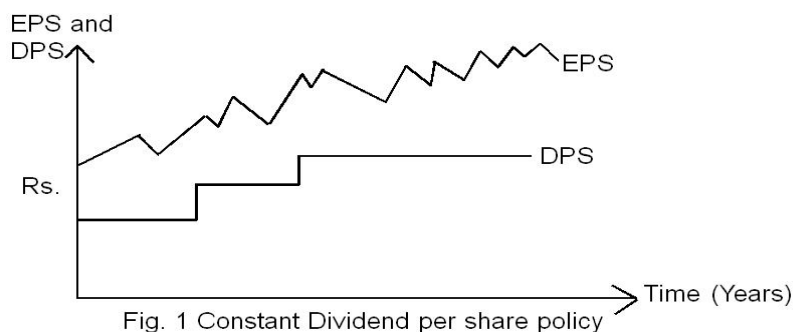
To maintain a constant dividend amount, it is necessary to create a reserve like Dividend Equalisation Reserve Fund earmarked by marketable securities for accumulation of surplus earnings and to use it for paying dividends in those years where the company's performance is not good. This policy treats common shareholders at par with preference shareholders without giving them any preferred opportunities within the firm. It is preferred by persons and institutions that depend on dividend income to meet their living and operating expenses.

Companies that use constant dividend policy, their dividend fluctuate with earnings in short term.

(ii)   ***Stable Dividend Policy***: The ratio of dividend to earnings is known as Payout ratio. Some companies follow a policy of constant Payout ratio i.e. paying fixed percentage on net earnings every year. To quote from Page 74 of the annual report 2011 of Infosys Technologies Limited,

"The Dividend Policy is to distribute up to 30% of the Consolidated Profit after Tax (PAT) of the Infosys Group as Dividend."

Contrary to this, Warren Buffet (amongst the richest persons of the world) says:

"We will either pay large dividends or none at all if we can't obtain more money through re-investment (of those funds). There is no logic to regularly paying out 10% or 20% of earnings as dividends every year."

Such a policy (as mentioned by Warren Buffet) envisages that the amount of dividend fluctuates in direct proportion to earnings. If a company adopts 40% payout ratio, then 40% of every rupee of net earnings will be paid out. If a company earns ₹ 2 per share, dividend per share will be 80 paise and if it earns ₹ 1.50 per share, dividend per share will be 60 paise.

Hence, such a policy is related to company's ability to pay dividends. For losses incurred, no dividend shall be paid. Internal financing with retained earnings is automatic. At any given payout ratio, amount of dividend and any addition to retained earnings increase with increased earnings and decrease with decreased earnings. This policy has a conservative approach and provides a guarantee against over/underpayment.

Company that use a stable dividend policy base dividend on a long-term forecast of sustainable earnings and increase dividends when earnings have increased to a substantially higher level.

The detailed explanation of target payout ratio is covered under the Linter's model as below:

Linter's Model

Linter's model has two parameters:

i.   The target payout ratio,

ii.   The spread at which current dividends adjust to the target.

John Linter based his model on a series of interviews which he conducted with corporate managers in the mid 1950's. While developing the model, he considers the following assumptions:

1.   Firms have a **long term dividend payout ratio**. They maintain a fixed dividend payout over a long term. Mature companies with stable earnings may have high payouts and growth companies usually have low payouts.

2.   Managers are more concerned with changes in dividends than the absolute amounts of dividends. A manager may easily decide to pay a dividend of ₹ 2

per share if last year too it was ₹ 2 but paying ₹ 3 dividend if last year dividend was ₹ 2 is an important financial management decision.

3. Dividend changes follow changes in long run sustainable earnings.

4. Managers are **reluctant to affect dividend changes** that may have to be reversed.
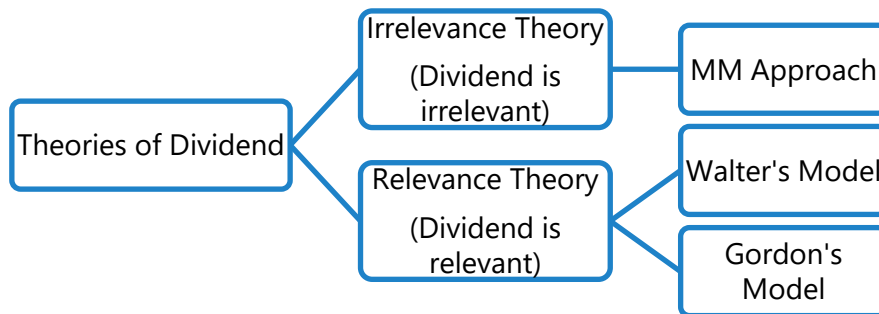
Under Linter's model, the current year's dividend is dependent on current year's earnings and last year's dividend.

$$D_1 = D_o + [(EPS \times Target\ payout) - D_o] \times Af$$

Where,

D_1	=	Dividend in year 1
D_o	=	Dividend in year 0 (last year dividend)
EPS	=	Earnings per share
Af	=	Adjustment factor or Speed of adjustment

8. THEORIES OF DIVIDEND

8.1 Dividend's Irrelevance Theory

MODIGLIANI and MILLER (MM) HYPOTHESIS:

Modigliani – Miller theory was proposed by Franco Modigliani and Merton Miller in 1961. MM approach is in support of the irrelevance of dividends i.e. firm's dividend policy has no effect on either the price of a firm's stock or its cost of capital.

According to MM Hypothesis

- Market value of equity shares of a firm depends solely on its earning power and is not influenced by the manner in which its earnings are split between dividends and retained earnings.

- Market value of equity shares is not affected by dividend size.

- Under MM hypothesis there is no meaningful distinction between dividend and share repurchases. They both are ways for a company to return cash to shareholders.

Assumptions of MM Hypothesis

MM hypothesis is based on the following assumptions:

- **Perfect capital markets:** The firm operates in a market in which all investors are rational and information is freely available to all.

- **No taxes:** There are no taxes or no tax discrimination between dividend income and capital appreciation (capital gain). It means there is no difference in taxation of dividend income or capital gain. This assumption is necessary for the universal applicability of the theory, since the tax rates may be different in different countries.

- **Fixed investment policy:** It is necessary to assume that all investment should be financed through equity only, since implication after using debt as a source of finance may be difficult to understand. Further, the impact will be different in different cases.

- **No floatation or transaction cost:** Similarly, these costs may differ from country to country or market to market.

- **Risk of uncertainty does not exist**. Investors are able to forecast future prices and dividend with certainty and one discount rate is appropriate for all securities and all time periods.

Situations under MM Hypothesis

Keeping in mind assumptions under MM Hypothesis, firms may have three possible situations regarding the payment of dividend as follows:

1. **Firm pays cash dividends from Reserve & Surplus:** In this situation, the shareholders receive cash (dividend) from the firm, thereby, reducing the cash balance of the firm. There is only transfer of asset (cash) from one pocket to

another pocket of the shareholders with no net gain or loss. So, payment of cash dividend will not affect the value of the firm.

2. **Firm pays cash dividends from new issue of shares:** If the firm does not have sufficient cash available for dividend, it will issue new shares and therefore will use the amount received for the payment of dividend. Here, shareholders receive cash (dividend) but suffer an equal amount of capital loss due to dilution of control over the assets of the company and dilution in earning per share. With the increase in the total number of shares, earning per share will also reduce. Thus, there is no change in the wealth of shareholders.

