Lesson 13

Dividend Policy: Concept, Need and Determinants

Objectives of the lesson

After studying this lesson, students will be able to:

- Develop understanding of the forms and importance of dividend,
- Describe determinants of dividend policy,
- Explain meaning, types and determinants of dividend payout, and
- Understand meaning and significance of stable dividend policy.

1.0 Introduction

The term dividend refers to that portion of profit (after tax) which is distributed among the owners/ shareholders of the firm and the profit which is not distributed is known as retained earnings. A company may have preference share capital as well as equity share capital and dividends may be paid on both types of capital. However, there is as such, no decision involved as far as the dividend payable to preference shareholders is concerned. The reason being, the preference dividend is more or less a contractual liability and is payable at a fixed rate. On the other hand, a firm has to consider a whole lot of factors before deciding for the equity dividend. The expected level of cash dividend, from the point of view of equity shareholders, is the key variable from which the shareholders and equity, investors determine the share value. The establishment and determination of an effective dividend policy is therefore, of significant importance to the firm's overall objective.

2.0 Importance of Dividend Decision

The primary objective of the financial manager is to maximize the value or price of the firm's share. The success or failure of financial decision making depends upon its effect on the market price of the share. Now look at the dividend decision and internal financing policies in the light of the same basic question: Can management influence the market price of the share through dividend policies? In each period any earning that remains after satisfying obligations to the creditors, the Government, and the preference shareholders can either be retained, or paid out as dividends or bifurcated between retained earnings and dividends.

The retained earnings can then be invested in assets which will help the firm to increase or at least maintain its present rate of growth. The dividend decision requires a financial manager to decide about the distribution of profits as dividends. It may be noted that the profits may be distributed either in the form of cash dividends to shareholders or in the form of stock dividends, say bonus shares. In dividend decision, a financial manager is concerned to decide one or more of the following.

- Should the profits be ploughed back to finance the investment decisions?
- Whether any dividend be paid?
- How much dividends be paid?
- When these dividends be paid?
- In what form the dividends be paid?

All these decisions are inter-related and have bearing on the future growth plans of the firm. If a firm pays dividends, it affects the cash flow position of the firm but earns goodwill among the investors who therefore, may be willing to provide additional funds for the financing of investment plans of the firm. On the other hand, the profits which are not distributed as dividends become an easily available source of funds at no explicit costs. However, in the case of ploughing back of profits, the firm may lose the goodwill and confidence of the investors and may also defy the standards set by other firms. Therefore, in taking the dividend decision, the financial manager has to consider and analyze various factors. Every aspect of dividend decision is to be critically evaluated. The most important of these considerations is to decide as to what portion of profit should be distributed. This is also known as the dividend payout ratio.

3.0 Forms of Dividend

Following are the popular forms of dividend payments.

Cash dividends: Dividends are paid in the form of cash to the shareholders. Cash dividends are paid periodically out of the firm's operating profits to the shareholders. Cash dividend can be interim or final.

- An interim dividend is one which is declared before the declaration of the final dividend. Interim dividend is a dividend which is declared between two annual general meetings. The Board of directors may from time to time pay to the members such interim dividend as appears to it to be justified by the profits of the company. The directors must take into consideration the future prospects of the profits e.g., orders in hand, any seasonal element in business before declaration of interim dividend otherwise it may be considered payment out of capital. Cash resources, likelihood profitability of the company must also be taken into while deciding to declare an interim dividend.
- Final Dividend: At the end of the accounting period, the accounts of the company are prepared to ascertain the amount of profit earned by the company. The directors, taking into consideration the financial position of the company's future prospectus, provision for resources etc., decide to recommend to the shareholders at the annual general meeting the dividend to be paid to the shareholders.
- Extra dividends: Extra dividends are paid in times of large earnings arising to a firm. In case of extra revenues the firm may distribute some portion of this extra revenue to its owners. Such a dividend occurs only in certain boom conditions.

Stock dividends: Stock dividends are paid out of the firm's equity stock and not in the form of cash from its operating profits. It is also termed as bonus issue of the firm. Here extra equity shares are issued to the existing shareholders in proportion to their existing holdings without taking any payment from them for the extra shares. Stock dividends do not have real value but shareholders, perceive them as future value. These act as additional holdings for the shareholders, which yield future benefits to them in the form of extra dividends and capital gain.

4.0 Dividend Policy

The prime objective of a firm is to maximize wealth of its owners i.e., shareholders. Cash inflows are generated from the successful operation of business which is used for payment of dividends to its shareholders. Dividend paid represents cash outflows which deplete the cash resources. The dividend decision is regarded as a financing decision since any cash dividend paid reduces the amount of cash available for investment by the firm. Dividends are periodic cash payments by the company to its shareholders. The dividend payable to the preference shareholders is usually fixed by the terms of the issue of preference shares. But the dividend on equity shares is payable at the discretion of the Board of directors of the company.

For payment of dividends, a company must earn distributable profits from which the actual payment of dividends will be made. Dividend policy is contemporary to retention policy. Retentions are used to finance capital projects and redeem shares and debentures. Dividends may be defined as divisible profit distributed amongst the members of a company in proportion to their shares in such a manner as is prescribed by the Memorandum and Articles of Association of the company. A dividend is a share of profit of the company divided among its shareholders. A company in general meeting may declare dividends, but no dividend shall exceed the amount recommended by the Board. The shareholders have no right to declare more dividend than what has been recommended by the directors. However, they may reduce the amount. The shareholders have no right to get the dividend as recommend by the directors until a resolution to that effect is passed at the general meeting of the shareholders.

5.0 Determinants of Dividend Policy

Dividend policy determines the distribution of net cash flows generated from successful trading between dividend payments and corporate retentions. Dividend policy determines the division of earnings between payments to shareholders and reinvestment in the firm. Retained earnings are one of the most significant sources of funds for financing corporate growth, but dividends constitute the cash flows that accrue to shareholders. Before study of the different theories on dividend policy, understanding of the following considerations is necessary.

