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[Writer's Name]

[Institute's Name]

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Executive Summary

The Paper is structured into 2 sections. The First Section deals with Optimal Dividend Policy & Optimal Structure, while the second Sections deal with the essentials of Discounted Cash Flow techniques in Today's world. Essentially, M&M theorem believes that under some strong assumptions the capital structure of a company likes a pie, and the value of stock and debt are two component parts of this pie; hence, no matter a firm issues more shares or more debt, it does not change this firm's value of capital, and the only changed thing is the corporation's capital structure. Consequently, dividend policy does not affect company's capital value at all. Nevertheless, M&M theory is a conditional theorem, which is under a series of strong assumption conditions; in other words, if these suppositions fail to establish then dividend policy will affect enterprises' capital value; thereby, dividend policy is important to companies. The Discounted Cash Flow has become essential to evaluate the long term investment decisions as it considers the time value of money.

Section-A: Optimal Dividend Policy and Capital Structure

Part-1: Optimal Dividend Policy and Capital Structure

Optimal Dividend Policy

This section presents the problem of the choice of dividend policy appropriate in the light of recent theoretical developments and observation dividend policies adopted by companies. From a conceptual point of view, the dividend policy remains a topic controversy. This problem comes from the results of Modigliani and Miller (1961) show that dividend policy has no impact on the value of the company and its cost of capital. In so far as the investors have the opportunity to buy and sell shares of a company in a market, to get the results they want, profitability expected is independent of how companies pay dividends and perform the issuance of shares. Therefore, the market value of the company is not affected by changes in the amounts of dividends.

If the Companies dividend policies does not impact on their share price than why firms decide twice before agreeing on the dividend size and buy back the shares rather than paying cash dividends. The main reason can be taken from real life as taxes shareholder value can be obtained from selecting an optimal dividend policy. If the stock repurchases and dividends are differently taxed, then companies adopt the average of cash payout that results in maximum reduction of Tax (William, 2008).

Residual Dividend policy:

To the extent that the company adopts profitable projects, with a positive net present value, all further profits must be distributed under dividends. This is the approach of a residual dividend. In practice, this policy is not followed by the leaders since companies generally choose a policy characterized by an increase over time of earnings per share, so that the dividend per share is less variable then earnings per share. Corporate behavior in terms of dividend distribution shows that the generally increases with a "phase delay" for a period in relation to the higher earnings. This result means that the company increases its dividend after realizing higher results. The increase in dividends during the year immediately follows the increase in income (Megginson & Scott, 2008).

This information allows the financial market to anticipate future profits of the company. Companies often adopt a constant payout ratio in which the dividend is reflected as percentage of profits. This behavior is not consistent with the residual policy since observed in practice; companies continue to distribute dividends, even when they increase their indebtedness (Shannon, 2009).

Stable Dividend policy:

Rejecting the hypothesis of a distribution of 100% of the profits in the form of dividends and the retention of all the benefits, researchers observe that shareholders attribute considerable importance to dividends as compared to previous year. These results suggest that companies tend to follow a payout ratio relatively stable in the long term. Lintner (1956) shows that dividends are related to long-term benefit and that company follow a ratio of dividends "target". He also notes that company leaders attach great importance to changes in dividend in comparison with the previous year. It also seems that the leaders use the dividend as "signal" growth prospects of the company and it has information content.

In this form of dividend policy, the company policy is to holds a fixed amount of dividend per share/ year. The change in the share price can be seen using the formula of share valuation. $P_0 = D_1/(r-g)$, where P_0 is the current share price, D_1 represents the dividend for next year, r indicates the required equity return and g is the growth rate of dividend in the next future years. If there is no growth in dividend, g=0, and $P_0 = D_1/r$. In the next year $P_0 = D_1/r$ but $D_1 = D_2$. Thus $P_1 = P_2$ and there is no growth in the share price.

According to the theory of Gordon, the company's dividend policy impacts on share Price. The value on a share is placed as, P= Y (1-b)/ (k-br). In the equation P indicates the share Price. B is the retention ratio, Y is the EPS, 1-b is the Dividend payout ratio, r is ROI, br is the dividend's growth rate, and k is the shareholders rate of return. In comparison of k with r, the relationship between dividend payout ratio and market price is exactly the same as compared to the Walter model (James & Bob, 2003).

