Subject	BUSINESS ECONOMICS
Paper No and Title	4, Principles of Business Finance and Accounting
Module No and Title	24, Approaches to Dividend Policies
Module Tag	BSE_P4_M24

Principal Investigator	Co-Principal Investigator		Technical Coordinator
Prof. Suresh Chand Aggarwal Department of Business Economics University of Delhi, South Campus	**Dr. Jaswinder Singh** Principal, SGTB Khalsa College, University of Delhi	**Prof. Rashmi Agrawal** Deptt. Of Business, Economics University of Delhi, South Delhi Campus	**Dr. Vimal Rarh** Deputy Director, Centre for e-Learning and Assistant Professor, Department of Chemistry, SGTB Khalsa College, University of Delhi Specialised in : e-Learning and Educational Technologies
Paper Coordinator	**Content Writer**		**Reviewer**
Prof. Suresh Chand Aggarwal Department of Business Economics, University of Delhi, South Campus	**Dr. K.M. Bansal** Associate Professor, Department of Commerce, B.R Ambedkar College, University of Delhi	**FCA Anjali Agarwal** Practicing Chatered Accountant, Ex. Faculty ICFAI (Delhi), Guest Lecturer at ICAI	**Prof. Narendra Kumar Jain** Department of Management Ex-Jamia Hamdard University, New Delhi
Anchor Institute : SGTB Khalsa College, University of Delhi			

TABLE OF CONTENTS

1. Learning Outcomes

After studying this module, you shall be able to

- Know the importance of dividends.
- Learn the various dividend models.
- Identify the relevance or irrelevance of dividends.
- Analyze the effect of dividends on the share prices.

2.Introduction

A firm has to take decision about its profits after tax. It can either distribute these profits to the shareholders in the form of cash or it can plough it back into the business to generate more returns in future. The firm that requires funds for growth and expansion follows the second option.

Depending upon the needs of the firm, the firm decides its dividend policy. The dividend policy will eventually decide as to what should be the pay- out ratio and what should be the retention ratio. The dividend policy becomes all the more relevant because of the relationship that exists between the dividend policy and the shareholders returns. If the firm pays dividends the shareholders get the return in the form of cash whereas if the firm decides to plough back its profits, the returns are in the form of capital gains. The decision of the firm should definitely be taken after keeping in mind the investor's expectation.

3. Importance of Dividend Policy

There are broadly two approaches to dividend policy. The first policy states that dividends are relevant and the price of shares depends upon the dividends declared by the firm as this maximizes the shareholders wealth. Some Models like Walter and Gordon support this theory. An alternate theory is that dividends are irrelevant and it does not affect the price of the share. The overall value of the firm remains same irrespective of the dividends declared or not. Modigliani and Miller model suggests and believes that dividends are irrelevant. Some Models suggest that dividends are relevant in determination of the wealth of the shareholders whereas others believe that dividends are irrelevant in increasing the wealth of the shareholders. Let us discuss each of these models.

4. Dividend Models

Some models have been suggested regarding the dividend policy and they are as under:

- Traditional Model also known as Grahm Dodd Model
- Walter Model
- Gordon Model
- Miller & Modigliani model
- Linter Model
- Rational Expectation Model

4.1 Traditional Model

Traditional Model: The traditional approach to the dividend policy, which was given by Graham and D. L. Dodd. This model lays a clear emphasis on the relationship between the dividends and the stock market. According to this approach the stock value responds positively to higher dividends and negatively when there are low dividends. Thus, as per this model dividend policy is relevant in maximizing shareholders wealth.