- Transaction Costs: Transaction costs are of two types. (i) Firm s transaction Costs: The costs incurred in raising new capital are called floatation costs and it is ranging as high as 10 per cent of the amount raised. The floatation costs associated with raising new funds give firms an incentive to avoid paying dividends. (ii) Shareholders transaction Costs: When a stock is sold, the investor must pay transaction costs of approximately 1-2 per cent of the share's value. The firm may be able to provide investors with dividend income at a lower transaction cost than if the investors provided income for themselves.
- Shareholder's Income-tax: Dividend payments to individuals are subject to personal income taxation in the year received. At the time of selling the shares, the investor will be attracted with capital gains. By paying dividends, a corporation is forcing its stockholders to have to pay taxes earlier than they would if the dividends were not paid.
- Dividend Clientele: Firms with different dividend policies will appeal to different kinds of investors, with each group constituting a different dividend clientele. A dividend clientele is a group of investors favoring a particular kind of dividend policy. Low and zero tax payers appear to prefer high payout ratios, while high taxation groups prefer low dividends and expect to realize benefits through capital gains.
- Dividend Payout Ratio: Dividend payout ratio in the dividend per share divided by the earnings per share as follows:

  $$\text{Dividend Payout Ratio} = \frac{\text{Dividend Per Share}}{\text{Earning Per Share}}$$

  Dividend payout indicates the extent of the net profits distributed to the shareholders as dividend. A high payout signifies a liberal distribution policy and a low payout reflects conservative distribution policy.
- Dividend Cover: The dividend cover is calculated as follows:

  $$\text{Dividend Cover} = \frac{\text{Profit After Tax}}{\text{Dividend}}$$

  This ratio indicates the number of times the dividends are covered by net profit. This highlights the amount retained by a company for financing of future operations.
- Dividend Signaling Hypothesis: It has been observed that an increase in the dividend is often accompanied by an increase in the price of the stock, while a dividend cut generally leads to a stock price decline. The companies, in practice appear to place great emphasis on last year's dividend when deciding the current year's dividend. Dividends tend to be more stable than earnings; companies appear to pursue some long-term payout ratio and dividends are changed in line with expected future net cash flows. Changes in dividend policy may convey information to the stock market. An increase in dividends is likely to be interpreted as good news and a cut as bad news. The complete skip off of a dividend is likely to be regarded as very bad news. The companies use this information channel to inform the investors.

According to the dividend signalling hypothesis, dividend changes provide an effective way of allowing management to convey believable information to the market about the firm's expected future cash flows. By conveying the favorable information to the market in a believable way, the dividend decision may affect the value of the firm.

- Divisible Profits: All the profits of a company are not divisible. Only those profits which can be legally distributed in the form of dividend to the shareholders of the company are called as divisible profits: otherwise, it is treated as payment of dividend out of capital and the directors of the company are liable to make it good. Capital profits may only be used for dividend where the Articles permit and there is a bona fide revaluation of all the assets of the company and the profit has to be converted into cash i.e., realized.
- Liquidity: In order to pay dividend, a company requires cash and, therefore, the availability of cash resources within the company will be a factor in determining dividend payments. It is not necessarily mean a highly profitable situation as the company with large amounts of cash at its disposal. The liquidity position of the company will influence the dividend payout of a particular year.
- Rate of Expansion of Business: The rate of asset expansion needs to be taken into account. The more rapid the rate at which the firm is growing, the greater will be its needs for financing asset expansion. The greater the future need for funds, the more likely the firm is to retain earnings rather than pay them out. If a firm seeks to raise funds externally, natural sources are the present shareholders who already know the company, yet if earnings are paid out as dividends and are subjected to high personal income-tax rates, only a portion of the earnings would be available for reinvestment.
- Rate of Return: Profit rate also influences the dividend/retention policy. The rate of return on assets determines the relative attractiveness of paying out earnings in the form of dividends to shareholders who will use them elsewhere, compared with the productivity of their use in the present enterprise.
- Stability of Earnings: The stability of earnings also effects the decision. If earnings are relatively stable, a firm is better able to predict what its future earnings will be. A stable firm is, therefore, more likely to payout a higher percentage of its earnings than is a firm with fluctuating earnings. The unstable firm is not certain that in subsequent years the hopes for earnings will be realized, so it is more likely to retain a high proportion of earnings.
- Contractual Constraints: When the company obtained loan funds from debenture holders or term lending institutions, the terms of issue or contract of loan may contain restrictions on dividend payments designed to ensure that the firm will have enough funds to meet its obligations to the loan providers.

- Cost of external financing: The cost of external financing will have impact on the dividend payout of a company. In situations where the external funds are costlier, a firm may resort to low dividend payout and use the internal funds for financing its business.
- Degree of control: The management who wish to maintain close control over the firm will not much depend on the external sources of finance, and they maintain a low dividend payout policy and the funds generated from operations would be used for working capital and capital investment needs of the firm.
- Access to Capital Market: A firm intends to raise further funds from the capital market for its expansion and diversification projects, to attract the funds from the capital market, it has to maintain a liberal dividend policy. The investment decisions of a general investor will be influenced by the firm's dividend policies.
- General State of Economy: When state of economy is uncertain, both political and economic, the firm may maintain a low dividend payout policy, to withstand to the business risks.

6.0 Types of Dividend Payout

Dividend payout or dividend payout ratio in the ratio between the equity dividends paid and the equity earnings. It can also be represented as dividend per share divided by the earnings per share.

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend Per Share}}{\text{Earning Per Share}}$$

There are three main pay-out policies that are normally adopted by the firms.

6.1 Constant Payout Ratio: In this policy the dividend payout ratio is constant. It denotes the fixed percentage of each rupee earned that is distributed to the shareholders. However, if earnings are low, are negative or zero then dividends may decrease or become zero. In such situations stable dividend policy is hampered and fluctuating dividends arise which may lead to decrease in the market value of the shares. Under this policy the company is able to adjust dividends according to its earnings. If earnings are high, dividend payment is high and if earnings are low dividend payment is low and may become zero too. Thus at any time the earnings are available to the company for its internal financing. This policy simply states the rule that dividends are paid when profits are earned and are decreased or made zero when the company incurs losses.

6.2 Constant Dividend Policy: In this policy either a fixed amount of dividend per share is given or dividends are paid to shareholders at a fixed dividend rate according to the policy of the business enterprise. Regardless of its earnings the firm pays dividends. When earnings increase and become stable the firm may increase its dividend rate. Such firms should create reserves for dividend payments so that in years of low earnings or fluctuating earnings the dividend payment to shareholders which is already fixed by the firm continues smoothly.

Most of the investors prefer this policy as fixed income is received by them regardless of earning variations occurring to the said firm.

6.3 Low constant dividend per share plus additional dividend: Many firms in order to keep themselves on the safer side formulate a policy of paying small amount of constant and continuous dividend to its shareholders. In time of high profits the shareholders get additional dividends from extra surplus generated. This way the shareholders are happy and look forward for such boom years when profits surge high. The firm is also on the safer side as extra dividends do not mean a constant fixed increase in dividends and shareholders accept the fact that they are just sharing such interim high profits. However, experts suggest that this additional dividend feature should not be a regular event otherwise it will become meaningless to the investors.