3. **Firm does not pay any dividend:** When the firm doesn't pay any dividend, but shareholder want to receive cash, then shareholder may sell part of his/her shareholding in market. Therefore, the cash received in the hands of the shareholder may be known as "home-made dividend". In this situation also, the shareholder receives cash (capital receipt) but lose in the form of capital loss due to dilution of control over the assets of the company among the existing and new shareholders. Hence, there will be no gain or loss and the value of the firm will remain unchanged.

In all the above 3 cases, any new additional investment requirement as well as earnings done for the year are taken into account for assessing the financing needs for issue of new shares.

Let us understand the different possible situations through an example as below:

Example – 2:

At the end of the current Financial Year, Dev Ltd. has 2 lakhs outstanding equity shares with market price of ₹ 10 per share with no other external borrowings since the company follows no borrowing policy. The company has used all its retained earnings for capital expenditure. The company also pays a constant dividend of ₹ 3 per share and its cost of capital is 10%.

Now analysing both situations i.e. when dividends are (i) not paid and (ii) paid.

(i)   If dividends are not paid, then the total no. of equity shares will remain same as no new shares are issued.

Market price per share (P_1)　　$= P_o (1 + K_e) - D_1$

$= 10 (1 + 0.10) - 0 = ₹ 11$

Value of Firm　　$= ₹ 11 \times 2,00,000 \text{ shares} = ₹ 22,00,000$

(ii)　As the company strictly follows the no borrowing policy, then to pay the dividend of ₹ 3 per share, it will have to issue new shares to finance the dividend payment as no retained earnings is available.

Market price per share (P_1)　　= $P_o (1 + K_e) - D_1$

　　　　　　　　　　　　　= $10 (1 + 0.10) - 3 = ₹ 8$

No. of new shares to be issued = $\dfrac{\text{Funds required (i.e. total dividend to be paid)}}{P_1}$

　　　　　　　　　　　　　= $\dfrac{2,00,000 \text{ shares} \times ₹ 3}{₹ 8}$ = 75,000 shares

Value of Firm　　　　　　　= ₹ 8 × 2,75,000 shares = ₹ 22,00,000

Thus, it can be seen from the above example that the value of the firm remains the same in either case.

MM hypothesis is primarily based on the arbitrage argument. Through the arbitrage process, MM hypothesis discusses how the value of the firm remains same whether the firm pays dividend or not. Here, **market price of shares can be calculated as follows:**

$$P_o = \frac{P_1 + D_1}{1 + K_e}$$

Where,

P_o　　= Price in the beginning of the period

P_1　　= Price at the end of the period

D_1　　= Dividend at the end of the period

K_e　　= Cost of equity/ rate of capitalization/ discount rate

As per MM hypothesis, the value of firm will remain unchanged due to dividend decision. This can be computed with the help of the following formula:

$$V_f \text{ or } nP_0 = \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)}$$

Where,

V_f　　= Value of firm in the beginning of the period

n　　= Number of shares in the beginning of the period

Δn = Number of shares issued to raise the funds required

I   = Amount required for investment

E   = Total earnings during the period

For Understanding purpose:

$$P_o \quad = \quad \frac{P_1 + D_1}{1 + K_e}$$

The above equation is for one share. Let's multiply it with n i.e. existing number of shares on both sides:

$$nP_o \quad = \quad \frac{nP_1 + nD_1}{1 + K_e}$$

Now add ΔnP_1 and subtract ΔnP_1 at numerator of the right hand side equation

$$nP_o \quad = \quad \frac{nP_1 + nD_1 + \Delta nP_1 - \Delta nP_1}{1 + K_e}$$

Further, retained earnings could be represented with the help of following:

Retained earnings   = $E - nD_1$

Δn i.e. number of shares issued to raise the funds required can be represented as follows:

$$\Delta n \ = \ \frac{\text{Funds required}}{\text{Price at end } (P_1)} = \frac{I - (E - nD_1)}{P_1}$$

Or, $\Delta nP_1 = I - (E - nD_1)$

Now putting value of ΔnP_1 in the equation:

$$nP_o \quad = \quad \frac{nD_1 + (nP_1 + \Delta nP_1) - [I - (E - nD_1)]}{1 + K_e}$$

$$nP_o \quad = \quad \frac{nD_1 + (n + \Delta n)P_1 - I + E - nD_1}{1 + K_e}$$

$$nP_o \quad = \quad \frac{(n + \Delta n)P_1 - I + E}{(1 + K_e)}$$

Advantages of MM Hypothesis

1. This model is **logically consistent.**

2. It provides a **satisfactory framework** on dividend policy with the concept of Arbitrage process.

Limitations of MM Hypothesis

1. Validity of various **assumptions is questionable.**

2. This model **may not be valid under uncertainty**.

ILLUSTRATION 1

AB Engineering Ltd. belongs to a risk class for which the capitalization rate is 10%. It currently has outstanding 10,000 shares selling at ₹ 100 each. The firm is contemplating the declaration of a dividend of ₹ 5 share at the end of the current financial year. It expects to have a net income of ₹ 1,00,000 and has a proposal for making new investments of ₹ 2,00,000. CALCULATE the value of the firm when dividends (i) are not paid (ii) are paid.

SOLUTION

CASE 1: Value of the firm when dividends are not paid.

Step 1: Calculate price at the end of the period

$K_e = 10\%$, $P_0 = 100$, $D_1 = 0$

$$P_o = \frac{P_1 + D_1}{1 + K_e}$$

$$100 = \frac{P_1 + 0}{1 + 0.10} \qquad » \qquad P_1 = 110$$

Step 2: Calculation of funds required for investment

Earning	₹ 1,00,000
Dividend distributed	Nil
Fund available for investment	₹ 1,00,000
Total Investment	₹ 2,00,000
Balance Funds required	₹ 2,00,000 - ₹ 1,00,000 = ₹ 1,00,000

Step 3: Calculation of No. of shares required to be issued for balance funds

$$\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end}(P_1)}$$

$$\Delta n = \frac{1,00,000}{110}$$

Step 4: Calculation of value of firm

$$nP_o = \frac{(n+\Delta n)P_1 - I + E}{1+K_e}$$

$$nP_0 = \frac{\left(10,000 + \dfrac{\text{₹}1,00,000}{\text{₹}110}\right) \times \text{₹}110 - \text{₹}2,00,000 + \text{₹}1,00,000}{(1+0.10)}$$

$$= \text{₹}\,10,00,000$$

CASE 2: Value of the firm when dividends are paid.

