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Equity Valuation, Risk & Return in Capital Project Financing

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Abstract:
In this paper a case study was performed for evaluating the risk and returns from capital projects. Companies ABC and XYZ Ltd were assumed with different capital structure ratios in equity, fixed rate debt investments. The cases for the cash flows to equity investors, debt borrowing along with the total funds are discussed in capital budgeting. The present value of cash flows is estimated for the company ABC Ltd and its relationship with change in cost of capital, the NPV of firm's investments is considered for three different cases using discounted cash flow valuation. The returns from both companies' stocks prices traded on the market index are computed using relative valuation or earnings method (P/E) to compare the risk –return variations on investments made into the portfolio of stocks. The portfolio risk was measured using the correlation coefficient for asset portfolio and standard deviation for two assets in the portfolio. The returns from investment into portfolio of stocks are calculated for different values of correlation in order to observe the sensitivity of risk. The required rate of return from CAPM model and dividend growth models are compared for assessment of model variations.

Keywords: *Risk, capital asset pricing model, equity, debt, valuation, dividend, earnings, cost of capital, return*

1. Introduction

The equity valuation of a company stock is a function of the returns expected from its stock, risk free rate of return prevalent in economy, market risk premium which is influenced by the factors involved in the framing of capital structure i.e. financing mix, issue of debt and equity instruments to the investors. Returns are profits or income derived from investments expressed as fraction of its cost. Methodologies such as the capital asset pricing model (CAPM), suggested by Fama et al (1969), dividend growth or yield from Myron Gordon (1959), earnings price approach and bond risk premium are used to estimate returns and resemble with returns from the relative valuations, open market valuation, obtained using the capital market data over the long term period. In this paper the first two approaches i.e. the CAPM method and P/E are discussed.

2. Literature Review

Studies presented in (2009) Projects, Planning, Analysis, Selection and Review, tell about the cost of capital and its common misinterpretation for estimating cost of capital. Historic values for calculating the market risk premium or cost of equity are not representative. The project cost of capital represents the same as the company WACC. The level of risk with a project and company is clarified on the basis of cash flows to investors who are risk averse and corresponding WACC for both are not the same.
Stock valuation presented in text, Engineering economics (1996) illustrate the understanding of the present worth calculations of investments involving debt instruments with different maturity periods and change in bond value with discount rate. The assumptions in this study involving the estimation of capital market returns, revenue, and finance cost and investment requirements, for the company whose stock is trading in benchmark index are presented as below. Data sources for historic stock prices for company A and B are taken from S&P500 index and BSE Sensex.

2.1. Assumptions

Earnings and Cash flows for the project of a company ABC Ltd.
Initial investment = Rs 50 million in year 0
Depreciable fixed assets = Rs 30 million
Depreciation per written down value method, on equipment depreciated towards 25 years.
Capital expenditure = Rs 50 million;
Depreciation rate = 13 %
Financing mix: Debt and Equity; No preferred capital.

Debt financing terms

	Financing	Investment
Type of debt instruments	Non-convertible debentures, Bank loans, Commercial paper	
Maturity	25 years	
Interest Working capital Term loan	 12 % 14 %	-
Coupon rates	10 %, 20 %, 30 %	-
Face value	Rs 1000	-
Market value	Rs 1040	-
YTM	9.61%, 19.38 %, 29.14 %	-

Table 1

Expected earnings (EBIT) = variable
Corporate tax rate = 30 %
Growth rate: Calculated using the dividends paid by the stock.
Capital market estimates and assumptions
Risk free rate of return based on nominal rate of interest - long term domestic traded government bonds

3. Objectives of Study

- Evaluate the risk from the stock using the CAPM method involving the equity market risk premium, beta of stock and the risk free rate assumption. Estimate the portfolio risk containing the two assets.
- Estimation of returns and valuation of asset using the earnings and current market price of company.
- Prepare amortization schedule based on the debt capital asset as well as the depreciation.
- Perform the sensitivity of present value of cash flows with respect to the WACC and with gross margin %

4. Data and Methodology

4.1. Revenue Function & Cost function

The registered hypothetical company ABC Ltd, is involved in the production of ancillary automobile components in the industry. The revenue function is defined according to the empirical equation $K = 1.1\sqrt{n}$. Where n is number of units produced by the machinery equipment and sold per year, K – the sales revenue in millions per year. **Cost function:** The cost function for the plant is defined accordingly as $10\ X\ 2.5^{\left(\frac{1}{n}\right)}$

The figures below show the total revenue and cost for the useful economic life operation of the asset of company who is engaged in the business of making ancillary automobile components. Production quantity variation defined before show the key functional parameter for the source of sales revenue for the company.

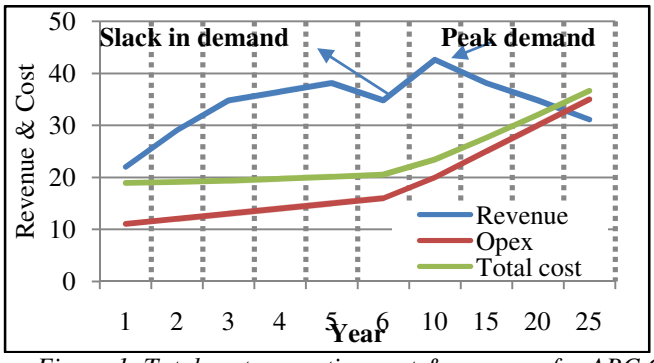

Figure 1: Total cost, operating cost & revenues for ABC Co Ltd.