7.0 Factors Affecting Dividend Payout

- Legal constraints: According to the Company's Act dividends are to be paid only out of surplus (profits) generated by the firm after adjustments of various expenses, debt obligations and investment plans of the firm. If the firm becomes bankrupt due to overdue liabilities then it is restricted from paying any dividends to its shareholders.
- Financial requirement of the firm: The financial requirements of the firm decide the dividend payments, as dividend is a residual function. If financial requirements of the firm are high then low dividend payments or zero dividends are paid to the shareholders. In such a case the firm has to rely on the external borrowings. If the financial requirements are low then complete amount of declared dividends are paid to the shareholders as extra borrowings are minimized.
- Borrowing capacity: If the firm has the capacity to borrow funds within short period of time, at minimum cost, and in desirable amount; then it can go ahead with its dividend payment plans. However, if any of these criteria is missing then dividend payments are difficult to meet out.
- Restrictions imposed by the creditors: Sometimes the creditors impose certain limitations on the firm in the loan agreement to safeguard their interest. These limitations are related to payment of cash dividends for a certain range of earnings. Usually creditors restrict dividend payment to a specified amount. Such protective covenants give creditors the security of getting their principal plus interest in time. It further ensures that the firm does not go bankrupt by giving away large amount of dividends by foregoing interest payments to creditors.
- Internal constraints: Dividend payments are cash outflow for the firm. If cash balance of the firm is limited then the firm may restrict its cash dividend payments. In other words, greater is the liquidity of a firm greater is its dividend paying capacity.

8.0 Significance of Stable Dividend Policy

Stable dividends provide advantage to the firm and investors in many respects like.

- Desire for current income is satisfied: For investors who desire fixed current income prefer firms having constant dividend payout to firms having unstable but high dividend payout for investment purpose. As we have already discussed above, value of the firm having stable dividend policy is greater than the value of firms paying unstable and discontinuous dividends. In such case the former firm yields high capital gain to its shareholders due to high appreciation in the value of its shares in the market.
- Investor uncertainty is resolved: If at any time dividend payout drops from existing amount, even if the future is financially bright for such firms, the investors become uncertain of the future earnings. Their confidence in the firm drops. And their future investments in such firms also become uncertain. Such investors prefer selling their shares off for capital gain instead of counting on dividend receipts. When dividends are stable and continuous the investors are at ease and secure about their future earnings and hence they do not get upset over fluctuations in financial earnings, if any, for such firms.
- Requirements for Institutional Investors are met: Various institutional investors and government bodies invest in stocks having minimum risk. In such risk pattern the income derived is fixed and continuous. Firms having stable and uninterrupted dividend policy qualify for such investments like pension funds, savings bank, trustees, insurance companies, mutual funds etc. In brief we can clearly state that stable dividends have a positive effect on the value of the firm and its stock.
- Enhancing the Value of Firm: Investors generally value dividend stability. Over the past years value of the firm paying stable and continuous dividends is perceived more than the firm paying high and discontinuous and fluctuating dividends. It is observed that under stable dividend policy firms earning low or fluctuating profits continue paying same amount of dividends and so the shareholders and potential' investors' confidence in the firm is enhanced. Thus over the years stable dividend policy enhances the total value of the firm in the market.

Summary

Dividends are earnings of shareholders. Many economists suggest the stable dividend policy because they feel that stable dividend resolves the uncertainty of future income, and insecurity of investors, plus their current income needs. Cash dividends are cash paid to the shareholders out of operating profits. Extra dividend is paid only at times of surplus revenues. Stock dividends or bonus issue are dividends paid to the shareholders in form of equity. Such issues arise when firms do not have sufficient cash to pay dividends. Bonus issue increases the future earnings of shareholders. The payment of dividends is decided by the Board of Directors of the firm. The declaration date is the date of declaring the dividend

payment of shareholders and payment date is the date of payment to the registered shareholders of the firm.

Review Questions

1. What are the determinants and significance of dividend policy for a firm?
2. What do you understand by stable dividend policy? What are the advantages of adopting such a policy?
3. What do you understand by dividend payout ratio? What are the different dividend payout policies which a firm can adopt?
4. What do you mean by dividend policy? What are the important forms of paying dividend?
5. What considerations are kept in view while deciding the dividend policy of a company? Explain with illustrations.
6. What are the essentials of an equitable dividend policy? Explain with suitable examples.

Lesson 17

Dividend Theories

Introduction

Dividend policy is basically concerned with deciding whether to pay dividend in cash now or to pay increased dividends at a later stage or distribution of profits in the form of bonus shares. The current dividend provides liquidity to the investors but the bonus share will bring capital gains to the shareholders. The investor's preferences between the current cash dividend and the future capital gain have been viewed differently. Some are of the opinion that the future capital gain are more risky than the current dividends while others argue that the investors are indifferent between the current dividend and the future capital gains. The basic question to be resolved while framing the dividend policy may be stated simply: What is sound rationale for dividend payments? In the light of the objective of maximizing the value of the share, the question may be restated as follows: Given the firm's investments and financing decisions, what is the effect of the firm's dividend policies on the share price? Does a high dividend payment decrease, increase or does not affect at all the share price. In the first in stance, it may be argued that the dividend policy is important. The value of the share has been defined to be equal to the present value of expected future dividends. So, how can now be suggested that the dividend is not relevant? However, the dividend policy has been a controversial issue among the financial managers and is often referred to as a dividend puzzle.

Various models have been proposed to evaluate the dividend policy decision in relation to value of the firm. While agreement is not found among the models as to the precise relationship, it is still worthwhile to examine some of these models to gain insight into the effect which the dividend policy might have on the market price of the share and hence on the wealth of the shareholders. Two schools of thoughts have emerged on the relationship between the dividend policy and the value of the firm. One school associated with Walter, Gordon etc. holds that the future capital gains (expected to result from lower current dividend payout) are more risky and the investors have preference for current dividends. The investors do have a tilt towards those firms which pay regular dividend. So, the dividend

payment affects the market value of the share and as a result the dividend policy is relevant for the overall value of the firm. On the other hand, the other school of thought associated with Modigliani and Miller holds that the investors are basically indifferent between current cash dividends and future capital gains.

Relevance of Dividend Policy

Generally, the firms pay dividends and view such dividend payments positively. The investors also expect and like to receive dividend income on their investments. The firms not paying dividends may be adversely rated by the investors affecting thereby the market value of the share. The basic argument of those supporting the dividend relevance is that because current cash dividends reduce investors' uncertainty, the investors will discount the firm's earnings at a lower rate, Ke thereby placing a higher value on the shares.

If dividends are not paid, the uncertainty of shareholders/ investors will increase, raising the required rate of return, Ke resulting in relatively lower market price of the share. So, it may be argued that the dividend policy has an effect on the market value of the share and the value of the firm. The market price of the share will increase if the firm pays dividends, otherwise it may decrease. A firm therefore, must pay a dividend to shareholders to fulfill the expectations of the shareholders in order to maintain or increase the market price of the share. The models representing this argument may be discussed here.