Step 1: Calculate price at the end of the period

$$K_e = 10\%, \qquad P_0 = 100, \qquad D_1 = 5$$

$$P_o = \frac{P_1 + D_1}{1+K_e}$$

$$100 = \frac{P_1 + 5}{1+0.10} \quad » \quad P_1 = 105$$

Step 2: Calculation of funds required for investment

Earning	₹ 1,00,000
Dividend distributed	₹ 50,000
Fund available for investment	₹ 50,000
Total Investment	₹ 2,00,000
Balance Funds required	₹ 2,00,000 - ₹ 50,000 = ₹1,50,000

Step 3: Calculation of No. of shares required to be issued for balance fund

$$\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end }(P_1)}$$

$$\Delta n = \frac{₹\,1,50,000}{₹\,105}$$

Step 4: Calculation of value of firm

$$nP_o = \frac{(n+\Delta n)P_1 - I + E}{1+K_e}$$

$$nP_0 = \frac{\left(10,000 + \dfrac{₹\,1,50,000}{₹\,105}\right) \times ₹\,105 - ₹\,2,00,000 + ₹\,1,00,000}{(1+0.10)}$$

$$= ₹\,10,00,000$$

Thus, it can be seen from the above illustration that the value of the firm remains the same in either case.

In real world, market imperfections create some problems for MM's dividend policy irrelevance proposition.

8.2 Dividend's Relevance Theory

1. **WALTER'S MODEL**

Assumptions of Walter's Model

Walter's approach is based on the following assumptions:

*   All investment proposals of the firm are to be financed **through retained earnings** only.

*   **'r'** rate of return & **'K$_e$'** cost of capital are **constant.**

*   **Perfect capital markets**: The firm operates in a market in which all investors are rational and information is freely available to all.

*   **No taxes or no tax discrimination** between dividend income and capital appreciation (capital gain). It means there is no difference in taxation of dividend income or capital gain. This assumption is necessary for the universal applicability of the theory, since, the tax rates may be different in different countries.

- **No floatation or transaction cost**: Similarly, these costs may differ country to country or market to market.

- The firm has **perpetual life**

The relationship between dividend and share price based on Walter's formula is shown below:

$$\text{Market Price}\,(P) \;=\; \frac{D + \dfrac{r}{K_e}(E - D)}{K_e}$$

Where,

P = Market Price of the share.

E = Earnings per share.

D = Dividend per share.

K_e = Cost of equity/ rate of capitalization/ discount rate.

r = Internal rate of return/ return on investment

The above formula is given by Prof. James E. Walter which shows how dividend can be used to maximise the wealth of equity holders. He argues that in the long run, share prices reflect only the present value of expected dividends. Retentions influence stock prices only through their effect on further dividends.

A close study of the formula indicates that Professor Walter emphasises two factors which influence the market price of a share which are:

(1) Dividend per share

(2) Relationship between Internal Rate of Return (IRR) and Cost of capital (K_e) [i.e. Market capitalization rate]

If the internal return of retained earnings is higher than market capitalization rate, the value of ordinary shares would be high even if dividends are low. However, if the internal return within the business is lower than what the market expects, the value of the share would be low. In such a case, shareholders would prefer a higher dividend so that they can utilise the funds so obtained elsewhere in more profitable opportunities.

Walter's Model explains why market prices of shares of growing companies are high even though the dividend paid out is low. It also explains why the market price

of shares of certain companies which pay higher dividends and retain very low profits is also high.

As explained above, market price is dependent upon two factors; firstly, the quantum of dividend and secondly, profitable opportunities available to the company in investing the earnings retained. It is obvious that when a company retains a part of its profits, it has to think in terms of the cost of such retention. Retention of profits depends upon whether it is cheaper and more profitable for shareholders of the company to have corporate earnings retained in the business or get the same in the form of cash dividend. This involves a comparison between the cost of retained earnings and the cost of distributing them. The cost of retained earnings, therefore, involves an opportunity cost, i.e., the benefits which shareholders forego in terms of leaving the funds in the business.

IRR, Ke and optimum payout

As we know that Walter's approach considers two factors, following can be concluded from this model:

Company	Condition of r vs K_e	Correlation between Size of Dividend and Market Price of share	Optimum dividend payout ratio
Growth	r > K_e	Negative	Zero
Constant	r = K_e	No correlation	Every payout ratio is optimum
Decline	r < K_e	Positive	100%

Growth Oriented Company: In this condition, a company is able to invest/utilize the fund in a better manner. Therefore, shareholders can accept low dividend because their value of share would be higher.

Declining Company: In this condition, a company is not in a position to cover the cost of capital. Therefore, shareholders would prefer a higher dividend so that they can utilize their funds elsewhere in more profitable opportunities.

Advantages of Walter's Model

1.   The formula is **simple to understand** and easy to compute.

2. It can envisage **different possible market prices** in different situations and considers internal rate of return, market capitalisation rate and dividend payout ratio in the determination of market value of shares.

Limitations of Walter's Model

1. The formula **does not consider all the factors** affecting dividend policy and share prices. Moreover, determination of market capitalisation rate is difficult.

2. Further, the formula **ignores such factors as taxation,** various legal and contractual obligations, management policy and attitude towards dividend policy and so on.

ILLUSTRATION 2

XYZ Ltd. earns ₹ 10/ share. Capitalization rate and return on investment are 10% and 12% respectively.

DETERMINE the optimum dividend payout ratio and the price of the share at the payout.

SOLUTION

Since r > K$_e$, the optimum dividend pay-out ratio would 'Zero' (i.e. D = 0),

Accordingly, value of a share:

$$P \;=\; \frac{D + \dfrac{r}{Ke}(E - D)}{K_e}$$

$$P \;=\; \frac{0 + \dfrac{0.12}{0.10}(10 - 0)}{0.10} = ₹120$$

The optimality of the above payout ratio can be proved by using 25%, 50%, 75% and 100% as pay- out ratio:

At 25% pay-out ratio

$$P \;=\; \frac{2.5 + \dfrac{0.12}{0.10}(10 - 2.5)}{0.10} = ₹\,115$$

At 50% pay-out ratio

$$P = \frac{5 + \dfrac{0.12}{0.10}(10 - 5)}{0.10} = ₹\,110$$

At 75% pay-out ratio

$$P = \frac{7.5 + \dfrac{0.12}{0.10}(10 - 7.5)}{0.10} = ₹\,105$$

At 100% pay-out ratio

$$P = \frac{10 + \dfrac{0.12}{0.10}(10 - 10)}{0.10} = ₹\,100$$

ILLUSTRATION 3

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	₹ 30 lakhs
Outstanding 12% preference shares	₹ 100 lakhs
No. of equity shares	3 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

COMPUTE the approximate dividend pay-out ratio so as to keep the share price at ₹ 42 by using Walter's model?

SOLUTION

	₹ in lakhs
Net Profit	30
Less: Preference dividend	12
Earning for equity shareholders	18
Earning per share	18/3 = ₹ 6.00

Let, the dividend per share be D to get share price of ₹ 42

$$P = \frac{D + \dfrac{r}{K_e}(E - D)}{K_e}$$

$$₹ 42 \quad = \frac{D + \dfrac{0.20}{0.16}(6 - D)}{0.16}$$

$$6.72 \quad = \frac{0.16D + 1.2 - 0.20D}{0.16}$$

$$0.04D \quad = 1.2 - 1.0752$$

$$D \quad = 3.12$$

$$\text{D/P ratio} \quad = \frac{DPS}{EPS} \times 100 = \frac{3.12}{6} \times 100 = 52\%$$

So, the required dividend payout ratio will be = 52%

2. GORDON'S MODEL

According to Gordon's model, dividend is relevant and dividend policy of a company affects its value.