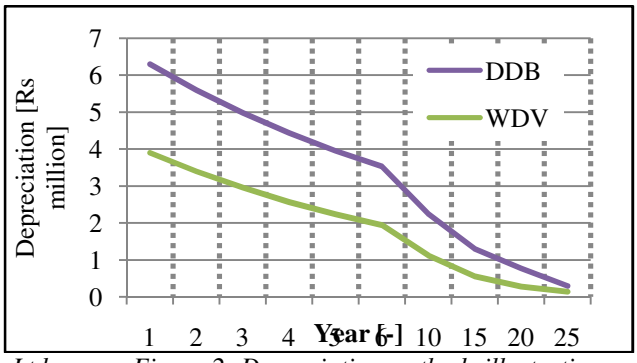

Figure 2: Depreciation methods illustration

The depreciation rate for the plant and equipment are assumed same over the useful economic life of assets and no replacement of assets is considered. Therefore the operating costs of assets continue to rise during its life. Both methods were compared for the changes to the value of depreciation charges each year. The management of a business selects the suitable depreciation method based upon factors such as type of asset, nature of asset use and business circumstances. In valuation of company, WDV method is often used since it represents the comprehensive value of company assets. Since depreciation charges for an asset, take the book values recorded i.e. bought price, as reference, it helps in determining the selling price of an asset in better manner. Further, the charges determined also depend on the scrap value and useful economic life of asset. A change in one method of depreciation to another is made often only if the adoption of new method is required by statutory body or compliance with accounting standards or when appropriate presentation of financial statements for an enterprise is necessary. Here a comparison between the WDV and DDB [iv] is

shown which allows the analyst to assess the difference on charges and its effect on the operating cash flows during valuation. Further, in the figure below the debt amortization schedule for such a company is interpreted which involves Rs 30 million containing Rs 20 million of term loans and Rs 10 million of working capital advances from bank to the firm. The interest rates for working capital and term loans are 12 % and 14 % respectively. The principal outstanding is completed for the year 20 operation. It can be noted that the interest payments for the term loans are completed by the end of year 11 according to the assumptions listed before, but interest due to working capital continues to the end of project life and hence a straight line indicating the equal annual installment payments for the working capital.

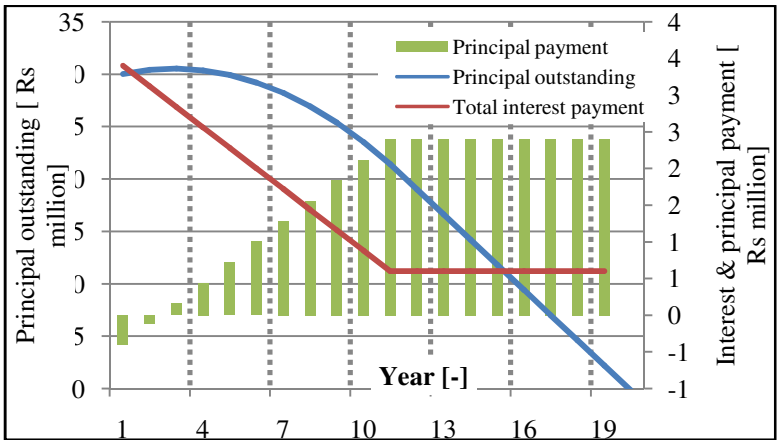

Figure 3: Amortization of debt (principal + interest)

4.2. Net Cash Flows and Changes to Capital Structure

The cash flows to the equity investors, long term debt liabilities and the overall cash flows to the company are calculated separately. The interest rate on working capital finance obtained from the banks, term loans from banks are kept constant through the useful economic life of asset for simplicity purposes. The depreciation charges of assets, and the scrap value of assets serve as source of funds to an organization are added back to derive the total cash flows. The total cash flows [v] are calculated utilizing the initial, operating and end cash flows respectively. Cash flows depending on situation can be positive or negative. To evaluate investments firms use project hurdle rates (IRR) with different levels of risk. The higher discount rates implies offset in optimistic cash flow forecasts.

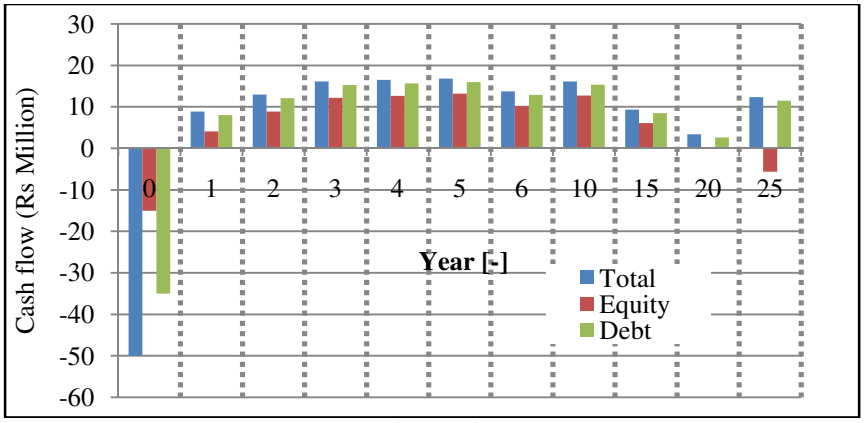

Figure 4: Annual cash flows to investors

The scrap values for fixed and current assets are Rs 5 &10 million. The net present values for assets are evaluated using the three different cases considering different debt equity ratios, and the cost of debt and equity for the weighted average cost of capital. It can be noted that the IRR from investment side implies that a lower cost of capital for project is preferred for investors since it provides higher returns and positive net present value at WACC values of <12 % for the project. The weighted average cost of capital [i]is calculated using the following

