

**DIVIDEND POLICY AND STOCK VALUATION :
A REVIEW OF LITERATURE**

**DISSERTATION SUBMITTED
IN PARTIAL FULFILMENT
OF THE COURSE FOR
THE DEGREE OF
MASTER OF PHILOSOPHY
OF THE
UNIVERSITY OF POONA**

**BY
TRILOCHAN MOHANTY**

**GOKHALE INSTITUTE OF POLITICS AND ECONOMICS
PUNE 411 004**

1982-83

PREFACE

"The Theory Finance" was a complete new area of study for me. The present study was the result of my year-long association with Professor B.S.R. Rao. Professor Rao introduced me to the subject and his encouragement sustained my interest in it. It was indeed a privilege to work under the guidance of a scholar like Professor Rao. I am extremely grateful to him for the time he spared for me inspite of his busy schedule.

The present study as part of M.Phil. programme, had to be completed within two months. I have to admit that the present study could not cover the entire empirical work in the subject, partly because of the time constraint, and partly owing to non-availability of literature.

I am grateful to the authorities of Gokhale Institute of Politics and Economics for awarding me a teacher fellowship and providing all necessary facilities. I will fail in my duty, if I do not mention the services rendered by the staff members of the Library.

My sincere thanks are also due to Shri S.M. Kulkarni for his prompt and neat typing of the dissertation.

Last but not the least, I thank my wife, Sarmistha, who has cheerfully borne all the unavoidable externalities of my study.

GOKHALE INSTITUTE OF POLITICS
AND ECONOMICS, PUNE 411 004

Trilochan Mohanty

June 1983.

C O N T E N T S

			<u>PAGES</u>
CHAPTER I	INTRODUCTION	....	1 - 15
CHAPTER II	A BRIEF SURVEY OF THEORY	....	16 - 47
CHAPTER III	A CRITICAL SUMMARY OF SOME IMPORTANT EMPIRICAL STUDIES	....	48 - 97
CHAPTER IV	CONCLUDING REMARKS	....	98 - 102
	SELECT BIBLIOGRAPHY	....	103 - 111

CHAPTER I

INTRODUCTION

Dividend policy is one of the core issues in corporate finance. Dividend policy divides the corporate earnings into two parts: retained earnings and dividends. Corporate income after all costs of operation including fixed charges and taxes on income are met, is either retained for investment or used to pay dividend. Dividends are also some time paid out of past reserve, if current net income is not sufficient to cover the dividend payment and the management has sufficient reason to maintain the rate of dividend. Most managements opt for a stable dividend policy. Graham and Dodd opined that the stock holders have a right for regular dividend income. Empirically it has also been found that corporate net earnings fluctuate more than dividend earnings.

A corporation is created principally for the benefit of the shareholders. Shareholders are legally the owners of the corporation. Board of Directors, elected by shareholders represent latter's interest. Though normally the shareholders do not intervene, in the activities of the board of directors, steps are taken by the managements to accommodate the aspiration of the shareholders. Otherwise, the possibility of replacement of a management cannot be completely ruled out. The court of law also, in extreme cases of

breach of faith or concrete evidence of mismanagement, may intervene and direct the firm to pay dividend. Retention of earnings significantly in excess of present and future investment needs may invite penalty tax. So the corporations are discouraged to keep excess retained earnings, thus indirectly forcing the firms to pay dividend.

Dividend is considered to be a reward to shareholders for providing risk capital. Dividend payment should be sufficient to meet the normal interest rate plus a reward for risk undertaken. Investors are persuaded to participate in equity capital, by making provision to compensate risk and uncertainties. Capital gain and future dividend are less attractive compared to current dividend in an uncertain world.

Dividend declaration is a regular feature in the corporate world. This is an occasion for which shareholders, prospective investors, financiers, speculators, stockbrokers and security analysts wait with anticipation. Payment of consistently high dividend is also considered as an index of successful management. Market does react to changes in dividend declaration. Experience also shows that dividend changes and stock price variations are positively correlated.¹ The effect of dividend on stock price (stock is used here-

1 Pettit, R.R., "Comments on 'The Impact of Dividend and Earning Announcement - A Reconciliation'", Journal of Business, (1976), pp. 94.

after in the sense of common share or equity) has been widely studied. Many researchers have documented a statistically significant relation between dividend declaration and stock price variation. But the explanation of this common empirical findings is controversial. The objective of the present study is to critically outline theoretical and empirical work done in the field.

Dividend payment may be considered as an outcome of long term investment decision, when it is a part of financial policy of the firm, or as a shareholders' wealth maximisation decision. Dividends determine the dividend pay out ratio, taking into account the investment requirement. A firm which pays dividends and finances the investment projects by issue of debt or new equity, has to incur the floatation costs. As a result, internal finance remains a cheaper source of finance than external finance. Here shareholders are considered to be indifferent between current income and future income. Retained earnings, rightly invested, increases the future earning capacity of the firm. This point of view asserts that dividend is paid only if the firm lacks profitable investment opportunities.

Alternatively, the dividend policy is considered as a wealth maximisation decision. In an imperfect capital market, the shareholders are not indifferent between dividend and retained earnings. Higher retained earnings may increase the

future income prospect but it also increases the risk and uncertainty. Shareholders normally show preference for the current income. Stocks that yield high dividend command a higher price in the market. More riskier the stock, the higher will be the dividend expectation. If the dividend declared by a firm is high enough to meet the average expectation of the market, the demand for the stock and hence the price, will rise.

A high dividend payout ratio may have instantaneous favourable impact on the stock price, but the growth of a firm will be jeopardised, unless sufficient investment are also made. Issue of new equities or debt to finance the required investment will dilute the hold of the present shareholders. There is also a limit upto which a firm can take recourse to debt finance. Increased retained earnings and the resulting reduced dividend payment, may bring down the stock prices immediately but in the long-term the stock price is likely to go up, as the firm's future earning prospects increase. So an optimum dividend policy should divide the corporate earning in such a way, that the objective of shareholders' wealth maximisation is satisfied.

Shareholders value stability of dividend payment over a period. Stable dividend policy resolves uncertainty. Market confidence in stable dividend policy is high, because the dividends are not cut even if the net earnings drop, suggesting management's confidence that the firm is in a

better shape than the earnings suggest. The figure 1.1 showing the total corporate earning and dividend, and figure 1.2 showing per share earning and dividend clearly bring out stable nature of dividend in U.S economy. Management can influence the expectation of the shareholders, through the information contents of dividend. No management, however, can fool the shareholders permanently. In the long run, dividend has to depend on the net earning of the firm.

Investors with need for periodic income, like widows, pensioners and people with low income, will prefer stable dividend policy. Income from capital gain is not favoured by this class because of the fluctuation of stock price, transaction cost and also lumpiness of income. So income conscious investors place positive utility on stable dividend.² Moreover trusts, endowments and institutional investors are only allowed to invest in those stocks, that yield stable dividend.

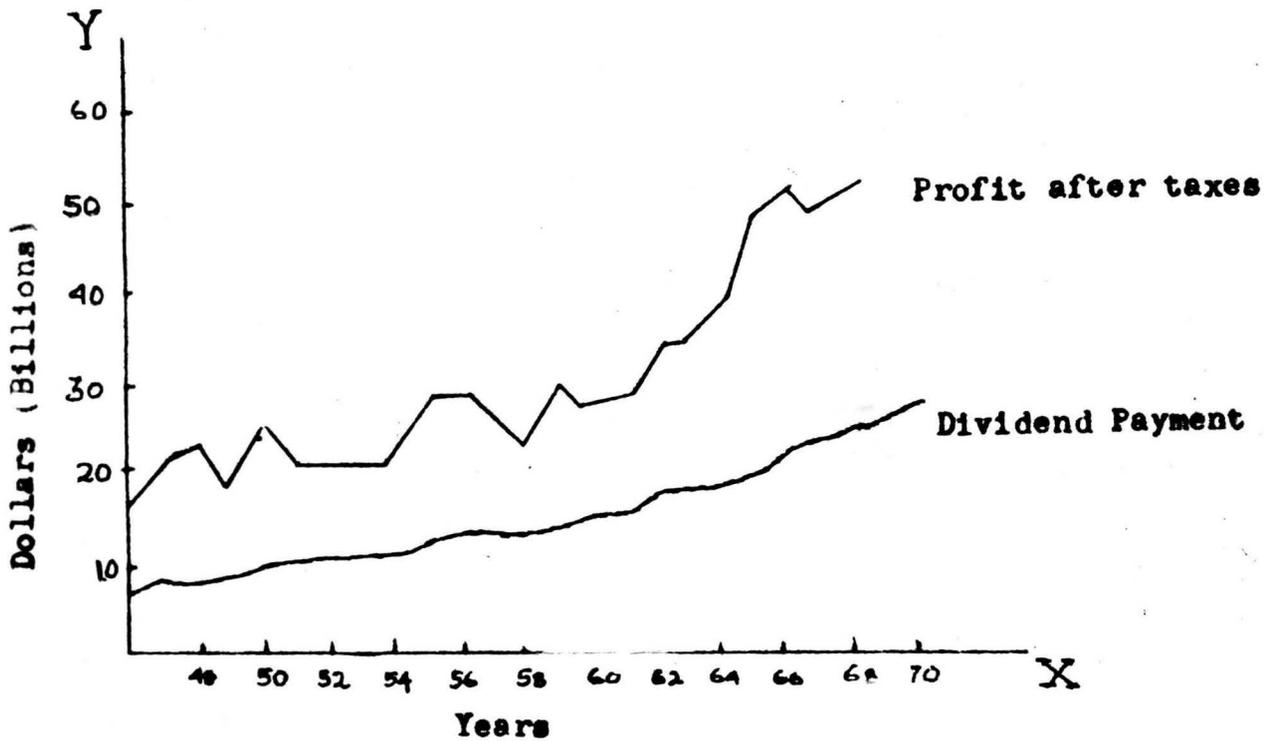
Some corporations also follow a target dividend pay-out ratio. Dividends are adjusted to the changes in the earning with a time lag.³ Corporations are reluctant to cut the dividend. So the dividends are increased only when it is felt that the increase in earning can be maintained in future. Empirically, the lag of dividend changes behind changes in earnings have been verified.⁴

² Van Horne, J.C., Financial Management and Policy, (New Delhi, Prentice Hall of India Private Limited., 1980, 4th ed.), pp.268.

³ Lintner J., "Distribution of Income of Corporations Among Dividend, Retained Earnings and Taxes", American Economic Review, (1956), pp. 97-113.

⁴ Brittain, J.A., Corporate Dividend Policy (Washington, DC. The Brookings Institution, 1964).

FIGURE 1.1

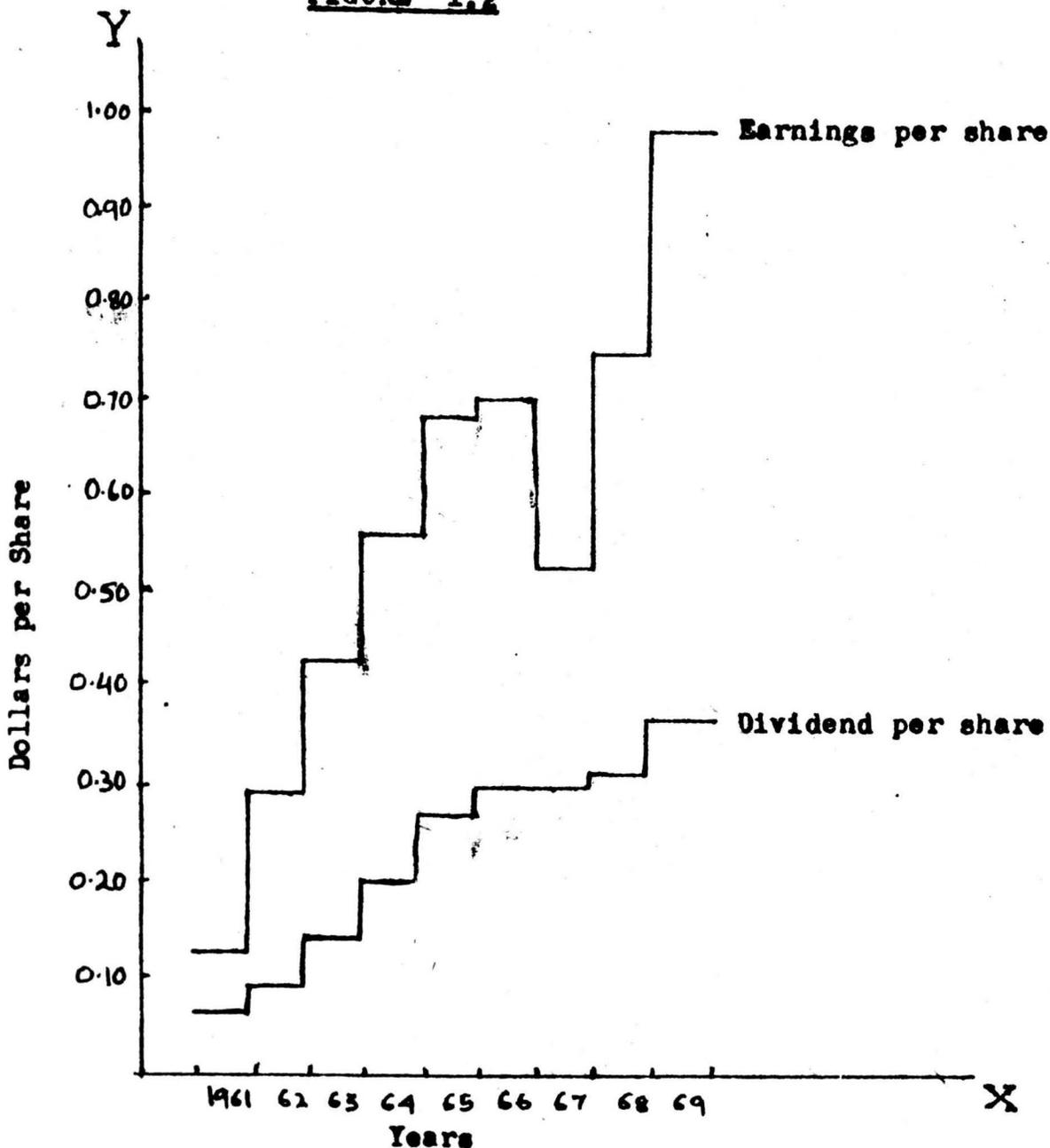


TOTAL CORPORATE EARNINGS AND DIVIDENDS

Source : ECONOMIC REPORT OF THE PRESIDENT 1970, p. 260.

As Reproduced by J.G. VanHorne
Financial Management and Policy, 2nd ed.
(New Delhi, Prentice Hall of India Private Limited,
1973), pp. 269.

FIGURE 1.2



COLEMAN COMPANY, DIVIDENDS AND EARNINGS PER SHARE, 1961-1969.

Source : VALUE LINE INVESTMENT SURVEY, APRIL 3, 1970,
pp. 1429.

As Reproduced by J.C. VanHorne; Financial Management and Policy (2nd Ed.) (New Delhi, Prentice Hall of India Private Limited, 1973), pp. 270.

Extra cash dividend, in addition to regular dividend, is also distributed at the time of prosperity. Investors are not likely to expect the extra dividend every year. It provides a way to those firms whose net earnings are fluctuating from year to year, to maintain a stable dividend policy. Of course, the company cannot legitimately expect, by paying extra dividend regularly, not to convey an impression of permanency.

The dividend policy of a firm is influenced by a number of factors, some of which are discussed below.