According to the Traditional theory founded by Graham, the shares market price will rise when dividends are declared apart from the normal company's policy. In a Quantitative manner, P= m (DPS+EPS/3). Where: P is the market price per share and M is a multiplier. James Walter was the founder of Walter model, which states that company's dividend policy will have an effect on the share value. In a Quantitative manner, P= (DPS+ (EPS-DPS) r/k)/k, where k is the cost of capital r is the IRR (Internal rate of return) on the investments.

The affect of dividend payments on the market price is examined by comparing the cost of capital with the rate of return. When IRR is greater than cost of capital, the payout ratio decreases and share price increases .When IRR is similar to cost of equity, the share price does

not varies with the changes in payout ratio. When IRR is smaller than cost of equity, the share price increases as the payout ratio also rises (James & Bob, 2003).

Actually, M&M theorem builds a perfect circuit of funds, and in this circuit some costs are ignored; however, the conditions of these assumptions of M&M theorem are proved to be unavailable in the real world, therefore, the belief that dividend policy does not affect companies loses touch with reality (Ronald, 2000).

Optimal Capital Structure

The Capital structure relates to the way, company finances its Investment and assets in a mixture of debt, equity or combined values. The Modigliani-Miller theory set the structure of modern approach on capital structure. According to theory, in a perfect market condition, the financing structure of company has no impact on the company's value (Marian, 2008). The results are used to examine that whether capital structure is relevant or irrelevant in the modern world. The analyses are further expanded to consider that in reality optimal capital structures exist which maximizes the company's value.

Perfect Combination of Debts and Equity:

This section will indicate how different structures of Debt and Equity affect the company's value. There are specific advantages for a firm comprising a specified debt level, mainly when it is utilize to invest for future growth. However, there are still some limitations as the same debt will restrict the company's over issuing further debt during more difficult situation (Pawel, 2008).

Debt is cheaper than equity capital and is considered to be an attractive option for companies. The major reason for this is because the Risk of Debt holders is lower as compared to the Equity Financers as they are secured over the company's Noncurrent assets and they get first preference over redemption payment in times of Insolvency. Due to the lower Risk bear by Debt holders, their return is also low. Some other Benefits of Debt over Equity are that Interest payments are tax-deductible unlike the dividend payments (Brian, 2000). Due to the result of these 2 factors, a company using the combination of equity and debt financing can lower its overall cost of Capital termed as WACC (weighted average cost of capital). A lower cost of Capital will maximize the company's value. The optimal balance of company's capital structure

still remains an issue and the debate will continue in the future. In terms of positive factors, companies will abide that an optimal Capital Structure Still exist that will maximize the market value of company (Pascal, 2011).

Application of the theories:

According to the theory of the Trade Off, the financial structure of a firm is linked to the tax advantages of debt and financial risk assumed, in this way, as it increases the level of debt increases tax benefits, but that it also increases the liability to pay the debt and financial difficulties. When debt increases, creditors aware of the existence of a greater risk of default demanding higher interest rates and similarly shareholders must assume greater financial risk and therefore increase their expectations, overall these situations cause increases the cost of capital and to decrease the value of the company in the market (Pierre, 2011). It can be concluded, according to Trade Off theory that there must be a point where optimal leverage capital cost is minimized and so does the value of the company is maximized.

According to Model proposed by Lee and Moon, an approximate solution can be obtained to determine the level of debt that minimizes the WACC, for it can be from the current structure of the firm and estimating changes in the cost of debt according to various degrees of indebtedness and the cost of capital finding a financial method and calculation of equity for the levered beta method (Garcia, 2003).

The following example provides the optimal capital structure that maximizes the company's value by considering various ratios of debt and equity.

- Company is 100% equity Financed
- Forecasted Earnings before Interest and Tax = $500,000
- Cost of Equity = 12%, P_0 (current market price) = $25, Tax rate = 40%
- B_u = 1.0 (Un levered Beta), R_f (Risk free rate of return) = 6%, R_m (Market Return) = 12%

  The company is planning to amend its capital structure by Debt Borrowing and repurchasing shares. The following estimates are provided for cost of debt at varying Debt percentage.

% Financed with Debt	K_d (cost of Debt)
0%	-
20%	8%
30%	8.5%
40%	10%
50%	12%

Table1: Estimates of Cost of Debt

The cost of Debt rises as the level of risk increases.

