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FINANCIAL RATIOS AND ANALYSIS OF TATA MOTORS

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ABSTRACT

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The paper investigates the financial health of Tata Motors in comparison with the Maruti Suzuki, Ashok Leyland, and SML Isuzu & Force motors for the period 2006-2016 on the aggregate market level data. Debt to total assets is approx. 60-70% which is above the average. Debt to equity ratio is moving between 1.5 to 2.2 which is bad for any company. In the case of the liquidity ratios which are very low relatively to industry. Further, earning per share, price to earning ratio, earning power & market value to book value all these ratios are below and its moving around zero. Overall Tata motors financial ratios indicates that its financial conditions are under performance.

KEYWORDS: *Tata Motors; Financial Ratios*

INTRODUCTION

FINANCIAL RATIO ANALYSIS

- A ratio is an arithmetical relationship between two figures.
- Financial ratio analysis is a study of ratios between various items or groups of items in financial statements.

Following are the important ratios:

1. LIQUIDITY RATIO

- Liquidity refers to the ability of a firm to meet its obligations in the short run, usually one year.
- L.R. are generally based on the relationship between current assets and current liabilities.
- The important liquidity ratios are:

Current ratio &Acid test ratio.

Current ratio:

The current ratio is an important financial ratio which measures the ability of the firm to meet its current liabilities — current assets get converted into cash in the operational cycle of the firm and provide the funds needed to pay current liabilities. Apparently, the higher the current ratio, the greater the short-term solvency.

The current ratio is defined as: $\frac{CURRENT\ ASSETS}{CURRENT\ LIABILITIES}$

Acid-test ratio:

The acid-test ratio is also known the quick ratio. It is a fairly stringent measure of liquidity. It is based on those current assets which are highly liquid-inventories are excluded from the numerator of this ratio because inventories are deemed to be the least liquid component of current assets.

The acid test ratio is defined as: $\frac{QUICK\ ASSETS}{CURRENT\ LIABILITIES}$

- Where quick assets are defined as current assets excluding inventories)

2. Leverage ratio

Leverage ratio refers to the use of debt finance. While debt capital is a cheaper source of finance, it is also a riskier source of finance. Leverage ratio helps in assessing the risk arising from the use of debt capital.

Two types of ratios are commonly used to analyse financial leverage they are as follows:

a. Debt-equity ratio
b. Interest coverage ratio

Debt equity ratio

The debt equity ratio shows the relative contributions of creditors and owners. It is defined as:

$$\frac{TOTAL\ DEBTS}{SHAREHOLDER'S\ FUND}$$

- In general, the lower the debt-equity ratio, the higher the degree of protection enjoyed by the creditors.

INTRESET COVERAGE RATIOS

The interest coverage ratio is a debt ratio and profitability ratio used to determine how easily a company can pay interest on outstanding debt. The interest coverage ratio may be calculated by dividing a company's earnings before interest and taxes (EBIT) during a given period by the amount a company must pay in interest on its debts during the same period.

The method for calculating interest coverage ratio may be represented with the following formula:

$$\frac{EBIT}{INTREST\ CHARGES}$$

INVENTORY TURNOVER RATIO

The inventory turnover or stock turnover ratio measures how fast the inventory is moving through the firm and generating sales. The inventory turnover ratio is deemed to reflect the efficiency of inventory management. The higher the ratio, the more efficient the management of inventories and vice versa. However, this may not always be true. A high inventory turnover ratio may be caused by a low level of inventory which may result in frequent stock outs and loss of sales and customer goodwill.

It may be calculated as:

$$\frac{NET\ SALES}{AVERAGE\ INVENTORIES}$$

ACCOUNT RECEIVABLE TURNOVER RATIO

This ratio shows how many times sundry debtors or trade receivables turn over during the year.

It is defined as:

$$\frac{NET\ SALES}{AVERAGE\ RECEIVABLES}$$

The *receivables* figure used in the denominator of this ratio is generally the receivables figure at the end of the period. However, when *sales* are highly seasonal or when sales growth is high, the year-end receivables figure is somewhat inappropriate. When sales are highly seasonal, the average of the receivables figure at the end of each month or each season may be used and when sales growth is high the average of the beginning and ending receivables balances may be used**.**

NO. OF DAYS SALES IN ACCOUNT RECEIVABLES

Measures, on average, how many days it takes to collect an account receivable**.**

It is defined as:

$$\frac{365}{AC.RECEIVABLES\ TURN\ OVER}$$

PROFITABILITY RATIOS

PROFIT MARGIN RATIOS

Profit margin ratio measures a company's ability to generate earnings relative to sales, assets and equity. This ratio assesses the ability of a company to generate earnings, profits and cash flows relative to relative to some metric, often the amount of money invested. They highlight how effectively the profitability of a company is being managed.