Liquidity

Dividend represents cash outflow. The greater the liquidity of the firm, the greater is its ability to pay dividend, other things remaining same. Brittain found for a sample of forty large firms in U.K. over the period 1920-60, that dividends are positively related to corporate liquidity.⁵ A growing firm, even if it is profitable, may not be liquid. Its funds may be invested in fixed assets. Management of these type of firms would like to maintain some liquidity cushion for flexibility and protection against uncertainty. Firm's investment and financial decisions determine its liquidity. Investment determines the rate of asset expansion and need for funds. The financial decision will determine the way to finance it. The firm's liquidity here covers

5 Brittain, J.A., Op.cit., pp. 184-87.

both potential and actual liquidity. The firm's potential liquidity in the form of large salable inventories gives flexibility to the firm's management.

Ability to Borrow

A firm's ability to borrow also has an indirect effect on the dividend policy. A firm has greater flexibility and ability to ward off risk and uncertainty, if it has an easy access to the credit market. Large and established firms have greater access to the capital market. The greater the ability to borrow, the greater the flexibility and the greater is the ability to pay dividend.

Control

High dividend payout may lead to external financing of new investment. Issue of new stock will dilute the controlling interest of existing shareholders, if they cannot subscribe to the new stock. Shareholders, to keep their hold over the company firm, may prefer low dividend payout. But very low dividend payment may depress the price of the stock unusually. It will provide an easy opportunity to the take over of the company, through market process by any competing groups or individuals. Moreover, consistently low dividend payment may lead to dissatisfaction of the shareholders, who may revolt and vote out the management. As a result, the management, who apprehends the take over of their firm, may like to have a high dividend payout ratio to please

the shareholders.

Nature of the Stockholders

If the stockholders are homogenous in character, like in the same tax bracket, age group, social standing, consumption habits, time preference and risk class, the management may tend to identify the appropriate dividend policy. For example, if most of the stockholders are in high tax brackets and young age group, the firm may prefer a low dividend policy. But if the stockholders are very large and heterogeneous in character, which is generally the case, there is no way for the firm to know the stockholders desire. Even if we assume that somehow the management come to know of the desires of stockholders, it would be virtually impossible for them to reconcile the conflicting interests and decide a dividend payout that will please all. So the market prices of the stocks are the only indicator for judging the desire of the stockholders.⁶

Investment Opportunities

A firm's opportunities for profitable investment should be continuous in nature. The sporadic nature of availability of investment opportunities does not justify the retention of earnings. In that case high dividend payout is justified and if the need for fund arises, new stock or debt can be issued to finance it. Sale of stock has an advantage

6 Van Horne J.C., Op.cit., pp. 273.

for raising block capital for this type of investment.

Restriction in Loan Agreement

Payment of dividend beyond certain stipulated limit are restricted by most of the loan agreements. The lenders usually insist on this restriction, so that the firms can service the debt. Managements also at times welcome these restrictions, because then they do not have to justify low dividend payment to the shareholders.

Inflation

Inflation also has an influence on dividend payment. Depreciation fund under these conditions may not be sufficient to replace fixed capital. Thus, a case is usually made for low dividend payout to preserve the firm's earning capacity.

Legal Consideration

Corporations are not allowed to pay dividend out of their capital in many countries. Directors cannot be compelled to pay dividends. Section 205(1) of Indian Companies' Act provides that dividend shall be declared or paid only out of current and past profit after providing for depreciation. The Union Government on public interest, may empower a corporation to pay dividend out of profits without providing for depreciation. The corporations have to act within the legal rules while deciding the payment ratio.

An insolvent firm is prohibited from declaring dividend. Insolvency here is defined as liabilities exceeding assets or as the firm being unable to serve the debt.

Stock dividends, the stock splits and repurchase of stock are alternative ways of paying the stockholders, other than cash dividend.

Stock dividend (equivalent to bonus share income in India) represents the distribution of shares in place of cash dividend or in addition to cash dividend. The proportional ownership of the firm of each shareholder remains unchanged, when stock dividend is distributed. If the stock price falls proportionately to the increase in the stocks, the wealth of shareholders is not affected. But actually we find, the stock price reacts less than proportionately and the stock-holders' wealth is increased. Stockholders, selling some of the stocks, have to pay tax at the rate appropriate to capital gains. Moreover, if the cash dividend per share is maintained after the stock dividend, the flow of dividend income will increase forever. The positive effect of an increased cash dividend on the shareholders' wealth depends upon the trade off between current dividend and retained earnings.⁷ Stock dividend in

7 Barker C. Austin, "Evaluation of Stock Dividends", Harvard Business Review, (1958), pp. 99-114.

this case represents a decision to increase the amount of cash dividend.

Stock dividends are typically associated with growing firms. They may convey to the investors that the earnings are expected to grow, which may offset the dilution in earning per share. Higher expectation of earnings which may influence the stock price favourably is the result of growth of the firm and not the act of declaring stock dividend.

Stock dividends are usually employed by corporations to conserve cash. A company can keep a greater portion of earning by declaring stock dividend. Even though the retention of earnings can be accomplished without stock dividend, the stock dividend has a psychological impact and its information content may please a section of the shareholders. If the cash dividend per share at the pre-stock dividend level is maintained, the total dividend is likely to increase with the increase in number of stocks. But when stock dividend is used by management to tide over the financial difficulty, stock dividends do not provide any growth possibilities.

Stock splits lead to increase in the number of outstanding shares and decrease the par value of the stock proportionally to the increase in the number. However, they do not affect the ownership pattern of the firm. Stock

split in case of growing firms, may indicate the management's expectation in regard to the future growth in earnings. Consequently, stock price may rise when stock split is announced or rumoured, even if the same dividend rate is maintained after the split. But if the dividend per shareholder increases, the market price of stock is likely to react more favourably.

Companies, in some countries repurchase their own stock. One of the reasons for stock repurchase is to retire them. Here the stock repurchase may be treated as a part of the dividend policy. Idle surplus fund can be distributed either in the form of higher dividend or repurchase^{of} the stock. Theoretically in a world with transaction costs, and no income tax the stockholders are indifferent to mode of payment; dividend and capital gain, and the value of the stock is likely to remain unaffected.⁹ But with high income tax and transaction cost, the shareholders have a preference for either capital gains or cash dividends. So the stock price is likely to be affected by the mode of payment. Repurchase of stock will reduce the number of available stocks and if the dividend payout ratio is maintained, then dividend per share will increase. If the price/earning ~~share~~ ratio is maintained, the stock price may increase. But if price/earning ratio is increased due to increase in earning per share, the market price will increase more. The repurchase of a stock has considerable advantage if

8 Johnson, K.B., "Stock Splits and Price Change", Journal of Finance, (1968), pp. 675-86.

9 Bodenhorn, D., "A Cash Flow Concept of Profit", Journal of Finance, (1964), pp. 19-20.

income tax is higher than capital gains tax. The shareholders will be financially better off, if the firm decides to pay surplus earnings through stock repurchase.¹⁰ It will save the shareholders a substantial tax burden. Extra dividend may be paid in lieu of stock repurchase ~~that~~ but they will be subject to higher income tax. The tax effect can be reduced substantially paying extra dividend over a period of time. But this may lead to investor counting extra dividend as permanent. As repurchase of stocks in lieu of dividend is discouraged,¹¹ it may not be used for regular dividend or even extra dividend.

The capital structure of the firm can be also altered by stock repurchase.¹² New debt can be issued to repurchase stock. But the stock repurchase, only when surplus cash is used, can be treated as a part of dividend policy. Most companies repurchasing stock are found to be lacking reinvestment opportunities, so that the stock repurchase for them is virtually a dividend decision.

The literature dealing with dividend policy and stock valuation for all practical purpose, started developing from early fifties. Three decades of highly intensive study has

10 Elton, E. and M.J. Gruber, "The Effect of share repurchase on the Value of Firm", Journal of Finance, (1968), pp. 136-37.

11 Bierman, H. (Jr) and R. West, "The Accusation of Common Stock by Corporate Issuer", Journal of Finance, (1966), pp. 687-96.

12 Young Allan, "Financial, Operating and Security Market of Repurchasing", Financial Analysts Journal, (1969), pp. 124. As reported by Van Horn, Op.cit., pp. 281.

solved very little of the nagging question, whether or not dividend affects stock price. The whole of fifties and early sixties saw the raging controversy regarding the relevancy of dividend in stock valuation. Miller and Modigliani argued that dividend policy is irrelevant in a perfect capital market and in a world with no tax discrimination. They, however, admitted that in a real world with tax discrimination, risk, uncertainty and imperfect capital markets, dividend announcement has some signalling effect. This is popularly known as the information content of dividend.¹³ Most recent studies, do not discuss irrelevancy hypothesis. Modigliani in his presidential address admits that the irrelevancy argument with a rational investor well functioning markets and no taxes, does not carry over to a world with taxes and imperfect capital markets.¹⁴ More or less it is now accepted that dividend policy has some positive effect on stock prices. Recent studies mostly concentrate on the clientele effect and information effect, to explain the dividends and stock prices relationship.

In the present study, Chapter II surveys some of the important theoretical works developed during the last three decades bringing out the arguments and counter arguments in support of the relevancy of dividend in stock valuation.

13 Miller, M.H. and F. Modigliani, "Dividend Policy, Growth and Valuation of Share", Journal of Business, (1961), pp.411-433.

14 Modigliani F., "Debt Dividend Policy Taxes, Inflation and Market Valuation", Journal of Finance, (1982), pp. 255.

Chapter III critically reviews some of the important empirical studies which examined the relevancy of the dividend in stock pricing. The last and concluding chapter makes a brief summary of our discussion.

CHAPTER II

A BRIEF SURVEY OF THEORY

Does dividend declaration influence the price of the stock? Our understanding of the problem is not satisfactory. Earlier, in the introductory chapter, we have discussed: why dividend are paid and what are the factors that influence dividend payment. We examine in this chapter, some of the important models dealing with dividend and stock valuation.

Walter's Model

Walter's valuation model is one of the earliest model which put emphasis on the availability of profitable investment opportunities. The rate of return on possible investment of retained earnings, relative to average market rate of return, is a crucial determinant of dividend payment. The model brings out clearly the importance of the relationship between a firm's internal rate of return and its cost of capital, to determine the payment of dividend. A high rate of return on retained earnings indicates desirability of low dividend payout ratio. Walter claims that dividend ~~and~~ almost always influence the value of the enterprise.¹

Walter's model is based on the following assumptions :

- 1) The firm is a cent per cent equity firm. It finances its investment through retained earnings.

¹ Walter, J.E., "Dividend Policy and Common Stock Prices", Journal of Finance, XI (March, 1956), pp. 29-41.

- 2) The internal rate of return and cost of capital are constant for the firm.
- 3) All the net earnings are either paid as dividend or retained for reinvestment.
- 4) The firm has a very long life and the stream of returns is almost perpetual.

Walter's model for the determination of market price of a share is

$$P = \frac{D + \frac{r}{e} (E - D)}{e} \quad \dots \quad (2 - 1)$$

$$= \frac{D}{e} + \frac{r(E - D)/e}{e}$$

$$= \frac{E}{e} + \frac{(r - e) (E - D)}{e^2} \quad \dots \quad (2 - 1a)$$

where, D = Cash dividend per share

E = Earnings per share

r = Average internal rate of return on investment.

e = Market capitalisation rate which is the cost of equity capital in this model.

P = Market Price per share.

Equation (2 - 1) stresses the importance of dividend payout ratio and the relation between r and e . When r is greater than e , the present value of future dividend resulting from retained earnings is more than the current retained earning. A low payout ratio under the discussed circumstance, will

result in increase of the value of the firm. If a firm retained $(E-D)$ and expected rate of return is r , its present value will be $\frac{r}{e}(E-D)$. If this rate of investment continues, the present value of the stream of returns will be $\frac{r}{e}(E-D)/e$. So the present market price of a share is the present value of the stream of expected dividend D/e plus the present value of all returns $\frac{r}{e}(E-D)/e$

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

Equation (2 - 1a) which is a modification of equation (2 - 1) provided some added realism. A decline in the return on additional investment r affects the share price. It questions seriously the rationality of permanently low dividend payout ratio. As long as $r > e$, the retention of earnings is beneficial.²

The optimum dividend policy depends on the firm's internal rate of return and cost of capital. A firm where $r > e$ may be termed as a growing firm. Because the rate of return on investment is higher than the capital cost, the firm will maximise its market value, if it retains and reinvests all its net earnings. Take the case of a firm where $r = 0.15$, $e = 0.10$ and net earning per share $E = \text{Rs. } 10.00$. If the firm retains all the net earning and have a zero dividend payment, Walter model will give the current price as

2 Walter, J.E., Op.cit., pp. 32-33.

$$\begin{aligned}
 P &= \frac{D}{e} + \frac{r(E - D)/e}{e} \\
 &= \frac{0}{.1} + \frac{.15(10-0)/.1}{.1} = \text{Rs. } 150.00
 \end{aligned}$$

If the firm under the above condition decides to have 50 per cent payout ratio, then out of net earning of Rs. 10.00 per share, Rs. 5.00 will be paid as dividend and the price of the share in this condition would be Rs. 125.00. If the firm pays all the net earnings as dividend, then the price will be Rs. 100.00. It is clear from the above illustrations, that for a firm where $r > e$, zero dividend policy will maximise the stock price. In case $r < e$, the firm should pay all the net earnings to maximise the price. Take the example of a firm, where $r = 0.08$, $e = 0.10$ and $E = \text{Rs. } 10.00$. If the firm retains all the net earning, the share price will be Rs. 80.00, where as the stock price will be Rs. 100.00 if all the earnings are distributed. A firm where $r < e$, may be termed as a declining firm, with no profitable investment opportunities. The rate of return on retained earnings are less than the cost of capital. As returns on investments outside the firm are higher, the firm should pay all the net earnings as dividend. But in case of a firm where $r = e$, the rate of return at margin is equal to average market return. All the profitable investments are just exhausted, in this case. The variation in payment of dividend makes no impact on the share price. Shareholders in this case are

indifferent between dividend income and capital gains.