Under each form of capital structure, the levered Beta will be calculated, cost of Equity (K_e), WACC (Weighted average cost of capital) and then company's value.

1st Step: According to MM theory the Beta value varies with the Leverage. B_L (Leverage Beta) can be found using the following equation.

$B_L = B_u [1+ (1-T) (D/E)]$

$= 1.0 [1+ (1-0.4) (0.2/0.8)] = 1.15$

2nd Step

The cost of Equity can be calculated using the CAPM (Capital Asset Pricing Model) equation

$K_e = R_f + B_L (R_m - R_f)$

$K_e = 6\% + 1.15 (12\%-6\%) = 12.9\%$

The following steps are followed for each value of Debt in the above Table and results are shown in below table

% Debt Financing	**D/E**	**B_L**	**K_e**
0%	0.0	1.0	12%
20%	0.25	1.15	12.9%
30%	0.43	1.257	13.54%
40%	0.67	1.4	14.4%
50%	1.00	1.6	15.6%

Table-2: Calculation of Cost of Equity

3rd Step

The value of WACC is calculated using following equation

$WACC = D (1-T) K_d + E (K_e)$

$WACC = 0.2 (1-0.4) 8\% + 0.8(12.9\%) = 11.28\%$

This step is repeated for all the % of Debt Financing and results are as follows:

% Debt Financing	**K_d**	**K_e**	**WACC**
0%	0%	12%	12%
20%	8%	12.9%	11.28%
30%	8.5%	13.54%	11.01%
40%	10%	14.4%	11.04%
50%	12%	15.6%	11.4%

Table-3: Calculation of WACC

The Lowest WACC indicates the lowest cost for the firm and hence the maximum value of company at this capital structure.

4th Step

The Company value is calculated using following equation

Market value = Future earnings (1+g) / WACC-g

The Future earnings after Tax are: $500,000 x (1-0.4) = $300,000 and the growth rate is 0%.

Market value = 300,000/ 0.1128 = $2659, 574

This step is repeated for all % of Debts and results indicate that maximum value of company is obtained at 30% debt and 70% equity; hence this is the firm's optimal capital structure.

% Debt Financing	**K_d**	**K_e**	**WACC**	**Market Value $**
0%	0%	12%	12%	2500,000
20%	8%	12.9%	11.28%	2659,574
30%	**8.5%**	**13.54%**	**11.01%**	**2724,796**
40%	10%	14.4%	11.04%	2717,391
50%	12%	15.6%	11.4%	2631,579

Table-4: Calculation of Market Values

Section-B: Discounted Cash Flow Techniques

Discounted Cash Flows

The techniques of discounted cash flows (Discounted cash flow, DCF) are practiced by most companies in assessment of assets and projects. The most widely used technique and most acceptable is to determine the value of a project in terms of its expected cash flows and it is necessary to update the weighted average cost of capital (WACC). Therefore, the question is to know the needs of "non finance specialists" to enable them to apply modern principles of evaluation. The Projects are evaluated on mainly three factors Cash flows, time and Risk. The DCF technique considers the timing of cash flows. The discount rate is the cost of raising capital. The cost of provision of capital may be the opportunity cost of these resources. Indeed, if one has the financial resources, an alternative investment is the investment of capital (Lutz & Andreas, 2006). The opportunity cost is then the financial rate of return of this investment. The relationship of the Present value to the future value can be written as: Present value = Future value/ $(1+r)^n$, r is the discount factor and n is the number of years.

The standard problem of evaluation is to determine the present value of cash flows from operations or assets in place in the process of Production Company. Leaders often find the value of a product or market and they are simultaneously faced with problems such as purchase of new equipment, evaluation of acquisition, changing suppliers, etc. In all cases, the decision concerns regarding operation in progress or an existing operation (Peter, 2000).

