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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	<p>NEW APPROACH IN DEVELOPMENT ECONOMY: INFORMAL ECONOMY, A SOCIETAL SCOURGE</p> <p><i>HIND MALIKA MERAD BOUDIA & Dr. CHAIB BOUNOUA</i></p>	1
2.	<p>DETERMINANTS OF DAIRYING: A CASE STUDY OF BALASORE AND KORAPUT DISTRICT OF ODISHA</p> <p><i>ARAKSHIT PATRA</i></p>	7
3.	<p>ANALYSIS OF COST OF EQUITY AND LEVERAGE OF POWER SECTOR</p> <p><i>ARUNIMA RUDRA</i></p>	12
	REQUEST FOR FEEDBACK & DISCLAIMER	15

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ANALYSIS OF COST OF EQUITY AND LEVERAGE OF POWER SECTOR

ARUNIMA RUDRA

M. Phil. RESEARCH SCHOLAR

INDIAN INSTITUTE OF SOCIAL WELFARE AND BUSINESS MANAGEMENT (IISWBM)
KOLKATA

ABSTRACT

In this paper we have calculated the cost of equity of companies working in power sector and checked under which method the cost of equity is more reliable to the market growth rate. Also, we have calculated the various types of leverage to assess the structure of assets and their nature of financing. Finally, the paper concludes on the basis of analysis that cost of equity calculated under CAPM method is more reliable with the market growth rate. CAPM is the more effective method to calculate the cost of equity than other methods.

KEYWORDS

cost of equity, leverage, power companies.

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I. INTRODUCTION

Cost of capital is one of the main parameters to undertake every capital budgeting project. Many companies use a combination of debt and equity to finance their capital. For those companies, analysts and investors typically mean the weighted average of a firm's cost of debt and cost of equity blended together (WACC) while explaining cost of capital. The cost of capital metric is used by companies internally to assess whether a capital project is worth the expenditure of resources. Therefore, investors make investment decisions depending on the expected or required level of interest rate determined by the risk scale of a given project. It also includes the uncertainty regarding the time required before the expected returns are gained. Generally, the greater the risk for the investor, the higher the expected returns. Without any hope of greater returns, investors would not consider carrying out projects with higher risk levels at all; In order to assess the economic effectiveness of the projects, investors use a variety of methods, the most widespread of which is the discounted cash flow analysis (DCF). This technique takes the time value of money and uses the cost of capital to update (as of the assessment date) future financial results into account. Leverage means that a percentage change in one amount causes a relatively large amount of change in other amounts. The process of increasing the earning per share to the equity shareholders by changing the fixed operating cost and fixed financial cost with respect to the change in sales is called leverage. Leverages are of three types: 1) operating leverage 2) financial leverage 3) combined leverage.

LITERATURE REVIEW

Based on various empirical literature it is proved that the relationship between leverage and K_e is extensive, but inconclusive. While some studies prove a positive relationship between cost of equity (K_e) and leverage (L), others show that returns are either insensitive or decline with leverage. Fama and French (1992) and George and Hwang (2007) in their studies determine that equity returns are not sensitive, even decline with book leverage, but Nielsen (2006) and Penman et al. (2007) find that while size and book-to-market factors are controlled, equity returns are not sensitive, rather fall with market leverage. However, a large number of studies tested different definitions of expected returns to determine whether there is any empirical relationship.

An empirical study conducted by Sharma and Rao (1969) showed that apart from tax advantages the cost of capital was affected by debt. This result was supported by another study conducted by Pandey (1985). Chandra (1997) has conducted a study to establish the effect of leverage on shareholders' return. This study has concluded that profitability has a strong influence on the financial leverage as well as on the shareholders' return in engineering industry in India.

Dhaliwal et al. (2006) examine the associations among the firm's implied K_e , leverage and corporate and investor level taxes. Their results conclude that the equity risk premium associated with leverage declines with the corporate tax benefits from debt.