Walter's valuation model brings out clearly that dividend policy of a firm depends on investment opportunities and the relation between r and e . Thus dividend policy here is treated as a financial decisions and payment of cash dividends is a passive residuals.³

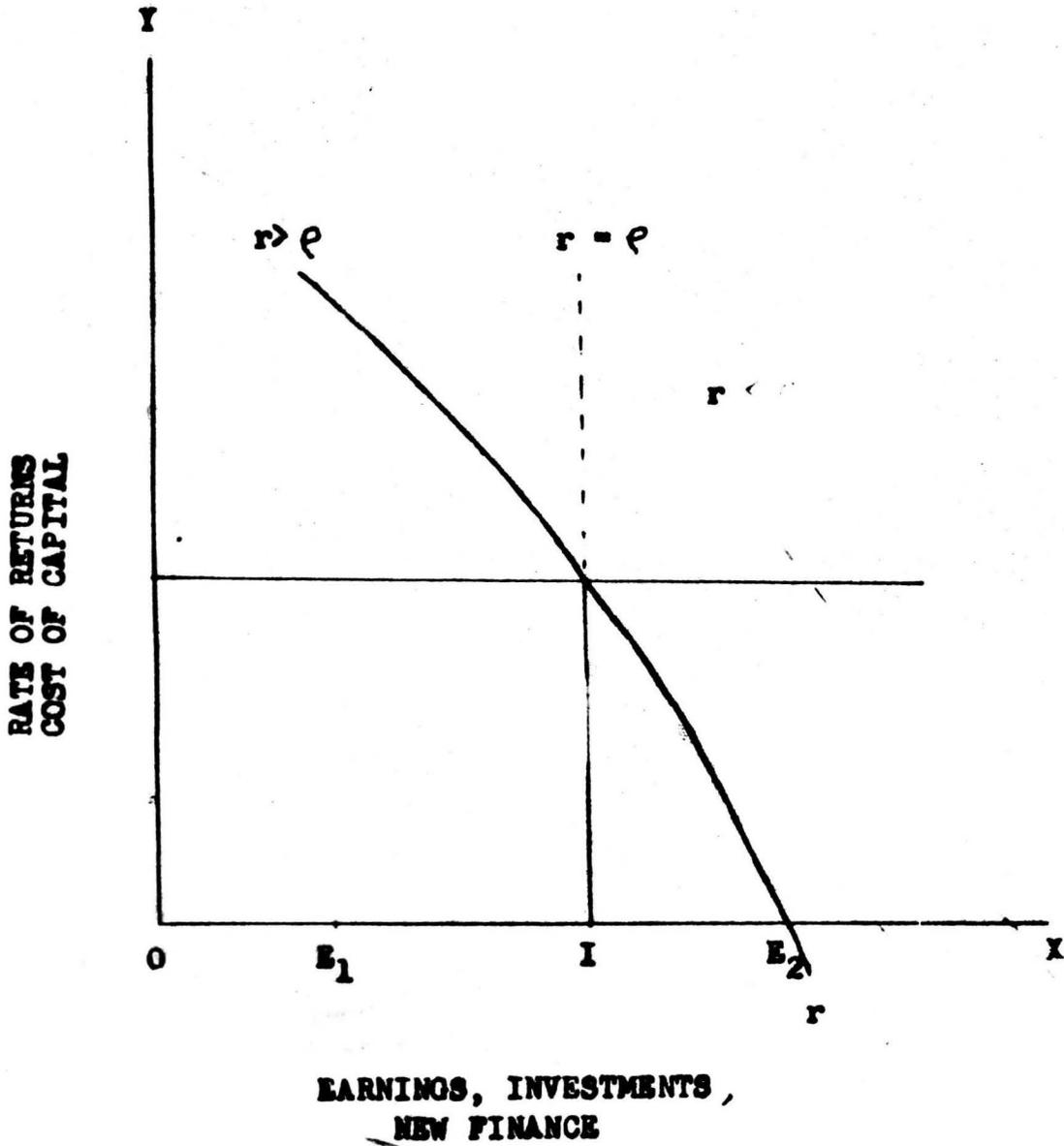
It may be noted that Walter's analysis is entirely static. It assumes implicitly that there is no tax differential between dividend income and capital gain. His model mixes the dividend policy with the investment policy of the firm. The model also completely ignores the stockholder's preference for current income over the capital gains. The firm in Walter's model is assumed to be cent percent equity firm. The possibility of external financing through issue of new equity or debt is denied. A firm's dividend policy or investment policy under the condition assumed by Walter's model is most likely to be suboptimal.⁴

Figure (2.1) shows earnings, investment and new finance on x-axis and shows the rate of return and cost of capital on y-axis. As mentioned earlier, the cost of capital in Walter's model is assumed to remain constant and marginal

3 Solomon, Ezra, The Theory of Financial Management, (New York, Columbia University Press, 1963), pp. 139-40.

4 Francis, J.C., Investment Analysis and Management, (New York, McGraw-Hill Book Company, Inc., 1972), pp. 344.

FIGURE 2.1



cost and average cost are equal. The rate of return on investment is likely to fall with increasing investment. More profitable investment is expected to be taken up first. In Figure (2.1) the optimum level of investment will be at I, where $r = e$. If the firm is earning say OE_1 and the external financing is not undertaken, the investment at best may be at the level of OE_1 . If the firm decides to pay some dividend, the level of investment will fall further. The investment in first case is sub-optimal and both investment and dividend are suboptimal in second case. Walter's valuation model suggests, when $r > e$, the shareholders' wealth will be maximised, if all the net earnings are retained and reinvested. But the diagram suggests, than even with hundred per cent retention of net income, the investment potential of the firm is not fully exploited. What the firm is doing under the condition is the best that is possible without external finance, but the shareholders' wealth will only be maximised when the total investment is equal to OI.

Walter's model also assumed constant r and e . In fact r is likely to fall and e is likely to rise with increasing investment. Marginal rate of return is likely to diminish, as investment goes on increasing. This is due to the celebrated law of diminishing marginal return operating with increased investment. So the marginal efficiency of capital is most likely to fall with increasing investment.

Now take the case when net income is OE_2 , here $r = 0$ and investment is OE_2 . The diagram shows at this stage, $r < e$. Walter's model under the given condition of $r < e$, will prescribe hundred per cent payout ratio. But the stockholders wealth will only be maximised, if OI is reinvested and IE_2 is distributed.

The assumption of constant capital cost is far from realistic as the capital cost in any venture some investment is likely to vary with changes in risk and uncertainties. So, firm's share value is likely vary inversely with the change in cost of capital. Walter's model, by assuming constant cost, completely neglects variation in risks and uncertainties.

Gordon's Model⁵

Gordon's model is based on the idea, that the market value of a share is equal to the sum total of the present value as expected infinite stream of dividend. The dividend per share is likely to grow when a part of the net earnings is retained and reinvested year after year. The dividend per share, $(1-b)E$, where b is the fraction of the net earning (E) that is retained. So bE are to be reinvested within the firm. If ' r ' is the rate of return, the firm's

5 Gordon, Myron J : The Investment Financing and Valuation of Corporation (Homewood, Ill: Richard, D., Irwin, 1962).

earnings will grow at the rate, $g = br$ per period. Gordon's model incorporated growth in earnings and dividends.

Gordon's model is based on the following assumptions.⁶

- 1) The firm is an all equity firm like Walter's firm.
- 2) No external finance is available. Expansion of the firm is currently financed by retained earnings.
- 3) Rate of return on firm's investment is constant. Thus like Walter's model, it ignores diminishing marginal efficiency of increasing investment.
- 4) The discount rate which is equal to the cost of equity capital is assumed to be constant like Walter's model. This model also ignores the variation in riskiness of investment.
- 5) The firm's life is infinite and stream of earnings is perpetual.
- 6) There is no corporate tax and personal income tax.
- 7) Retention ratio b , once decided, remain constant, so $g = br$ is also assumed to be constant.
- 8) $r > br = g$, otherwise no meaningful value of share can be derived from the model.

Gordon's model expressed P_0 , the market value per share at base period to be equal to the sum of the present

6 Francis, J.C., Op.cit., pp. 352.

value of the expected infinite stream of earnings.

$$\begin{aligned}
 P_0 &= \frac{D_1}{1+e} + \frac{D_2}{(1+e)^2} + \dots + \frac{D_\alpha}{(1+e)^\alpha} \\
 &= \sum_{t=1}^{\alpha} \frac{D_t}{(1+e)^t} \dots (2.2)
 \end{aligned}$$

Dividend per share is likely to grow when a portion of the earnings are retained and reinvested regularly. Dividend per share is $(1-b)E$. That is $D_t = (1-b)E$. As a result of retention and reinvestment of bE amount in the firm, where constant rate of return 'r' is assumed, the earning of the firm is likely to grow at a rate $g = br$.

Gordon's model, after incorporating the growth of earnings and investment, can be expressed as

$$\begin{aligned}
 P_0 &= \frac{D_0(1+g)}{(1+e)} + \frac{D_0(1+g)^2}{(1+e)^2} + \dots + \frac{D_0(1+g)^\alpha}{(1+e)^\alpha} \dots (2.3) \\
 &= \sum_{t=1}^{\alpha} \frac{D_0(1+g)^t}{(1+e)^t} \dots (2.3a)
 \end{aligned}$$

By assuming $e > g$, we can manipulate the equation (2.3)

and write it as ⁷

$$P_0 = \frac{D_1}{(e - g)} \quad \dots \quad (2.4)$$

By substituting D_1 for $(1 - b)E_1$ and br for g we can rewrite equation (2.4) as

$$P_0 = \frac{E_1(1 - b)}{e - br} \quad \dots \quad (2.5)$$

Equation (2.5) clearly brings out the relationship between earning, E_1 , dividend policy, b , internal rate of

7 Multiply both sides of equation (2.3) by $1 + \frac{e}{1+g}$

$$\begin{aligned} \text{So } \frac{P_0(1+e)}{1+g} &= \frac{1+e}{1+g} \left[\frac{D_0(1+g)}{(1+e)} + \dots + \frac{D_0(1+g)^\alpha}{(1+e)^\alpha} \right] \\ &= \left(\frac{1+e}{1+g} \right) \left(\frac{1+g}{1+e} \right) \left[D_0 + \frac{D_0(1+g)}{(1+e)} + \dots + \frac{D_0(1+g)^{\alpha-1}}{(1+e)^{\alpha-1}} \right] \\ \frac{P_0(1+e)}{(1+g)} &= D_0 + \frac{D_0(1+g)}{(1+e)} + \dots + \frac{D_0(1+g)^{\alpha-1}}{(1+e)^{\alpha-1}} \end{aligned}$$

By deducting equation (2.3) from the above expression, we get

$$\frac{P_0(1+e)}{(1+g)} - P_0 = D_0 - \frac{D_0(1+g)^\alpha}{(1+e)^\alpha}$$

By assuming $e > g$ and $\alpha \rightarrow \infty$ the 2nd term of right side expression $\frac{D_0(1+g)^\alpha}{(1+e)^\alpha}$ can be eliminated.

$$\text{Now } \frac{P_0(1+e)}{(1+g)} - P_0 = D_0 \quad \text{or} \quad \frac{P_0(1+e) - P_0(1+g)}{(1+g)} = D_0$$

$$\text{or } P_0(e - g) = D_0(1+g) \quad \text{or} \quad P_0 = \frac{D_0(1+g)}{(e - g)} = \frac{D_1}{(e - g)}$$

return r , and the cost of capital, e to determine the current price of a share.

In case of a firm, where $r = e$ the equation (2.5) can be expressed as

$$\begin{aligned}
 P_0 &= \frac{E_1(1-b)}{e-br} = \frac{E_1(1-b)}{r-br} = \frac{E_1(1-b)}{r(1-b)} \\
 &= \frac{E_1}{r} = \frac{rA}{e} \dots (2.6)
 \end{aligned}$$

Since $E_1 = Ar$ $A =$ total investment
 $r =$ rate of return

Equation (2-6) shows that dividend does not affect the price of a share where $r = e$. So in a competitive equilibrium condition, where marginal rate of return in all investment opportunities are equal, dividend policy becomes irrelevant.

Take the case where $r < e$; here the retention ratio should be zero and dividend payout 100 per cent.

$$\text{Then } P_0 = \frac{rA}{e}, \text{ if } b = 0 \dots (2.7)$$

If $r < e$, then $r/e < 1$ and from the equation (2.7), it follows that P_0 is smaller than the firms investment per share in asset A. If the value of b increases, the value of the share will continue to fall.

"If the internal rate of return is smaller than e , which is the rate available in the market, profit retention becomes undesirable from the stand point of shareholders."⁸

Each additional rupee retained reduces the fund available to shareholders to invest outside the firm more profitably. This will depress the value of the share in the market. A corporation, under such a condition should adopt a policy of contraction and disinvestment. This will release capital to be used in a more remunerative enterprise.

A firm, where $r > e$, the value of the share is likely to increase, as retention ratio b increases. Here we are not sure what should be the value of b to maximise P_0 . If we take for example $b = \frac{e}{r}$,

$$P_0 = \frac{E_1(1 - b)}{e - br} \quad \text{will be infinitely large when } e - br = 0.$$

And if b is taken to be equal to 1, $e - br$ becomes negative. P_0 will also be negative. We obtain these absurd results, because Gordon Model assumed r and e to be constant. A meaningful price for the share from equation (2.5) can be obtained, only when b is less than e/r .

The conclusion derived from Gordon Model is almost similar to the one from Walter's Model as the assumptions are similar. Walter's model concludes the irrelevancy of dividend policy when $r = e$. Gordon by incorporating uncertainty into his model, points out that dividend does influence

⁸ Dobrovolsky, Sergei P; The Economics of Corporation Finance (New Delhi, Tata McGraw-Hill Publishing Co. Ltd., 1976), pp.56.

the value of the share, even when $r = e$. Investors discount dividend under conditions of uncertainty. The risk averse investor, prefers present income to future. The investor will of course prefer, future income, if the risk adjusted present value of future income is more than current income. But as the future is unknown, the logic that explain the dividend effect is the bird in the hand argument. Krishman put it, "Of two stocks with identical earnings record and prospect, but the one paying larger dividend than the other, the former will undoubtedly command a higher price merely because stockholder prefer present to future value. Myopic vision plays a part in the price-making process. Stockholders often act upon a principle that a bird in the hand is worth two in the bush and for this reason are willing to pay a premium for the stock with a higher dividend rate just as they discount the one with lower rate."⁹

A typical investor will always prefer his dividend today and will let tomorrow take care of itself. Rarely the retention of earning to increase the stock price is appreciated by stockholders. Among the two stocks of the same general condition, one paying higher dividend will sell at a higher prices.¹⁰

⁹ Krishman, John, E. : Principle of Investment (New York: McGraw-Hill Inc., 1933) pp. 737.
As quoted by I.M. Pandey, Financial Management, 2nd ed. (New Delhi, Vikash Publishing House, 1981), pp. 285.

¹⁰ Graham, Benjamin and David L. Dodd, Security Analysis, (New York : McGraw-Hill, Inc. 1951).

Gordon puts the same argument more convincingly. Uncertainty increases with futurity. More distant the future, more uncertain becomes the dividend. The rate of discount, e , is not likely to remain constant, when the risk and uncertainty varies, it increases with the increase of uncertainty. So, stocks paying higher dividend are preferred and they command higher prices in the market. Increase in retention ratio is likely to increase the discount rate. Low dividend payment at the beginning may lower the price of the stock.

With an increasing discount rate, Gordon's Model can be expressed as

$$\begin{aligned}
 P_0 &= \frac{D_1}{(1+e_1)} + \frac{D_2}{(1+e_2)^2} + \dots + \frac{D_\infty}{(1+e_\infty)^\infty} \\
 &= \sum_{t=1}^{\infty} \frac{D_t}{(1+e_t)^t} \dots \quad (2.8)
 \end{aligned}$$

where P_0 is the price of the share, when retention ratio $b = 0$ and symbolically $e_t > e_{t-1}$.

Now if the firm retains fraction b of the net earning for reinvestment, the dividend is likely to grow at the rate $g = br$, where r is the constant rate of internal return of the firm. If D_0 is the dividend at the base year, the dividend at the end of first year, will be $D_0(1+g)$ at the end of second year, $D_0(1+g)^2$ and so on. Present

value of dividend stream when added will constitute the price of the share.

$$\begin{aligned}
 P_0 &= \frac{D_0(1+g)}{(1+e_1)} + \frac{D_0(1+g)^2}{(1+e_2)^2} + \dots + \frac{D_0(1+g)^\alpha}{(1+e_\alpha)^\alpha} \\
 &= \sum_{t=1}^{\alpha} \frac{D_0(1+g)^t}{(1+e_t)^t} \dots \quad (2.9)
 \end{aligned}$$

when $b > 0$.

If the dividend stream is discounted at a uniform rate e' which is weighted average of e_t ¹¹ the equation (2.9) can be expressed as

$$P_0 = \frac{D_0(1+g)}{(1+e')} + \frac{D_0(1+g)^2}{(1+e')^2} + \dots + \frac{D_0(1+g)^\alpha}{(1+e')^\alpha}$$

By assuming $e > g$, we can express

$$P_0 = \frac{D_1}{e' - g} = \frac{(1-b)E}{e' - br} \dots \quad (2.10)$$

Equation (2.10) brings out clearly, that if e' increases the price P_0 will diminish.