The following expression given by traditional approach, establishes the relationship between market price and dividends using a multiplier:

$$P = m (D + E/3)$$

Where,
P = Market price
m = Multiplier
D = Dividend per share
E = Earnings per share

There are however certain limitations of this model:

a) The traditional approach states that the P/E ratios are directly related to the dividend pay out ratios i.e. a high dividend pay out ratio will increase the P/E ratio and thereby increasing the wealth of the shareholders and on the contrary a low dividend payout ratio will decrease the P/E ratio and therefore will decrease the wealth of the shareholders. However, if a firm has increasing earnings a low dividend pay out ratio may also increase the P/E ratio and similarly, a firm with high dividend pay out ratio may have low P/E ratio if its earnings are decreasing.

b) Secondly, this model does not cater to the investor's preference and expectations. There could be investors who would want to have more returns in the form of dividends rather than a future hope of growth in share prices whereas others may prefer low taxed or exempted capital gains rather than having dividends which are taxed indirectly in the hands of shareholders by the imposition of corporate dividend tax or dividend distribution tax.

4.2 Walter Model

Just like the traditional model, the model given by James E Walter also believes that the dividends are relevant in determining the price of the share. He studied the relationship between internal return generated by the firm and the cost of capital to give a dividend policy that would maximize a shareholder's wealth. He gave a very simple logic to determine the dividend policy. As per him if the return generated by the firm is more than the return expected by the shareholder it is better to keep the profits of the firm in the hands of the firm only and if the returns generated by the firm are less than what the investor expects than it is better to give the investor's money to the investor only as he can do better justice with that money. Therefore, when the return generated by firm is more the profits should be retained and dividend policy should be strict where as if return generated by the firm is less the payout ratio should be more and dividend policy should be liberal.

4.2.1Assumptions of Walter Model:

1. Retained earnings are the only source of finance available to the firm with no outside debt or additional equity used.
2. r and k are assumed to be constant and thus additional investments made by the firm will not change its risk and return profiles.
3. The life of the firm is infinite and it is assumed to continue forever.
4. If the value of the firm is constant, the dividend per share and the earnings per share remain constant.

Thus, the model studies the relevance of the dividend policy under three situations:

1. When the returns of the firm is more than the return expected by the investor i.e. r > ke, here r is the rate of return of the firm and ke is the equity capitalization rate, the rate that the equity share holders are expecting.
2. When the returns generated by the firm are exactly equal to the investor's capitalization rate i.e. r = ke.
3. When the returns generated by the firm is less than the equity's expectation rate i.e. r < ke.

The following formula is used to calculate the price of the share:

$$P = \frac{D + (E - D)\left(\frac{r}{k_e}\right)}{k_e}$$

Where,
P = Market Price of the share
D = Dividend per Share
E = Earnings per Share
r = Internal rate of return of the firm
ke = Cost of capital of the Equity or the Equity Capitalization rate.

4.2.2 Practical Illustrations

Illustration1.

A company has earnings per share of Rs. 10. The equity's capitalization rate being 12%. Show the impact on the market price of the share under various dividend policies assuming the rate of return generated by the firm is 15%.
Let the dividend policy be

i. 0% pay out
ii. 100% payout.

Solution:

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

i. When pay -out ratio is 0% = $\frac{D}{ke} + \frac{\frac{r(E-D)}{ke}}{ke}$

$$= \frac{\left[0 + (10-0) \times \left(\frac{0.15}{0.12}\right)\right]}{0.12} = \frac{12.5}{0.12} = \text{Rs. } 104.16$$

ii. When pay- out ratio is 100%= $\frac{D}{ke} + \frac{\frac{r(E-D)}{ke}}{ke}$

$$= \frac{\left[10 + (10-10) \times \left(\frac{0.15}{0.12}\right)\right]}{0.12} = \frac{10}{0.12} = \text{Rs. } 83.33$$

We can see that the price of the share is maximum, when the payout ratio is 0% and the price is minimum when the pay- out ratio is 100%. This shows the relevance of dividend policy.

Illustration 2:

Valuation based on dividend
The following information is available for XYZ Co.

- No of shares outstanding is 1 lakh
- EPS is Rs. 4
- DPS is Rs. 2.4
- Equity capitalization rate:12%
- Rate of return on investment : 15%

(i) As per Walter's model, what will be Market value per share?
(ii) To keep share price at Rs. 40, what should be payout ratio?
(iii) As per Walter's model, what is optimum payout ratio?
(iv) Market value at that payout ratio?