$WACC = C_E P_E + C_p P_p + C_D(1\text{-}T)P_D$

where C_E C_D (1-T) is the cost of equity and debt, P_E, P_D is proportion of equity and debt, respectively. Since no preferential capital is considered in this paper, its cost and proportion are zero. The proportions or weights frequently use the book value as the reference rather than market value from historic survey in industry.

4.3. Steps Involved in Calculating WACC

1. Identify components in capital structure mix and establish its value
2. Prepare a possible estimate of opportunity cost for sources of finance
3. Calculate the WACC by using weighted average of estimates of cost of capital used by firm.

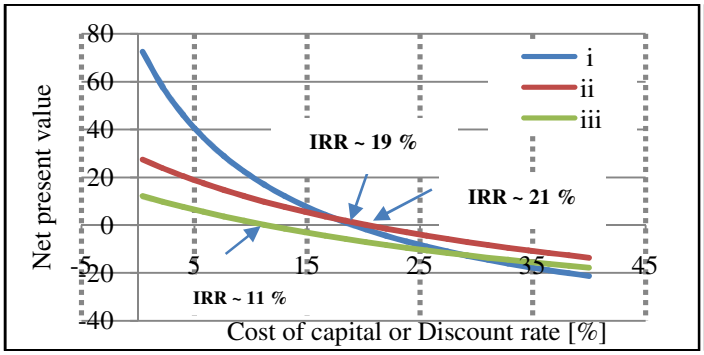

Figure 5: Illustration of Net present value Vs discount rate

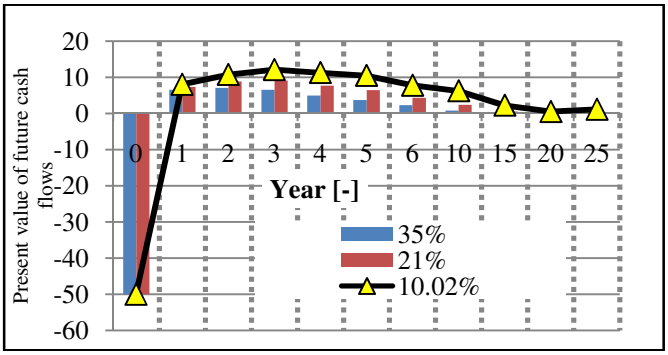

Figure 6: Present value of cash flows for different WACC

The cost of debt therefore depends on several parameters like the yield to maturity or discount rate considered, coupon rate on bond face value, and the maturity period of the bond. Since the value of debt or equity capital changes according to the discount rate or the market rate of interest, a comparison has been made to illustrate the effect of discount rate on the net present value of asset. The present value of future cash flows for three different cases is shown having a WACC of ~ 10, 21 and 35 % at which the net present values are Rs 21,-0.33,-19 million

4.4. Net Profits after Taxes

The base case scenario has D/E ratio of 2.33, case I has D/E ratio of 1.5, case ii has D/E ratio of 1 has been used in order to understand the importance of leverage on cash flows and earnings of company. The initial total investment is ~ Rs 50 million, fixed and current assets for organization. The case ii is considered with 99 % composing the debt capital as trade credit on which there is no interest. The ARR for such case i is higher compared to base case and case ii respectively.

	Year										ARR %	Payback duration
	1	2	3	4	5	6	10	15	20	25		
Base case	2.1	7.0	10.8	11.7	12.6	10.0	13.4	7.4	1.9	-3.9	14.5	5.58 year
Case i	4.9	7.7	11.5	12.5	13.3	10.7	14.2	8.1	2.7	-3.1	16.5	5 year
Case ii	3.7	6.6	10.3	11.3	12.2	9.5	13.0	6.9	1.5	-4.3	14.2	5.61 year