Assumptions of Gordon's Model

This model is based on the following assumptions:

- Firm is an all equity firm i.e. **no debt.**

- **IRR will remain constant**, because change in IRR will change the growth rate and consequently the value will be affected. Hence this assumption is necessary.

- **K_e will remain constant**, because change in discount rate will affect the present value.

- **Retention ratio** (b), once decide upon, is **constant** i.e. constant dividend payout ratio will be followed.

- **Growth rate** (g = br) is also **constant**, since retention ratio and IRR will remain unchanged and growth, which is the function of these two variable will remain unaffected.

- $K_e > g$, this assumption is necessary and based on the principles of series of sum of geometric progression for 'n' number of years.

- All investment proposals of the firm are to be **financed through retained earnings** only.

The following formula is used by Gordon to find out price per share:

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

Where,

P$_0$ = Price per share

E$_1$ = Earnings per share

b = Retention ratio; (1 - b = Payout ratio)

K$_e$ = Cost of capital

r   = IRR

br = Growth rate (g)

According to Gordon's model, when **IRR is greater than cost of capital, the price per share increases and dividend pay-out decreases**. On the other hand, when IRR is lower than the cost of capital, the price per share decreases and dividend pay-out increases.

Following is the conclusion of Gordon's model:

Company	Condition of r vs K$_e$	Optimum dividend payout ratio
Growth	r > K$_e$	Zero
Constant	r = K$_e$	There is no optimum ratio
Declining	r < K$_e$	100%

ILLUSTRATION 4

The following figures are collected from the annual report of XYZ Ltd.:

Net Profit	*₹ 30 lakhs*
Outstanding 12% preference shares	*₹ 100 lakhs*
No. of equity shares	*3 lakhs*
Return on Investment	*20%*
Cost of capital i.e. (K$_e$)	*16%*

CALCULATE price per share using Gordon's Model when dividend pay-out is (i) 25%; (ii) 50% and (iii) 100%.

SOLUTION

	₹ in lakhs
Net Profit	30
Less: Preference dividend	12
Earning for equity shareholders	18
Earning per share	18/3 = ₹ 6.00

Price per share according to Gordon's Model is calculated as follows:

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

Here, E1 = 6, Ke = 16%

(i)   When dividend pay-out is 25%

$$P_0 = \frac{6 \times 0.25}{0.16 - (0.75 \times 0.2)} = \frac{1.5}{0.16 - 0.15} = 150$$

(ii)   When dividend pay-out is 50%

$$P_0 = \frac{6 \times 0.5}{0.16 - (0.5 \times 0.2)} = \frac{3}{0.16 - 0.10} = 50$$

(iii)   When dividend pay-out is 100%

$$P_0 = \frac{6 \times 1}{0.16 - (0 \times 0.2)} = \frac{6}{0.16} = 37.50$$

The "Bird-in-hand theory" – Gordon's Revised Model

Myron Gordon revised his dividend model and considered the risk and uncertainty in his model. The Bird-in-hand theory of Gordon has two arguments:

(i)   Investors are **risk averse** and

(ii)   Investors put a **premium on certain return** and discount on uncertain return.

Gordon argues that what is available at present is preferable to what may be available in the future. As investors are rational, they want to avoid risk and uncertainty. They would prefer to pay a higher price for shares on which current dividends are paid. Conversely, they would discount the value of shares of a firm which postpones dividends. The discount rate would vary with the retention rate.

The relationship between dividend and share price on the basis of Gordon's formula is shown as:

$$\text{Market price per share} (P_0) = \left[\frac{D_0(1+g)}{K_e - g} \right]$$

Where,

P_0 = Market price per share (ex-dividend)

D_o = Current year dividend

g = Constant annual growth rate of dividends

K_e = Cost of equity capital (expected rate of return).

The formula given by Gordon shows that when the rate of return (r) is greater than the discount rate (K_e), the price per share increases as the dividend ratio decreases and the vice-versa. On the other hand, if the rate of return (r) is less than discount rate (K_e), the price per share increases as the dividend ratio increases and the vice-versa. The price per share remains unchanged where the rate of return and discount rate are equal.

Dividend Discount Model (DDM)

It is a financial model that values shares at the discounted value of the future dividend payments. Under this model, the price of a share that will be traded is calculated by the PV of all expected future dividend payment discounted by an appropriate risk- adjusted rate. The dividend discount model price is the intrinsic value of the stock i.e.

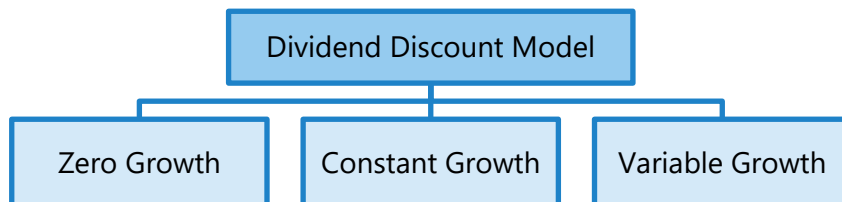**Intrinsic value = Sum of PV of future cash flows**

Intrinsic value = Sum of PV of Dividends + PV of Stock Sale Price

$$\text{Stock Intrinsic Value} = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + ... + \frac{D_n}{(1+K_e)^n} + \frac{RV_n}{(1+K_e)^n}$$

In the above equation, it is assumed that dividend is paid at the end of each year and that the stock is sold at the end of the nth year.

There can three possible situations:

(a) Zero Growth Rate: assumes all dividend paid by a stock remains same. In this case the stock price would be equal to:

$$\text{Stock's intrinsic Value} = \frac{\text{Annual dividend}}{\text{Required rate of return}}$$

$$\text{i.e.}\quad P_0 = \frac{D}{K_e}$$

Where,

    D = Annual dividend

    K_e = Cost of capital

    P_0 = Current Market price of share

ILLUSTRATION 5

X Ltd. is a no growth company, pays a dividend of ₹ 5 per share. If the cost of capital is 10%, COMPUTE the current market price of the share?

SOLUTION

$$P_0 = \frac{D}{K_e} = \frac{5}{0.10} = ₹\,50$$

(b) Constant Growth Rate (Gordon's Growth Model): The relationship between dividend and share price on the basis of Gordon's formula is:

$$\text{Market price per share (P)} = \frac{D_0(1+g)}{K_e - g}$$

Where

P = Market price per share

D_0 = current year dividend

g = growth rate of dividends

K_e = cost of equity capital/ expected rate of return

Notes:

g = b × r

b = proportion of retained earnings or (1- dividend payout ratio)

ILLUSTRATION 6

XYZ is a company having share capital of ₹10 lakhs of ₹10 each. It distributed current dividend of 20% per annum. Annual growth rate in dividend expected is 2%. The expected rate of return on its equity capital is 15%. CALCULATE price of share applying Gordon's growth Model.

SOLUTION

$$P = \frac{D_0(1+g)}{K_e - g}$$

$$= \frac{2(1+0.02)}{0.15 - 0.02} = ₹\ 15.69$$

(c) Variable Growth Rate : Variable-growth rate models (multi-stage growth models) can take many forms, even assuming the growth rate is different for every year. However, the most common form is one that assumes 3 different rates of growth: an initial high rate of growth, a transition to slower growth, and lastly, a sustainable, steady rate of growth. Basically, the constant-growth rate model is extended, with each phase of growth calculated using the constant-growth method but using 3 different growth rates of the 3 phases. The present values of each stage are added together to derive the intrinsic value of the stock. Sometimes, even the capitalization rate, or the required rate of return, may be varied if changes in the rate are projected. This is also referred to as 3 staged growth model.