Walter's Model

Walter JE supports the view that the dividend policy has a bearing on the market price of the share and has presented a model to explain the relevance of dividend policy for valuation of the firm based on the following assumptions:

- All investment proposals of the firm are to be financed through retained earnings only and no external finance is available to the firm.
- The business-risk complexion of the firm remains same even after fresh investment decisions are taken. In other words, the rate of return on investment i.e., 'r' and the cost of capital of the firm i.e., 'Ke' are constant.
- The firm has an infinite life.

This model considers that the investment decision and dividend decision of a firm are inter-related. A firm should or should not pay dividends depend upon whether it has got the suitable investment opportunities to invest the retained earnings or not. This model can now be presented as follows.

If a firm pays dividends to shareholders, they in turn, will invest this income to get further returns. This expected return to shareholders is the opportunity cost of the firm and hence the cost of capital, ke to the firm. On the other hand, if the firm does not pay dividends, and instead retains, then these retained earnings will be reinvested by the firm to get return on

these investment. This rate of return on the investment, r, of the firm must be at least equal to the cost of capital, K. If r = Ke, the firm is earning a return just equal to what the shareholders could have earned had the dividends been paid to them.

However, what happen if the rate of return, r, is more than the cost of capital, Ke? In such a case, the firm can earn more by retaining the profits, than the shareholders can earn by investing their dividend income. The Walter's model, thus, says that if r > Ke, the firm should refrain from dividends and should reinvest the retained earnings and thereby increase the wealth of the shareholders. However, if the investment opportunities before the firm to reinvest the retain earnings are expected to give a rate of return which is less than the opportunity cost of the shareholders of the firm, then the firm should better distribute the entire profits. This will give opportunity to the shareholders to reinvest this dividend income and get higher returns.

In nutshell, therefore, the dividend policy of a firm depends upon the relationship between r and K. If r > K. (i.e., a case of a growth firm), the firm should have zero payout and reinvest the entire profits to earn more than the investors. If however, r < K, then the firm should have 100% payout ratio and let the shareholders reinvest their dividend income to earn higher returns. If r happens to be just equal to K, the shareholders will be indifferent whether the firm pays dividends or retains the profits. In such a case, the returns to the firm from reinvesting the retained earnings will be just equal to the earnings available to the shareholders on their investment of dividend income.

Thus, a firm can maximize the market value of its share and the value of the firm by adopting a dividend policy as follows:

- If r > k., the payout ratio should be zero (i.e., retention of 100% profit).
- If r < k., the payout ratio should be 100% and the firm should not retain any profit, and
- If r = k., the dividend is irrelevant and the dividend policy is not expected to affect the market value of the share.

In order to testify the above, Walter has suggested a mathematical valuation model i.e.,

$$P = \frac{D + \frac{r}{k}(E - D)}{K}$$

Here: P = Market Price of Equity Share; D = Dividend per Share; r = Rate of Return on Investment; k = Cost of Equity Share Capital; and E = Earnings per Share of the Firm.

As per the above formula, the market price of a share is the sum of two components, (i) present value of an infinite stream of dividend, and ii) the present value of an infinite stream of return from retained earnings. Thus, the Walter's formula shows that the market value of a share is the present value of the expected stream of dividends and capital gains. The effect

of varying payout ratio on the market price of the share under different rates of return, r, have been shown in following example.

The Walter's model provides a theoretical and simple frame work to explain the relationship between dividend policy and value of the firm. As far as the assumptions underlying the model hold good, the behavior of the market price of the share in response to the dividend policy of the firm can be explained with the help of this model. However, the limitation of this model is that these underlying assumptions are unrealistic. The financing of investment proposals only by retained earnings and no external financing is seldom found in real life. The assumption of constant 'r' and constant 'k', is also unrealistic and does not hold good. As more and more investment is made, the risk complexion of the firm will change and consequently the ke may not remain constant.

Gordon's Model

Myron Gordon has also proposed a model suggesting that the dividend policy is relevant and can affect the value of the share and that of the firm. This model is also based on the assumptions similar to that made in Walter's model. However, two additional assumptions made by this model are as follows:

The growth rate of the firm 'g', is the product of its retention ratio, b, and its rate of return, r, i.e., g = br, and the cost of capital besides being constant is more than the growth rate i.e., ke > g.

Gordon argues that the investors do have a preference for current dividends and there is a direct relationship between the dividend policy and the market value of the share. He has built the model on the basic premise that the investors are basically risk averse and they evaluate the future dividends/capital gains as a risky and uncertain proposition. Dividends are more predictable than capital gains; management can control dividends but it cannot dictate the market price of the share. Investors are certain of receiving incomes from dividends than from future capital gains. The incremental risk associated with capital gains implies a higher required rate of return for discounting the capital gains than for discounting the current dividends. In other words, an investor values, current dividends more highly than an expected future capital gain.

So, the "bird-in-hand" argument of this model suggests that the dividend policy is relevant as the investors prefer current dividends as against the future uncertain capital gains. When the investors are certain about their returns, they discount the firm's earnings at a lower rate and therefore, placing a higher value for the share and that of the firm. So, the investors require a higher rate of return as retention rate increases and this would adversely affect the share price.

Thus, Gordon's model is a share valuation model (like that of Walter's). Under this model, the market price of a share can be calculated as follows:

$$P = \frac{E(1-b)}{K - b_r}$$

Where: P = Market price of equity share; E = Earnings per share; b = Retention Ratio i.e. (1 - Dividend Payout Ratio), r = Rate of return on investment of the Firm; K = Cost of equity share capital; and b_r = Growth rate of the firm. This model shows the relationship between dividend payout ratio i.e., (1 - b), cost of capital 'K', rate of return 'r' and the market value of the share. This can be explained with the help of following example.

If r = k, the dividend policy is irrelevant and the market price remains constant at Rs. 100 only. However, in his revised model, Gordon has argued that even if r = k, the dividend payout ratio matters and the investors being risk averse prefer current dividends which are certain to future capital gains which are uncertain. The investors will apply a higher capitalization rate i.e., k to discount the future capital gains. This will compensate them for the future uncertain capital gain and thus, the market price of the share of a firm which retains profit will be adversely affected. Thus, Gordon's conclusion about the relationship between the dividend policy and the value of the firm are similar to that of Walter's model. The similarity is due to the reason that the underlying assumptions of both the models are same.