Solution:

(i) According to Walter's model,

$$P = \frac{D + (E-D)\left(\frac{r}{k_e}\right)}{k_e}$$

P = [2.4 + {(4 – 2.4)}X 0.15/0.12]/0.12=Rs. 36.67

(ii) Let payout ratio is X

Then, 40 = [2.4 + {(4 – 2.4)}X 0.15/0.12]/0.12
Or, 4.8 = 4x + 5 – 5x
Or x = 0.2

Thus, required payout ratio is 20%.

(iii) According to Walter's model, when return on investment is more than the cost of equity price of share increases as dividend payout ratio decreases. Hence, optimum payout ratio in the present case should be nil.

(iv) At nil payout ratio, P = $\frac{\left(4 \times \frac{0.15}{0.12}\right)}{0.12} = \text{Rs. } 41.66$

Illustration 3:

Following are the details regarding three companies X Ltd. Y Ltd. & Z Ltd.

	X Ltd.	Y Ltd.	Z Ltd.
R	20%	15%	10%
K_e	15%	15%	15%
E	Rs. 4	Rs.4	Rs. 4

Solution:

$$P_0 = \frac{D + (E - D)\frac{r}{K_e}}{K_e}$$

Calculate the share price at a pay out ratio of 50% and 75%

X Ltd. 50%

$$= \frac{2 + (4 - 2)\frac{0.20}{0.15}}{0.15} = \text{Rs. } 31.11$$

75%

$$= \frac{3 + (4 - 3)\frac{0.20}{0.15}}{0.15} = \text{Rs. } 28.89$$

Y Ltd. 50%

$$= \frac{2 + (4 - 2)\frac{0.15}{0.15}}{0.15} = \text{Rs. } 26.67$$

75%

$$= \frac{3 + (4 - 3)\frac{0.15}{0.15}}{0.15} = \text{Rs. } 26.67$$

Z Ltd. 50%

$$= \frac{2 + (4 - 2)\frac{0.1}{0.15}}{0.15} = \text{Rs. } 22.22$$

75%

$$= \frac{3 + (4 - 3)\frac{0.1}{0.15}}{0.15} = \text{Rs. } 24.44$$

It can be observed from above that in case of X Ltd. where r is greater than Ke, increase in pay out ratio decreases the price of share. Company Y's share price is same irrespective of payout ratio because r=Ke. An increase in payout ratio increases the share price of Z Ltd. because r < Ke.

Illustration4:

The earnings per share of a company is Rs. 10 and the rate of capitalization applicable to it is 10 percent. The company has three options of paying dividend i.e. (i) 50% (ii) 75% and (iii) 100%. Calculate the market price of the share as per Walter's model if it can earn a return of (a) 15, (b) 10 and (c) 5 percent on its retained earnings.

Solution:

$$P = \frac{D + (E - D)\left(\frac{r}{k_e}\right)}{k_e}$$

Where,
P = price of share
R = rate of earning
K_e = Rate of capitalization or cost of Equity

	(i) DP Ratio 50%	(ii) DP Ratio 75%	(iii) DP Ratio 100%
(a)Price of share if r = 15%	$\frac{5 + \left(\frac{0.15}{0.10}\right)(10 - 5)}{0.10}$	$\frac{7.5 + \left(\frac{0.15}{0.10}\right)(10 - 7.5)}{0.10}$	$\frac{10 + \left(\frac{0.15}{0.10}\right)(10 - 10)}{0.10}$
	$\frac{12.5}{0.10} = Rs.125$	$\frac{11.5}{0.10} = Rs.1125$	$\frac{10}{0.10} = Rs.100$
(a)Price of share if r = 10%	$\frac{5 + \left(\frac{0.10}{0.10}\right)(10 - 5)}{0.10}$	$\frac{7.5 + \left(\frac{0.10}{0.10}\right)(10 - 7.5)}{0.10}$	$\frac{10 + \left(\frac{0.10}{0.10}\right)(10 - 10)}{0.10}$
	$\frac{10}{0.10} = Rs.100$	$\frac{10}{0.10} = Rs.100$	$\frac{10}{0.10} = Rs.100$
(a)Price of share if r = 5%	$\frac{5 + \left(\frac{0.05}{0.10}\right)(10 - 5)}{0.10}$	$\frac{7.5 + \left(\frac{0.05}{0.10}\right)(10 - 7.5)}{0.10}$	$\frac{7.5 + \left(\frac{0.05}{0.10}\right)(10 - 1)}{0.10}$
	$\frac{7.5}{0.10} = Rs.75$	$\frac{8.75}{0.10} = Rs.87.5$	$\frac{10}{0.1} = Rs.100$