Table 2: After tax profits, Rs Million, ARR & Payback Illustration

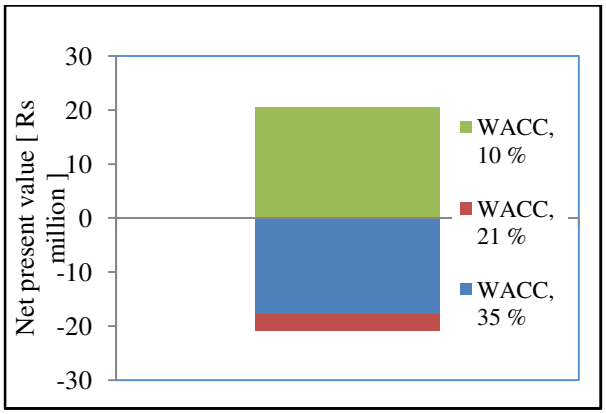

Figure 7: Comparison of net present values for project WACC

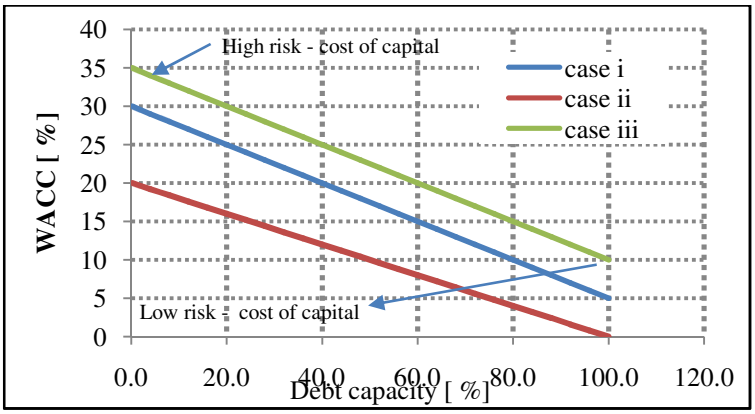

Figure 8: Illustration of WACC with changing debt capacity

As the debt capacity ratios are changed the cost of capital decreases until it reaches zero for 100% debt capacity where this condition shows the low risk profile for investors. The three cases illustrated in the figure are for different cost of debt and equity that make up the capital structure. Further it can be noted for some cases the risk of investment in this is never completely zero when suitable proportions of debt and equity capital are chosen. The cost of debt is kept fixed rate over the entire life of asset operations as shown in figure 9 however, in many circumstances it varies due to changes in economic factors. From figure 7 the net present value is Rs 21 million when the WACC is ~ 10 % while NPV is negative for cases WACC of 21 &35 % . The IRR of 21% is higher than WACC of 10 % hence a positive NPV while for the remaining two cases the IRR is 11 % and 21.5 % which is lesser than WACC of 21 and 35 % respectively. Hence it appears that IRR with a WACC of 10 % is recommended for profitability.

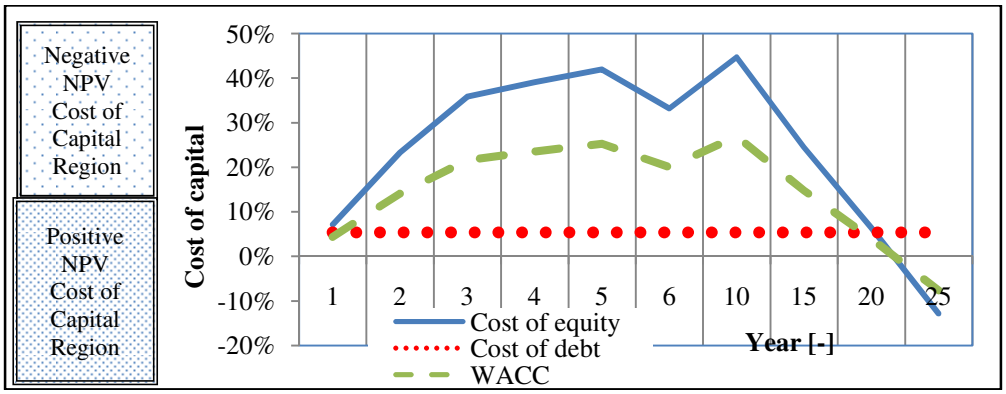

Figure 9: Comparison of cost of capital over its life

The weighted average cost of capital is driven mainly by the cost of equity and fixed rate debt capital. The market price of stock and returns derived from composition of asset portfolio, along with investor attitude towards risk ascertain the performance of stock in the industry, in developed markets. So here, it is adequate for a company involved in the production of ancillary automobile parts to compare its equity returns with its peers in the industry for valuation purposes.

5. Results & Discussion

- **Risk evaluation of ABC Ltd. [Stock A] & XYZ Ltd [Stock B]**

CAPM approach

Risk free rate – return derived from investment at which risk is zero.
Market risk premium – difference between the market return rates and the risk free rate.
Beta - measure of risk sensitivity of stock relative to market return.

Risk free rate is assumed as ~5 % & 11% for stocks A & B. The common reference to this value is usually the rate of return from the domestic offered short term government or treasury bonds and considered least controversial. The data for the annual average closing market price and the stock price for the companies over the period of several years are used. The beta, which is a measure of sensitivity of equity returns [ii] to variation in rate of returns on overall market portfolio, is calculated using the regression based procedure as shown below