Irrelevance of Dividend Policy

This school of thought argues that what a firm pays as dividends to shareholders is irrelevant and the shareholders are indifferent about receiving current dividends or receiving capital gains in future. The advocates of this school of thought argue that the dividend policy has no effect on the market price of a share. The shareholders do not differentiate between the present dividend and future capital gains. They are basically interested in higher returns either earned by the firm by reinvesting profits in profitable investment opportunities or earned by them by making investment of dividend income. The underlying intuition for the dividend irrelevance proposition is simple: Firms that pay more dividends offer less price appreciation but provide the same total return to shareholders, given the risk characteristics of the firm. The investors should be indifferent of receiving their returns in the form of current dividends or in the form of price increase in the market. The conclusion that dividends are not relevant is based on two pre-conditions: (i) investment and financing decisions have already been made and that these decisions will not be altered by the amount of dividends payment, and (ii) perfect capital market is there in which an investor can buy and sell the shares without any transaction cost and that the companies can issue shares without any flotation cost.

There are two theories arguing irrelevance of dividend. These are: (i) Residuals theory of dividends, and Modigliani and Miller theory of dividends.

Residuals Theory of Dividends

This theory is based on the assumption that either the external financing is not available to the firm or if available, cannot be used due to its excessive costs for financing the profitable investment opportunities of the firm. Therefore, the firm finances its investment decisions by retaining profits. The quantum of profits to be distributed is a balancing figure and thus depends on what portions of profits are to be retained. If a firm has sufficient profitable investment opportunities, then the wealth of the shareholders will be maximized by retaining profits and reinvesting them in the financing of investment opportunities either by reducing dividends or even by paying no dividend to the shareholders. If a firm has no such investment opportunity, then the profits may be distributed among the shareholders.

However, it may be noted that the flotation cost associated with a new offering may be as much as 10 percent of the issue size. Thus, if a firm chooses to issue securities than retaining profits, a larger amount of the issue is required to receive the net amount of the investment. For example, if Rs. 50, 00,000 is needed to finance the proposed investment and the flotation cost is 20%, the firm will be required to make an issue of Rs. 55, 55,000 approximately, so that the net proceeds with the company are Rs. 50, 00,000. This means that the new capital will be more expensive than the capital raised by retention of earnings. In effect, the flotation cost eliminates the indifference between financing by internal capital (i.e.. retention) and new issue. Given the flotation cost, dividends would be paid only if profits are not completely used for investment purposes i.e., only when the firm has some residual earnings after the financing of new investments. This is referred to as the Residuals Theory of dividends.

Thus, a firm does not decide as to how much dividends be paid rather it decides as to how much profits should be retained. The profits not required to be retained may be distributed as dividends. Therefore, dividend decision is a passive decision. The dividends are a distribution of residual profits after retaining sufficient profit for financing the available opportunities. Under the Residuals Theory, the firm would treat the dividend decision in three steps:

- Determining the level of capital expenditures which is determined by the investment opportunities and the marginal cost of capital.
- Using the optimal financing mix, find out the amount of equity financing needed to support the capital expenditure in step (i) above.
- As the cost of retained earnings, k is less than the cost of new equity capital, the retained earnings would be used to meet the equity portions financing in step (ii) above. If the available profits are more than this need, then the surplus may be distributed as dividends to shareholders. As far as the required equity financing is in excess of the amount of profits available, no dividends would be paid to the shareholders.

In the Residuals theory, the dividends policy is influenced by (i) the company's investment opportunities, and (ii) the availability of internally generated funds, where dividends are

paid only after all acceptable investment proposals have been financed. The dividend policy is totally passive in nature and has no direct influence on the market price of the share. So, the Residuals Theory treats the dividend as a passive decision determined by the availability of profitable investments. Consequently, the dividends may fluctuate from one year to another depending upon the investment opportunity. But the shareholders do not show any concern to the fluctuations in dividends as they are compensated for reduction in dividends or no dividends at all by future capital gains. The market price of the share is still taken as the present value of all future dividends and the pattern of these dividends does not matter.

For example, a firm paying a dividend of Rs. 3 per share and having a capitalization rate of 15 percent will have a market price of Rs. 20 (i.e., Rs. 3/0.15). If it has 20,000 equity shares outstanding then the total value of the firm is Rs. 4, 00,000 (i.e., Rs. 20x20,000). The total earnings of the firm (presuming 100 percent dividend payout) are Rs. 3x20, 000 = Rs. 60,000. Now, suppose that the firm has investment opportunity of Rs. 40, 000, so it retains Rs. 40,000 out of available profits of Rs. 60,000 and distributes only Rs. 20,000 among the shareholders at the rate of Rs. 1 per share. However, the profit available during next year would be Rs. 60,000 + the profits generated by new investment of I Rs. 40,000, say Rs. 10,000.

Now, the shareholder will receive a dividend Rs. 1 per share in current year but next year onward the dividends per share will be Rs. 3.50 per share as follows:

Existing profits (Expected to be maintained)	Rs. 60,000
Increase in Profit due to new investment	Rs. 10,000
Total profits	Rs. 70,000
No. of shares	20,000
Dividend per share	Rs. 3.50

This expected increase in dividends from Rs. 3 to Rs. 3.50 will affect the market price of the share which will be the present value of all dividends i.e., the current year dividend + Future dividend. So,

$$\text{New Price} = \frac{D_1}{1 + K_e} + \left(\frac{D_2}{K_e} \text{ X } \frac{1}{1 + K_e}\right)$$

$$\text{New Price} = \frac{1}{1.15} + \left(\frac{3.50}{0.15} \text{ X } \frac{1}{1.15}\right) = \text{Rs. } 21.15$$

So, the market price of the share is expected to increase from Rs. 20 to Rs. 21.15 when the firm has retained profits and reinvests them in the profitable investment opportunity. But, what about the incomes of the shareholders? A shareholder might be more interested in maintaining his income rather than the investment opportunity undertaken by the firm out of retained earnings. Say, a shareholder is having 2,000 shares of this firm and is getting a dividend of Rs. 6,000 per annum (i.e., 2,000xRs. 3). What will be his future dividend income if the profits have been retained by the firm to finance investment opportunity of Rs. 40,000? In this case, his total income would be

Dividend in Year 1 (2,000 X Re. 1) = Rs. 2,000 and dividend thereafter (2,000 X Rs. 3.50) = Rs. 7,000 per annum. Now, the shareholder is having a decrease in income of Rs. 4,000 (i.e., Rs. 6,000-2,000). However, thereafter his income will increase by Rs. 1,000 per annum (i.e., R'S. 7,000-6,000). Suppose, he wants to maintain his cash flows in the form of dividend income of Rs. 6,000 even during year 1, then he can sell off some shares to get the cash flow of Rs. 4,000 (so that he has total cash inflow of Rs. 6,000 in year 1 also). Number of shares to be sold for this purpose can be ascertained as follows:

Share price at the end of the year 1	3.50/0.15 = Rs. 23.33
Amount required	Rs. 4,000
So, Number of shares to be sold (4,000/23.33)	172

By selling 172 shares at a price of Rs. 23.33, he will be able to generate Rs. 4,000 and thus, will maintain his cash flow of Rs. 6,000 in year 1. The dividend for the year 2 and thereafter will be (2,000-172) X 3.50 = Rs. 6,398.