4.2.3 Limitations of Walter Model:

Most of the limitations for this model arise due to the assumptions made. The first assumption of exclusive financing by retained earnings makes the model suitable only for all equity firms. This model also assumes that the return on investments is constant. This will not be true for a growing firm which makes constant investments. Most importantly, the model assumes the business risk to be constant which may not be true.

4.3 Gordon Model

Myron Gordon used the dividend capitalization approach to study the effect of the firm's dividend policy on the stock prices.

4.3.1 *Assumptions:*

The following are the assumptions on which Gordon based the dividend policy model for the firms.

1. The firm will be an all equity firm with the new investment proposals being financed solely by the retained earnings.
2. Return on investment (r) and the cost of equity capital (Ke) remain constant.
3. Firm has an infinite life.
4. The retention ratio remains constant and hence the growth rate also is constant.(g=br)
5. Ke > br i.e. cost of equity capital is greater than the growth rate.

The model also assumes that the investors are rational and risk-averse. They prefer certain returns to uncertain returns and thus put a premium to the certain returns and discount the uncertain returns. Thus, investors would prefer current dividends and avoid risk. Retained earnings involve risk and so the investor discounts the future dividends. They would like to pay a higher price for the stocks which earn them current dividend income and would discount those stocks which either postpone or reduce the current income.

Gordon's dividend capitalization model gives the value of the stock as:

$$P = E(1-b)/(Ke - br)$$

Where,
P = Share price
E = Earnings per Share
b = Retention ratio
(1-b) = Dividend pay- out ratio
Ke = cost of equity capital
br = Growth rate g

4.3.2 Practical Illustrations

Illustration 5:

The following information is given for QB Ltd.

Earnings per share	**Rs. 12**
Dividend per share	Rs.3
Cost of capital	18%
Internal Rate of Return on investment	22%
Retention Ratio	40%

Calculation the market price per share using Gordon formula

Solution:

(i) Gordon Formula

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

where

P_0 = Present value of Market price per share,

E = Earnings per share,

K = Cost of Capital

b = Retention Ratio (%)

r = IRR,

br = Growth Rate

$$P_0 = \frac{Rs.12(1-0.40)}{0.18-(0.40 \times 0.22)} = \frac{Rs.7.20}{0.18-0.088}$$

= Rs. 7.20/0.092 = Rs. 78.26

4.3.3 Limitations

Once again the assumptions of a model become its major limitations.
A firm is not always an all equity firm and the return on investment and the retention ratio does not remain constant. The cost of equity may not be greater than g the growth rate also given by br.

4.4 Miller and Modigliani Model

Miller and Modigliani have propounded the MM hypothesis to explain the irrelevance of a firm's dividend policy. This method clearly proved that dividend policy does not impact the price of the share price. As per the model, it is the investment policy of the firm which affects the share prices and not the dividend policy.

4.4.1 Assumptions

However, MM model is based on certain assumptions which are not very realistic. These assumptions are:

a) The markets are perfect in which all investors are rational.
b) There are no taxes.
c) The risk and return of the firm does not change and it keeps the same investment policy.
d) The investors are able to forecast the earnings, dividends, and share price of the company with certainty.

The firm has two choices as regards the profits it will earn.

