



Symbiosis Institute of Management Studies Annual Research Conference (SIMSARC13)

A Study on Capital Structure and Leverage of Tata Motors Limited: Its Role and future Prospects

Dr. M Sekar^a, Ms. M. Gowri^{b*}, Ms. G. Ramya^c

^aAssistant Professor, Commerce department, CBM College, Kovaipudur, Coimbatore

^bAssistant Professor, GRG School of Management Studies, Coimbatore

^cMBA Student, GRG School of Management Studies, Coimbatore

Abstract

This study examines the influence of capital structure on the performance of the company. It is measured using EBIT-EPS analysis. In this paper an attempt is made to analyze the capital structure of Tata Motors Limited during the period 2003-04 to 2012-2013, so as to understand the factors that influenced the capital structure decisions of the company and to know the impact of capital structure decisions on profitability and performance of the company. The company's performance is measured through EBIT-EPS analysis. Increase in the level of debt and net worth increases the debt equity ratio. Capital structure is the crucial decision to be taken by every business, the positives and negatives of these decisions plays a important role in determining the future of every business.

© 2014 Elsevier B.V. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

Selection and/or peer-review under responsibility of Symbiosis Institute of Management Studies.

Keywords: Capital structure; Leverage; EPS; Level of debt; Net worth; Debt equity

1. Introduction

Capital structure is the combination of the capital raised by the company. This combination or mix influences the overall cost of capital. Normally capital structure will be the mix of equity and debt. The proportion of this equity

* Corresponding author. Tel.: +0-000-000-0000 ; fax: +0-000-000-0000 .

E-mail address: gowri@grgsms.com

and debt to the total capital is decided by the company according to the financial position and ability to raise such capital. The decision regarding the capital structure is very important because it affects the earnings per share or wealth of the shareholders. Capital structure is the crucial decision to be taken by every business, the positives and negatives of these decisions plays a important role in determining the future of every business. The modern theory of capital structure was established by Modigliani and Miller (1958). According to Myers (2001, p. 81), 'there is no universal theory of the debt--equity choice, and no reason to expect one'. Many proven theories about capital structure help us to understand about the debt equity mix that the firms choose. These theories can be divided into two groups – either they predict the existence of the optimal debt-equity ratio for each firm (so-called static trade-off models) or they declare that there is no well-defined target capital structure (pecking-order hypothesis).

Static trade-off models understand the optimal capital structure as an optimal solution of a trade-off, for example the trade-off between a tax shield and the costs of financial distress in the case of trade-off theory. According to this theory the optimal capital structure is achieved when the marginal present value of the tax shield on additional debt is equal to the marginal present value of the costs of financial distress on additional debt. On the other hand, the pecking-order theory suggests that there is no optimal capital structure. Firms are supposed to prefer internal financing (retained earnings) to external funds. And when the internal funds are inadequate, the firms may opt for debt instead of equity. Therefore there is no well-defined optimal leverage, because there are two kinds of equity, internal and external, one at the top of the pecking order and one at the bottom. Thus, several conditional theories of capital structure exist but very little is known about their empirical relevance.

Capital structure decision is one of the key decisions to be undertaken by every company at the time of raising their capital. Poor decisions would result in adverse effects. Many firms which are financially healthy have lost because of poor decisions. This paper focuses on the capital structure of the company during 2004 to 2013 and will examine the results of various capital structure.

1.1. Factors which influences Capital Structure:

- **Business Risk**

Excluding debt, business risk is the basic risk of the company's operations. The greater the business risk, the lower the optimal debt ratio.

- **Company's Tax Exposure**

Debt payments are tax deductible. As such, if a company's tax rate is high, using debt as a means of financing a project is attractive because the tax deductibility of the debt payments protects some income from taxes. Therefore debts form to be the cheaper source of capital. And in the period of prosperity the debenture holders or creditors cannot participate in the profits, through which the company can retain major part of its

earnings. And the existing equity shareholders will be the beneficiaries.