When using Net Present value technique, managers determine the cash flows expected from the project and the appropriate discount rate. Flows are determined by consensus among

estimates upward, downward and neutrals cash flows. Supposing that the project starts immediately than NPV is used to compare two possibilities: invest now or never invest. A more appropriate decision will be to invest immediately in a year, two years, if the NPV is positive. For the choice of discount rate, the NPV uses the opportunity cost of capital, that is to say, the expected return on a project that presents a similar risk. In principle, this opportunity cost reflects the systematic risk or non diversifiable risk associated with a particular project (Dennis, 2007). In practice, the opportunity cost of a project can be difficult to measure. For this reason, the weighted average cost of different sources of financing is used. This rate provides a reasonable approximation when the risk is non-diversifiable and it does not differ significantly between projects of the company. The first Discounting Technique widely used for evaluating long term investments is Net Present value. This measure calculates the Present value of Total Cash Flows. The other Techniques are Payback method an internal rate of Return.

The Discounting of Cash Flows has become essential as the money in future is not equivalent today. This is due to Inflation as price rises and there is lot of uncertainty in future. The opportunity cost is also a significant factor as money invested today will also yield return. This eliminates the use of Profits in evaluating projects and necessitates the need of Discounted Cash Flows in making decisions over investments (Frank, 2000).

Example:

The company is planning to Purchase a new machine at a cost of $25,000. The Installation costs are $2000 and there will be an increase of $1000 in working capital. The Investment in new machinery will reduce the operating costs and maintenance annually by $7000 and $500. The machine will also require 750$/year for technical support. The machine is depreciated over 5

years using straight line method and has a residual value of $5000. The underlying tax rate is 35%.

In the First step, the Tax will be calculated:

	$
Annual Savings in Operating costs	7000
Annual Savings in Maintenance costs	500
Annual Depreciation	(4000)
Annual Cost of Technical Support	(750)
Net Revenues	2750
Tax @ 35%	(962)

Table-5: Calculation of Tax

Calculation of Relevant Project Cash Flows:

	$
Net Revenues	2750
Add: Depreciation (non cash item)	4000
Less: Taxation	(962)
Relevant Cash Flows	5788

Table-6: Calculation of Relevant Cash Flows

The company will receive annual cash flows of 5788$ by investing in new machine and there will be terminal cash flows due to salvage value of the machine. The terminal cash flow at the end of year 5 is $3250 (5000 x 0.65) after Tax.

The next step is to calculate the present value of Cash Flows. The cost of capital at 12% is used to calculate discount factor. The discount factor is calculated as follows: $(1/1+r)^n$

The cash flows for 5 years are constant; hence the annuity factor can be taken for 5 years at 12%. The Annuity factor for 5 years is 3.605 and the discount rate for 5^{th} year is 0.567.

($5788 x 3.605) + ($3250 x 0.567) = $20806 + $1843 = $22709.

The Total Present value is $22,709 and this will be compared with the Initial investment. The investment will include Purchase cost, Installation cost and increase in working capital. The initial outlay is $28,000 (25000+2000+1000). On the basis of NPV the Project should be rejected as it is resulting in NPV of ($5291). If the NPV becomes positive, then project should be accepted.

Apart from NPV, project return can be calculated through internal rate of return. The IRR gives the rate at which the NPV becomes 0 which indicates that present value of cash flows equal the Net Investment.

The formula for Annuity factor:

$$\frac{1-(1+r)\text{^}-n}{r}$$

Where r is the rate per period and n is the number of periods.

The Formula for IRR is:

$$R1+\frac{NPV1\ (R2-R1)}{NPV1-NPV2}$$

Where:

NPV1: NPV at 12% discount rate

NPV2: NBPV at 6% discount rate

R1: 12%

R2: 6%

If other discount factor is taken at 6%, then Annuity factor for 5 years is 4.2124 and the discount factor for last year is 0.7472. The NPV at 6% discount rate becomes ($5788 x 4.2124) + ($3250 x 0.7472) - $28000 = ($1190).

The IRR is calculated as:

$$0.12 + \frac{-5291\ (0.06 - 0.12)}{-5291 - 1190}$$

IRR = 7.10%, the IRR is below the actual discount factor of 12%. This indicates that the Investment is generating 7.10% returns while the required return of Investors is 12%, hence the Investment is not worthwhile. The Payback of the Project cannot be achieved as the NPV is negative.

There are also some arguments over the use of DCF techniques as some people argue that various benefits and costs cannot be quantified in currency values. If DCF model is improperly used than it will lead to wrong investment decisions. This model expects the managers to consider the future expected earnings. It also allows them to address the risk and uncertainty in the Investment.

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