It can either give the profits as dividends or it can retain. If the firm retains the profits the share price will increase and the firm will not require external financing to make its investments. If the firm will pay dividends the share price will be less and the firm will need external financing and it

will have to issue more number of shares to raise the investments and the price of the shares will also be comparatively low. In both the situations the overall value of the firm will remain same.

It is given by using the formula

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

4.4.2 Practical Illustrations

Illustration 6:

ABC Ltd. has 10 lakhs equity shares outstanding at the beginning of the year. The current market price of is Rs. 150 and the directors have recommended a dividend of Rs. 8 per share. The shareholders expect a return of 12%.

(i) Applying MM model calculate the fair price of the share when a) dividend is declared and b) dividend is not declared.

(ii) If the investment budget is Rs. 500 lakhs and anticipated profit is Rs. 180 lakhs, compute how many share are to be issued if a) dividend is declared and b) dividend is not declared:

Solution:

(i) (a) calculation of share price when dividend is declared:

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

Or $$150 = \frac{(P_1 + D_1)}{(1 + K_e)}$$

Or $$150 = \frac{(P_1 + 8)}{(1 + 0.12)}$$

Or $$168 = P_1 + 8$$

Or $$P_1 = 160$$

(b) Calculation of share price when dividend is not declared:

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

Or $$150 = \frac{(P_1 + 0)}{(1 + K_e)}$$

Or $$150 = \frac{(P_1)}{(1 + 0.12)}$$

Or $$P_1 = 168$$

It is assumed that there is no retained fund. For the raising fund, equity shares to be issued at fair price as calculated above.

(ii) External Funds required = Rs. (500 -180) = 320 lakhs.

(a) If dividend is declared

No of shares to be issued = $\frac{3,20,00,000}{160} = 2,00,000$

(b) If dividend is not declared

No of shares to be issued = $\frac{3,20,00,000}{168} = 1,90,476$

4.4.3 Limitations of MM model:

Once again the assumptions of the model become its limitations. Ignoring transaction costs and taxes is the major drawback of this model. Markets are also not perfect and to raise funds from the market, the firm will not be able to raise the money at prevailing market prices of shares.

4.5 Linter Model

This model suggests that dividends should be stable and uses an adjustment factor 'c' which gives some weightage to current expected dividends and 1-c weightage to the last years dividends. This model is given by the following mathematical formula:

$D_1 = D_0 (1-c) + [EPS \times \text{Target payout ratio}] \times c$

4.6 Rational Expectation Model

As per this model, it assumes that there is no movement on the price of shares as long as the dividends declared by the company are as per the expectation of the investor. If the dividends declared by the company are not in line with the expectation of the investor, the price will show some adjustments. It will show an upward movement if the dividend declared are higher than expectation and downward movement if they are lower than expected.

5. Summary

- A firm has to take decision about its profits after tax.
- It can either distribute these profits to the shareholders in the form of cash or it can plough it back into the business to generate more returns in future.
- The firm that requires funds for growth and expansion follows the second option.
- Depending upon the needs of the firm, the firm decides its dividend policy.
- There are broadly two approaches to dividend policy.
- The first policy states that dividends are relevant and the price of shares depends upon the dividends declared by the firm as this maximizes the shareholders wealth. Some Models like Walter and Gordon support this theory.
- An alternate theory is that dividends are irrelevant and it does not affect the price of the share. The overall value of the firm remains same irrespective of the dividends declared or not.
- Some models have been suggested regarding the dividend policy and they are as under:
    a. Traditional Model also known as Grahm Dodd Model
    $P = m (D + E/3)$

    b. Walter Model

    $$P = \frac{D + (E - D)\left(\frac{r}{k_e}\right)}{k_e}$$

    c. Gordon Model
    $P = E(1-b)/(ke – br)$

    d. Miller & Modigliani model

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

    e. Linter Model
    $D_1 = D_0 (1-c)+ [EPS \times Target\ payout\ ratio\ ] \times c$

    f. Rational Expectation Model: It assumes that there is no movement on the price of shares as long as the dividends declared by the company are as per the expectation of the investor.