The reformulation of Gordon's model, by incorporating the element of uncertainty, affirms the view that the dividend policy affects the share value. The reformulation is based on the idea that a rupee of current dividend income is more than a rupee of capital gain in future. Investors prefer dividends

¹¹ Mao, James C.T. : Quantitative Analysis of Financial Decision (New York: The MacMillan Company, 1969), pp. 482.

to capital gains because dividends are less uncertain, less risky and easier to predict and discounted at a lower rate.¹²

Hypothesis of Dividend Irrelevance

Walter and Gordon, by compounding investment policy with dividend policy, came to the conclusion that under certain conditions, dividend policy affects the stock price. Miller and Modigliani (MM), in their famous study¹³ provided the most comprehensive argument for the irrelevance of dividend. They argue dividend policy does not affect the wealth of stockholders, if investment policy is given. The value of the firm is determined by its rate of earnings. The rate of earning is determined by the investment policy of the firm, not by dividend policy. The investment policy also determines the retention ratio, that in what proportion the net earnings will be split between retention and dividend. The retained earnings if invested, will influence the stock value, not the act of splitting itself. Miller and Modigliani had made some critical assumptions.¹⁴

- (1) Perfect capital market where : a) All investors are rational, b) Information is cost free, c) Cost free

12 Francis, Op.cit., pp. 354.

13 Miller, M.H. and Franco Modigliani, "Dividend Policy, Growth and Valuation of Shares", Journal of Finance, (Oct.1961), pp. 411-33.

14 Miller, M.H. and F. Modigliani, Ibid.cit., pp. 415.

and instantaneous transaction, d) Infinitely divisible security, e) No individual investor can influence the security market.

- (2) Absence of flotation cost.
- (3) Taxes don't exist, or there is no differential rate of tax on dividend and capital gain.
- (4) A fixed investment policy for the firm
- (5) Perfect certainty about future investment and profit.
MM drop this assumption later.

MM assert that the effect of dividend payment on shareholder's wealth is offset exactly by other means of financing. A firm's policy whether to pay dividend or not, is determined by its investment policy. A firm can sell new equity, to the extent of dividend paid, to finance the investment. Financing investment through new equity or retained earnings has the same impact on share price. The discounted value of share after external financing plus dividend paid, is equal to the market value of the predividend share. The decline in stock price because of external financing is exactly offset by the payment of dividend. Consequently, the stockholders are indifferent between dividends and retained earnings.

The market value of the share at the beginning of the period equals the sum of the present value of dividend to be paid at the end of the period and the market price of the share at the end of the period.¹⁵

15 Millar^e and Modigliani (1961), Op.cit., pp. 411-33.

$$\text{So } P_0 = \left(\frac{1}{1+\rho} \right) (D_1 + P_1) \quad \dots \quad (2.11)$$

where P_0 = Market price of the share at base period

ρ = Constant capitalisation rate

D_1 = Dividend per share at period 1

P_1 = Market price of share at period 1

If there are n number of shares at the base period, and m number of new shares are sold during time period 1 at price P_1 , the equation (2.11) can be expressed

$$nP_0 = \left(\frac{1}{1+\rho} \right) [nD_1 + (n+m)P_1 - mP_1] \quad \dots \quad (2.12)$$

Thus the total value of the shares at base period equals the present value of dividend paid at time period 1 plus the present value of all the stocks at period 1 less the total value of new stock issued.

Total number of new stock issued

$$mP_1 = I - (X - nD_1) \quad \dots \quad (2.13)$$

where I is the total investment made during period I and X is the total amount of net profit.

By substituting mP_1 by $I - (X - nD_1)$ in equation (2.12) we can write

$$\begin{aligned} nP_0 &= \left(\frac{1}{1+\rho} \right) [nD_1 + (n+m)P_1 - I + X - nD_1] \\ &= \left(\frac{1}{1+\rho} \right) [(n+m)P_1 - I + X] \quad \dots \quad (2.14) \end{aligned}$$

It is clear from equation (2.14) that D_1 is not directly involved in determining nPo . Moreover other variables like P , X , I and $(m+n)P_1$ are assumed to be independent of D_1 . MM pointed out that the pricing of the common stock is independent of dividend decision. Not only the current dividend, but the future dividend also does not influence the current price of the share. With the assumption of perfect certainty, equation (2.12) can determine the share price at any period of time.

Assumption of perfect certainty, constant rate of return, constant rate of capitalisation, and tax neutrality logically lead to irrelevancy conclusion. An individual investor has the freedom to invest or retain his earnings. The corporation can also do the same for the investor.

The cost of capital will be independent of dividend, if the irrelevancy argument is valid. Alternative sources of financing investment like debt, retained earnings or common stock issue, will have the same effect on stock price.¹⁶

New investment will be financed by debt, only when real cost of debt is equal the real cost of equity. MM argue that the external financing (debt or equity), that compensates the dividend payment, does not affect the irrelevancy hypothesis.

¹⁶ VanHorne, James C., Financial Management and Policy, (New Delhi, Prentice Hall of India Pvt. Ltd., 1979), 4th ed., pp. 281.

MM drop the complete certainty assumption. Even when P_1 and D_1 are subject to uncertainty, MM concluded that the irrelevancy hypothesis continues to be valid. The market prices of two firms, with identical risk, future earning prospect and investment policy will be the same if symmetric market rationality is there. Symmetric market rationality defines a position when (1) every investor prefer more to less income and (2) believes others to be doing so. It differs from the usual postulate of rational behaviour.

Symmetric market rationality, not only depends upon rational individual behaviour, but their belief that others will also behave so. It is a statement about the market. As rational behaviour, **symmetric** market rationality cannot be deduced from individual rational behaviour. A difference in present and future dividend policy also is not expected to affect the market value of the two firms, as the sum of present value of future dividends and terminal value are the same. Given the investment policy, MM maintain that even under uncertainty, the dividend policy is irrelevant.

MM's hypothesis of dividend irrelevancy is based on a set of simplifying assumptions which are not well founded. As a result, MM hypothesis lacks the practical relevance. It is a fact that dividend payment does affect the perception of shareholders. They are not indifferent between dividend payment and retention of earnings.

Lintner counters MM's irrelevance arguments by observing that under certain types of uncertainty dividend policy is relevant.¹⁷ Lintner classifies uncertainty into three categories. (1) Fully idealised uncertainty: It describes the situation in which information needed to formulate probability distribution of possible events is distributed uniformly among all market participants and the probability distribution of possible events of all participants are identical. (2) Uncertainty with uniform information and diverse judgmental distribution: As the very name suggests, here the subjective probability distribution formulated by market participants need not be identical. (3) Generalised uncertainty: It describes the situation ~~both~~ in which both quality and quantity of information are not distributed uniformly. He argues that only under the condition of generalised uncertainty, the dividend policy is irrelevant. The relevancy arguments stressed that the investors are not indifferent between dividend payment and retention of earnings.

Current dividend is considered to be more certain than the distant future one. Current dividend reduces doubt in the mind of the investors about the income from common stock. So the investors are not indifferent between dividend payment

17 Lintner, J., "Dividends, Earnings, Leverage Stock Prices and Supply of Capital to Corporations", Review of Economics and Statistics, (1962), pp. 254-60.

and retained earnings. Gordon contends that uncertainty increases at an increasing rate with the increase of futurity of cash payment. The discount rate is said to rise, when a company cuts dividend to finance investment. Here the near dividend is reduced and the future prospect of higher dividend increases. Thus, the discount rate which increases with the reduction of current dividend is likely to bring down the price, other thing remaining same.

Investors prefer early resolution of doubt and are ready to pay higher price to high dividend-yielding stock. It is true that the basic business risk of a firm is not changed by the dividend payment, but investors' perception of such riskiness or uncertainty is affected.¹⁸

Higgen observes that if current dividend are considered less risky than the future one, the investor can sell a portion of the stock to get cash, if low dividend is paid. Investors can create home made dividends that are good substitute to corporate dividends. If the Company fails to do it for investors, the investors can do it for themselves. So the dividend policy is not relevant.¹⁹ But these arguments do not hold, if the transaction costs and other inconveniences

18 Keane, S.M., "Dividend and the Resolution of Uncertainty", Journal of Business Finance and Accounting, (1974), pp. 389-93.

19 As reported by Elton, E.J. and M.J. Gruber, "Marginal Stockholder Tax Rate and the Clientele Effect", Review of Economics and Statistics, (1970), pp. 68-74.

are considered.

Dividend with Floatation Costs

Introduction of floatation cost into the analysis, favours retention of earnings. For each rupee paid as dividend, the firm gets less than a rupee from external financing, after floatation cost is deducted. The cost is also higher for smaller issues. Stock financing is lumpy in nature, as small issue suffers from cost disadvantage. Stock financing is also less than perfectly divisible. So firms usually prefer internal financing on this count.

Dividend with Transaction Costs

Stock holders desirous of selling a part of the stocks have to pay brokerage fee which varies with the size of the sale. Thus, the stockholders' freedom to get cash income by selling stock is not frictionless. Further, common stocks are not perfectly divisible and the income from the sale of stocks is lumpy in nature. Moreover, the stockholders who aim to invest his dividend income also have to suffer from the transaction costs and indivisibility inconveniency. But some companies have automatic dividend reinvestment scheme where dividend income are invested to buy additional stocks, according to stockholders specification. Mostly these reinvestments are administered through the banks, where the transaction costs are comparatively lower. So the overall impact of transaction cost in the

market seems to favour the current dividend payment.

Legal Impediments

Some legal restrictions are there for institutional investors like pension fund or foundations to invest only in these companies which have a long record of dividend payment. Some institutions like universities are also not allowed to spend from capital gains.

Dividend with Differential Rate of Tax on Capital gain and Dividend Income

MM's Model assumes a no tax world. But in most countries, the capital gain tax rates are lower than personal income tax. Moreover, where as the capital gain tax can be deferred till the sale of the stock, income tax has to be paid in most cases at the source in the case of dividend payment. Logically, there is likely to be strong bias for capital gain which favours retention of earnings. Brittain's study indicates that the dividend ratio tends to vary inversely with the increase in differential between personal income tax and capital gain tax rate.²⁰

Any rational investor under differential tax rates is expected to maximise the aftertax income. Farrar and Selwyn²¹ in their study observe the impact of tax differential on the dividend policy.

20 Brittain, J.A., Corporate Dividend Policy, (Washington, D.C., Brookings Institution, 1966), Ch. 4.

21 Farrar, D. and L. Selwyn, "Taxes, Corporate Financial Policy and Return to Investors", National Tax Journal, (1967), pp. 444-454.

As reported by T.E. Copeland and J.F. Weston, Financial Theory and Corporate Policy, (California, Addison-Wesley Publishing Company, Philippines; 1980), pp. 340.

They use partial equilibrium analysis and assumes that investors will maximise their after-tax income. Investors have two choices either to buy shares in an all equity firm and borrow to provide personal ~~xxx~~ leverage or buy shares in a levered firm. The first choice relates to the desired amount of personal versus corporate leverage. The second choice pertains to the form in which payment is to be made. A firm can pay out its earnings as dividend or can retain its income to make it available to shareholders in the form of capital gains. It is the shareholders who must choose whether they want dividend or capital gain.

If, for example, a firm pays all its earning as dividend, the i th shareholder will get the following after-tax income (\tilde{Y}_i^d) .

$$\tilde{Y}_i^d = [\tilde{E} - rD_c](1 - t_c) - rD_{pi}](1 - t_{pi}) \quad \dots \quad (2.15)$$

where \tilde{Y}_i^d = the aftertax uncertain income of i th individual if corporate income is received as dividend

\tilde{E} = the firm's uncertain earning

r = borrowing rate, (assumed to be equal for individuals and firms)

D_c = Corporate debt

D_{pi} = Personal debt

t_c = Corporate tax rate

t_{pi} = Income tax rate for i th individual.

The first term $(\tilde{E} - rD_c)(1 - t_c)$ is the aftertax cash flow of the firm. The before tax income to the shareholders

is the dividends minus the interest on debt used to buy shares. After subtracting the income tax we get the after-tax dividend income of the shareholders.



As an alternative, if the firm decides to retain all the earning and shareholders immediately realised the income by selling the stock and are taxed at the capital gains, then the aftertax income of the shareholder is

$$\tilde{Y}_i^g = (\tilde{E} - rD_c)(1 - t_c)(1 - t_{gi}) - rD_{pi}(1 - t_{pi}) \dots (2.16)$$

where \tilde{Y}_i^g = uncertain income of the i th shareholder if corporate income is received as the capital gain

t_{gi} = tax rate on Capital gains for the i th individuals

Now an individual shareholder has to pay capital gain tax on the income and has to deduct after tax interest expenses on personal debt. The corporation by repurchasing some of its shares can translate the cash into capital gains.

Equation (2.16) can be rewritten as

$$\begin{aligned} \tilde{Y}_i^g = & [(\tilde{E} - rD_c)(1 - t_c) - rD_{pi}](1 - t_{gi}) \\ & + rD_{pi}(t_{pi} - t_{gi}) \dots (2.17) \end{aligned}$$

Equation (2.15) and (2.17) shows the advantage the investors is likely to get from receiving incomes in the form of capital gain. The ratio of two income stream

$\tilde{Y}_i^g / \tilde{Y}_i^d > 1$ if $t_{pi} > t_{gi}$. The implication, of course, is

that the corporation should never pay dividend. If payment is to be made to shareholders, it should always be by re-purchase of share.

Brennan extended the work of Farrar and Selwyn into a general equilibrium framework, where the investors are expected to maximise their expected utility of wealth. His conclusions are not different from that of Farrar and Selwyn. Brennan concluded "for a given level of risk, investors requires a higher total return on a security the higher its prospective dividend is because of the higher rate of tax levied on dividends than on capital gains."²²

Capital gains are given a preferential tax treatment over the dividend income, throughout the capitalist world. Naturally this discriminatory treatment between the source of income, creates a strong preference for retention of earnings. But as things remain, every year billions of dollars in form of dividend are distributed. Here we are confronted with a paradox, which many in the past have tried to solve.

An equity share has a market demand and fetches a higher or a lower price, depending on its capability to yield income in the form of current dividend or capital gain. An important section of stock market (corporate

22 Brennan, M., "Taxes and Market Valuation and Corporate Financial Policy", National Tax Journal, (1970), pp. 417-427.

As reported by Copeland and Weston, Op.cit., pp. 342.

investors, tax free institutions and foundations, old and retired investors, and large number of small investors) have all the reason to prefer dividend. It is only the people in the high tax brackets, who prefer retention of earnings to current dividend.

Hence we find two distinct group of investors, one preferring current dividends and the other favouring retention of earnings. Moreover, tax subsidies enjoyed by capital gains also differ from person to person.

Desire to hold cash rather than only a right to it, also varies from person to person. So we find among the investors in high tax bracket, some investors preferring dividend rather than future capital gains.

Miller and Scholes,²³ in their study, have shown that even with the existing U.S. tax systems (where $t_{pi} > t_{gi}$), the individual shareholder need not pay more than capital gains tax rate on his dividend income.

We find a significant section of the market, even under existing differential tax rate system, demand current income to future capital gains. If the demand for the common stock depends to a significant extent on its dividend yield, then dividend will have definitely some influence on the share price.

23 Miller, M. and M. Scholes, Dividend and Tax, Working Papers, University of Chicago, (1977). As reported by Copeland and Weston, Op.cit., pp. 356.