ILLUSTRATION 7

A firm had paid dividend at ₹ 2 per share last year. The estimated growth of the dividends from the company is estimated to be 5% p.a. DETERMINE the estimated market price of the equity share if the estimated growth rate of dividends (i) rises to 8%, and (ii) falls to 3%. Also FIND OUT the present market price of the share, given that the required rate of return of the equity investors is 15%.

SOLUTION

In the present situation, the current MPS is as follows:

$$P = \frac{D_0(1+g)}{K_e - g}$$

$$P = \frac{2(1+0.05)}{0.15 - 0.05} = ₹\ 21$$

(i) The impact of changes in growth rate to 8% on MPS will be as follows:

$$P = \frac{2(1+0.08)}{0.15 - 0.08} = ₹\ 30.86$$

(ii) The impact of changes in growth rate to 3% on MPS will be as follows:

$$P = \frac{2(1+0.03)}{0.15 - 0.03} = ₹\ 17.17$$

So, the market price of the share is expected to vary in response to change in expected growth rate of dividends.

Advantages of Gordon's Model

1. The dividend discount model is a **useful heuristic model** that relates the present stock price to the present value of its future cash flows.

2. This Model is **easy to understand.**

Limitations of Gordon's Model

1. The dividend discount model **depends** on projections about company growth rate and future capitalization rates of the remaining cash flows, which may be **difficult to calculate accurately.**

2. The **true intrinsic value** of a stock is **difficult to determine** realistically.

Important considerations for Gordon's Model

1. With dividends growing at constant rate of g, the share price also grows at g.

$P_0 = D_1/(r-g)$

Multiplying both sides by (1+g) gives as follows:

$P_0 (1+g) = D_1 (1+g)/(r-g)$

$P_1 = D_2/(r-g)$

So both dividend and price have grown at the rate of g given r is constant.

2.   Growth rate g is also referred to as capital appreciation or capital yield.

3.   The dividend yield which is D_1/P_0 at t=0 will be constant as both dividend and price are expected to grow at the same rate, leaving dividend yield unchanged.

9.   STOCK SPLITS

9.1 Meaning of Stock Split

Stock split means splitting **one share into many,** say, one share of ₹ 500 into 5 shares of ₹ 100. Stock splits is a tool used by the companies to regulate the prices of shares i.e. if a share price increases beyond a limit, it may become less tradable, for e.g. suppose a company's share price increases from ₹ 50 to ₹ 1000 over the years, it is possible that it might goes out of range of many investors.

9.2 Advantages of Stock Splits

1.   It makes the **share affordable** to small investors.

2.   **Number of shares may increase** the number of shareholders; hence the potential of investment may increase.

9.3 Limitations of Stock Splits

1.   **Additional expenditure** needs to be incurred on the process of stock split.

2.   **Low share price may attract speculators** or short term investors, which are generally not preferred by any company.

10. SHARE BUYBACK

10.1 Meaning of Share Buyback

Share buyback, in simple terms, means buying/repurchasing own shares by the company resulting into decrease in share capital of the company. Thus, the shares bought back are cancelled leading reduction in outstanding number of shares.

Share buyback is also a form of shareholders' dividend. As the number of circulating shares in the market fall, amount of dividend per share in the future increases.

There are two main types of buyback that can be performed by the companies. One is through an open market, and another is through tender offer. While company intending to buyback through open market, it need to go through secondary market. However, in case of tender offer, company offers a fixed price where all the shareholders can participate or sell their shares.

Miscellaneous Illustrations

ILLUSTRATION 8

RST Ltd. has a capital of ₹ 10,00,000 in equity shares of ₹ 100 each. The shares are currently quoted at par. The company proposes to declare a dividend of ₹ 10 per share at the end of the current financial year. The capitalization rate for the risk class of which the company belongs is 12%. COMPUTE market price of the share at the end of the year, if

(i)   dividend is not declared

(ii)   dividend is declared

Assuming that the company pays the dividend and has net profits of ₹ 5,00,000 and makes new investments of ₹ 10,00,000 during the period, CALCULATE number of new shares to be issued? Use the MM model.

SOLUTION

Given,

Cost of Equity (K_e)	12%
Number of shares in the beginning (n)	10,000
Current Market Price (P_0)	₹ 100
Net Profit (E)	₹ 5,00,000
Expected Dividend (D_1)	₹ 10 per share
Investment (I)	₹ 10,00,000

Computation of market price per share, when:

(i)   No dividend is declared:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

$$100 = \frac{P_1 + 0}{1 + 0.12}$$

$P_1 = 112 - 0 = ₹ 112$

(ii)   Dividend is declared:

$$100 = \frac{P_1 + 10}{1 + 0.12}$$

$P_1 = 112 - 10 = ₹ 102$

Calculation of number of shares required for investment

	₹
Earning	5,00,000
Dividend distributed	1,00,000
Fund available for investment	4,00,000
Total Investment	10,00,000
Balance Funds required	10,00,000 - 4,00,000 = 6,00,000

$$\text{No. of shares} = \frac{\text{Funds required}}{\text{Price at end}(P_1)}$$

$$\Delta n = \frac{6,00,000}{102} = 5,882.35 \text{ or } 5,883 \text{ Shares}$$

ILLUSTRATION 9

The following information pertains to M/s XY Ltd.

Earnings of the Company	*₹ 5,00,000*
Dividend Payout ratio	*60%*
No. of shares outstanding	*1,00,000*

Equity capitalization rate	12%
Rate of return on investment	15%

CALCULATE:

(i) Market value per share as per Walter's model.

(ii) Optimum dividend payout ratio according to Walter's model and the market value of Company's share at that payout ratio.

SOLUTION

(i) As per Walter's model:

$$P = \frac{D + \dfrac{r}{K_e}(E - D)}{K_e}$$

Where,

P = Market price per share.

E = Earnings per share = ₹ 5

D = Dividend per share = ₹ 3

R = Return earned on investment = 15%

K_e = Cost of equity capital = 12%

$$P = \frac{3 + \dfrac{0.15}{0.12}(5 - 3)}{0.12} = ₹\ 45.83$$

(ii) According to Walter's model, when the return on investment is more than the cost of equity capital, the price per share increases as the dividend pay-out ratio decreases. Hence, the optimum dividend pay-out ratio in this case is nil.

So, at a pay-out ratio of zero, the market value of the company's share will be:

$$P = \frac{0 + \dfrac{0.15}{0.12}(5 - 0)}{0.12} = ₹\ 52.08$$

ILLUSTRATION 10

Taking an example of three different firms i.e. growth, normal and declining, CALCULATE the share price using Gordon's model.