- Common examples of profitability ratios include return on sales, return on investment, return on equity, return on capital employed (ROCE), cash return on capital invested (CROCI), gross profit margin and net profit margin. All of these ratios indicate how well a company is performing at generating profits or revenues relative to a certain metric.

Profit margin ratio is of two types which as follows:

a. Gross profit margin ratio
b. Net profit margin ratio

GROSS PROFIT MARGINS

This ratio shows the margin left after meeting manufacturing costs. It measures the efficiency of production as well as pricing. To analyse the factors underlying the variation in gross profit margin, the proportion of various elements of cost (labour, materials and manufacturing overheads) to sales may be studied in detail.

It is defined as

$$\frac{GROSS\ PROFIT}{NET\ SALES}$$

NET PROFIT MARGINS

This ratio shows the earnings left for shareholders (both equity and preference) as a percentage of net sales. It measures the overall efficiency of production, administration, selling, financing, pricing, and tax management.

It may be calculated as:

$$\frac{N.P.A.T}{NET\ SALES}$$

5. Valuation ratio

Valuation ratios are ratios computed on the basis of parameters in the financial statements of a company and used to estimate the value of a companies. These can be used to easily compare companies and determine which a better investment is. A particular firm's valuation ratio can be compared with that of the industry's or with other companies to determine its investment attractiveness.

It is mainly categorised in to three types which as follows:

a. Yield
b. Price-earning ratio
c. Market price to book value ratio

Price-earning ratio:

It is the most popular financial statistics in stock market.

It is commonly referred to as a summary measure which primarily reflects the following factors: growth prospects, risk characteristics, shareholders' orientation, cooperate image, and degree of liquidity.

Price-earning ratio may be calculated as follows:

$$\frac{Market\ price\ per\ share}{Earning\ per\ share}$$

The market price per share may be the price prevailing on a certain day, or preferably the average price over a period of time. *The earnings per share* is simply the profit after tax divided by the number of outstanding equity shares.

Market price to book value ratio:

It is a financial ratio used to compare a company's current market price to its book value. It is also sometimes known as a Market-to-Book ratio.

This ratio also gives some idea of whether an investor is paying too much for what would be left if the company went bankrupt immediately. For companies in distress, the book value is usually calculated without the intangible assets that would have no resale value. In such cases, P/B should also be calculated on a "diluted" basis, because stock options may well vest on sale of the company or change of control or firing of management.

Market Value to Book Value Ratio is defined as:

$$\frac{MV}{BOOK\ VALUE}$$

In a very important sense, this ratio reflects the contribution of a firm to the net wealth of the society. When this ratio exceeds 1 it means that the firm has contributed to the creation of net wealth in the society — if this ratio is, say, 2, the firm has created a net wealth of one rupee for every rupee invested in it. When this ratio is equal to 1, it implies that the firm has neither contributed to nor detracted from the net wealth of the society.

TATA MOTORS

Tata Motors Limited, a USD 42 billion organisation, is a leading global automobile manufacturer of cars, utility vehicles, buses, trucks and defence vehicles.

Tata Motors is part of the USD 100 billion Tata group founded by Jamsetji Tata in 1868. Sustainability and the spirit of 'giving back to society' is a core philosophy and good corporate citizenship is strongly embedded in our DNA. Tata Motors is India's largest automobile company.

Empirical Analysis:

FINANCIAL RATIOS OF TATA MOTORS										
YEAR	Mar 07	Mar 08	Mar 09	Mar 10	Mar 11	Mar 12	Mar 13	Mar 14	Mar 15	Mar 16
LQUIDITY RATIO										
CURRENT RATIO	1.099	0.796	0.540	0.519	0.577	0.618	0.480	0.359	0.421	0.603
ACID TEST RATIO	0.828	0.610	0.416	0.387	0.373	0.411	0.269	0.153	0.185	0.327
ACCOUNT RECEVABLE TURNOVER	35.601	30.078	19.107	17.924	18.855	20.450	19.780	22.597	31.139	31.585
No. of days sale in ac. Receivable	10.253	12.135	19.102	20.364	19.358	17.849	18.453	16.153	11.722	11.556
Inventory turn over	8.390	9.446	8.099	8.017	8.233	8.803	7.887	6.298	5.684	10.248
LEVERAGE RATIO										
DEBT TO EQUITY	1.795	2.336	2.099	2.452	1.708	1.778	1.727	1.593	2.360	1.344