Information Content of Dividend

Solomon contends that dividend may offer tangible evidence on a firm's future profitability. As a result the dividend policy of firms affects share price. He observes "In an uncertain world in which verbal statements can be ignored or misinterpreted, dividend action does provide a clearcut means of making a statement that speaks louder than a thousand words."²⁴

Miller and Modigliani²⁵ also do not deny the possibility of this effect. The widespread practice of dividend stabilisation, and the belief that dividend is largely based on the management's expectation of long run future earning, makes any change in dividend, a source of information regarding firm's future performance, Walter points out that if past observed behaviour is consistent with the information conveyed by dividend declaration in the past, then investor will rely on it as a predictor of what is to come in future.²⁶ Pettit supports the observation that market does react to announcement of dividend changes. Price rises with an increase in dividend and falls with a significant fall in the dividend. He argues that dividend announcement contains more information than the earning announcement.²⁷

²⁴ Solomon, E., The Theory of Financial Management, (New York, Columbia University Press, 1963), pp. 2.

²⁵ Miller, M. and ~~Myx Scholx Dividndx Taxx Workingx~~ ~~Rapexx Nixxkxixxafx Chixagoxx~~ Modigliani, Op.Cit., pp. 411-433.

²⁶ Walter, J.E.; Dividend Policy and Enterprise Valuation, (Belmont, Calif: Wadsworth Publishing Co., 1967), pp. 90-98. As reported by J.C. VanHorne, Financial Management and Policy, (Prentice-Hall of India Pvt.Ltd., New Delhi, 1980), pp. 250.

²⁷ Pettit, R.R., "The Impact of Dividend and Earning Announcements: A Reconciliation", Journal of Finance, (1976), pp.87-96.

Watts observes that the unexpected change in dividend payment contains the information content of dividends. He found a positive but trivial relationship between unexpected changes in dividend and future earning change. He considers, the information content of dividends is trivial as the return from monopolistic possession of this information does not exceed transaction costs.²⁸

Keane²⁹ argues that companies have to disclose more information as per the requirement of the regulatory bodies. The firms, when they pay dividend and issue new security, disclose more information, as a result of which investors uncertainty is reduced.

Ross³⁰ and Bhattacharya³¹ have argued that dividend policy could be employed as a signalling mechanism, where firms with a profitable project are able and willing to pay higher dividends to make them recognisable from firms with low profitable project. The authors provide a rationale of value maximisation by paying positive dividend when the risk

28 Watts, Ross, "The Informational Content of Dividend", Journal of Business, (1973), pp. 191-211.

29 Keane, S.M., "Dividend and Resolution of Uncertainty", Journal of Business Finance and Accounting, (1974), pp. 392.

30 Ross, S.A., "The Determination of Financial Structure, the Incentive Signalling Approach", Bell Journal of Economics, (1977), pp. 23-40.

31 Bhattacharya, S., "Imperfect Information Dividend Policy and the Bird in the Hand Falacy", Bell Journal of Economics, (1979), pp. 219-270.

Both 30 and 31 above, are reported by Litzenberger R.H. and K. Ramaswamy "The Effects of Dividends on Common Stock Prices Tax Effects or Information Effects?", Journal of Finance, (1982), pp. 430.

premiums per units of dividend yield is positive in equilibrium. Stern³² pointed out that such signalling via dividend is excessively costly.

Hakanson (1982)³³ in his recent study tried to give some finer insights into the problem whether or not dividend conveys information. The basic idea is that a change in dividend communicate information over and above what is provided by earning reports, forecasts and other announcements. He mentioned the condition under which dividend payment increases the welfare of the investors. He has shown, whether informative or not, dividend serves no purpose, when investors are homogeneous, have time-additive utility and markets exhibit full allocational efficiency. Under these conditions, if dividend payment is associated with positive cost, then it decreases the welfare of the shareholders. On the other hand, if investors are heterogeneous in belief, utility is non-additive, and market is incomplete, informative dividend increases the welfare. Here the power of informative dividend to act as a substitute for financial market is significant. He noted, "dividend announcements may under certain circumstances bring an incomplete market to or even beyond the level of efficiency that would

32 Stern, J., "The Dividend Question, Opinion Column", Wall Street Journal, (July 15, 1979). As reported by Litzenberger and Ramaswamy, Op.cit., pp. 430.

33 Hakansson, N.H., "To Pay or Not to Pay Dividend", Journal of Finance, (1982), pp. 415-428.

be attained if the market were complete."³⁴

Litenberger and Ramaswamy (1982)³⁵ in their recent study found the information effect of dividend payment to be insignificant. They noted, "The prediction rule for the expected dividend yield is based solely on information that would have been available to the investor ex-ante, and hence is free from potential information effects that are contained in dividend yield variables that anticipate the occurrence (or lack thereof) of dividend"³⁵ He concluded that the significant dividend yield effect cannot be pinned to the information content in the prior knowledge that the firm will declare a dividend of magnitude. unknown

34 Hakansson, Op.cit., pp. 416.

35 Litzenberger and Ramaswamy, Op.cit., pp. 442-43.

CHAPTER III

A CRITICAL SUMMARY OF SOME IMPORTANT EMPIRICAL STUDIES

The models discussed in the Second Chapter examine the relevance of dividend policy for stock valuation. These models are built with and without the assumptions of perfect capital market, growth and certainty. The concept of investors' expectation of future earnings and dividends and uncertainty attached to such forecasts, the expected rate of earnings and dividends are used in some of the models. One of the main objections to these models relate to their unrealistic assumptions. Miller and Modigliani are of the view, that the earlier empirical studies, which support the relevancy of dividend in stock valuation, flows from the measurement error introduced when historical earnings is taken as a proxy for the future earnings. Past trends of dividend payment are also sometimes used as a surrogate for future growth rate. Different variables that enter into the valuation models are interrelated and to separate out the influence of each on stock price is not always possible. Most of the empirical works are unsatisfactory in nature, and these could not resolve the issue, whether or not dividend is relevant in stock valuation. Investment, finance and dividend decisions are the three important determinants of share value, moreover the three are interdependent. Thus

any partial analysis based on any of the variables will be far from complete.¹

In the pages that follow, we propose to examine some of the empirical studies. Some find strong relation between dividend payment and common stock prices while some other furnish evidence in support of the hypothesis that dividend has no role to play in stock valuation. Yet some other studies even though they find a positive relationship between dividend and share price do not give clearcut verdict as the statistical significance of their result is not strong enough. Most of the studies can be grouped into three classes, namely, (1) those that consider the relevance of dividend in stock valuation whether dividend payment and common stock prices are positively related, (2) those that examine the clientele effect, and whether through this effect, the dividend policy influences stock valuation. (3) The third group studies the information content hypothesis of dividend, and to what extent this informative nature of dividend influences stock valuation.

Dividend Determines the Stock Value

Tinbergen² was one of the earliest authors, who developed an econometric model to test the hypothesis. He stated

1 Bromwich, Michael, The Economics of Capital Budgeting, (Penguin Books Ltd., Harmondsworth, Middlesex, England, 1977), pp. 185.

2 Tinbergen, J., "The Dynamics of Share Price Formation", Review of Economics Statistics, (1939), pp. 153-160.

"share price vary proportionally with dividend and inversely proportionally with the rate of interest, for which the long term rate may be taken".³ This hypothesis seems to be reasonable, only if (a) market consists of investors and not speculators, (b) dividend is expected to be constant overtime. These conditions are seldom fulfilled. So, Tinbergen, elaborated a more generalised static law, where expected rate of dividends may differ from current dividends, and the price of the common share may vary less than proportionally with dividend changes. Tinbergen took into account the speculative nature of share price in stock market, and incorporated past trend in rate of changes in the share price in his model. He hypothesised that the prices of the stock in the previous period influence the attractiveness of the stock, and thus influence it's price. His model can be summarised as

$$P = f(x_1, x_2, x_3) \quad \dots \quad (3.1)$$

where P = Price of the common share

x_1 = long run interest rate

x_2 = dividend yield on nominal capital

x_3 = Rate of change in share price.

Tinbergen tested this model in a simple linear form on time series indexed data for different countries as a part of his larger study of business cycle. The result of study

3 Tinbergen, J., Op.cit., pp. 156.

indicates a strong positive relation between dividend and share price. Tinbergen's model seems to be deficient by current standard of statistical procedure, but as far as, insight into the problem is concerned, the study remains an important one.

Keenan⁴ examined a modified form of the Tinbergen model $P = a(dv) + b(\Delta P)$. Here price is assumed to be a function of the expected dividend, (dv) , measured as the greater of actual reported dividends or 40 ¢ per share and capital gains (ΔP) measured as the greater of an exponentially smoothed function of past gain or \$ 2 per share.⁵ This simple investor expectation model does not postulate relative valuation in terms of a firm's financial variables but in terms of variables directly observed by the investors in the market. Keenan found all the parameters to be significant. But the variability across the groups or over time is too great for the estimates to be accepted as coming from the same underlying population. Keenan admitted that all his attempts to incorporate into this model, market rate fluctuations and risk index to reduce parameter variability

4 Keenan, Michael, "Models of equity valuation. The Great Serm Bubble", The Journal of Finance, (1970), pp. 254.

5 Keenan admits 40 ¢ and \$ 2 figures are arbitrary, but they are a consensus of minimum expectation of small group of investors on a hypothetical \$ 40.00 stock. Bushow and Clower also attempted testing different variation of Tinbergen's model. Bushow, D.W. and R.W. Clower, "Price Determination in Stock Flow Economy", Econometrica, (1954), pp. 328-43.

have failed.

Durand, in 1952 undertook a study of the price of bank stocks.⁶ His study was aimed at measuring the importance of variables that might affect the market of bank stock. The question that concerned Durand was "Given a ratio of market price (P) to book net worth (nw), what level of bank's rate of return [net dividend income by book net worth (ni/nw)] would be necessary to maintain ratio, (P/nw) of at least 100%".⁷ Durand took dividend payout ratio (dv/ni) per share as one additional factor influencing the market price of the stock. An increase in dividend payout rate, other things remaining same, is assumed to decrease the rate of return to maintain P/nw at a given level. The basic relationship can be expressed as

$$P/nw = a(ni/nw)^e \cdot (dv/nw)^t \quad \dots \quad (3.2)$$

Durand actually tested Eq. (3.2) in the following slightly different form

$$P = a \cdot (ni)^b \cdot (dv)^c \cdot (nw)^d \quad \dots \quad (3.3)$$

where P = price of the stock

ni = net income per share

dv = dividend per share

nw = net worth per share

6 Durand, D., "Bank Stock Prices and Analysis of Co-variance", Econometrica, (1955), pp. 30-45.

7 Durand, D., Bank Stock Price and the Bank Capital Problem, (New York), National Bureau of Economic Research, Occasional Paper, 59, 1957.

Durrand also examined the rationality of including in his model some other variables, such as, (1) Total equity capital as a measure of firm's size, (2) ratio of assets to capital, (3) ratio of risk assets to capital, (4) ratio of current dividend rate to average past dividend rate, (5) average annual rate of earnings, (6) Stability of earnings. He found the performance of none of these variables significant enough to warrant inclusion.

Durand took a sample of six groups of banks and studied them over a period of eight years (1946-53). This made 48 basic sample. He found the parameter estimates different from group to group and from year to year. Durand documented this variability by a series of co-variance analysis tests on the data. The parametric estimate of Durand's model turned out to be sample sensitive. He concluded that the samples could not be regarded as coming from the same universe. He was not successful in finding any additional variables for reducing these sample heterogeneities. Durand, aware of the limitation of his study, sounded a warning on the theoretical and statistical problems that may arise in equity valuation. His tests thus show that while dividend payout and share prices are positively related, the real magnitude of the relation was virtually impossible to establish owing to limitations of statistical procedure used.

Oskar Harkavy⁸ found in his study that of two stocks similar in all respects but for dividend payout ratio, a higher price will be paid to that share that pays high percentage of earning as dividend. Only exception to the above rule is the firm with exceptional growth, where high retention is associated with price appreciation. He argues ~~that~~ that only low payout ratio is not sufficient to induce price rise. Higher rate of return on new investment must accompany the increase in the book value due to undistributed profit, if price appreciation is to be maximised.

Harkavy differentiated between instantaneous and long term effect of dividend policy. He contended that the average price of share for a given year varies with proportion of earning distributed as dividend, whereas over a period of years, greater price appreciation is associated with greater proportion of earnings retained.

Harkavy's study analyses the time ~~■~~ series of average price-earning ratio and average dividend-earning ratio for two periods (1871-1937 and 1934-1950). The co-efficient of co-relation in case of first series is found to be positive and statistically significant. But the co-efficient of co-relation for the second period is found to be negative and statistically insignificant. The negative sign of the

⁸ Harkavy, Oscar, "The Relation Between Earnings and Common Stock Prices for Large Listed Corporations", Journal of Finance, (1953), pp. 283-297.

co-efficient may be neglected as the value of the co-efficient is very small. (0.04) Harkavy, contrary to the expectation, found the coefficient of correlation even in case of a growing industry like chemical to be comparatively high (0.784) and statistically significant. This suggests that dividend payment ratio is associated with stock price valuation. Harkavy concluded, as many other factors affects stock price, it is useless to predict on the basis of earnings and dividend. The partial co-efficient of correlation between price and earnings calculated in Harkey's study, was found to be + .0459 and between price and dividend payout ratio was only + 0.190. The low value of co-efficient of co-relation between price and dividend indicated, given earning, dividend payment has little influence on price variation.

Harkavy also tested the relationship between retention percentage and price appreciation using time series data from 1942 to 1951. He found positive relation in case of 384 industrial firms. All groups of firms did not show the same relationship. So, it cannot be said with certainty that high retention leads to price appreciation. Harkavy concluded that both price-appreciation and high retention of earnings are result of a third factor, the rate of growth of demand for the firm's product.⁹

9 Harkavy, Oscar, Op.cit., pp. 288.

Graham and Dodd¹⁰ are of the view that in case of an average firm dividend payment has stronger effect on price appreciation, than retention of earnings. They went to the extent of suggesting that dividend effect of a dollar is equal to retention of earnings effect of three to four dollar on price appreciation.

Young¹¹ and Pastorija¹² put forward evidence which supports the hypothesis that high payout ratio is associated with high stock price. Young found a close positive relationship between dividend payout ratio and price earning ratio for sixty gas and electricity companies. Pastorija conceded that the weightage given to undistributed earning compared to weightage given to distributed earning depends on the standing of the Company in the market. He took 14 different companies where their weight vary from 17 per cent to 35 per cent and averaged at 25 per cent. The last figure means \$ 1.00 of retained earning has an effect on market prices, which is equal only to 25 cents of earnings paid in dividend.

10 Graham, B. and D.L. Dodd, Security Analysis, 3rd Ed., (New York, McGraw-Hill Book Company Inc., 1951), pp. 434.

11 Young, Harold H., "Factor Influencing Utility Price-earning ratio", Analyst Journal, (1955), pp. 45-48.

12 Pastorija, Huga, "Valuation Utility Earning Distributed and Retained", Analyst Journal, (1945), pp. 11-15.

(Both 11 and 12 references are from Graham and Dodd, Ibid, pp. 432.)

Gordon's¹³ reformulated model discussed here is constructed by extending earlier certainty - perpetuity model (See Chapter II). This single equation model is explicitly designed to answer the question as to what variables may explain the value of common stock.

Gordon's model can be expressed as

$$P = a(x_1)^b(x_2)^c(x_3)^d(x_4)^e(x_5)^f(x_6)^g(x_7)^i \dots (3.4)$$

where p = Price of common share
 x_1 = dividend per share
 x_2 = growth rate
 x_3 = earning instability rate
 x_4 = leverage effect
 x_5 = operating asset liquidity index
 x_6 = debt maturity index
 x_7 = firm size.

The sample estimates of the regression equation (3.4) are calculated for ten samples comprising two industries, (Food and machinery) and five-years (1954-1958).