As a result of new investment taken up by the firm in year lout of retained earnings, the position of the shareholder may be summed up as follows:

- He is able to maintain his cash flows of Rs. 6,000 in year 1, and
- His income in year 2 and thereafter will increase from Rs. 6,000 to Rs. 6,398. This increase of Rs. 398 reflects the benefits of the new projects taken up by the firm out of retained earnings.

Modigliani and Miller Approach

The Residuals theory of dividends tends to imply that the dividends are irrelevant and the value of the firm is independent of its dividend policy. The irrelevance of dividend policy for valuation of the firm has been most comprehensively presented by Modigliani and Miller (MM). They have argued that the market price of a share is affected by the earnings of the firm and is not influenced by the pattern of income distribution. The dividend policy is immaterial and is of no consequence to the value of the firm. What matters, on the other hand, is the investment decisions which determine the earnings of the firm and thus affect the value of the firm. They argue that subject to a number of assumptions, the way a firm splits its earnings between dividends and retained earnings has no effect on the value of the firm.

Assumptions of the MM Approach: The MM approach to irrelevance of dividend is based on the following assumptions:

- The capital markets are perfect and the investors behave rationally.
- All information are freely available to all the investors.
- There is no transaction cost and no time lag.

- Securities are divisible and can be split into any fraction. No investor can affect the market price.
- There are no taxes and no flotation cost.
- The firm has a defined investment policy and the future profits are known with certainty. The implication is that the investment decisions are unaffected by the dividend decision and operating cash flows are same no matter which dividend policy is adopted.

Under these assumptions firm's cost of equity is as predictable and certain as its cost of debt.

$$\text{Ke} = \frac{\text{Dividend} + \text{Capital Gain / Loss)}}{\text{Share Price}}$$

$$\text{Or, Ke} = \frac{D_t + (P_1 - P_0)}{P_0}$$

Here: Ke = Cost of equity D_t = Dividend paid on equity after time t; P_1 = Market price of share at time t; P_0 = market price of share at time 0 or purchase price of equity.

Under the above assumptions cost of equity is equal to the internal rate of return (r) generated by utilization of equity capital.

$$\text{Ke} = r$$

$$r = \frac{D_t + (P_1 - P_0)}{P_0}$$

$$P_0 = \frac{D_t + P_t}{1 + r}; \text{ or } P_0 = \frac{D_t + P_t}{1 + \text{Ke}}$$

Value of Firm (V) = No. of shares outstanding, (n) x Value per share (Po), and
Value of Firm (V) = n X Po

$$V = \frac{n(D_t + P_t)}{1 + K}; \text{ or } V = \frac{nD_t + nP_t}{1 + \text{Ke}}$$

We know that generated earnings are to be split up to finance firms' investments and dividend payments.

If firm has to finance both its investments and dividend payments, then it may hiwe to raise additional funds, as generated profits may not be sufficient enough. Keeping this in view, MM next added a new element to their model and that was, 'A firm can raise fresh capital externally, if needed, to finance its investments and dividend payments'. Under the assumption of perfect and riskless market raising fresh external equity is as good as raising external debt.

Say if 'm' number of shares are issued in time (t) at price P_t, then total amount of new equity issued will be equal to total investments made by the firm at time t, less the retained earnings as shown by the following equation:

$$mP_t = I_t - (X_t - nD_t)$$

Here: I_t = Total Investments; X_t = Total Net Profits; nD_t = Total Dividend Paid

Here, the Value of the firm can be written as:

$$nP_0 = \frac{nD_t + nP_t + mP_t - mP_t}{1 + K}$$

$$\text{Or, } nP_0 = \frac{nD_t + (n + m)P_t - mP_t}{1 + K}$$

$$\text{Or, } nP_0 = \frac{nD_t + (n + m)P_t - [I_t - (X_t - nD_t)]}{1 + K}$$

$$\text{Or, } nP_0 = \frac{(n + m)P_t - I_t - X_t}{1 + K}$$

The final equation does not contain the element of dividend payment, hence we can clearly state that the value of the firm (V) is independent of dividend payment function of the firm. Thus a given firm may decide upon its dividend policy in three possible ways. As discussed below we can clearly see that in all the three situations the value of the firm is not affected by its dividend payout ratio.

1. Situation 1: The firm decides to abstain from paying dividends: Here the value of equity will continue to be same in the absence of dividend transaction. The shareholders will either

   - Wait for the period when the firm will pay dividends or
   - Sell their shares for cash.

   In the later condition the shareholder receives cash against the shares he sells and simultaneously he loses his ownership in the firm proportionate to the amount of holdings he sells. So the total value of the shareowner will remain same both before and after the sale of his shares.

2. Situation 2: The firm decides to pay dividends: Here the value of the share of the owners increases as they receive cash dividends. But simultaneously their stake or ownership in the firm decreases as the value of their assets decreases. Assets include fixed assets and current assets. Current assets comprise of cash earnings from which dividends are paid. As the dividends are paid out, cash earnings decrease, thus decreasing the current assets, and hence decreasing the total assets of the firm. Shareholders are the owners of the firm i.e., they are the owners of the total assets the firm holds. As the value of the assets

decreases their claim on assets also decreases thus the total value of the shareholders remains same both before and after dividend payments.

3. Situation 3: The firm decides to pay dividends but does not have sufficient cash to pay it out: In this case the firm issues new shares to raise additional funds for meeting its requirements. Existing shareholders receive dividends thus increasing the value of their shares but simultaneously their stake or ownership in the firm decreases as the value of their assets (due to decrease in current assets) decreases. New shareholders pay cash to subscribe to the shares issued by the firm. They part with cash and in return get ownership claim in the firm.

Thus, ultimately the total value of the shareholders both old and new remains same both before and after dividend payments.

Under M & M's assumptions of perfect capital market, raising new equity is as good as raising debt or a mix of the two. So, if we assume that the firm raises additional capital by issuing debt or a mix of debt and equity, the divided irrelevance model remains same.

Even the Value equation of firm derived above does not have the element of dividend. Thus the present value of future dividend receipts remains unaffected by changes in Dividend Policy.

$$V = \frac{(n + m)P_t - I_t - X_t}{1 + K}$$

Practically we see that in real world situations large dividend changes affects the value of equity in Capital market like large increase in Dividends result in large increase in share price of equity. Similarly, decrease in dividend causes decrease in share value. Such changes in equity value are not due to dividend policy but due to the Informational Content of dividends. Dividend changes create an environment base for changes in equity value. But they do not cause these changes. When dividend policy of the company changes, hidden information is provided to the market regarding future dividend receipts and capital gain (loss). These results in increase (decrease) of share price of equity traded in the stock market.