- **Financial Flexibility**

This is essentially the firm's ability to raise capital in bad times. It should come as no surprise that companies typically have no problem raising capital when sales are growing and earnings are strong. However, given a company's strong cash flow in the good times, raising capital is not as hard. Companies should make an effort to be prudent when raising capital in the good times, not stretching its capabilities too far. The lower a company's debt level, the more financial flexibility a company has. A company which is too debt ridden may not be in a position to raise its capital as debt.

- **Management Style**

Management styles range from aggressive too conservative. The more conservative a management's approach is, the less inclined it is to use debt to increase profits. An aggressive management may try to grow the firm quickly, using significant amounts of debt to ramp up the growth of the company's earnings per share (EPS).

- **Growth Rate**

Firms that are in the growth stage of their cycle typically finance that growth through debt, borrowing money to grow faster. The conflict that arises with this method is that the revenues of growth firms are typically unstable and unproven. As such, a high debt load is usually not appropriate.

More stable and mature firms typically need less debt to finance growth as its revenues are stable and proven. These firms also generate cash flow, which can be used to finance projects when they arise.

- **Market Conditions**

Market conditions can have a significant impact on a company's capital-structure condition. Suppose a firm needs to borrow funds for a new plant. If the market is struggling, meaning investors are limiting companies' access to capital because of market concerns, the interest rate to borrow may be higher than a company would want to pay. In that situation, it may be prudent for a company to wait until market conditions return to a more normal state before the company tries to access funds for the plant.

2. Objectives of study

- To study the capital structure of the firm during the study period
- To study the value of the company
- To study the influence of capital structure on Return on equity

3. Research Design

- Period of Study:

- The study period for the research is 10 years starting from 2004 to 2013.
- Source of Data:
 - Secondary data is used for the study. The financial statements of Tata Motors Limited for the 10 years are taken from CMIE prowess.
- Tools of Analysis:
 - To assess the significance of ‘Capital Structure’ of Tata Motors Limited Ltd during the study period of 2003-2004 to 2012-2013, mainly the ratio analysis is used to analyze the data.

4. Shortcomings of the research

- a) The results of the research is limited to the study period
- b) The results cannot be generalized to automobile industry as the study is done only for Tata Motors Limited.

5. Analysis & Interpretation

Analysis is done with an objective to study the capital structure, its determinants, nexus with the value of the firm and moreover the capital structure decisions on the performance of the Tata Motors Limited.

Tata Motors Limited has used only two sources of finance to finance its assets and working capital.

5.1. Equity capital:

Tata Motors Limited is authorized to issue a paid up capital of 638.07crores. The equity share capital of the company in the year 2003-04 was 353 crores. The company issued further equity shares in the year 2004-05, by which it raised to 361.79 crores and in the year 2006-2007 it increasedto382.87. During 2007-2008 and 2008-2009 there was no change in the equity capital. After that, the company has increased its equity every year till the end of the period. The net worth of the company is also increasing over the years. This shows the company is getting benefitted through the increase in equity share capital. The net worth of the company is calculated and represented by the following table.

NET WORTH= Equity share Capital+ Reserves & Surpluses- (Debit balance of P/L Account + Miscellaneous expenditure not written off, if any)

Table 1: Net worth

YEAR	NET WORTH (In Crores)
2003-04	3593.60
2004-05	4111.39
2005-06	5537.07

2006-07	6869.75
2007-08	7839.50
2008-09	12394.27
2009-10	14803.78
2010-11	20013.30
2011-12	19367.66
2012-13	19134.84

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

The value of the equity of Tata Motors Limited shows an increasing trend from 2003-2004 to 2010-2011. From 2011-2012 it started declining. During 2011-12 the net worth of the Tata Motors Limited was 19367.66 and in 2012-2013 it was again decreased to 19134.84. This is because of increase in profits, additional issue of shares and the debt balances of Profit & loss account is also written off.

5.2. Debt capital:

The debt capital of the company comprises of both secured as well as unsecured loans. The loans taken from secured sources are more than unsecured ones. This is because the company made a huge investment for developments in the year 2009-2010. Availing unsecured loans for the company was not possible. These secured loans are old loans and carry a higher rate of interest as compared to unsecured loans. The rate of interest on unsecured loans is 9.5% and for secured loans is 9.75-10.25% till 2009. But the company resorted to debt swapping from the year 2010-11 and has the rate of interest on secured loans 15% and which is between 10-11% on unsecured loans. Most of the secured loans are taken from banks and the bank had charged higher rate of interest than the market rate.