DEBT TO TOTAL ASSETS	0.642	0.700	0.677	0.710	0.631	0.640	0.633	0.614	0.702	0.573
TOTAL CAPITALIZATION	0.311	0.401	0.394	0.488	0.431	0.393	0.384	0.380	0.497	0.355
COVERAGE RATIO										
INTREST COVERAGE RATIO	7.602	7.054	2.505	3.270	2.587	2.100	1.126	0.233	-1.466	1.102
EQUITY RATIO	0.358	0.300	0.323	0.290	0.369	0.360	0.367	0.386	0.298	0.427
NET INCOME TO NET SALES	0.072	0.071	0.040	0.063	0.038	0.023	0.007	0.010	-0.131	0.006
ROE	0.308	0.276	0.100	0.165	0.104	0.063	0.016	0.017	-0.278	0.013
PROFTABILITY RATIO										
GROSS PROFIT MARGIN	0.226	0.236	0.185	0.226	0.259	0.267	0.267	0.204	0.240	0.407
NET PROFIT MARGIN	0.072	0.071	0.040	0.063	0.038	0.023	0.007	0.010	-0.131	0.006
RETURN ON INVESTMENT	0.100	0.078	0.026	0.044	0.033	0.023	0.006	0.007	-0.095	0.004
RETURN ON EQUITY	0.279	0.259	0.082	0.151	0.091	0.063	0.016	0.017	-0.319	0.010
EARNING PER SHARE	49.650	52.630	19.780	39.260	6.060	3.900	0.930	1.030	-14.720	0.680
PRICE TO EARNING RATIO	2.711	2.191	1.804	3.809	40.736	69.944	282.462	382.650	-36.965	568.088
EARNING POWER	0.154	0.115	0.044	0.080	0.066	0.047	0.030	0.006	-0.047	0.031
MV/BV	0.020	0.015	0.003	0.010	0.012	0.014	0.014	0.021	0.037	0.017