Factors	Growth	Normal	Declining

	Firm *r > K_e*	*Firm* *r = K_e*	*Firm* *r < K_e*
r (rate of return on retained earnings)	*15%*	*10%*	*8%*
K_e (Cost of Capital)	*10%*	*10%*	*10%*
E (Earning Per Share)	*₹ 10*	*₹ 10*	*₹ 10*
b (Retained Earnings)	*0.6*	*0.6*	*0.6*
1- b (Dividend Payout)	*0.4*	*0.4*	*0.4*

SOLUTION

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

(i)   Situation-1: Growth Firm r > K_e

$$P_0 = \frac{10(1-0.6)}{0.10 - 0.15 \times 0.6} = \frac{4}{0.10 - 0.09} = ₹\ 400$$

(ii)   Situation-2: Normal Firm r = K_e

$$P_0 = \frac{10(1-0.6)}{0.10 - 0.10 \times 0.6} = \frac{4}{0.10 - 0.06} = ₹\ 100$$

(ii)   Situation-2: Normal Firm r < K_e

$$P_0 = \frac{10(1-0.6)}{0.10 - 0.08 \times 0.6} = \frac{4}{0.10 - 0.048} = ₹\ 76.92$$

If the retention ratio (b) is changed from 0.6 to 0.4, the new share price will be as follows:

Growth Firm

$$P_0 = \frac{10(1-0.4)}{0.10 - 0.15 \times 0.4} = \frac{6}{0.10 - 0.06} = ₹\ 150$$

Normal Firm

$$P_0 = \frac{10(1-0.4)}{0.10 - 0.10 \times 0.4} = \frac{6}{0.10 - 0.04} = ₹\ 100$$

Declining Firm

$$P_0 = \frac{10(1-0.4)}{0.10-0.08\times0.4} = \frac{6}{0.10-0.032} = ₹\ 88.24$$

From the above analysis, it can be concluded that:

When r > k, the market value increases with retention ratio.

When r < k, the market value of share stands to decrease.

When r = k, the market value is not affected by dividend policy.

The conclusion of the Gordon's model is similar to that of Walter's model.

ILLUSTRATION 11

The following information is given below in case of Aditya Ltd.:

Earnings per share   = ₹60

Capitalisation rate   = 15%

Return on investment = 25%

Dividend payout ratio = 30%

(i)   COMPUTE price per share using Walter's Model.

(ii)   WHAT would be optimum dividend payout ratio per share under Gordon's Model.

SOLUTION

(i)   As per Walter's Model, Price per share is computed by using the following formula:

$$P \quad = \quad \frac{D + \dfrac{r}{K_e}(E-D)}{K_e}$$

Where,

P = Market Price of the share.

E = Earnings per share.

D = Dividend per share.

K_e = Cost of equity/ rate of capitalization/ discount rate.

r = Internal rate of return/ return on investment

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Applying the above formula, price per share

$$P \quad = \quad \frac{18 + \dfrac{0.25}{0.15}(60 - 18)}{0.15}$$

$$\text{Or, } P \quad = \quad \frac{18 + 70}{0.15} = ₹\ 586.67$$

(ii) **As per Gordon's model, when r > K$_e$, optimum dividend payout ratio is 'Zero'.**

SUMMARY

Dividend decision is one of the most important areas of management decisions. It is easy to understand but difficult to implement. Generally, the dividend can be in the form of **Cash Dividend** and **Stock Dividend**.

Dividend policy is generally governed by long term financing decision and wealth maximization decision. Some other factors also play major role in this decision like growth opportunities, expectation of shareholders, trend of the industry, legal constraints etc.

The three major theories of dividend decision are classified under irrelevance (M.M. Hypothesis) and relevance category (Walter's model & Gordon's Model). However, few other theories studied in this chapter are Graham & Dodd's model and Linter model.

Further, we studied **stock splits** as a tool to maintain price range so that it does not move too high to become unaffordable for a wide range of investors.

TEST YOUR KNOWLEDGE

Multiple Choice Questions (MCQs)

1. *Which one of the following is the assumption of Gordon's Model:*

    (a) *Ke > g*

    (b) *Retention ratio, (b), once decide upon, is constant*

    (c) *Firm is an all equity firm*

    (d) *All of the above*

2.   *What should be the optimum Dividend pay-out ratio, when r = 15% & K_e = 12%:*

   (a)   100%

   (b)   50%

   (c)   Zero

   (d)   None of the above.

3.   *Which of the following is the irrelevance theory?*

   (a)   Walter model

   (b)   Gordon model

   (c)   M.M. hypothesis

   (d)   Linter's model

4.   *If the company's D/P ratio is 60% & ROI is 16%, what should be the growth rate?*

   (a)   5%

   (b)   7%

   (c)   6.4%

   (d)   9.6%

5.   *If the shareholders prefer regular income, how does this affect the dividend decision:*

   (a)   It will lead to payment of dividend

   (b)   It is the indicator to retain more earnings

   (c)   It has no impact on dividend decision

   (d)   Can't say

6.   *Mature companies having few investment opportunities will show high payout ratios, this statement is:*

   (a)   False

   (b)   True

   (c)   Partial true

   (d)   None of these

7. Which of the following is the limitation of Linter's model?

    (a) This model does not offer a market price for the shares.

    (b) The adjustment factor is an arbitrary number and not based on any scientific criterion or methods.

    (c) Both (a) & (b)

    (d) None of the above.

8. What are the different options other than cash used for distributing profits to shareholders?

    (a) Bonus shares

    (b) Stock split

    (c) Both (a) and (b)

    (d) None of the above

9. Which of the following statement is correct with respect to Gordon's model?

    (a) When IRR is greater than cost of capital, the price per share increases and dividend pay-out decreases.

    (b) When IRR is greater than cost of capital, the price per share decreases and dividend pay-out increases.

    (c) When IRR is equal to cost of capital, the price per share increases and dividend pay-out decreases.

    (d) When IRR is lower than cost of capital, the price per share increases and dividend pay-out decreases.

10. Compute EPS according to Graham & Dodd approach from the given information:

Market price	₹ 56
Dividend pay-out ratio	60%
Multiplier	2

    (a) ₹ 30

    (b) ₹ 56

    (c) ₹ 28

    (d) ₹ 84

11. Which among the following is not an assumption of Walter's Model?

   (a)   Rate of return and cost of capital are constant

   (b)   Information is freely available to all

   (c)   There is discrimination in taxes

   (d)   The firm has perpetual life

Theoretical Questions

1.   STATE dividend decision. Briefly EXPLAIN the factors which govern this decision.

2.   EXPLAIN the advantages and disadvantages of the stock dividend.

3.   DISCUSS the practical considerations in dividend policy.

4.   LIST out the assumptions of irrelevance theory.

5.   State the meaning of stock split. Explain its advantages and disadvantages.

Practical Problems

1.   M Ltd. belongs to a risk class for which the capitalization rate is 10%. It has 25,000 outstanding shares and the current market price is ₹ 100. It expects a net profit of ₹ 2,50,000 for the year and the Board is considering dividend of ₹ 5 per share.

   M Ltd. requires to raise ₹ 5,00,000 for an approved investment expenditure. ILLUSTRATE, how the MM approach affects the value of M Ltd. if dividends are paid or not paid.

2.   The following information is supplied to you:

	₹
Total Earnings	2,00,000
No. of equity shares (of ₹ 100 each)	20,000
Dividend paid	1,50,000
Price/ Earnings ratio	12.5

   Applying Walter's Model:

   (i)   ANALYSE whether the company is following an optimal dividend policy.

(ii) COMPUTE P/E ratio at which the dividend policy will have no effect on the value of the share.