The sources of debt for the company are mentioned below:

- Working capital borrowings from banks.
- Term loan from banks/Financial Institutions
- Foreign Loans
- Public deposits (also includes loans from retired employees)

The debt capital of Tata Motors Limited is represented by the following table:

TABLE :2 Debt Capital of Tata Motors Limited

YEAR	DEBT CAPITAL (In Crores)
2003-04	1259.77
2004-05	2495.42
2005-06	2936.84
2006-07	4009.14
2007-08	6280.52
2008-09	13165.56
2009-10	16625.91
2010-11	15898.75
2011-12	11011.63
2012-13	14268.69

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

The above table represents that the debt capital of the company increased till 2009-10 because of the investment and developments but the company went for debt swapping and loans repayments in the year 2010-11. So the debt capital of the company has decreased subsequently from 2010-11 and it shows an increase in the year 2012-13.

TABLE: 3 Influence of various factors on choice of capital structure:

YEAR	Equity (E)In Crores	Debt (D)in crores	Interest (I)in crores	Cost of Debt (Kd%)	Cost of equity (Ke%)	WACC (%)
2003-04	353	1259.77	225.96	17.93	22.54	18.94
2004-05	361.79	2495.42	234.30	9.38	30.08	12.00
2005-06	382.87	2936.84	350.24	11.92	22.61	13.73
2006-07	385.41	4009.14	455.75	11.36	27.85	12.81
2007-08	385.54	6280.52	471.56	7.50	25.88	8.57
2008-09	514.05	13165.56	704.92	5.35	8.07	5.45
2009-10	570.60	16625.91	1276.25	7.67	15.13	7.92
2010-11	634.65	15898.75	1383.79	8.70	9.05	8.71
2011-12	634.75	11011.63	1218.62	11.06	6.41	10.8
2012-13	638.07	14268.69	1387.76	9.72	1.57	9.3

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

Notes:

The cost of debt (Kd), cost of equity (Ke) and WACC (Ko) is represented in the above table.

(WACC(Ko) is calculated as $(D/(D+E))Kd + (E/(D+E))Ke$)

The above table shows the cost of debt is decreasing through out the study period. This is because the profit of the company is raised. Since the company has been able to decrease its interest expense there by reducing the cost of debt.

The cost of equity of Tata Motors Limited is very high in the year 2004-05 as the company was making profits and the net worth was increasing but subsequently cost of equity reduced and is 1.57 in the year 2012-13 because the company had suffered some losses and the cost of equity has reduced. Because the decline of their product sales, innovation of competitors in the same field. The dividend percent is decreased from 200% to 100% in last three years. The company had made a profit of Rs.1717.98 crores in the year 2012-13 comparing to previous years where company profit declined

The WACC of the company is decreasing and for some specific years it is fluctuating over the study period. It is very high from the year 2003-04 because of huge losses and reduction in net worth. This led to an increase in debt capital and the analysis of Table reveals that the cost of debt for the company is higher than the cost of equity. The introduction of more debt capital is increasing the WACC because of high cost of debt. The WACC of the company shows a declining trend throughout the study period.

TABLE :4 Tax benefit Derived

YEAR	Interest	PAT	Int.Tax.Benefit (1-Tax)Interest)
2003-04	225.96	810.34	151.39
2004-05	234.30	1236.95	156.98
2005-06	350.24	1528.88	234.66
2006-07	455.75	1913.46	305.36
2007-08	471.56	2028.92	315.94
2008-09	704.92	1001.26	472.29
2009-10	1276.25	2240.08	855.08
2010-11	1383.79	1811.82	927.13
2011-12	1218.62	1242.23	816.47
2012-13	1387.76	301.81	929.79

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

(Corporate tax for Tata Motors Limited is taken as 33.33%)

The above table depicts that the company has an interest tax shield and it is benefitted throughout the study

period because the company has made huge profits during the study period years. The tax benefit is the reduction in income taxes that results from taking an deduction from taxable income. Hence interest on debt is a tax-deductible expense, taking on debt creates a tax benefit. Since a tax shield is a way to save cash flows. It increases the value of the business and these years the tax on interest paid could be saved as cash flows and it increases the value of the business.