The dividend co-efficients are found to be highly significant. They fluctuate in a narrow range between years and significantly less than one for both industries, suggesting a strong relationship between dividend payment and the stock price. Growth rate and firm size are found to have positive influence on stock price. The earning instability

13 Gordon, M.J., The Investment, Financing and Valuation of the Corporation, (Homewood, Illinois, Richard D. Irwin, Inc., 1962), Ch. 12.

and leverage seem to have negative effect. The two risk variables asset liquidity index and debt maturity index, are found to perform poorly. Thus Gordon's test shows that dividend along with growth rate, firm size, leverage and earning instability influence the stock price.

Gordon's model is important on two counts: (1) It has used standard statistical criterion. This model, as the parameter estimates show performs well, compared to those models that rely on firm's financial variable as the basic explanatory agent. This model can be used as a benchmark to measure future progress. (2) Gordon's methodology contains an important innovation. His dividend variable depends not only on the firm's actual payment but also on the level of those payment; "when income falls sharply or the firm feels a strong temporary need for cash, the dividend may be cut sharply as a temporary expedient. To deal with these situation 2 per cent of the book value per share was used [in place of dividend payment] whenever the dividend was below the figure."¹⁴ It implies that dividend expectation can sometime be better approximated by actually excluding dividend variable from the equation.

Bodenhorn¹⁵ is critical of Gordon analysis, because it reverses the investment logic. Investment depends basically

14 Gordon, M.J., Op.cit., pp. 157.

15 Bodenhorn, D., "On the problem of Capital Budgeting", Journal of Finance, (1959), pp. 473-92.

on availability of investment opportunity. Gordon, by assuming stable payout ratio, takes the availability of investment opportunity for granted. The earnings of the firm are likely to grow, as also the retention of earnings in absolute terms. If all the increased amount of retained earnings are to be reinvested, then the investment opportunity must grow proportionately. This possibility is very remote. Gordon is aware of the limitation of his study. He considers the question of dividend policy, as an instrument influencing stock price, an open one.

Gordon's statistical methods can also be questioned. He used the historical trend of dividend as a proxy for expected dividend. This may lead to measurement error. The leverage effect (L/W) depends on the share value (W) which precisely Gordon was trying to explain. This may lead to circularity in argument. Moreover the seven variables are not completely unrelated. So they may lead to the problem of multicollinearity

Keenan¹⁶ tried to reproduce Gordon's result from a separate set of information. He took the period 1916-59 for a sample of industries which included, (1) a food related industry (55 firms), (2) Machine related industry (62 firms), (3) Chemical related (50 firms), and (4) a sample consisting of the largest firm from about fifty industries. Group I

16 Keenan, Op.cit., pp. 254.

and II are almost the same as Gordon's sample. The samples are not completely independent as some firms in Groups I to III are in Group IV.

Keenan found most of the parameters statistically significant for the majority of sixteen samples. The dividend co-efficients across all the groups and years are positive and statistically significant implying that dividend payment is positively related with the stock price.

Keenan performed a series of co-variance tests to evaluate the parameter stability, comparing the residual from the sample regression supposed to come from the same population with the residual from a pooled regression made up of all sample data under consideration. These tests provide enough evidence, to reject the hypothesis of equivalence of population parameters, whether it is pooled cross sectionally or inter-temporally. The values of the sample parameters are found to be sample sensitive. So it is advisable not to pool, average or group them to derive inference for a non-existing underlying universe. This makes it very difficult to make quantitative inference, as the true value of the parameter may be between a range. From his tests, Keenan was unable to present quantitatively the effect of dividend payment on share price. However, the general sign of co-efficient of co-relation supports the Gordon's view that dividend payout and share price are positively related.

Modigliani and Miller,¹⁷ as mentioned earlier, represent the school which put forward the thesis, that dividend is irrelevant in share valuation. MM in their famous study (1961) has shown that under ideal conditions of perfect capital market, rational investor behaviour and no tax discrimination between sources of income, dividend policy is not relevant in stock valuation. Given a firm's investment policy, dividend policy has no effect on the current value of share. Dividend policy only divides the shareholders return into current cash payment and capital appreciation. It also divides the firm's equity financing between retained earning and external financing. But with the presence of tax discrimination, brokerage fee and floatation cost, dividend policy is considered to have some influence on the market price of the share. MM reason that it is almost impossible to determine the precise amount of effect on a priori reasoning. The tax subsidies on the form of lower capital gain tax enjoyed by investors vary from one to the other. It is actually zero for a substantial part of the market represented by pension fund, foundation, etc.. Tax on corporate dividend is lower than tax on capital gains. Small investors do not pay income tax. Elderly and retired persons may prefer high payout ratio to high capital gain, because of the considerable savings in brokerage fee and other cost of portfolio adjustment, which they can obtain.

17 Miller and Modigliani, Op.cit., pp. 411-33.

In 1966, MM presented an elaboration of their original model¹⁸ (See Chapter II). They shifted the focus to (1) the development of an explicit firm valuation (V) theory and hence shareholder value (S) model and the development of more sophisticated statistical testing procedure. A two stage least square regression procedure is used to estimate a valuation model incorporating the following variables.

$$V = f(t, D, NI^*, A, g, e) \quad \dots \quad (3.5)$$

$$NI^* = h(t, D, A, g, PR, DV) \quad \dots \quad (3.6)$$

where

- t = Income tax rate
- D = debt
- NI* = Expected net income
- A = Total assets
- g = Asset growth rate
- PR = Preferred stock
- DV = Expected dividend measure
- e = Risk class index

Modigliani and Miller argue, that an upward bias is imparted to dividend effect, if unadjusted earnings are used in empirical work as has been done in the works of Gordon and Durand (discussed earlier). They are of the view that these difficulties arise because of the widespread practice of dividend stabilisation. The current dividend is largely based on the management's expectation about future earnings. So any upward change in dividends are taken as management's message about future profitability

¹⁸ Modigliani, F. and M. Miller, "Some estimates of the Cost of Capital to Electricity Utility Industry, 1954-57", American Economic Review, (1966), pp. 333-39.

of the firm. So the coefficient of dividend in regression equation will show substantial information about future expected earning along with true dividend effect, if any, on share valuation.

The treatment of dividend in MM study is based on the assumption that true effect of dividend on share valuation without information effect is very small. So they tried to develop statistical procedure for eliminating the information effect from the true dividend effect. They suggest: a better measure of expected earning is obtained by constructing a special earning figures using the method of instrumental variables.

The dividend variable used in the test is of the form

$$= \frac{\text{div}}{A} - \lambda \left(\frac{\bar{x}_t - tR}{R} \right)$$

where λ is the sample average payout for the year in the equation. This form for the dividend variable has the advantage of preserving the interpretation of earning co-efficient as the capitalisation rate for companies following an average dividend policy and thereby facilitating comparison with previous years.

They obtain their earning figures by regressing the value of the firm on several causal factors like dividend, firm size, growth rate of asset, debt/equity ratio, etc.. MM claim that the earning figure obtained by this exercise

would not introduce bias into empirical works, as their procedure purges dividend of their informational content about future earnings.

The results obtained from the direct least square, where measured earning (unadjusted) are used as earning variables show dividend coefficient to be positive in all three years and very substantially so in relation to its standard error. This kind of study supports the traditional view that high dividend payment increases the value of the firm.

As discussed earlier, MM found the coefficient of dividend to be biased upward, because of additional information that the dividend conveys about expected future earning over and above that contained in imperfectly measured earning variable.

The results obtained from two stage least square estimate are striking. The point estimate of coefficients are found to be negative, for each of the three years. All of them are small in magnitude and insignificant except for 1954. The results show that the traditional view, that the share price tends to increase with increase of dividend payout ratio is without any support. The present study supports their earlier stand (1961) that dividend payout is irrelevant in share valuation.

Friend and Puckett (FP)¹⁹ used cross section data to test the effect of dividend on share price. They are critical of earlier studies (Gordon, Durand) which related stock price with dividend and retained earnings. The conclusion that the multiplier effect of dividend on share price is greater than the multiplier effect of retained earnings, is questioned by FP as theoretically inconsistent. Their objection to earlier empirical studies are mostly related to the regression equation, commonly applied to crosssectional analysis.

$$P_{it} = a + bD_{it} + cR_{it} + e_{it} \quad \dots \quad (3.7)$$

where P_{it} = Price of a share of ith firm in period t

D_{it} = Aggregate dividend payout of ith firm in period t

R_{it} = Retained earning of ith firm in period t

e_{it} = error term.

FP argue that if $b > c$ is taken as a condition showing preference for dividend, the dividend payout ratio which is in most cases less than one, seemed inconsistent with the result. The above equation implies that the payout ratio that maximised the stock price, is either one or zero. The possibility of stockholder's indifference between dividend and capital gain seemed questionable. Moreover, the above

19 Friend, I. and M. Puckett, "Dividend and Stock Price", American Economic Review, (1967), pp. 656-682.

equation may be considered as deficient because it can not admit any payout ratio other than one or zero.

So if the Company pays, on an average, less than optimum dividend, $b > c$, more than optimum dividend, $b < c$ and just optimum dividend, $b = c$, the above statement implies that at optimum payout, one dollar of dividend will have same effect on share price as one dollar of retained earning. So when $b \neq c$, any payout ratio, other than one or zero, may be considered as either a disequilibrium position or a result of the limitation of statistical analysis. The type of analysis discussed above is found to be less efficient due to (1) Omitted variables, (2) Regression weight, (3) Random variation in income, (4) Error in measurement of income, and (5) Least square bias.

The above analysis completely omits the risk variable, by assuming constant risk. The external financing which is the most important source of growth is also neglected. But both the risk variable and variable representing external finance are too important to be neglected.

Extreme values are likely to influence the regression result more than ^{the} values centre around the sample average. High quality stocks are characterised by high per share value. (prices, dividends and earnings) Low quality stocks are characterised by low per share value. So the high yield stock is likely to have high payout ratio compared to low quality stock. Thus the association between regression weight

and investment quality may exaggerate the existing regression bias due to association of investment quality and dividend payout.

The incomes reported by firms are subject to error owing to a host of short-term economic factors and accounting methods. This makes the reported earning different from what they should have been under normal condition. Stock prices are expected to be related to normal earning than to reported one. Dividend payment remains unchanged despite short term fluctuation in reported income. As a result, the regression equation in its standard form will be biased in favour of dividend.

Different accounting procedures to estimate business earning may introduce error in income measurement. Retained earnings are usually decided in relation to total earnings. So the measurement error in total earning is likely to affect the estimate of retained earnings. This may give a downward bias to the coefficient of retained earnings. As dividend is measured precisely, no such bias exists in case of dividend coefficient. If price and dividend, both are geared to economically correct value of earnings a firm which reports higher earning (due to particular accounting procedure) will have both low payout and low price-earning ratio compared to the sample average. As a result, the coefficient of retained earnings is likely to be biased downward.

The above analysis assumed only one way causality between dividend and price. Changes in payment of dividend are, in part a result rather than a cause of changes in price earning ratio. The regression equation discussed here, fails to take into account. One way causality reflected in cross-section data, biased the regression result in favour of dividend co-efficient. The dual causality needs a complete model employing both demand and supply schedule for dividends.

FP tried to handle the problem of omitted variable, by expanding the regression equation. They admitted the difficulty in measuring variables like risk evaluation, profitability of investment opportunity, **source** of expected future earnings and accounting differences. They took an indirect approach to overcome the difficulty; they introduced continuous cross-section technique for studying the problem. FP took a variable F_i , which they defined as aggregate composite effect of omitted variables.

The composite effect F_i is assumed to be constant over time and is additive.

FP contend, the dividend and retained earning will be free from firm effect, if F_i can be eliminated.²⁰

The above formulation, inspite of its theoretical appeal, runs into difficulties. The error term in the cross-section difference equation becomes quite large. Movement of

20 See Friend and Puckett, Op.cit., pp. 666.

variables from period to period, may contain random element and serial correlation, which affect the meaning and reliability of the coefficient. FP have used group data rather than individual firm data, to minimise the above complications. The random change in earnings is more likely to be reflected in retained earnings rather than in dividends and depresses the retained earning co-efficient. FP argue that the firm effect is more likely to be multiplicative rather than additive.

FP took an alternative approach incorporating multiplicative relationship of the firm effect.

$$\text{If } F_{it} = f_i E_{it} \quad \dots \quad (3.8)$$

where f_i is the firm effect multiplier and E is the per share earning, F_{it} is the aggregate firm effect for any period, which is assumed to be proportional to firm's per share earnings. They hypothesize that $P_{it} = (k_t + f_i)E_{it}$ if earning payout effects are assumed to be negligible. Here k_t is the average price earning ratio of the sample. Over any two periods, f_i is assumed to be constant. They introduced a variable $[(P/E)'_{i(t-1)}]$ which measures the individual deviations from sample average P/E in the previous period, in the regression model, to keep the firm effect constant.

$$P_{it} = a + bD_{it} + cR_{it} + d(P/E)'_{i(t-1)} + e_{it} \quad \dots \quad (3.9)$$

FP to overcome the least square bias suggested a complete model including dividend supply function and the customary price relation.

$$\text{Let } P_{it} = a + bD_{it} + cR_{it} + d(P/E)'_{i(t-1)} \dots (3.10)$$

be the relation determining price and,

$$D_{it} = e + fE_{it} + gD_{i(t-1)} + h(P/E)'_{i(t-1)} \dots (3.11)$$

be the supply equation (error term omitted); the dividend supply equation emphasises the importance of past dividend on current dividend. This variable permits the firm to adjust its current payout to past market valuation of future earnings. FP completed the system by the identity

$$E_{it} = D_{it} + R_{it} \dots (3.12)$$

Here E_{it} may be considered as exogenous and but not D_{it} or R_{it} . FP solving the equation (3.10, 3.11 and 3.12) derived

$$P_{it} = [a + e(b-c)] + [c + f(b-c)]E_{it} + [g(b-c)D_{i(t-1)}] + [d + h(b-c)](P/E)'_{i(t-1)} \dots (3.13)$$

The coefficient calculated are theoretically free from bias due to effect of price on dividend supply.

FP contend that the problem of random income fluctuation can be tackled by use of normalisation of earnings in the regression equation. The normalised earnings can be found by simply multiplying normalised value of earning

price ratio with per share price. The normalised retained earnings can be obtained by subtracting observed dividend from normalised earnings. The underlying assumptions of the above analysis that dividends do not react to annual earning changes, no speculative component in share price, and earning fluctuations add to zero, can be questioned. FP pointed out that the dividends are more likely to be influenced by relatively permanent change of income. Price averaged over a period of a year is more likely to minimise the speculative component. The average earning can be used as normal earning, because the possibility of error is small, its effect on the regression equation will be small. As individual price contains some speculative component, normal earning measured from such prices, may also contain some error.

FP to check the influence of dividend on price, took a time series analysis. They introduced an equation in their study,

$$\frac{(D/E)_{it}}{(D/E)_{kt}} = a + b \frac{t}{k} + e_{it} \quad \dots \quad (3.14)$$

where t stands for time trend.

to ascertain if changes, over time, in relative earnings price ratio are consistently associated with changes in the dividend payout ratio.

FP had selected five industry samples (chemical, electronics, electric utility, food and steel) and two years (1956 and 1958) for cross-sectional analysis. The

samples include growth and non-growth, cyclical and non-cyclical industries. All care had been taken to make the industry group homogenous.

FP initially took a simple linear relationship $(P_t = a + b_1 D_t + c R_t)$ between average price, and dividends and retained earnings. They found a strong dividend effect and relatively weak retained earning effect in three of the five industries (chemical, food and steel). The result in chemical industry, a growth industry, seemed to be highly objectionable. The magnitude of difference, even in the case of food and steel appeared suspect. FP recomputed the regression model for chemical and electric utility using logarithms. The result in case of chemical industry remain unaltered, but in case of electrical utilities, the results were reversed ($b > c$). The results from the above analysis showed a strong dividend effect on price in case of non-growth industry whereas in case of growth industry, the results seemed to support higher retained earning effect, even though the results in all growth industries are not uniform.