Year No	Stock Return, %	Stock Return, %	Market Return %	Deviation of market return from its mean	Square of deviation	Product of deviation ABC Ltd	Product of deviation XYZ Ltd
	A_R	B_R	M_R	M_R-M_{avg}	$(M_R-M_{avg})^2$	$(A_R-A_{R,avg})x$ (M_R-M_{Ravg})	$(B_R-B_{R,avg})x$ (M_R-M_{Ravg})
1	-1.71	1.53	-0.86	-0.18	0.03	0.53	-1.47
2	10.10	-4.10	-6.45	-5.77	33.34	-50.96	-15.18
3	0.59	-20.73	-5.97	-5.29	28.00	3.58	74.11
4	9.09	8.33	9.50	10.18	103.70	79.67	153.36
5	-4.95	-20.05	-5.31	-4.63	21.44	28.81	61.69
6	-13.09	-48.27	-21.94	-21.26	452.14	305.43	883.32
7	16.30	22.19	6.23	6.91	47.73	103.85	199.80
8	2.38	-3.24	1.43	2.11	4.467	2.34	7.37
9	2.51	-39.56	-13.25	-12.57	158.02	-15.52	412.68
10	-11.95	-60.49	-31.39	-30.71	943.03	405.88	1650.94
11	6.64	-11.07	-7.65	-6.97	48.54	-37.38	30.25
12	5.95	29.67	5.75	6.43	41.33	30.07	234.03
13	4.38	-59.09	-2.37	-1.69	2.85	-5.24	88.32
14	-2.83	-16.81	-5.99	-5.31	28.20	21.79	53.53
15	-6.15	9.27	8.41	9.09	82.71	-67.46	145.51
16	-1.53	27.59	14.86	15.54	241.56	-43.57	533.36
17	-1.47	42.75	22.03	22.71	515.77	-62.28	1123.64
18	15.58	-29.76	-0.91	-0.23	0.05	-3.24	5.22
19	9.02	21.55	1.87	2.55	6.51	19.78	72.16
20	-10.77	6.61	5.72	6.40	40.98	-77.05	85.39
21	1.15	3.15	8.53	9.21	84.75	-1.07	90.96
22	7.65	-18.38	-7.74	-7.06	49.86	-45.02	82.25
23	0.81	-5.23	6.08	6.76	45.76	-3.12	10.12
24	-7.18	2.64	3.08	3.76	14.17	-31.82	35.28

Table 3: Beta coefficient - Covariance of stocks A & B with Market return

Illustration of calculations

For the expected return from the stock, the market risk premium is required to be calculated for the stock after the estimation of beta for stock and added to the risk free rate of return.

Name	Stock beta	Market return %	Risk free rate, %	Equity risk premium	Expected rate of return, %
ABC Ltd	0.186	7	5	5.37	1.05
XYZ Ltd	2.0	22	11	33	42.64

Table 4: Market risk premium for two stocks A & B

Market risk premium factors changes with the share price of company for given market and are attributed to investor risk confidence, time horizon or holding period of the company stock in the portfolio, inflation level in the economy, business cycle i.e. boom or recession, market timing and hence considered necessary for investment purposes. The market portfolio contains risky assets in international economic system, and every asset in portfolio represents the proportion of total market value of asset relative to others.

Stock	A [ABC Ltd]	B [XYZ ltd]
A	Cov(A,A)	Cov (B,A)
B	Cov(A,B)	Cov(B,B)

Table 5: Covariance matrix for two stocks

The expected return from a stock can be expressed using

$R_s = R_f + \beta(R_m - R_f)$ …. (1)

The term R_m-R_f indicates the equity market risk premium for a stock, R_s is expected return on stock; R_f is the risk free rate whereas returns from market portfolio can be written as

$R_m = R_f + (R_m - R_f)$ …. (2)

$\beta_A = Cov(A_R,M_R)/ (\sigma_M)^2$ …. (3)

$\beta_B = Cov(B_R,M_R)/ (\sigma_M)^2$ …. (4)

$Cov(A_R,M_R) = \Sigma(A_R-A_{Ravg})x(M_R-M_{Ravg})/ (n-1)$ …. (5)

$Cov(B_R,M_R) = \Sigma(B_R-B_{Ravg})x(M_R-M_{Ravg})/ (n-1)$ …. (6)

$Cov(A,A) = (\sigma_A)^2$ …. (7)

$Cov(B,A) = (\sigma_{A,B})$ …. (8)

$Cov(A,B) = (\sigma_{B,A})^2$ …. (9)

$Cov(B,B) = (\sigma_B)^2$ …. (10)

$(\sigma_M)^2 = \Sigma(M_R-M_{Ravg})^2/ (n-1)$ …. (11)

The portfolio return is calculated using

$(\sigma_P)^2 = (w_A. \sigma_A)^2 + (w_B. \sigma_B)^2 + 2\ w_A. w_B. \sigma_A\ \sigma_B\ \rho_{A,B}$

Standard deviation of stock A, $\sigma_A = 0.477$

Standard deviation of stock A, $\sigma_B = 0.272$

Weight of stock A, $w_A = 0.5$

Weight of stock B, $w_B = 0.5$

The correlation coefficient is given by

$\rho_{A,B} = (\sigma_{A,B})/[\sigma_A\ \sigma_B] = 0.89$

The weights are assigned equal to both stocks for simple calculations. The total risk in stock is characterized using the following equation

Total risk = Unsystematic risk + systematic risk

Unsystematic risk

- *Business risk* – The overall risk associated with business operations of a company and refers to possibility of inadequate profits or losses due to uncertainties such as changing preferences, strikes and competition level in the industry. It can occur in different forms depending upon the nature and size of business.
- *Financial risk* – It implies the downside risk associated with a stock and uncertainty of return with a consequent impending financial loss to company.

Systematic risk

- *Market risk* – It describes about the changes to value of investments due to market factors often measured using volatility i.e. standard deviation of change in the value of financial instrument with defined period. They are several components to this risk involving the equity, interest rate, currency risk, inflation etc. In this study only the equity market risk has been evaluated using the two stocks or asset portfolio.

Market indices contain nearly 400 industrial, 40 financial, 20 transportation and 40 public utility companies and data sources [iii] are used for estimation variation of returns from a stock around the expected average and thus provide a quantitative description of risk associated with the stock. The market equilibrium condition takes account of relation between the individual stock's expected rate of

return and its systematic risk as measured by beta. It is defined according to the security market line. The higher expected returns for the market are proportionate to higher excess returns for stock. The slope of characteristic line refers to a given stock is measured by the stocks beta which represents the line of best fit. The propensity of stock to produce returns that deviate from the characteristic market line gives residual variance while stock variance is the individual stock propensity to produce returns that deviate from the expected value. For simplicity purposes the interest rate risk is assumed fixed rate in this study. This risk pertains normally to the bonds issued to the investors by the firm in the debt capital markets. Beta estimates vary not only by industry but also on the firm's capital structure.