5.3. Debt Capacity of the firm:

The debt capacity or debt servicing capacity of the firm can be determined by calculating the interest coverage ratio.

Interest coverage ratio (ICR)= operating profit (EBIT)/ Interest expenses.

TABLE: 5 Details of Debt service of Tata Motors Limited.

YEAR	EBIT	Interest	ICR
2003-04	1727.28	225.96	7.64
2004-05	2000.05	234.30	8.53
2005-06	2146.36	350.24	6.12
2006-07	2586.51	455.75	5.67
2007-08	3030.52	471.56	6.42
2008-09	1723.10	704.92	2.44
2009-10	4032.83	1276.25	3.15
2010-11	4705.72	1383.79	3.40
2011-12	4177.55	1218.62	3.42
2012-13	1717.98	1387.76	1.23

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

(EBIT is calculated by Revenue-Cost of good sold-Operating expenses – depreciation)

Also known as Profit before interest & taxes (PBIT) equals to Net income with interest & taxes added to it.

The interest coverage ratio of Tata Motors Limited is very less in the year 2012-13. It is fluctuating throughout the study period. The ratio should be at least 3 times for comfortable service of debt but here the ratio is more than 2 in many years and but it declines to 1.23 in the year 2012-13. This is because of debt swapping, loan repayments and reduction in the interest expenses of the company.

5.4. Trading on equity:

Trading on equity refers to the technique in which low cost of debt is used enhance earnings for the shareholders. Return on Investment (ROI) must be greater than the cost of debt to reap benefit of trading on equity.

TABLE: 6 Comparison of ROI and cost of debt.

YEAR	PAT In Crores	Total assets In Crores	ROI (%)	Cost of Debt (%)
2003-04	810.34	4853.37	16	17.93
2004-05	1236.95	6606.81	18	9.38
2005-06	1528.88	8473.91	18	11.92
2006-07	1913.46	10878.89	17	11.36
2007-08	2028.92	14120.02	14	7.50
2008-09	1001.26	25559.69	3	5.35
2009-10	2240.08	31429.69	7	7.67
2010-11	1811.82	35912.05	5	8.70
2011-12	1242.23	30379.29	4	11.06
2012-13	301.81	33403.53	0	9.72

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

$$\text{ROI} = \text{PAT} / \text{Total assets}$$

Total asset is calculated as Net fixed assets + Net Working capital.

Comparing the return on investments (ROI) and cost of debt, it is observed that ROI is always less than the cost of debt. Throughout the study period the return on investment is very low. The ROI does not support trading on equity as cost of debt is higher and equity holders are not benefited out of this.

6. Testing The Significance Of Correlation Coefficient:

Based on the above analysis the researcher framed the following null hypothesis.

HYPOTHESIS (H1):

Ho (1): There is no significant relationship between Return on equity and value of firm during 2003-04 to 2012-13.

6.1. Return on Equity:

Return on Equity (ROE) is a basic test of how effectively a company's management uses investor's money, ROE shows whether management is growing the company's value at the acceptable rate. It measures the rate of return that the firm earns on stockholder's equity.

The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have

invested.

ROE is expressed as a percentage and calculated as:

$$\text{Return on Equity} = \text{Net Income/Shareholder's Equity}$$

TABLE: 7 ROE AND VALUE OF FIRM

YEAR	Net Income In Crores	Shareholder's Equity (in Crores)	ROE %	Value of firm In Crores)
2003-04	13115.02	353	37.15	4853.37
2004-05	17747.15	361.79	49.05	6606.81
2005-06	21197.95	382.87	55.36	8473.91
2006-07	28128.31	385.41	72.98	10878.89
2007-08	29461.60	385.54	76.41	14120.02
2008-09	26343.92	514.05	51.24	25559.83
2009-10	37200.78	570.60	65.19	31429.69
2010-11	48652.99	634.65	76.66	35912.06
2011-12	54829.90	634.75	86.38	30379.29
2012-13	46571.65	638.07	72.98	33403.53
Correlation				0.611

Source: Computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

From the above table it is inferred that return on equity is increasing throughout the study period. The highest return on equity is 86.38 in the year 2011-12, and the lowest ROE is 37.15 in the year 2004.