FP added a lagged price-earning ratio to the regression equation discussed above, and the results obtained are almost the same as in the earlier analysis, however, the difference between b and $\frac{c}{\lambda}$ coefficients are reduced considerably.

The results obtained from the use of complete models (equ. 3.10, 3.11, 1.12) for 1958 showed that price-earning

ratio does not have significant effect on dividend payout. The retained earning effects, except for steel, seemed to have increased relatively.

The equation initially used was modified by adding a lagged price variable, which allowed for slow short term adjustment of price to current level of income. It is noted earlier that the lagged price variable holds firm effect constant and minimizes regression weight. The results indicated that the retained earning got more weightage in most of the cases. Steel and food in 1958 are the exception. All growth industries showed stronger retained earning effects. There is no significant difference between b and c in food and steel industries. The anomalous result for dividend and retained earnings are eliminated. The regression co-efficients of constant terms are in general close to zero. The results seemed to be in accordance with theoretical expectation. But the results showed an undesirable property like negative dividend co-efficient. The standard error for both dividend and retained earnings are very large. The results pointed a weak response of price to short term earning changes. The prices are not seriously affected, whether the increased earning are paid out or retained. At least for growing concerns, the retained earning effects on price seemed to be stronger.

FP used normalised earning designed from time series data for period 1950-1961. They calculated normalised

retained earning for the period by subtracting reported dividend from the normalised earnings. FP tried to relate the price with dividends and normalised retained earnings for chemical, food and steel. They added previous years normalised earning price variable to keep the firm effect constant. The results show the significant role of normalised earnings in correcting the understatement of retained earning effects. Results show that with normalised earning and constant firm effect incorporated in to the model, the difference between the b and c co-efficient disappeared. A closer examination of chemicals sample group showed the possibility for regression weight bias. FP omitted three firms, whose prices deviated from the sample price, and as a result the finding were substantially improved.

FP wanted to compare the time series behaviour of the relative earning ratios. It was done only in case of chemical industry for lack of information. The results indicate that as relative payout increases, relative earning yield also increases more often. Price earning ratio may have some tendency to move inversely to payout ratio. This is in contrast to the customary assertion of a direct relation.

FP argue that the results of their analysis indicated little basis for the customary view, that in stock market, except for growth stock, a dollar of dividend has several times the impact of price of a dollar of retained earnings. A moderately high value was placed on dividend effect in

case of non-growth industry. The opposite is true in case of growth industry. So no strong case can be made for either dividend or retained earnings as a determinant of stock valuation.

Black and Scholes (B-S)²¹ presented a strong empirical evidence that before tax returns are not related to corporate dividend policy. They contend "it is not possible to demonstrate, using best empirical methods, that expected return on high yield common stock differ from the expected return on low yield common stock either, before or after tax".²² A section of share market is indifferent to tax discrimination. The existing U.S. tax laws provide preferential treatment to corporate dividend (like mutual fund). There are some tax-free institutions like trusts and endowments, who can only spend from dividend income. Old and retired shareholders prefer dividend to capital gain, small investors whose income is not in the taxable brackets also prefer dividend. With such diverse investors, it is possible that there may be clientele effect, which imply that with change in dividend policy, a firm may lose some investors, but they will be compensated by others who prefers new policy. So dividend payout may not have any effect on the

21 Black, F. and M. Scholes, "The Effects of Dividend Yield and Dividend Policy on Common Stock Prices and Returns", Journal of Financial Economics, (1974), pp. 1-22.

22 Ibid., pp. 9.

value of firm.²³

Black and Scholes were not satisfied with the cross-sectional regression tests which fail to ascertain the causality and the direction of causality between price and payout ratio. An association of high payout with high price-earning ratio does not mean that value of a firm can be increased by increasing ^{the} payout ratio. A firm with high price-earning ratio normally has ^a high payout ratio. A low risk firm may have high payout and high price earning ratio. BS claimed, that by adding more explanatory variable to cross-sectional regression, the causality and its direction can not be ascertained.

BS hypothesized that :

- (1) Increasing the dividend will increase the stock price,
- (2) Increasing the dividend will reduce the expected return on a company's share.

BS tested the hypothesis in its second form. They used an expanded form of the CAPM which tells that the expected return on any security should be a linear function of its ' β '.

$$E(\tilde{R}_i) = R + [E(\tilde{R}_m) - R] \beta_i \quad \dots \quad (3.15)$$

where $E(\tilde{R}_i)$ = the expected return on security i .

$E(\tilde{R}_m)$ = the expected return on the market portfolio
(Market portfolio in this model is the portfolio containing all assets).

23 Miller and Scholes had shown that even with the existing tax laws, no one need pay more than the capital gains tax rates (Dividend/Taxes Working Paper, University of Chicago) (and 1971.)

R = the riskless short-term interest rate.

β_i = the co-variance between \tilde{R}_i and

\tilde{R}_m divided by the variance of \tilde{R}_m which means the systematic risk of the firm.²⁴

The above relationship assumes (1) that there are no institutional factors like taxes which may affect investors demand for different securities, and (2) the supplies of all securities are given. If the first assumption is dropped the relationship breaks down. But if both the assumptions are dropped, then the relationship indicated in (Eq. 3.15) remains valid. The corporations can change the supply of shares with different dividend yield to match the investors demand. A company can go on changing its dividend policy, until there is no longer any advantage in making further change. In equilibrium equation (3.15) will describe the expected return of securities.

BS postulated a linear relationship between expected return of the stock and dividend yield. To take into account the postwar experience on expected returns based on the study of Black, et al, (1972)²⁵ they postulated,

24 Total risk of any asset can be partitioned into two parts, systematic risk and unsystematic risk. Systematic risk measures how the asset covaries with the economy and this part of the security risk cannot be eliminated by portfolio diversification. The unsystematic risk is that part of security risk, which is associated with random events, independent of economy and can be eliminated by judicious portfolio diversification.

25 Black F., M.C. Jensen and M. Scholes, "The Capital Asset Pricing Model, Some Empirical Tests", in Studies in Theory of Capital Market, Ed. by M.C. Jensen (Prager, New York, 1972), pp. 79-124.

As reproduced by Black and Scholes, Op.cit., pp. 8.

$$E(\tilde{R}_i) = Y_0 + [E(\tilde{R}_m) - Y_0] \beta_i, \text{ where } Y > R \dots (3.16)$$

One possible explanation is that firms systematic risk (β_i) is co-related with the dividend yield and if dividend yield term were included, the value of Y_0 would be equal to R .

Black, Jensen and Scholes pointed that usually high securities are overvalued and low β securities are undervalued. If high β stocks tend to be low yield stocks, which are overvalued, then this result may be associated with dividend. The result may be associated with factors like capital structure of the company which may influence the β of the corporations. BS warned that the test must be so designed as not to pick up artificial relationship with the dividend. If there is a correlation between β and the yield of the corporation, most probably Y_i will turn up significantly different from zero. But this manifestation may not be due to dividend policy.

BS postulated a model incorporating the Black et al suggestion, to have an independent test for dividend effect.

$$E(\tilde{R}_i) = Y_0 [E(\tilde{R}_m) - Y_0] \beta_i + Y_i (\delta_i - \delta_m) / d_m \dots (3.17)$$

The results of BS study showed that the dividend yield coefficient is not significantly different from zero across the time period 1936-1966 or in any sub-period. This implied that the expected return on high yield securities are not significantly different from low yield securities.

The investors cannot tell whether high yield stock or low-yield stock of some risk, have higher return. This indicates that the investors while making valuation of different stock, do not take into account the dividend yield. The corporation that increases the dividend policy may not expect any definite increase in the stock price. So the corporation may choose dividend policy under the assumptions that changes in dividend policy will have no permanent effect on its stock price. Internal financing by reducing dividend will be one of the inexpensive way of providing capital.

Clientele Effect

Miller and Modigliani in their pioneering work (1961), suggested the clientele effect for the first time. They noted: "If for example the frequency distribution of corporate payout ratio happened to correspond exactly with the distribution of investor preference for payout ratios, then the existence of these preference would clearly lead ultimately to a situation whose implication were different in no fundamental respect, from the perfect market case. Each corporation would tend to attract to itself a "clientele" consisting of those preferring its particular payout ratio, but one clientele would be as good as another in terms of valuation it would imply for firms."²⁶

26 Miller, M. and F. Modigliani; "Dividend Policy Growth and the Valuation of Shares". Journal of Business, (1961),

The clientele effect may be a possible reason why management are generally reluctant to change the stable payout ratio. Investors do not prefer to trade with stock frequently and readjust their portfolio. But frequent changes in dividend payout ratio will make it difficult for an investors to decide the composition of different types of stock in their portfolio. As a result, any firm, frequently changing their payout ratio may lose its clientele. This may adversely affect the demand for the stock and hence the price.

Elton and Gruber²⁷ tried to measure clientele effect by observing the average price decline which when stock goes ex-dividend. A shareholder if he sells his stock before it goes ex-dividend gets a price P_B and pays a capital gains tax t_g on the difference between selling and purchasing price of the stock, P_C . Alternatively, he can sell it after the stock goes ex-dividend. He will receive a dividend D , on which he has to pay income tax, t_o . However, he has to pay capital gains tax on the difference between ex-dividend price P_A and purchase price P_C . If the gain from both the activity are the same, then only the investors will be indifferent between alternative ways of getting returns. They postulated the following relationship.

$$P_B - t_g(P_B - P_C) = P_A - t_g(P_A - P_C) + D(1 - t_o) \dots (3.18)$$

27 Elton, E.J. and M.J. Gruber, "Marginal Stock-holder's Tax Rate and Clientele-Effect", Review of Economics and Statistics, (1970), pp. 68-74.

By rearranging

$$\frac{P_B - P_A}{D} = \frac{1 - t_o}{1 - t_g} \quad \dots \quad (3.19)$$

The ratio of decline in stock price to dividend paid becomes a means of estimating the marginal tax-rate for the average investors.

Elton and Gruber used 4186 observations spanning 1st April 1960 and 31st March. They noted, "the lower a firm's dividend yield the smaller the percentage of his total return that a stockholder expects to receive in the form of dividends and the larger the percentage he expects to receive in the form of capital gains. Therefore, investors who held stocks which have high dividend yields should be in low tax brackets relative to stock holders who hold stocks with low dividend yield."²⁸

The results of their study give the relationship of dividend payout of different decile with a drop in price as percentage of dividend paid and the implied tax bracket. The tax bracket decreases with increase in dividend payment. This evidence suggests the presence of clientele effect. The results show that the firm not only attracts a clientele, but it attracts rational clientele, which prefer its dividend policy.

28 Elton and Gruber; Op.cit., pp. 71.

A counter argument²⁹ is advanced by Copeland and Weston that the arbitrage can be carried out by traders who initially do not own the stock. They may have to pay income tax on their short term gain. The traders may invest P_B to acquire a stock before it goes ex-dividend, receive dividend, pay income tax on it and sell the stock after it goes ex-dividend at price P_A , receiving a shield for their short term loss. The profit is

$\pi = (1 - t_o)(P_A - P_R - D)$. To prevent any arbitrage profit the price decline must be equal to dividend payout ($P_B - P_A = D$). This condition is different from that suggested by Elton and Gruber. Both the models however neglect the transaction cost, ^{and case of} the tax-exempt investors. Therefore no strong conclusion can be made regarding the existence of clientele effect.

Pettit³⁰ tested for the clientele effect by examining the portfolio accounts of 917 individuals between 1964 and 1970. He tried to provide empirical evidence on the relative demand for different dividend-paying securities induced by transaction cost and differential rate of tax on dividends and capital gains. The results indicate that both transaction

29 Copeland, T.E. and J.F. Weston; Financial Theory and Corporate Finance, (Massachusetts, Addison - Wesley Publishing Company, 3rd ed., 1980, pp. 353.

30 Pettit, R.R., "Taxes, Transaction Cost and Clientele Effect of Dividends", Journal of Financial Economics, (1977), pp. 419-436.

does not select the preferred stock dividend yield because his preferred choice of risk or vice versa. Low dividend stock because of higher futurity of its return tend to have higher risk. Investors preferring high dividend yield stock are likely to hold portfolio with relatively low risk, and the structural specification must take this into account. Investors' time preference may proxy for his risk preference. As there is no causality between risk and dividend yield in the individual's portfolio selection process, risk as an explanatory variable may be included in the equation. Pettit tried to explain the observed difference in portfolio dividend yields with use of variables measuring time preference, tax rate structure and portfolio risk. Pettit postulated the following equation.

$$Dy_i = a_1 + a_2\beta_i + a_3AGE_i + a_4INC_i + a_5DIR_i + E_i \dots (3.19)$$

where, Dy_i = Dividend yield for i th individual's portfolio.

β_i = The systematic risk of i th individual's portfolio.

AGE_i = Age of the i th investor.

INC_i = Gross family income averaged over the last three years of i th investors.

DTR_i = The difference between the income tax and capital gains tax of i th investor.

E_i = a normally distributed random error.

The results indicate a strong negative relationship between risk and dividend yield. Pettit found, keeping risk constant, other coefficients tend to support the existence

of clientele effect, because of relative high desire for correct consumption and tax discrimination. AGE and INC are the variables which represent time preference. AGE bears a strong positive relationship with relative desire to consume.³² Selection of a portfolio of security with high dividend yield seemed to be consistent with the desire for current consumption. The coefficient of AGE estimated supports that old persons prefers high dividend yielding stock than high capital gain stock. Income has a negative relationship with dividend yield that lower the income, higher is the desire for dividend income. Pettit's study indicate the coefficient of DTR to be negative and statistically significant which implied the presence of clientele effect. The coefficient of DTR in case of no tax difference group, is insignificant, which implies the indifference between dividends and capital gains.

The evidence provided to the study suggests the presence of clientele effect, because it explained a significant position of cross section variation in individual portfolio dividend yield. But the study in no way suggests that the market price of a security is determined by the dividend policy of the firm alone.

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32 See, Modigliani, F. and R. Brumberg "Utility Analysis and Consumption Functions: An Interpretation of Cross Section Data", Post Keynesian Economics, Ed. K.K. Kurihara (Rutgers University Press, New Brunswick).

Announcement effects

Most of the studies undertaken during sixties and early seventies provided evidence to support to the hypothesis that dividends are irrelevant for the stock valuation. But the evidence does not completely rule out the possible relation between dividend and stock price. Experience reveals that most firms prefer to have a stable dividend policy. The advantage of cornering a definite clientele is discussed earlier. Given this type of managerial behaviour, there is every possibility, that investor may interpret an increase in current dividend payout as a message from the management, that they anticipate higher return from the investment in future. Announcement of higher dividends are mostly associated with price appreciation of the common stock. The dividend per se does not affect the price of share, the argument goes; instead it serves as a message from the management that the firm in question is expected to do better in future. So, to have an impact on share price, dividend must convey information about future earnings.

Ross³³ argues that an increase in dividend payout is an unambiguous message, because a firm cannot misguide investors for a long time by paying high dividend if it really does not expect the higher earning to continue. And, moreover, it is in the interest of the firm to tell the

33 Ross, S.A., "The determination of Financial Structure, The Incentive Signalling Approach", Bell Journal of Economics, (1977), pp. 23-4 .

truth, otherwise, it may lose it's credibility. But the question is whether the same message can be given by any other variable (say, earnings).

Watts³³ and Pettit³⁴ were among the first to study empirically whether or not dividend announcement changes share price. Watts found evidence for positive announcement effect. But the evidence is not strong enough to give any clear verdict. Moreover, as the monopolistic access to information is not likely to enable a trader to earn abnormal profit, after meeting the transaction costs, the information contents of the dividend announcement is considered to have no economic ~~an~~ significance. The announcement effect, even if it is positive, is trivial. Pettit on the other hand found clearcut support to the proposition that the market takes into account, the dividend announcement for stock pricing.