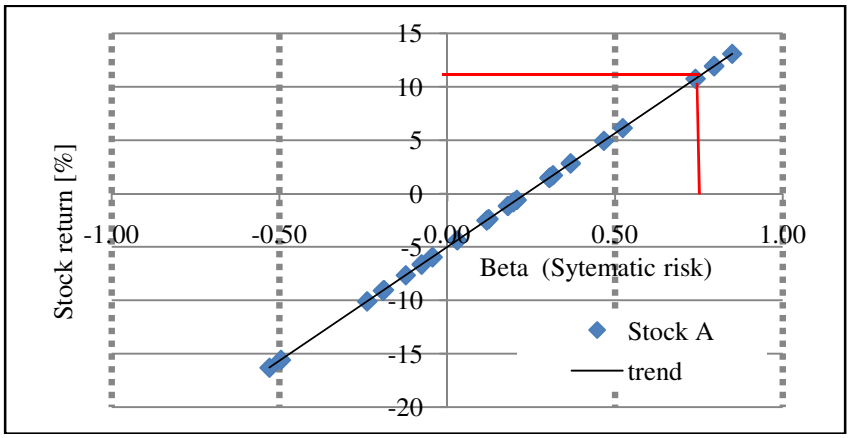

Figure 10: Security market line of stock with return of 12 %

Information relevant to valuation of given stocks are dependent upon public available information which is free to everyone and costs nothing and private information which is available to few select individuals and costs which can influence the asset or portfolio selection for investors. The above figure shows the perfect positive correlation between the stock return and its beta. The line represents the "security market line" for the stock A used in the study. It can be seen that the risk free rate of return is ~ 5 % for the investors is possible. When the beta is > 0.25 the expected returns from the stock are positive and continue to rise. The maximum expected return for this stock is 14 % when the beta is 0.89 which is indicative of positive linear correlation

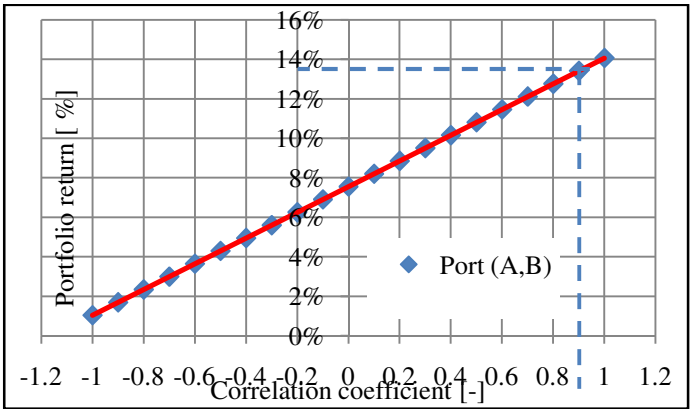

Figure 11: Correlation for case of two asset portfolio

Portfolio variance is determined on the basis of covariance matrix for individual stocks in portfolio. Every covariance element in the matrix is multiplied with the portfolio weights for associated stocks and by adding all the products to obtain the variance of portfolio [vi]. The portfolio return is given by the weighted average of expected rate of return of individual stocks. The weights are usually determined on the basis of buying and selling characteristics of investors which indicate relative importance. The correlation coefficient for the portfolio is ~ 0.89 at which the portfolio return is ~14 %. It can be seen that stock B produces higher returns than A as defined by its beta. The characteristic market line shows the best fit line for the returns from both stocks in a given market portfolio.

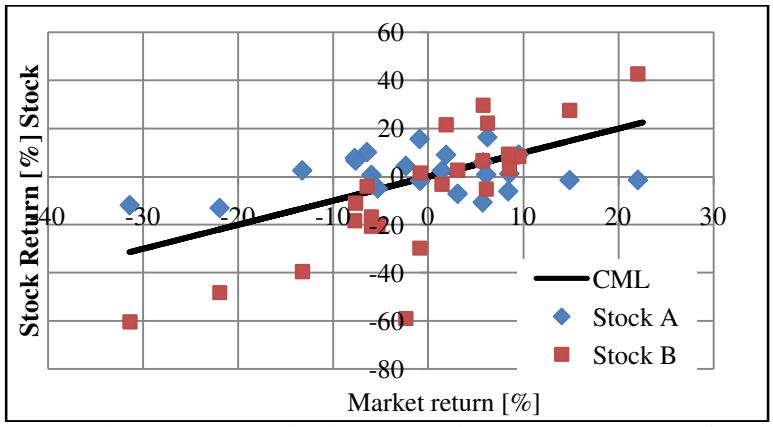

Figure 12: Characteristic market line for stock returns A & B Vs market return

Stocks are often traded in primary and secondary markets and at the time of first issue to finance capital investments stocks are marketed through investment bankers in primary market, hence the primary market establishes the connection between the financiers/capital providers and capital users. Secondary capital market serves as the source of liquidity for investors whose stocks are already trading in the market. Some stocks pay the dividend while some utilize the retained funds and reinvest for future growth. While dividend payments are given by companies which are well established and matured in industry, firms that are in growth stage tend to reinvest the earnings or buy shares back for capital reduction.