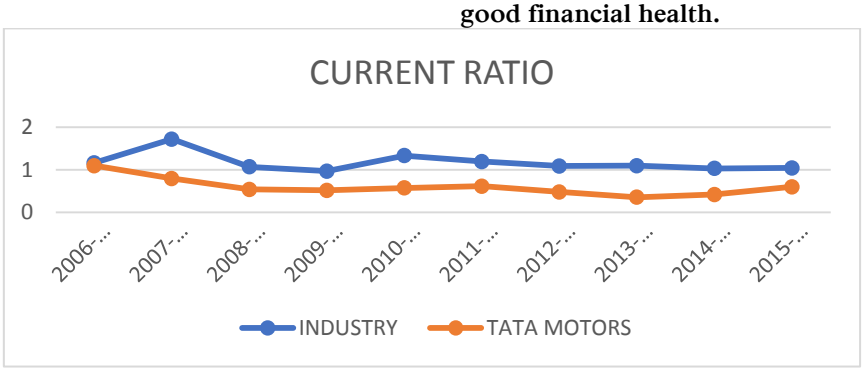
FINANCIAL RATIOS OF AUTOMOBILE INDUSTRY

AVERAGE RATIO OF 5 AUTOMOBILE COMPANIES										
RATIO	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**
CR	1.16	1.72	1.07	0.97	1.33	1.19	1.09	1.10	1.03	1.04
QR	0.83	1.42	0.75	0.65	0.93	0.82	0.74	0.68	0.65	0.61
AcRT	16.30	17.49	23.62	29.35	45.30	52.33	48.05	63.67	60.62	47.77
NDSAcRT	44.37	35.80	40.66	33.39	25.72	23.05	25.90	27.70	20.67	18.80
IT	7.48	9.30	7.40	7.95	8.11	8.05	7.77	7.32	8.04	9.34
D-E	2.17	1.99	1.83	1.37	1.17	1.27	1.28	1.14	1.22	0.94
D-TA	0.63	0.57	0.57	0.52	0.49	0.52	0.52	0.49	0.49	0.45
TCR	0.55	0.45	0.65	0.49	0.46	0.44	0.44	0.45	0.46	0.41
ICR	21.14	8.20	25.25	13.11	26.91	141.02	275.45	100.35	171.95	260.98
GPM	23.77%	24.87%	24.11%	27.36%	27.93%	27.00%	26.85%	26.21%	28.35%	33.11%
NPM	7.35%	7.09%	5.54%	10.44%	10.67%	8.35%	8.40%	7.89%	6.71%	10.39%
ROI	119.44%	150.77%	71.12%	82.32%	95.25%	101.37%	100.63%	99.74%	106.45%	117.95%
ROE	24.09%	22.97%	4.33%	16.52%	18.48%	16.75%	16.38%	15.28%	12.20%	20.23%
EPS	27.006	29.756	2.206	24.43	24.84	27.17	37.07	56.046	79.054	108.554
MV/BV	1.05	0.80	0.36	0.55	0.82	0.97	0.87	1.22	2.66	2.26
PER	10.20	7.80	7.14	13.25	22.10	29.84	69.69	134.17	28.07	139.77
EP	0.12	0.13	0.06	0.11	0.13	0.11	0.12	0.12	0.14	0.18

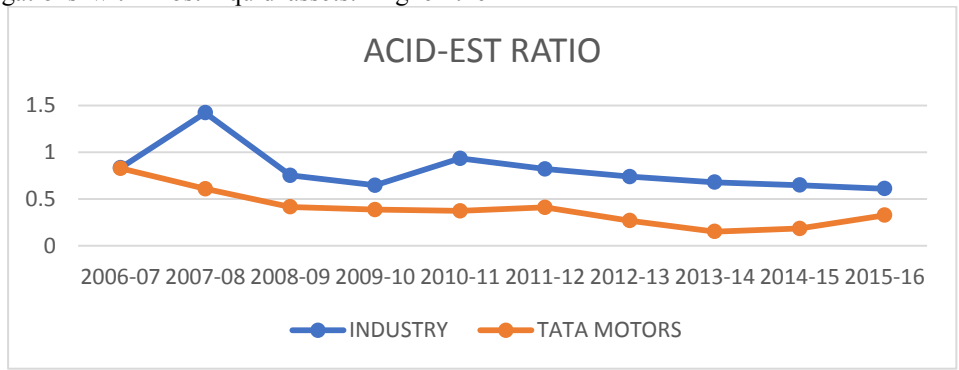
1. We have calculated the above average ratios considering 5 automobile companies namely:Tata motors, Maruti Suzuki, Ashok Leyland, SML Isuzu & Force motors.

COMPARISON OF TATA MOTORS FINANCIAL RATIOS WITH INDUSTRIES RATIOS

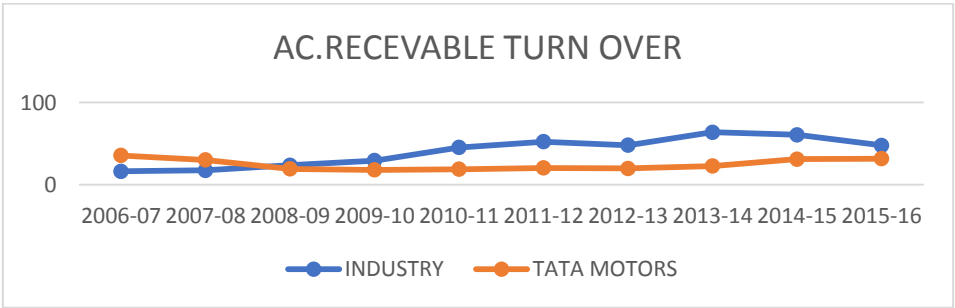
1. CURRENT RATIO: it gives an idea of company's ability to pay back its liability.Here Tata motors C.R. is highest in 2006-07 period after that it is decreasing and it is under 1.It indicates that its liability is greater than its assets. **So, it is not in good financial health.**