Increase in dividends is taken as positive sign causing investors to increase the share price as they prefer current dividends to future dividends. This appreciation in share price results in capital gain to SHs selling them. Similarly, decrease in dividends -is taken as negative sign i.e., causing investors to decrease share price. This Depreciation in share price causes capital loss to SHs selling such stock. .

M & M model further states that a second factor exists which affect the value of shares. It is called, "Clientele Effect". A firm attracts a body of investors who prefer the payment pattern, degree and stability of dividends provided by the different firms. Different investor groups prefer and agree with different individual dividend policies of different firms. Say an investor

group that prefers continuous and stable dividends, as a source of income will hold the equity stock of firm paying constant dividends.

Investor group preferring capital gain would hold shocks of growing firms (where r > k, such firms invest their earnings in profitable invest giving a handsome return to its owners) which pay unstable, fluctuating but high dividends. In such a case shareholders falling in high tax bracket tend to prefer the option of having lower tax liability. In such case they will hold stock of a firm offering high tax benefit through their Dividend Policy.

Criticism of M & M's Model of Dividend Irrelevance: The "M & M model of dividend irrelevance was criticized on many points:

- Most investors prefer dividends to Capital gain OR future dividends. When dividends are not paid in the immediate period, they are retained by the firm and invested in profitable investments. However, such future cash inflows/benefits contain an element of risk and uncertainty under certain market imperfections. Thus growth cannot be predicted with certainty for equity earnings; hence degree and timing of capital gain may become vague and uncertain. So, most investors prefer current dividend to future dividends.
- Taxes: Tax structure affects personal choice of investors regarding dividend payment of different firms. Sometimes investors face different tax slabs like different tax liability of dividend income and different tax liability on capital gain. Thus the personal choice of investor differs greatly under different tax structure, different tax policy. Thus, Dividends are relevant in real imperfect world where investor perceive and determine the value of firm in accordance with firm's dividend policy change.

In brief we can summarize the M & M Model as follows:

- Value of firm / value of equity is determined by the earnings of the firm and risk structure of its investments and other assets, and not by its dividend decisions.
- If value of firm/equity is affected by dividend policy then it is only due to: (1) Informational content of dividend policy (2) Clientele effect existing with the firm.

Market Imperfections: Market imperfections in real world reveal the importance of dividend policy of any given firm regarding its real time value. The following imperfections of the market strongly recommend the relevance of firm's dividend policy.

- Floatation Costs: It is assumed in M&M Model that when the firm decides to pay dividend and make investments, it acquires some fund from outside to cope up with both the dividend and investment decisions. Under Perfect Capital Market cost of raising equity is same as cost of debt and same as cost of R.E. In practice, however, this does not hold true. Each new issue of security involves a transaction cost and floatation cost. This cost adds to the cost at which the lender agrees to lend funds to the firm.

- Institutional Restrictions: Certain institutions invest in stock of those firms, which pay stable-high-continuous dividends. In that case the firm, no matter what, adopts a stable dividend payment policy to attract such investors. If dividends fluctuate or are retained by the firm then such institutional investors abstain from investing in these firms.
- Financial Performance: Dividend payments are made out of cash earnings of the firm. The Accounting income may show a low cash balance than actual economic income of the firm. So accounting performance of a given firm may give a wrong signal to the investors whereas dividend payments give a strong signal to the investor about the firm's financial condition.

Bird-in-Hand Argument: According to relevance approach dividend policy becomes irrelevant when r = k but this holds good only under their assumptions that r, k, dividends, earnings are predictable and constant. Under the conditions of uncertainty investors' value present cash inflows to future cash inflows. Bird in hand argument simply states that "a bird in hand is worth two in the bush."

Investors are risk averse, not many people like taking heavy risk to make good profits. Investors do prefer profits but on the condition that the risk i~ at its minimum.

So investors prefer present/current dividend to future dividends. Future earnings always contain the element of uncertainty, hence the risk of not receiving it. Thus instead of waiting for future growth (g = br) one may prefer present income which can be immediately utilized productively/profitably.

The first rule of finance states the fundamental to this proposition; "Money today is worth more than money tomorrow". Money today is safer than money receipt of tomorrow and safer money is worth more than risky money.

Summary

Ratio of dividends paid out of earnings to total earnings is termed as payout ratio. High payout ratio implies more dividend and less retained earnings (which is utilized by firm for investment purpose and profitable investment opportunities lead to expansion and growth). Low payout ratio leads to a higher growth as retained earnings are large. The net resultant earnings distributed to shareholders are called dividends the important issue in dividend payments is whether the dividend payouts affect the value of the firm or not.

If dividends affect the value of the firm, than dividends are relevant, but if they do not affect the value of the firm they are irrelevant. Gordon's and Walter's model propose that dividend decisions and investment decisions are dependent functions. In other words dividend decisions do affect the value of the firm. We have seen that relevant theories (Walter's and Gordon's model) suggest that under condition of r > k, the company should go for low payout and invest money in profitable investment opportunities available to it. However, if r < k, the company should go for high payout to the shareholders. Dividends are of many types namely

(a) Cash dividends where dividends are paid as cash from operating earnings; and (b) In kind where bonus issue is given to the existing shareholders. Many factors affect dividend payout like legal framework, fund requirement of the firm, nature of business, size of firm, business risk, liquidity position, availability of funds, etc.

The residual theory is based on the assumption that either the external financing is not available to the firm or if available, cannot be used due to its excessive costs for financing the profitable investment opportunities of the firm. Therefore, the firm finances its investment decisions by retaining profits. The quantum of profits to be distributed is a balancing figure and thus depends upon what portions of profits are to be retained. If a firm has sufficient profitable investment opportunities, then the wealth of the shareholders will be maximized by retaining profits and reinvesting them in the financing of investment opportunities either by reducing dividends or even by paying no dividend to the shareholders. The MM model (Modigliani and Miller) states that dividends are irrelevant. Whether the firm goes for dividend payments or not, the individual existing shareholder's wealth does not alter. However, the theory holds good under perfect market conditions and zero tax environments, but real markets are not perfect. There are market imperfections of floatation cost, taxes, agency costs etc. Some imperfections favor higher retention (i.e., internal equity financing) while, other favors low retention i.e., distribution of earnings to shareholders. (They prefer external equity financing).