The increase in the value of the firm of Tata Motors Limited, enabled the company to strengthen its reputation. However, at the same time a narrow margin of value of firm. Even then, there was no need for any anxiety as this ratio is within the unity. There is a high positive correlation relationship between ROE and Value of the firm in the Tata Motors Limited. Therefore, the null hypothesis is rejected.

6.2. Leverage effects:

The leverage effect of the firm can be found out by Debt Equity ratio calculated as

$$(\text{Long term debt} / \text{Long term debt} + \text{Shareholder funds})$$

TABLE: 8 Debt- Equity Analysis of Tata Motors Limited.

YEAR	Long term debt	Long term debt +Shareholders fund	Debt equity ratio
2003-04	1259.77	3593.60	0.35
2004-05	2495.42	4111.39	0.61
2005-06	2936.84	5537.07	0.53
2006-07	4009.14	6869.75	0.58
2007-08	6280.52	7839.50	0.80
2008-09	13165.56	12394.27	1.06
2009-10	16625.91	14803.78	1.12
2010-11	15898.75	20013.30	0.79
2011-12	11011.63	19367.66	0.56
2012-13	14268.69	19134.84	0.75

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

Analysis of the debt equity ratio reveals the fact that the debt component is very high as compared to value of equity. The ratio is always more than 0.10 and sometimes it is also more than 1. It is very high as compared to the industry average debt equity ratio 2:1

6.3. Factors responsible for selection of capital structure:

An analysis of the factors responsible for selection of capital structure indicate that almost all the factors like cost of capital, trading on equity, taxes saved, leverage effect, debt capacity of the firm, and stability of earnings are against raising debt capital by the company.

- The cost of capital is increasing with an increase in the debt component in the capital structure. The cost of equity is higher than the cost of debt. The cost of debt i.e interest also contributes towards the profits made by the company. The WACC has decreased. All these costs lead to a conclusion that Tata Motors Limited would not have gone for raising debt capital.
- The company had saved corporate tax on interest throughout the study period.
- The interest coverage ratio of Tata Motors Limited is more than comfortable ratio of 3 times. Hence the company was not in a position of the comfortable service of debt. Still the company had gone for raising loan funds and thereby increasing debt component in the capital structure.

Ho (2):

There is **no significant** relationship between Value of equity and Value of firm

Ho (3):

There is **no significant** relationship between Value of debt & value of firm

The testing of significance coefficient of Value of debt and the value of firm of Tata Motors Limited Ltd shows in following table.

TABLE: 9 Study of nexus between capital structure and value of Tata Motors Limited

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Net-Worth per B/S	3593.60	4111.39	5537.07	6869.75	7839.5	12394.27	14803.78	20013.30	19367.66	19134.84
Less: P&L Debit balance	22.19	18.16	14.12	10.09	6.05	2.02				
Less: Miscellaneous Expenditure not w/o										
Value of equity	3571.41	4093.23	5522.95	6859.66	7833.45	12392.25	14803.78	20013.30	19367.66	19134.84
Value of debt	1259.77	2495.42	2936.84	4009.14	6280.52	13165.56	16625.91	15898.75	11011.63	14268.69
Value of firm	4831.18	6588.65	8459.79	10868.80	14113.97	25557.81	31429.69	35912.05	30379.29	33403.53
Correlation value of equity & firm	0.976									
Correlation value of debt&firm	0.972									
Co-efficient of determination(value of equity & firm)	0.9529									
Co-efficient of determination(value of debt & firm)	0.9459									

Source: computed from annual reports of Tata Motors Limited., from 2003-2004 to 2012-2013.

The above table represents that the value of firm is increasing over the study period 2003-2004 to 2012-2013.

The value of any firm depends upon the two things i.e, the investment decisions of the firm which will affect the EBIT and the capital structure which affects the EPS because of slicing EBIT.