(iii) Will your decision change, if the P/E ratio is 8 instead of 12.5? ANALYSE.

3. With the help of following figures CALCULATE the market price of a share of a company by using:

(i) Walter's formula

(ii) Dividend growth model (Gordon's formula)

Earnings per share (EPS)	₹ 10
Dividend per share (DPS)	₹ 6
Cost of capital (K_e)	20%
Internal rate of return on investment	25%
Retention Ratio	40%

4. The annual report of XYZ Ltd. provides the following information:

Particulars	Amount (₹)
Net Profit	50 lakhs
Outstanding 15% preference shares	100 lakhs
No. of equity shares	5 lakhs
Return on Investment	20%
Cost of capital i.e. (K_e)	16%

CALCULATE price per share using Gordon's Model when dividend pay-out is:

(i) 25%;

(ii) 50%;

(iii) 100%.

5. A&R Ltd. is a large-cap multinational company listed in BSE in India with a face value of ₹ 100 per share. The company is expected to grow @ 15% p.a. for next four years then 5% for an indefinite period. The shareholders expect 20% return on their share investments. Company paid ₹ 120 as dividend per share for the current Financial Year. The shares of the company traded at an average price of

₹ 3,122 on last day. FIND out the intrinsic value per share and state whether shares are overpriced or underpriced.

6. In the month of May of the current Financial Year, shares of RT Ltd. was sold for ₹ 1,460 per share. A long term earnings growth rate of 7.5% is anticipated. RT Ltd. is expected to pay dividend of ₹ 20 per share.

    (i)   CALCULATE rate of return an investor can expect to earn assuming that dividends are expected to grow along with earnings at 7.5% per year in perpetuity?

    (ii) It is expected that RT Ltd. will earn about 10% on retained earnings and shall retain 60% of earnings. In this case, STATE whether, there would be any change in growth rate and cost of Equity?

7. Aakash Ltd. has 10 lakh equity shares outstanding at the start of the accounting year. The existing market price per share is ₹ 150. Expected dividend is ₹ 8 per share. The rate of capitalization appropriate to the risk class to which the company belongs is 10%.

    (i)   CALCULATE the market price per share when expected dividends are: (a) declared, and (b) not declared, based on the Miller – Modigliani approach.

    (ii) CALCULATE number of shares to be issued by the company at the end of the accounting year on the assumption that the net income for the year is ₹ 3 crore, investment budget is ₹ 6 crores, when (a) Dividends are declared, and (b) Dividends are not declared.

    (iii) PROOF that the market value of the shares at the end of the accounting year will remain unchanged irrespective of whether (a) Dividends are declared, or (ii) Dividends are not declared.

8. Mr H is currently holding 1,00,000 shares of HM ltd, and currently the share of HM ltd is trading on Bombay Stock Exchange at ₹ 50 per share. Mr A have a policy to re-invest the amount of any dividend received into the shared back again of HM ltd. If HM ltd has declared a dividend of ₹ 10 per share, please determine the no of shares that Mr A would hold after he re-invests dividend in shares of HM ltd.

9. *Following information is given pertaining to DG ltd,*

No of shares outstanding	*1 lakh shares*
Earnings Per share	*25 per share*
P/E Ratio	*20*
Book Value per share	*400 per share*

If company decides to repurchase 5,000 shares, at the prevailing market price, what is the resulting book value per share after repurchasing.

ANSWERS/SOLUTIONS

Answers to the MCQs

1.	(d)	**2.**	(c)	**3.**	(c)	**4.**	(c)	**5.**	(a)	**6.**	(b)
7.	(c)	**8.**	(a)	**9.**	(a)	**10.**	(a)	**11.**	(c)		

Answers to Theoretical Questions

1. Please refer paragraph 1,2 and 6
2. Please refer paragraph 3
3. Please refer paragraph 7
4. Please refer paragraph 8.1
5. Please refer paragraph 9

Answers to Practical Problems

1. Given,

Cost of Equity (K_e)	10%
Number of shares in the beginning (n)	25,000
Current Market Price (P_0)	₹ 100
Net Profit (E)	₹ 2,50,000
Expected Dividend (D_1)	₹ 5 per share
Investment (I)	₹ 5,00,000

Case 1 - When dividends are paid	Case 2 - When dividends are not paid
Step 1 $P_o = \dfrac{P_1 + D_1}{1 + K_e}$ $100 = \dfrac{P_1 + 5}{1 + 0.10}$ $P_1 = 110 - 5 = 105$	**Step 1** $P_o = \dfrac{P_1 + D_1}{1 + K_e}$ $100 = \dfrac{P_1 + 0}{1 + 0.10}$ $P_1 = 110 - 0 = 110$
Step 2 Calculation of funds required = [Total Investment − (Net profit - Dividend)] = 5,00,000 - (2,50,000 - 1,25,000) = 3,75,000	**Step 2** Calculation of funds required = [Total Investment − (Net profit - Dividend)] = 5,00,000 - (2,50,000 - 0) = 2,50,000
Step 3 No. of shares required to be issued for balance fund No. of shares = $\dfrac{\text{Funds required}}{\text{Price at end}(P_1)}$ $\Delta n = \dfrac{3,75,000}{105}$ = 3,571.4285	**Step 3** No. of shares required to be issued for balance fund No. of shares = $\dfrac{\text{Funds required}}{\text{Price at end}(P_1)}$ $\Delta n = \dfrac{2,50,000}{110}$ = 2,272.73
Step 4 Calculation of value of firm $Vf = \dfrac{(n + \Delta n)P_1 - I + E}{(1 + k_e)}$	**Step 4** Calculation of value of firm $Vf = \dfrac{(n + \Delta n)P_1 - I + E}{(1 + k_e)}$

Vf =	Vf =
$$\dfrac{\left(25{,}000 + \dfrac{3{,}75{,}000}{105}\right)105 - 5{,}00{,}000 + 2{,}50{,}000}{(1+.10)}$$	$$\dfrac{\left(25{,}000 + \dfrac{2{,}50{,}000}{110}\right)110 - 5{,}00{,}000 + 2{,}50{,}000}{(1+0.10)}$$
= ₹ 25,00,000	= ₹ 25,00,000

2.   **(i)**   The EPS of the firm is ₹ 10 (i.e., ₹ 2,00,000/ 20,000), r = ₹ 2,00,000/ (20,000 shares × ₹ 100) = 10%. The P/E Ratio is given at 12.5 and the cost of capital (K_e) may be taken at the inverse of P/E ratio. Therefore, K_e is 8 (i.e., 1/12.5). The firm is distributing total dividends of ₹ 1,50,000 among 20,000 shares, giving a dividend per share of ₹ 7.50. the value of the share as per Walter's model may be found as follows:

$$P = \frac{D + \dfrac{r}{K_e}(E - D)}{K_e} = \frac{7.5 + \dfrac{0.1}{0.08}(10 - 7.5)}{0.08} = ₹\ 132.81$$

The firm has a dividend payout of 75% (i.e., ₹ 1,50,000) out of total earnings of ₹ 2,00,000. Since, the rate of return of the firm (r) is 10% and it is more than the K_e of 8%, therefore, by distributing 75% of earnings, the firm is not following an optimal dividend policy. The optimal dividend policy for the firm would be to pay zero dividend and in such a situation, the market price would be:

$$= \frac{0 + \dfrac{0.1}{0.08}(10 - 0)}{0.08} = ₹\ 156.25$$

So, theoretically the market price of the share can be increased by adopting a zero payout.