Review Questions

1. Discuss the Walter's dividend model giving appropriate examples. What are the demerits of this model?
2. How does dividend policy affect the market value of the firm's securities?
3. What are the basic assumptions and crux of relevance theories of dividend policy?
4. Discuss with suitable example: (a) Bird in hand Argument; and the (b) Market imperfections.
5. Discuss Gordon's Model of divided policy. How do the two relevance models of dividend policy differ?
6. Write a lucid note on Residual Theory of dividend with suitable examples.
7. Critically evaluate MM hypothesis on dividend policy.
8. Discuss the assumptions and the limitations of MM Model.
9. Discuss the information content of dividend payments and its effect on value of firm.
10. How do market imperfections affect the value of a given firm?
11. Write short note on (i) Clientele Effect (ii) Bird-in-Hand Argument

Lesson 19
Practical problems on dividend policy decisions

Illustration # 1: If earnings per share (E) of ABC Ltd are Rs. 10; and the cost of Capital (K) is 10%, find the market price of the share under different rates of return (r), of 8%, 10% and 15% for different payout ratios of 0%, 25%, 50%, 75%, and 100%.

Solution: The market price of the share as per Walter's model may be calculated for different combinations of rate of return and dividend payout ratios (the earnings per share and the cost of capital taken as constant) as follows:

By Formula, $P = \dfrac{D + \frac{r}{k}(E - D)}{K}$

D/P Ratio	Rate of Return		
	8%	10%	15%
0%	$P = \dfrac{0 + \frac{0.08}{0.10}(10 - 0)}{0.10} = 80$	$P = \dfrac{0 + \frac{0.10}{0.10}(10 - 0)}{0.10} = 100$	$P = \dfrac{0 + \frac{0.15}{0.10}(10 - 0)}{0.10} = 150$
25%	$P = \dfrac{2.5 + \frac{0.08}{0.10}(10 - 2.5)}{0.10} = 85$	$P = \dfrac{2.5 + \frac{0.10}{0.10}(10 - 2.5)}{0.10} = 100$	$P = \dfrac{2.5 + \frac{0.15}{0.10}(10 - 2.5)}{0.10} = 137.50$
50%	$P = \dfrac{5 + \frac{0.08}{0.10}(10 - 5)}{0.10} = 90$	$P = \dfrac{5 + \frac{0.10}{0.10}(10 - 5)}{0.10} = 100$	$P = \dfrac{5 + \frac{0.15}{0.10}(10 - 5)}{0.10} = 125$

75%	P $= \frac{7.5 + \frac{0.08}{0.10}(10 - 7.5)}{0.10}$ $= 95$	P $= \frac{7.5 + \frac{0.10}{0.10}(10 - 7.5)}{0.10}$ $= 100$	P $= \frac{7.5 + \frac{0.15}{0.10}(10 - 7.5)}{0.10}$ $= 112.50$
100%	$P = \frac{10 + \frac{0.08}{0.10}(10 - 10)}{0.10}$ $= 100$	$P = \frac{10 + \frac{0.10}{0.10}(10 - 10)}{0.10}$ $= 100$	$P = \frac{10 + \frac{0.15}{0.10}(10 - 10)}{0.10}$ $= 100$

It may be seen from the above calculations that for a growth firm (r = 15% and r > k), the market price is highest at Rs. 150 when the firm adopts a zero payout and retains the entire earnings. As the payout increases gradually from 0% to 100%, the market price tends to decrease from Rs. 150 to Rs. 100. For a firm having r < ke (i.e., r = 8%), the market price is highest when the payout ratio is 100% and the firm retains no profit. However, if r = ke = 10%, the price is constant at Rs. 100 for different payout ratios. Such a firm does not have any optimum payout ratio and every payout ratio is as good as any other.

Illustration # 2: Following information is available in respect of XYZ Limited.

Earnings per share (E): Rs. 20; Cost of Capital (K): 11%.

Find the market price of the share if: Rates of return (r) of the firm are 10%, 11% and 12%; and the dividend payout ratios are 20%, 40%, and 60%.

Solution: The market price of share in different situations as per Gordon's model will be:

By formula; $P = \frac{E(1 - b)}{K - b_r}$

D/P Ratio	Rate of Return		
	10%	11%	12%
20%	$P = \frac{20(1 - 0.8)}{0.11 - 0.08} = 133.33$	$P = \frac{20(1 - 0.8)}{0.11 - 0.088} = 181.82$	$P = \frac{20(1 - 0.8)}{0.11 - 0.096} = 285.71$
40%	$P = \frac{20(1 - 0.6)}{0.11 - 0.06} = 160.00$	$P = \frac{20(1 - 0.6)}{0.11 - 0.066} = 181.82$	$P = \frac{20(1 - 0.6)}{0.11 - 0.072} = 210.52$
60%	$P = \frac{20(1 - 0.4)}{0.11 - 0.04} = 171.48$	$P = \frac{20(1 - 0.4)}{0.11 - 0.044} = 181.82$	$P = \frac{20(1 - 0.4)}{0.11 - 0.048} = 193.55$

On the basis of above calculations, it can be seen that if the firm adopts a zero payout then the investor may not be willing to offer any price. For a growth firm (i.e., r > k), the market price decreases when the payout ratio is increased. For a firm having r < k, the market price increases when the payout ratio is increased.

Illustration # 3: A company has 2, 00,000 outstanding shares selling at Rs. 50 each. The firm has net profits of Rs. 20, 00,000 and intends to make new investment of Rs. 40, 00,000 during the current financial year 2020. The cost of capital for the firm is 10%.

Determine the price of its equity at the end of financial year 2020 under the conditions: (a) Dividend is declared; (b) Dividend is not declared; and (c) In case of declaring the dividend how many new shares must be issued to finance dividend payments. In case the dividends are declared, the dividend payable per share will be equal to Rs. 15 per share.

Solution: Price of equity at the end of the current financial year 2010 is:

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

$$P_1 = P_0(1 + K) - D_1$$

(a) The value of P_1 when dividend is declared:

$$P_1 = 50(1 + 0.10) - 15 = 40$$

(b) The value of P_1 when dividend is not declared:

$$P_1 = 50(1 + 0.10) - 0 = 55$$

Thus, the value of shareholders remains same in both the conditions.

- Value of shareholder is Rs. 40 + Rs. 15 = Rs. 55 (Capital Gain + Dividend Receipt)
- Value of shareholder is Rs. 55 (Only Capital Gain, No Dividend Receipt)

(c) Number of Fresh Shares to be issued by the company to finance dividend payments/ Investments is:

$$mP_1 = I - (X - nD_1)$$

$$40\ m = 40{,}00{,}000 - (20{,}00{,}000 - 30{,}00{,}000)$$

$$m = \frac{50{,}00{,}000}{40} = 1{,}25{,}000 \text{ Shares}$$