The objective of his study, Watts claimed, is to test the hypothesis that dividend contains information about future earnings. It aimed also at testing that the past and current dividends enable a better prediction of future earnings than the past and current earnings. Watts took a

34 Watts, R., "The information Contents of Dividends", Journal of Business, (1973), pp. 191-211.

35. Pettit, R.R., "Dividend Announcement, Security Performance and Capital Market Efficiency", Journal of Finance, (1972), pp. 993-1007.

preliminary test to find whether dividends add any thing to current and past earnings in predicting next years earnings. He postulates a regression equation of the form.

$$E_{i(t+1)} = \alpha_i + \beta_{1i} E_{it} + \beta_{2i} E_{i(t-1)} + \beta_{3i} D_{it} + \beta_{4i} D_{i(t-1)} + V_{it} \quad \dots \quad (3.20)$$

where $t = 1947 \quad \dots \quad 1966$

$i = 1 \quad \dots \quad 310$ firms.

$E_{i(t+1)}$, $E_{i(t)}$, and $E_{i(t-1)}$ are earnings of the i th firm in years $(t+1)$, t and $(t-1)$ respectively.

D_{it} and $D_{i(t-1)}$ are dividends of the i th firm in year t and $(t-1)$ respectively.

V_{it} = error term.

If higher earnings is expected in $(t+1)$ year and the management is concerned with maintaining a stable dividend ratio, under the assumption of information hypothesis, it is expected that management will declare higher dividend for period t , than one would expect given the earning of period t and $t-1$ and dividend of $t-1$. If current dividends convey information about future earnings, then the estimated coefficient of D_{it} will be positive. The estimated coefficient of D_{it} , on an average was found to be positive. But the relationship between future earnings and current dividends are not strongly positive for all firms. The

regression also suffers from multicollinearity, as E_{it} and D_{it} are related. This may increase the standard error of estimate of computed coefficients.

Watts considered the unexpected changes in dividend (difference between actual current dividend and the expectation of current dividend conditional on current earnings) should be used to estimate changes in future earnings. He used a model originally developed by Lintner³⁶ and latter modified by Fama and Babiak³⁷ to estimate the unexpected change in dividend.

$$\Delta D_{it} = \beta_1 D_{i(t-1)} + \beta_2 E_{it} + \beta_3 E_{i(t-1)} + Z_{it} \dots (3.21)$$

ΔD_{it} = Change in dividend in period t of ith firm

Z_{it} = Unanticipated dividend changes (the error term)

The parameters of the equations (3.21) were estimated using simple least square. The estimated error term Z_{it} is the estimated unexpected changes in dividend and it should impound the information content of the dividends. The information, as it is expected to reflect the next year, (t+1) earnings, the regression of the changes in earning of (t+1) period ($E_{i(t+1)}$), on the dividend residual for the year

36 Lintner, John, "Distribution of Incomes of Corporation Dividend, Retained Earnings and Taxes", American Economic Review (1958) pp. 261-97.

37 Fama, E.F. and H. Babiak, "Dividend Policy and Empirical Analysis", Journal of the American Statistical Association, (1966), pp. 132-61.

t , (Z_{it}), should reveal the potential information in dividend. He postulated the equation of the form

$$\Delta E_{i(t+1)} = Y_i + \theta_i Z_{it} + W_{i(t+1)} \quad \dots \quad (3.22)$$

where $t = 1947 \dots 1966$

$$\Delta E_{i(t+1)} = E_{i(t+1)} - E_{it}$$

The time series regression suggests that the relationship between unexpected changes in dividend and changes in future earning is positive, on an average. The relationship, however, is hardly general and strong. It implies that dividend residual not only impounds managements expectation for future earnings but also the noise in the dividend model. There will be little information in dividend, if the dividend noise is relatively stronger than dividend effect. The second explanation for the weak relationship may be that the management does not use the inside information for determining dividend. The third explanation may be that the relationship between unexpected changes in dividends and changes in future earnings is not properly specified in the regression equation. Watts took sign tests of the relationship, to verify the third explanation.

Watts subtracted the trend term, which was ~~also~~ calculated by averaging the actual changes in earning for each firm over the period 1947-67, from the changes in earning to calculate the unexpected changes in earnings. Each unexpected change in

earning in a year is paired with unexpected dividend change in the previous year for a firm. The sign test indicated a positive relation between unexpected change in a earnings and unexpected change in dividend. The correlation coefficient of the two can be interpreted as a measure of potential information in the accompanying unexpected dividend change. The estimates of average standardised unexpected change in earnings for either positive or negative unexpected change in dividend is not very much different from zero and average t-statistics suggested that the potential information in an unexpected change in dividend is trivial.

Watts considered that the true test of triviality of potential information is whether the change in dividend is associated with change in stock price or not. Watts, then developed an abnormal performance index (API) which measures departure from the risk adjusted rate of return. He computed API for a security as the product of its one month abnormal return.

$$API = \prod_{t=1}^T (1 + \epsilon_{jt}), \quad T = 1 \dots N \quad \dots (3.23)$$

Watts looked at the API averaged across 310 firms. The API of 24 months around dividend announcement, indicated that performance of firms with dividend increase is better than of the firms with dividend decrease.

All the tests done by Watts suggested that on an average the relationship between further earning changes and unexpected dividend changes is positive, but the absolute size of the future earning change conveyed by unexpected change in dividend is very small. The examination of the relationship between unexpected dividend changes and stock price, also indicates, even if dividend changes convey information to market participants, the information is trivial.

Pettit used both monthly and daily data to investigate the API of firms. Pettit found that the most of the price adjustments ~~said~~ were either on dividend day or on the following day. Again price changes appeared to be significant. Pettit concluded that dividend announcements conveyed substantial information.

Lamb³⁸ joined issue with Watts and contended that informational content of the dividend declaration is not trivial. He considered quarterly model as more efficient than the annual model, since dividends are distributed in all four quarters, even though more than two-thirds occur in first and last quarter. Lamb found the evidence, supporting the hypothesis that announcements convey informations about future earning prospect. This information is not inherent in past time series of future earning. Lamb was

38 Lamb, P. Michael, "On the Information Content of Dividends", Journal of Business, (1976), pp. 73-80.

of the view that Watts misinterpreted the regression results. One of Watts' sign test, Lamb concluded supports the information hypothesis and the other one did not test it at all. His (Laub) test provided evidence, that the knowledge of both quarterly dividend and earnings improves the ability to forecast the future earning.

Watts³⁹ found little substance in Laub's argument. He countered that neither Laub's evidence nor the reinterpretation indicates the superiority of a quarterly model or non-triviality of the information contents in dividend. Watts opined that the result of any dividend information content depends crucially on the approach used. Watts insisted that annual earning model is superior to quarterly earning model. He provided two reasons for it. (1) Management may prefer to wait for the determination of annual earnings before changing regular dividends as the expectation of the future earning based on quarterly earning may be less efficient than such expectation based on annual earning, (2) There may be a seasonal component in quarterly earnings. An estimation of this seasonal component is necessary for right interpretation. Any error in this estimate will only add to other measurement error. Regular dividend changes and extras are not uniformly distributed across all four quarters. The regular dividend changes and extras, do

39 Watts, R., "Comments on 'On the Information Contents of Dividend'", Journal of Business, (1976), pp. 51-85.

cluster around the 4th and the 1st quarters. This suggests that the management waits for the annual dividend till the information regarding annual earnings is available. Watts admitted that the best model should involve the mixture of both annual and quarterly earnings. But as the cost of such a model is expected to exceed the benefit, more correctly specified model amongst the two discussed should be selected. Moreover, Laub's selection of models for quarterly and annual earnings are not similar. His annual earning model which is an a priori one, is expected to perform poorly, while his quarterly model was tested and found to be adequate. So, Watts claimed, Laub's comparison seemed to be prejudiced in favour of quarterly earning model.

Watts argued that true test of triviality of potential information is whether it is associated with the changes in stock price. Triviality depends on the value of the information. Laub's test of triviality did not rest on economic value of information but on the association between future earnings changes and the variable representing the management information used to determine dividends. Watts pointed, even if Laub's view is taken as valid, it would not affect the stock price and the dividend information would still be trivial.

Pettit⁴⁰ tried to ~~reconcile~~ reconcile the views that concluded "there is a little potential information in dividend"

⁴⁰ Pettit, R.R., "The ~~Effect~~ Impact of dividend and Earning Announcement : A Reconciliation", Journal of Business, (1976), pp. 56-96.

and "the market participant make considerable use of the information implicit in the announcement of changes in dividend payment". Pettit observed that Watts' classification based on the sign of the unexpected change in dividend, is not favourable to information hypothesis, given the discrete nature of dividend change. Watts' classification scheme results in information misclassification as dividend earning effects are confounded. A firm, that makes no change in dividend is likely to be classified as supplying negative dividend information, the higher the level of earnings. The effect is likely bias the API value. According to Pettit, the extent of this bias will be a function of the proportion of firms/years in which no dividend changes occurred. Historically, the proportion has been so large that this confounding of dividend and earning effect may well have overwhelmed this API value.

Even a firm which changes its dividends (say by 10 per cent increase) may be misclassified into negative information group, if its earnings change at a higher rate (say 15 per cent increase). Watts' methodology, Pettit pointed has an inherent tendency for misclassification.

Pettit like Laub insists that dividends are typically set at a quarterly rate rather than an annual rate. The use of annual rates understate the magnitude of the rate of change, unless the firm makes the change in the first quarter.

Watts' study shows that only about 16 per cent in dividend change occurred in the second quarter. Thus 84 per cent of the changes in annual dividend will be understated. Thus, if any change is made later in the dividend years there is every possibility of understatement of the importance of information conveyed, as the procedure itself understates the size of change.

Pettit found evidence to support a strong announcement effect and hence concluded that Watts' original methodology misclassified such a large number of firms, that homogenous information classes are not generated.

Pettit made an attempt to reconcile the difference between Watts and his studies given by API values on both Watts definition of dividend information and Pettit definition of earning and dividend information. The sample of observations consists of all dividend changes identified in Pettit study. The Watts' definition of dividend information was constructed for the same set of firms/years. The regression result showed a clear deficiency in Watts' classification scheme. The co-efficient values of Pettit dividend information classes found to be declining significantly as dividend changes approaches zero. The coefficient/^{on Watts'}dividend variable tend to be closer to zero, when annualised last quarterly dividend rate is used. This Pettit claimed suggested that quarterly rather than annual payment rates are better measure of the information being conveyed.

Watts⁴¹ answered that it is apparent from Pettit's original and reconciliation articles that the earning variables are misspecified. The extent of misspecification is such that using Pettit methodology, it is not possible to indicate, if dividend can convey information. The result obtained by reformulated Watts' methodology suggests that dividend perhaps convey information, but these results are not clear cut.

41 Watts, R., "Comments on 'The Impact of Dividend and Earnings Announcement: A Reconciliation'", Journal of Business, (1976), pp. 98-106.

CHAPTER IV

CONCLUDING REMARKS

The present study attempts at examining some of the important theoretical and empirical works in the field of dividend and stock valuation. Serious work in this field really started from the early fifties. The role of dividend in the pricing of common stocks remains a theoretical puzzle. Pioneering work in the field tried to link dividend with the stock price directly. Authors like Graham and Dodd went to the extent of claiming a multiplier effect - one dollar of dividend on stock price was equal to two to three dollars of retained earnings. MM study (1961) represents the typical dilemma faced in this field. MM argued that in perfect capital market dividend is irrelevant for pricing the common stock. But they tempered their arguments with an explanation, which is popularly known as information hypothesis in the literature. This hypothesis at its best can only be termed a conjecture, since it is an adhoc observation - that dividend may convey information to share market regarding the future earning possibilities. This hypothesis has caught the imagination of a new generation of economists, who, time and again, tried to explain the link between dividend and stock price. Even though the information hypothesis is not derived from a well specified economic model, it has been subject of quite a large number of empirical studies.

Dividends, when informative, serves as a substitute for additional financial market. The informations conveyed by dividend are otherwise not available to the market. Some of the recent studies debate whether or not dividend is informative. The present study does not cover them, as they are not directly relevant to dividend and stock pricing problem. Even when it is accepted that dividend is informative the doubt persists whether or not, the informations conveyed by dividend has any economic significance. It is argued that dividend information would have no economic significance, if the same information can be had from any other sources, (like earning announcement) and if the monopolistic access to this information does not enable one to earn supernormal profit.

Clientele effect, which again originates from MM's study (1961), tells us how change in dividend policy cannot change the aggregate demand for stocks with different levels of dividend yield, in a world with different rates of tax on dividend income and capital gains. Investors, with different tax liabilities, will choose stock with different level of dividend yield. Hence, change in dividend policy is not likely to influence the stock price, as aggregate demand for stocks with different dividend yield remains relatively stable.

Most of the recent studies tried to explain the effect of dividend on stock price with the help of clientele or/and information effect.

Empirical work covered in the present study reveals the limitation of methodology used. Most of the cross-sectional regression equations used a set of independent variables, like current dividend, past dividend, earnings, unexpected change in dividend, etc., to explain the independent variable - price of the stock. Independent variables like earning and dividend are not really independent. The problem of co-linearity plagued almost all the studies. The estimates of independent variables are found to be unstable and sample sensitive. Methodology which explore the non-linearity relationship between stock price and its determinants should be developed. Interdependency among explanatory variables must also be tackled.

The functional specification of most of the models used in these studies is simple linear or log linear. The parameters under these formulations are assumed to be constant throughout the period of observation. But actual observations show that the constant parameter formulations are not accurately representative of the way the equity valuation is assessed. As a result, most of the regression equations are open to criticism on the ground of misspecification.

Most studies assume that the investors' expectation for the uncertain flow of income from the common stock can be simply defined by a surrogate from the financial variables, which is far from true. They exclude deliberately the firms with negative earnings, no dividend payment and negative

growth rate. The generality of the studies, with this type of exclusion, is suspect. The validity of the results obtained are also open to question.

Moreover, it is the expectation of the investors regarding the future income from the stock that more or less determines the stock price. Investment in equity being risky and uncertain, expectation of future growth and earning of a firm plays a substantial role in stock valuation. Low payment ratio, for example, tells the investors that the firm has sufficient investment opportunity, and hence the growth prospect of the firm is good. But, individual investors expectation that may influence price depends, for all practical purpose, on the average expectation of the other investors. Individual judgement of how the market on the whole is going to react to a particular situation, is the basis for the formation of an investors expectation. It is the average ■ expectation of the market regarding stock's future income-yielding capacity that determines the stock price. The role of dividend in the formation of investor's expectation should be probed. One has to admit that variables which can represent the investor's expectation is difficult to identify. It may be still more difficult to find quantitative estimators for these variables.

We must be clear from the outset that our model should describe the relationship accurately. Any modification to make the model quantitatively tractable, should be carefully

examined, so that there will be no misspecification. Future empirical studies must take into account the process of expectation formation. And to find the effect of dividend on share price, the role played by dividend in the process of expectation formation should be examined.

All that we can conclude from the evidence gathered from our study is that there is a positive relationship between dividend and stock price. The causality, we have to admit, could not be firmly established. It remains an open question, whether or not, the stock price variation is caused by changes in dividend pay out alone or along with other variables. As mentioned earlier, variations in both dividend and stock price may be caused by other factors.

The present study covered empirical works relating to the so called capitalist world, mostly the U.S.A. The lack of literature relating to India is almost complete or if any empirical work is done in the field, it has not come to our notice. It will be really of great interest to see how under the condition of government policy intervention and control, the dividend affects the stock price.

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