(ii)   The P/E ratio at which the dividend policy will have no effect on the value of the share is such at which the K_e would be equal to the rate of return (r) of the firm. The K_e would be 10% (= r) at the P/E ratio of 10. Therefore, at the P/E ratio of 10, the dividend policy would have no effect on the value of the share.

(iii)   If the P/E is 8 instead of 12.5, then the K_e which is the inverse of P/E ratio, would be 12.5 and in such a situation k_e> r and the market price, as per Walter's model would be:

$$P = \frac{D + \dfrac{r}{K_e}(E - D)}{K_e} = \frac{7.5 + \dfrac{0.1}{0.125}(10 - 7.5)}{0.125} = ₹\,76$$

3. **Market price per share by**

   (i) **Walter's model**

$$P = \frac{D + \dfrac{r}{K_e}(E - D)}{K_e} = \frac{6 + \dfrac{0.25}{0.20}(10 - 6)}{0.20} = ₹\,55$$

   (ii) **Gordon's model**

Present market price per share $(P_0) = \dfrac{E(1 - b)}{k - br}$

$$P_0 = \frac{10\,(1 - 0.40)}{0.20 - (0.4 \times 0.25)}$$

$$= \frac{6}{0.1} = ₹\,60$$

4. **Price per share according to Gordon's Model is calculated as follows:**

Particulars	Amount in ₹
Net Profit	50 lakhs
Less: Preference dividend	15 lakhs
Earnings for equity shareholders	35 lakhs
Earnings per share	35 lakhs/5 lakhs = ₹ 7.00

Price per share according to Gordon's Model is calculated as follows:

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

Here, $E_1 = 7$, $K_e = 16\%$

(i) When dividend pay-out is 25%

$$P_0 = \frac{7 \times 0.25}{0.16 - (0.75 \times 0.2)} = \frac{1.75}{0.16 - 0.15} = ₹\,175$$

(ii) When dividend pay-out is 50%

$$P_0 = \frac{7 \times 0.5}{0.16 - (0.5 \times 0.2)} = \frac{3.5}{0.16 - 0.10} = ₹\ 58.33$$

(iii) When dividend pay-out is 100%

$$P_0 = \frac{7 \times 1}{0.16 - (0 \times 0.2)} = \frac{7}{0.16} = ₹\ 43.75$$

5. **As per Dividend discount model, the price of share is calculated as follows:**

$$P = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \frac{D_3}{(1+K_e)^3} + \frac{D_4}{(1+K_e)^4} + \frac{D_5}{(K_e - g)} \times \frac{1}{(1+K_e)^5}$$

Where,

P = Price per share

K_e = Required rate of return on equity

g = Growth rate

$$P = \frac{₹120 \times 1.15}{(1+0.2)^1} + \frac{₹138 \times 1.15}{(1+0.2)^2} + \frac{₹158.7 \times 1.15}{(1+0.2)^3} + \frac{₹182.5 \times 1.15}{(1+0.2)^4} + \frac{₹209.88 \times 1.15}{(0.2-0.05)^1} \times \frac{1}{(1+0.2)^5}$$

P = 115 + 110.2 + 105.6 + 101.2 + 590.42 = ₹ 1,022.42

Intrinsic value of share is ₹ 1,022.42 as compared to latest market price of ₹ 3,122. Market price of a share is overpriced by ₹ 2,099.58.

6. **(i)** According to Dividend Discount Model approach, the firm's expected or required return on equity is computed as follows:

$$K_e = \frac{D_1}{P_0} + g$$

$$K_e = \frac{20\,(1+0.075)}{1,460} + 7.5\%$$

$$= 0.0147 + 0.075 = 0.0897 \text{ or } 8.97\%$$

(ii) With rate of return on retained earnings (r) is 10% and retention ratio (b) is 60%, new growth rate will be as follows:

g = br = 0.10 × 0.60 = 0.06

Accordingly, dividend will also get changed and to calculate this, first we shall calculate previous retention ratio (b_1) and then EPS assuming that rate of return on retained earnings (r) is same.

With previous Growth Rate of 7.5% and r =10%, the retention ratio comes out to be:

$0.075 = b_1 \times 0.10$

b_1 = 0.75 and payout ratio = 0.25

With 0.25 payout ratio the EPS will be as follows:

$$\frac{₹\,20}{0.25} = ₹\,80$$

With new 0.40 (1 – 0.60) payout ratio, the new dividend will be

D_1 = ₹ 80 × 0.40 = ₹ 32

Accordingly, new K_e will be

$$K_e = \frac{32}{1,460} + 6.0\%$$

or, K_e = 8.19%

7.   (i)   Calculation of market price per share

According to Miller – Modigliani (MM) Approach:

$$P_0 = \frac{P_1 + D_1}{1 + K_e}$$

Where,

Existing market price (P_0)   = ₹ 150

Expected dividend per share (D_1)   = ₹ 8

Capitalization rate (k_e)   = 0.10

Market price at year end (P_1)   = to be determined

(a)   If expected dividends are declared, then

$$₹\,150 \quad = \frac{P_1 + ₹\,8}{1 + 0.10}$$

$\therefore$ P_1 = ₹ 157

(b)   If expected dividends are not declared, then

$$₹ 150 = \frac{P_1 + 0}{1 + 0.10}$$

$$\therefore P_1 = ₹ 165$$

(ii) Calculation of number of shares to be issued

	(a) Dividends are declared (₹ lakh)	(b) Dividends are not Declared (₹ lakh)
Net income	300	300
Total dividends	(80)	-
Retained earnings	220	300
Investment budget	600	600
Amount to be raised by new issues	380	300
Relevant market price (₹ per share)	157	165
No. of new shares to be issued (in lakh)(₹ 380 ÷ 157; ₹ 300 ÷ 165)	2.42	1.82

(iii) Calculation of market value of the shares

	(a) Dividends are declared	(b) Dividends are not Declared
Existing shares (in lakhs)	10.00	10.00
New shares (in lakhs)	2.42	1.82
Total shares (in lakhs)	12.42	11.82
Market price per share (₹)	157	165
Total market value of shares at the end of the year (₹ in lakh)	12.42 × 157 = 1,950 (approx.)	11.82 × 165 = 1,950 (approx.)

Hence, it is proved that the total market value of shares remains unchanged irrespective of whether dividends are declared, or not declared.

8. Ex-dividend price is ₹ 40 (50-10).

    The total amount of dividend received is ₹ 10,00,000 which is re-invested at the rate of ₹ 40 per share.

    Hence additional shares purchased would be 25,000.

    Total holding would be 1,25,000 shares (1,00,000 + 25,000)

9. Current Market price = 20x25 = 500 per share

    Book value of the company before repurchase = ₹ 4 cr (400x1 lakh shares)

    Amount paid for repurchase = 1.25 cr (25,000 shares x 500 per share)

    Book Value of company after repurchase = ₹ 2.75 cr (4cr – 1.25cr)

    No of shares after repurchase = 75,000 shares

    Book value per share = 367 per share.

NOTES