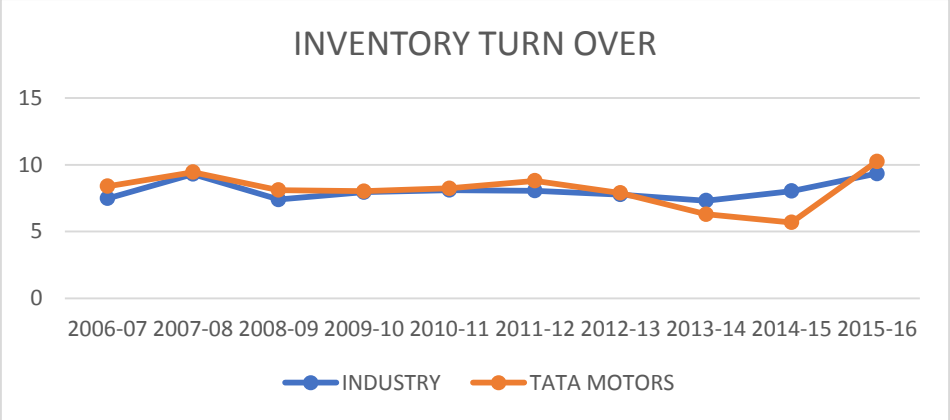
2. **ACID - TEST RATIO:** It indicates the company short term liquidity and measures company'sability to meet its short-term obligations with most liquid assets. Higher the acid-test ratio should be for healthy company. In the case of TATA MOTORS, acid test ratio is below 1after 2007.



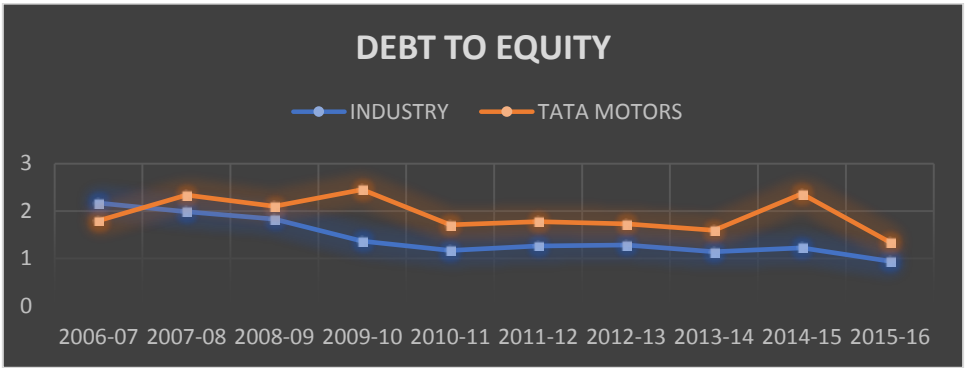
3. **ACCOUNT RECEIVABLE TURN OVER:** this ratio measure how many times a company converts its receivables into cash.



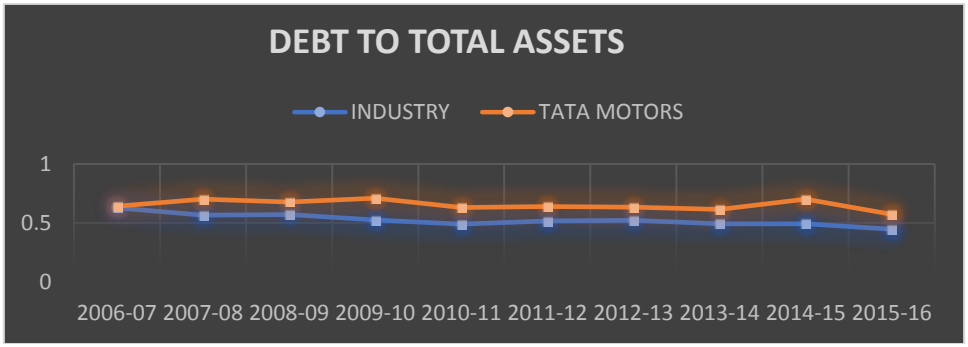
4. **INVENTORY TURNOVER RATIO:** Indicates the effectiveness of the inventory management practices of the firm. In this case it is moving with industry.



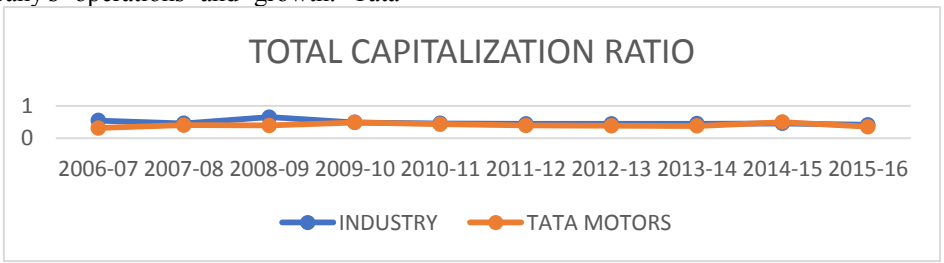
5. **DEBT TO EQUITY RATIO:** shows the relative contributions of creditors and owners. This ratio is currently not high but it is above on average. Data shows that Tata motors is aggressive in financing its growth with debt. This create a high level of risk



6. **DEBT TO TOTAL ASSETS:** Here TATA MOTORS approx. 60-70 % assets financed by debt while on an industry shows that it should be below 0.5 or 50%.