The Capital Assets Pricing Model (CAPM) established by Sharpe (1964), Lintner (1965) and Mossini (1966) builds upon the "Portfolio Theory" presented by Harry Markowitz (1959). The Capital Assets Pricing Model (CAPM) assistances the basis for significant the required rate of return on all risky assets. The Capital Assets Pricing Model (CAPM) is mostly used by the finance managers or investors in finding the risk of the investment and to expect the expected return of the stock (Jagannathan & Wang, 1993). The Capital Assets Pricing Model (CAPM) is based on certain assumptions; (Van Horne, 2006). Unsystematic risk can be avoided by the portfolio diversification; however, investors are satisfied for the systematic risk of basic security which cannot be expanded away; higher the systematic risk higher will be the return the investors expect (Lau & Quay, 1974). Beta (β) is the measure of systematic risk and having Positive relationship with return.

OBJECTIVES

Here, in this paper, we will find out the most effective way of calculating the cost of equity. We have taken three companies from the power sector. We will calculate the cost of equity of these companies.

Also, we will calculate the 3 types of leverage of these companies and will try to find out the most effective one for these companies.

The objectives of the paper are as follows:

- To calculate the cost of equity of the three companies and to show that the CAPM method is the more reliable one.
- To find out the appropriate leverage indicator of these companies.

METHODOLOGY

We have taken three companies such as: Torrent Power, TATA Power, and CESC Limited. We have taken these companies because they are private companies. Data is collected from secondary sources i.e. from the Annual Report of these companies.

First, we will find out the cost of equity of these companies. Then we will calculate the leverage of these companies.

Cost of Equity

There are 6 methods for calculating the cost of equity, described as below:

1) Historical rate of return method

$$K_e = \left(\frac{\text{Average dividend per share}}{\text{Purchase price per share}} \right) + \text{Rate of increase in share price}$$

2) Earnings price Ratio Model

$$K_e = \frac{E}{P}$$

Where

E = Earnings per share

P = Current market price per share

3) Dividend Growth Model

$$K_e = \frac{D}{P} + g$$

Where

D = Dividend per share

P = Current market price per share

g = growth rate in dividend = b x r

b = (net profit – dividend) / net profit

r = Net profit / capital employed

4) Earning Growth Model

$$K_e = \frac{E}{P} + g$$

Where

E = Earnings per share

P = Current market price per share

g = growth rate in earning = b x r

b = (Net profit – Earning) / net profit

r = Net profit / capital employed

5) Bond yield plus risk premium method

$$K_e = \text{pre tax interest rate in longterm debt} + \text{risk premium}$$

Where risk premium is a judgmental factor. It is expected to be 2% to 4%.

6) Capital Asset Pricing Model

$$K_e = R_f + \beta (K_m - R_f)$$

Where R_f = Risk free return

K_m = Market return or expected return

β = Risk factor

Leverage

There are three types of leverages: 1) operating leverage 2) financial leverage 3) combined leverage.

1) Operating Leverage

Operating leverage arises when fluctuations in sales are accompanied by disproportionate fluctuations in operating profit. This is due to presence of fixed cost in the cost structure of the firms. Since the power sector companies have huge level of fixed cost, they have the advantage of operating leverage.

$$DOL = \frac{Q(S - V)}{EBIT}$$

Where Q = volume of sales

V = Variable cost per unit

S = Selling price per unit

2) Financial Leverage:

It is the firm's ability to use fixed financial charges to magnify the effects of changes in EBIT on the firm's EPS.

Degree of financial leverage (DFL) = $\frac{EBIT}{EBIT - INTEREST}$ when there is no preference share capital in the capital structure

If there is preference share capital in the capital structure,

$$DFL = \frac{EBIT}{EBT - \frac{Pd}{(1-t)}}$$

3) Combined leverage:

Degree of Combined leverage (DCL) = $\frac{Contribution}{EBT}$ when there is no preference share capital in the capital structure

If there is preference share capital in the capital structure,

$$DFL = \frac{Contribution}{EBT - \frac{Pd}{(1-t)}}$$

ANALYSIS AND FINDINGS

COST OF EQUITY STUDY

We have calculated cost of equity percentage for the three private sector power companies. For this purpose, we have used certain data as provided in the annual reports as well as some published figures such as share price on certain dates.