From the above analysis of Tata Motors Limited Ltd, it is analyzed that the value of the equity is highly correlated to the value of firm and also in hypothesis 3, the value of the debt and value of the firm are highly correlated in the large scale automobile industry. Therefore, the null hypothesis is rejected. To conclude, the capital structure and value of firm was appropriate in all the study units. Alternatively, there is significant relationship between the value of equity and value of firm as such value of firm and value of equity and value of firm.

7. Factors responsible for increase in the value of Tata Motors Limited are observed as follows:

- The investment decisions of the firm which can be interpreted from the increase in EBIT. The EBIT of Tata Motors Limited has increased throughout the study period.
- The capital structure of the firm has increased the PAT. The high cost of capital raised through loan funds has sometimes resulted in a positive PAT because the amount of interest paid or accrued during the year is

also higher. It has resulted in increases in EPS in these years. Hence low cost of capital resulted because of a balanced capital structure which is the main reason for increase in the value of Tata Motors Limited.

8. Major Findings

After the analysis of the financial statements of Tata Motors Limited, the first impression any one may frame is that the profits incurred by the company is the outcome of a balanced finance mix. But in the year 2012-13 the net profit and the cost of capital decreased unexpectedly. The findings are stated below-

- There is decline in the sales since the competition in the automobile industry has risen, Tata Motors Limited has more stocks which are solely responsible for these declines. But close scrutiny to the financial statement of the firm reveals certain important factors which prove the false facts. Apart from interest payments the factors responsible is due to lower sales realization on automobiles, high amount of depreciation, high productivity and increase in stock.
- It is also found that ROE and value of the firm is positively correlated. And there is also a positive correlation between value of equity and value of firm. & Value of debt and firm is also positively correlated

9. Conclusion

Net worth of the company started increasing throughout the study period. Debt capital has decreased from the year 2010-2011 because of debt repayments and debt swapping. The weighted average cost of capital (WACC) of the company fluctuated over years. It is very high in the financial year 2003-04 because of huge losses and reduction in net worth. This has led to an increase in debt capital. The WACC of the company started decreasing from the 2004-05 because the company towards the way of cost effectiveness. The debt ratio and debt equity ratio of the company are very low suggesting that low amount of debt in the capital structure. It had reduced the owner's fund and confidence as the risk of the equity holder's increase with an increase in loans. The company has obtained fixed charges of funds more than that of return on assets which has lowered all the ROE, ROI, EPS etc. The Value of the firm is also positively correlated with its ROE, Value of debt and equity. The value of the company is increased over years because of the investment decisions of the company that are reflected from the EBIT as well as the low cost of capital due to balanced capital structure. Since it has an optimal capital structure it will have positive effect in its future business.

References

- Brealey,R., &Myers S.(2000) Principles of Corporate Finance, India: McGraw-Hill.
- Bradley,M., G.Jarrell, & Kim E.(1984), On the Existence of an Optimal Capital Structure: Theory and Evidence, *Journal of Finance*, 39, 857-878.
- Evidence from International Data, *Journal of Finance*,1421-1460
- Galai,D., &Masulis R.(1976). The optimal Pricing model and the Risk factor of stock, *Journal of Financial Economics*,3,631-644

- Gujarati D.N., &Sangeetha.(2007).*Basic Econometrics*. India: Tata McGraw-Hill.
- Harris, M., &Raviv A.(1991).The theory of the capital structure, *Journal of Finance*, 46, 297-355.
- Jensen,M (1986). Agency Cost of Free cash flow,Corporate finance and Takeovers,*American Economic Review* ,76, 323-339
- Krasu, A.,&Litaenberger R.(1973).A state-preference model of optimal financial leverage,*Journal of Finance*, 28, 911-922.
- Myers,S.(1977). The Determinants of corporate Borrowing,*Journal of Finance*,32, 147-175
- Myers,S., The capital structure Puzzle, *Journal of Finance*,575-592.
- Titman, S.,&Wessels R.(1988).The Determinant of Capital Structure Choice.*Journal of Finance*, 43, 1-19.
- Accounting Manuals of Tata Motors Limited.
- Published financial statements and their related schedules of Tata Motors Limited of India Limited for the last 10 years (2003-04 to 2012-2013).
- CMIE,PROWESS3.1 – CMIE/Prowess website., Retrived from <http://www.cmie.com> accessed on 15/6/2013