6. Dividend Discount Model Calculation

The company ABC Ltd pays stock dividend to its shareholders after the company decides to float its stock in market. Therefore, the cost of equity capital for such a firm could be evaluated using the dividend discount approach [v] which considers the dividend payments over the historic time period, current market price for its stock as well as the growth rate of the company over the period. The growth rate is evaluated using the dividend payment history data [iii] for the stock and compared with the benchmark returns. The profit after tax or annual retained earnings for the company is taken as input for calculation of growth rate for period of 25 years.

$$K = [D_0(1+g)/P] + g \quad (12)$$

Where g – growth rate of company, %, P – purchase price of stock at market value, Do – Dividends paid to shareholders at time period t_0; K – annual expected return from the stock.

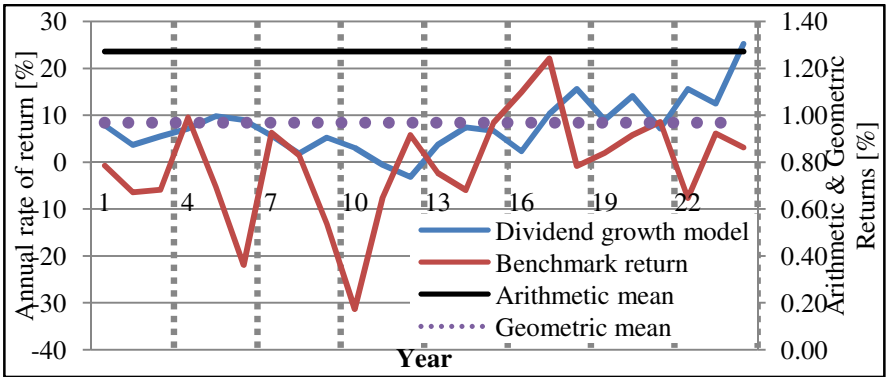

Figure 13: Illustration of dividend growth model for stock A

As can be seen the method takes into account the annual growth rate of company, dividend payments by the company to shareholders, which are taken from historic stock dividend index and the current market price of the stock. For risk averse investors from industry, the geometric mean returns from stock provides more favorable outcome which is evaluated using the return relative for any given period. From academic view point the arithmetic mean returns from stock is considered more suitable however, it does not capture the compound interest scenario and therefore more realistic returns are expected using geometric mean than former.

Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**10**	**15**	**20**	**25**
Earnings	-	2.1	7.0	10.8	11.7	12.6	10.0	13.4	7.4	1.9	-3.9
Growth, %	-	7.73	3.59	5.45	7.04	9.65	8.80	5.51	1.74	5.14	-0.63
Dividend index	-	1.81	1.95	2.02	2.13	2.28	2.5	2.72	2.87	2.92	3.07

Table 6: Annual growth rate and dividend history

6.1. Total Return Comparison

For evaluation of total return from the stock it is required to consider the market return as well as the cash payments received as income to the shareholders in the form of dividends. The total returns estimation includes addition of value of dividend index to the returns based upon the market price of stock.

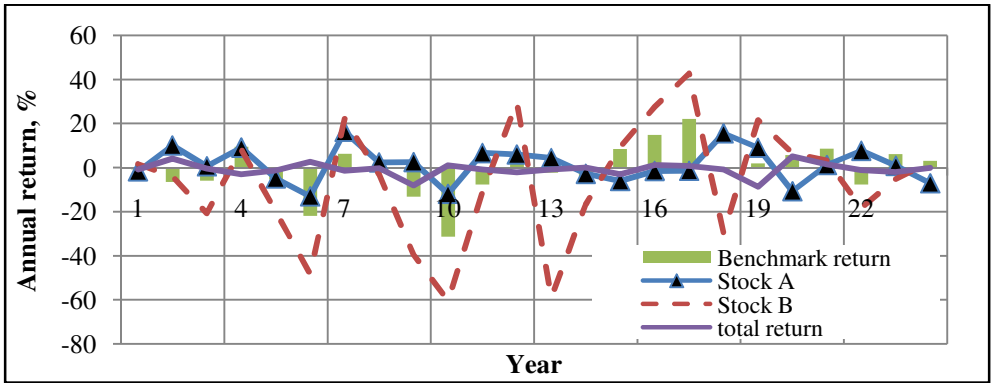

Figure 14: Annual returns from Stock A & B & its comparison with benchmark return

A comparison of two approaches for cost of equity evaluation is shown for the stock as well as its total return. It indicates the returns from the stock using CAPM method follow the same trend as that of market returns while the dividend discount model show divergence in returns. The index for the dividend is included for this study which produces total returns. Based upon the analyst findings [viii] it is observed that returns on equity are primarily driven through capital appreciation of assets. The annual variation in returns for stock A is lower than stock B and benchmark return. The total returns of stock is calculated using

$$R_t = [(P_{new} - P_{old}) + D] / P_{old} \quad (13)$$

Where, R_t – total return of stock, R_{new} – New market price of stock, R_{old} – Old market price of stock; D- Dividend.