TABLE 1: DATA OBTAINED FROM THE ANNUAL REPORT 2016-17 AND 2017-18

Particulars	Unit	Tata power	Torrent power	CESC Ltd.
Dividend paid in 2017-18	Cr.	384	127	190
Dividend paid in 2016-17	Cr.	380	0	160
Earnings in 2017-18 - EBT	Cr.	1428.8	1375.53	864.66
Earnings in 2016-17 - EBT	Cr.	1321.68	583.94	861
share number in 2017-18	No.	2707605570	480616784	132557043
Average dividend per share	Rs.	1.420	2.640	14.348
Purchase price per share	Rs.	92.75	320.85	966.2
Rate of increase in share price	%	11	13.83	15
EPS	Rs.	12.05	19.18	65.23
Share price on 31-3-17	Rs.	90.35	230.35	841.2
Share price on 31-3-18)	Rs.	81.9	234.1	966.2

After doing the analysis, we have got the results which are shown below in the table:

TABLE 2: RESULTS OBTAINED FROM THE ANALYSIS

Methods	Tata power	Torrent power	CESC Ltd.
1. Historical rate of return method	-8%	3%	16%
2. Earning price Ratio Model	15%	8%	7%
3. Dividend Growth Model	-13%	5%	5%
4. Earnings growth model	-4%	6%	6%
5. Bond yield and Risk premium method	12%	Not Available	12%
6. CAPM Model	13%	10%	13%

Under CAPM model calculation, we have considered beta value as published.¹⁶ As we can see from the above table, the average cost of equity for the three power companies is around 12% for the method 5 and method 6.

But for method 5, pretax interest rate in long term debt was not available for Torrent power. Also, the risk premium is a judgmental value.

Whereas, the advantages of CAPM are as follows¹⁴:

- It considers only systematic risk, where most investors have diversified portfolios reflecting elimination of unsystematic risk.
- The relationship between required return and systematic risk has been theoretically-derived subject to frequent empirical research and testing.
- A better method of calculating the cost of equity than the dividend growth model (DGM) which explicitly considers a company's level of systematic risk relative to the stock market as a whole.
- This method is superior to the WACC in providing discount rates as a tool in investment appraisal.

We compared the cost of equity as calculated from the method 6 with the growth of BSE Sensex.¹⁵

We have seen that the market growth rate is around 11%, which is near the result we have calculated under CAPM model.

LEVERAGE STUDY

We have calculated the Degree of operating leverage (DOL), Degree of financial leverage (DFL) and Degree of combined leverage (DCL) for these three companies from the published annual reports. The Results are as follows:

TABLE 3: DOL, DFL AND DCL OF THREE COMPANIES

2017-18	Units	Tata power	Torrent power	CESC Ltd.
EBIT	Cr.	2860	2215	1377
Interest	Cr.	1431	840	484
Contribution or fixed cost	Cr.	3849	3519	2701
Degree of operating leverage(DOL)(Contribution/EBIT)		1.3	1.6	2.0
Degree of financial leverage(DFL) EBIT/EBT		2.0	1.6	1.5
Degree of combined leverage(DCL) contribution/EBT		2.7	2.6	3.0

It can be seen from the above table for CESC, the DOL is high and DFL is low which means high level of fixed cost structure and low level of debt financing. High operating leverage signifies that company is making few sales with high margins. Low financial leverage signifies that a better approach towards the debt capital has been adopted by the management. This results in a decrease in management decision making on earning per share. It reflects the optimum situation.

For Tata Power, the DOL is low and DFL is high which imply a better situation for maximizing return with minimum possible risk. Hence, full advantage of debt financing can be taken.

For Torrent power the DOL as well as DFL is low which implies these leverages show that the amount of fixed costs is very small and proportion of debts in capital is also low.

CONCLUSION

To conclude, we can say that the cost of equity calculated under CAPM method is more relatable to the market growth rate. CAPM is the more effective method to calculate the cost of equity. In case of leverage, we have seen that for high DOL and low DFL, management can partly dilute the adverse effect of high operating leverage by having low financial leverage. For low DOL and high DFL, operating cost is low so full advantage of debt financing can be taken. In case of low DOL and low DFL, management is taking a very cautious approach towards debt financing. It is difficult to maximize the return to the shareholders in this case.

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