7. Relative Valuation – P/E Approach

A P/E ratio indicates investors pay more for every unit of net income earned by the firm per each share outstanding. Hence a higher P/E ratio indicates the price of stock is expensive relative to the total earnings of the firm in a period which at times may make the trading of stock difficult. The P/E approach [vii] helps predicts the long term stock returns on the basis of future corporate earnings using appropriate discount rate. The low P/E valuations are often consistent with high discount rates and high expected returns. It also shows that with increasing earnings for company the P/E ratio are higher and favorable in the long term which may imply higher expected returns from stock to investors.

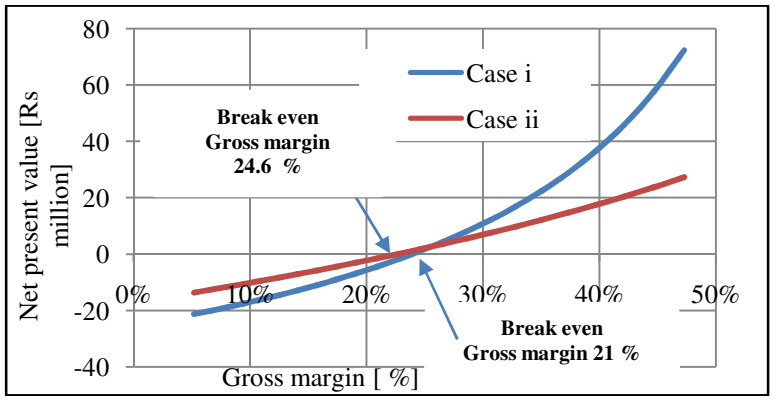

Figure 15: Illustration of breakeven sensitivity analysis

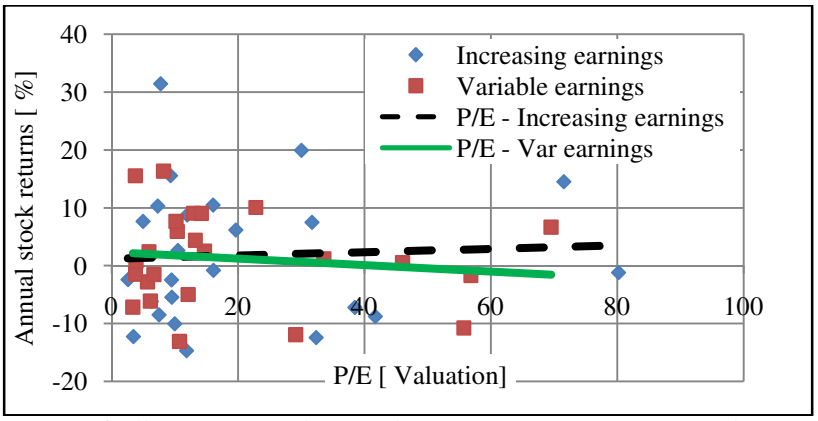

Figure 16: Illustration of relative valuation metric P/E ratio on stock return

The sensitivity analysis of gross margin shows that for the project whose IRR is lesser than WACC is associated with lower gross margin percentage. The breakeven gross margins are computed using the gross profit and the net sales revenue for firm with variable earnings power. The large gross margins indicate higher efficiency or cost effective asset operations by management to produce income. Here the two cases are chosen for different companies with variable earnings to represent the gross margin higher than other.

8. Summary & Conclusions

In this paper, two different valuation approaches for risk analysis and returns from the company stock were studied namely the discounted cash flow method in which CAPM is used to calculate equity risk premium and dividend growth model are compared. The results show positive correlation between expected market return from a portfolio of stock and elucidates the relative strength of systematic risk in market and between individual stocks. The earnings based or relative valuation (P/E) method would enable the analysts to estimate the returns from a stock or benchmark returns utilizing the dividend payment history, data of company earnings as well as its market price. The stock price movements predict the returns and provide investors for rational selection of assets. The discount factor or the weighted average cost of capital influences the internal rate or required rate of return for a project company and tend to predict the biases in cash flow estimates. It enables management of company to take decisions on the investment portfolio and its selection for achieving better returns when the project has multiple internal rates of return. The band of positive and negative NPV region is more sensitive to the changes to the capital structure ratios, the coupon rates and yield to maturity for the debt instruments.

The cost of equity estimates provide insights to the valuation outcomes since the WACC variations influence the NPV obtainable as well as the internal or required rate of return for the investors. The beta coefficient and correlation coefficient present qualitative information about the deviation of the stock returns versus the market which allows the portfolio manager or an investor to diversify the investment risk in a portfolio. The portfolio risk is sensitive to variations in the market/index are weighed according to number of assets in portfolio and correlation coefficient determines the degree of risk. The betas of stocks in a portfolio are additive in nature and obtained by the weighted averages for firms in the asset portfolio. The rational investors prefer to avoid the stock which is least diversified in a market portfolio and tend to prefer a combination of risk free asset. Risk averse investors are often confronted with the expected returns from stock and financiers become wary about the extent of systematic risk to control the cost of financial capital.

9. Nomenclature

IRR – Internal Rate of Return; ARR – Average Rate of Return; YTM – Yield to maturity or redemption yield
CAPM – Capital Asset Pricing Model; DGM – Dividend Growth Model
β_s … Risk sensitivity of stock; β_m … Risk sensitivity of market
SML – Security Market Line; CML –Characteristic market line
P/E – Price to Earnings ratio; D/E – Debt to Equity ratio;
WACC – Weighted Average Cost of Capital; DCF – Discounted Cash Flow

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