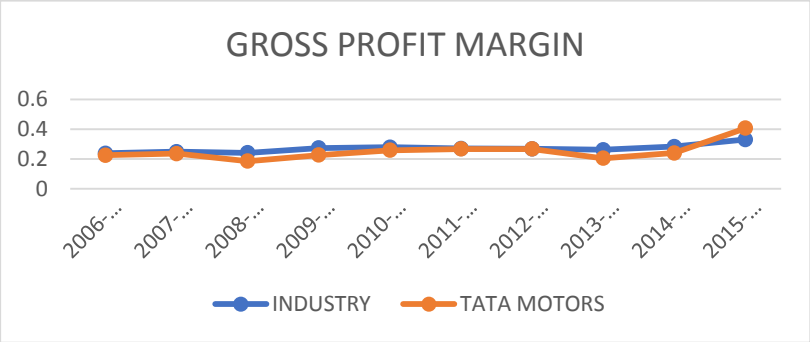


7. **TOTAL CAPITALIZATION RATIO**:The capitalization ratio measures the debt component of a company's capital structure, or capitalization to support a company's operations and growth. Tata motors has an average TCR relative to industry average.

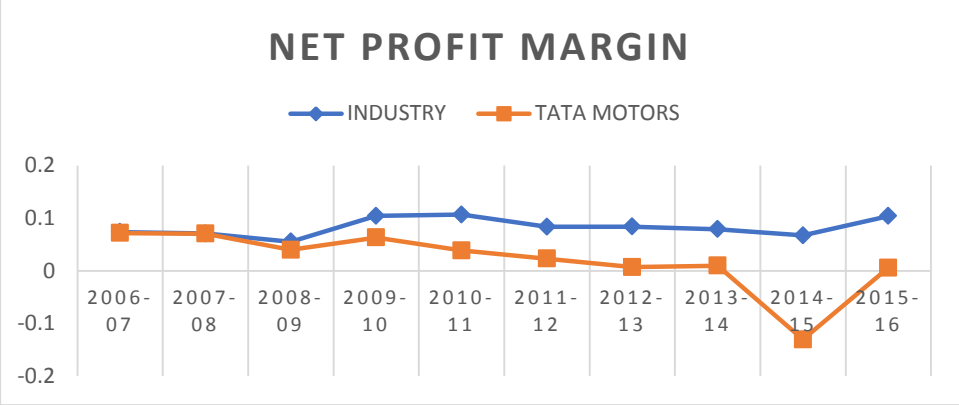


8. PROFITABILITY RATIOS:

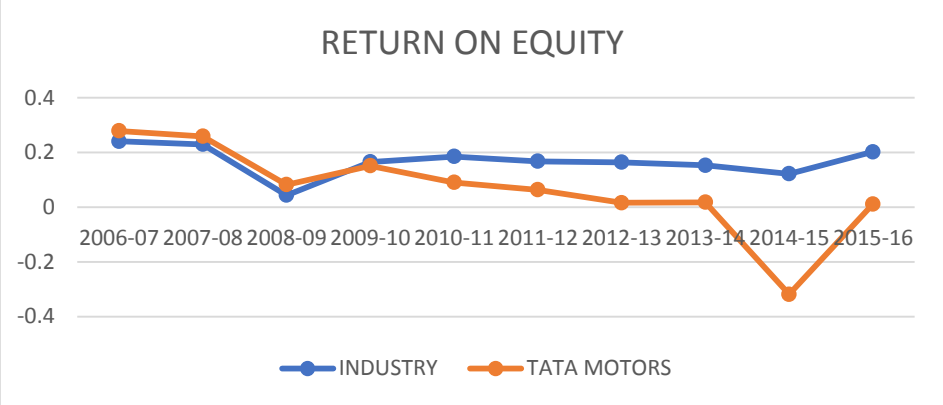
a. GROSS PROFIT MARGIN:



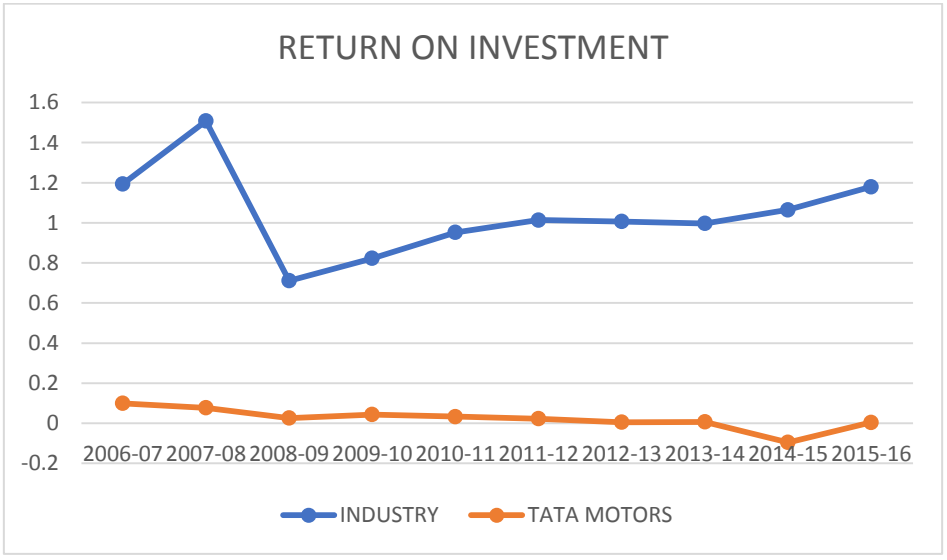
b. NET PROFIT MARGIN:



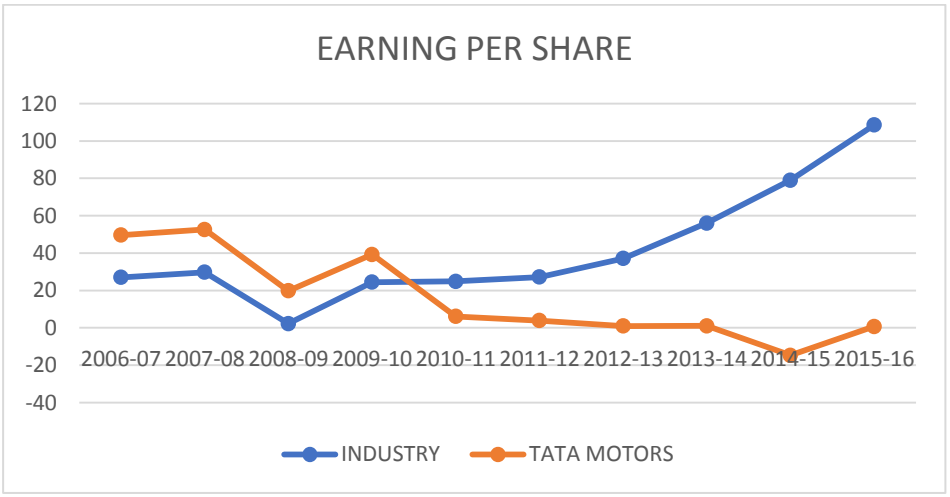
c. RETURN ON EQUITY



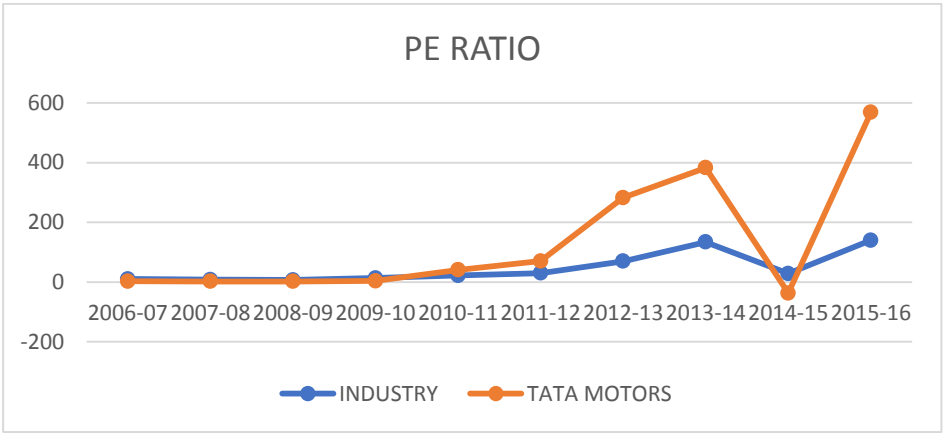
d. RETURN ON INVESTMENT:



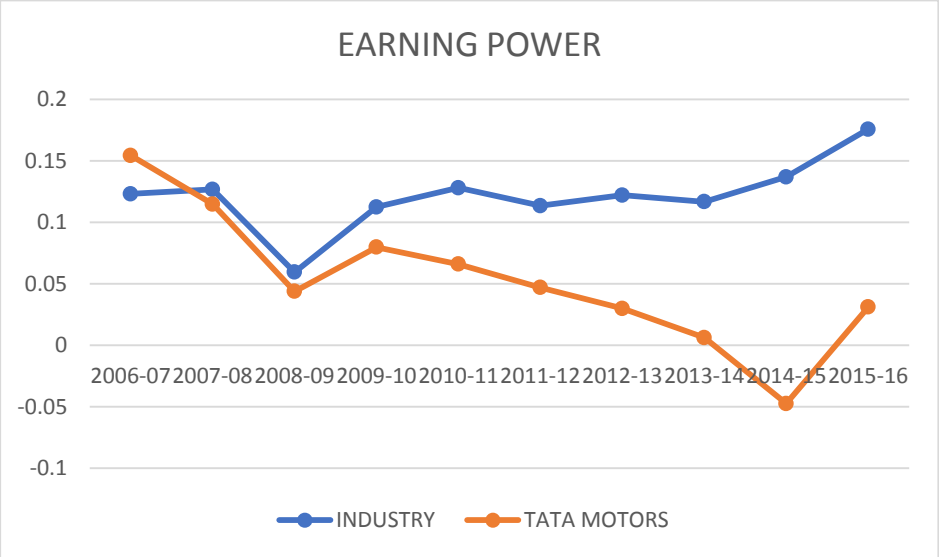
e. EARNING PER SHARE:



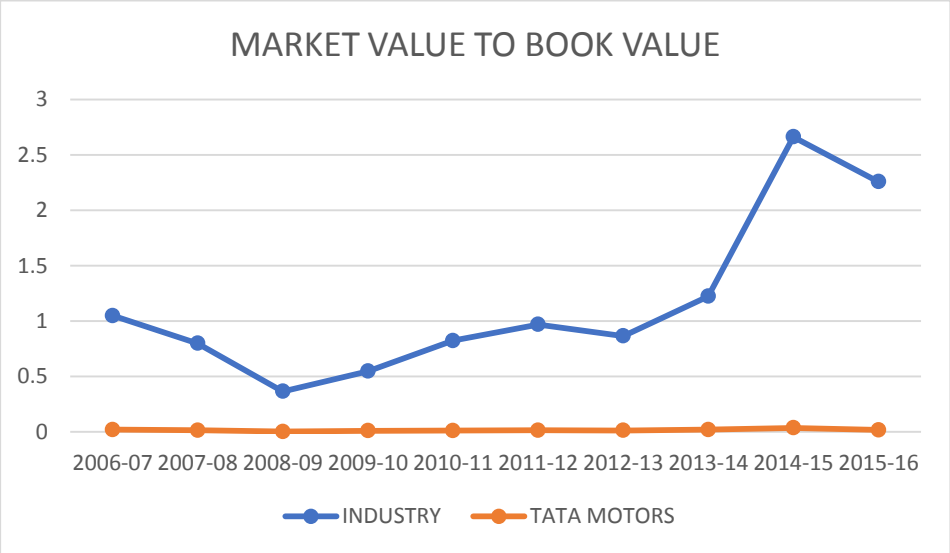
f. PRICE TO EARNING RATIOS:



g. EARNING POWER:



h. MARKET VALUE TO BOOK VALUE:



Profitability ratio Indicates the efficiency of operations and firm pricing policies. Gross profit margin moving with industry average through the years but net profit margin is moving below the industry average .so earning left for shareholders is very low and it also indicates that it is not good in converting revenue into profits available for shareholders.

Return on investment and return on equity both is below the industry average and it went on a negative side during period 2014-15. After that it has covered but still it is moving around zero.

Earning per share , price to earning ratio , earning power & market value to book value all these ratios are below and its moving around zero .

HORIZONTAL ANALYSIS

Horizontal analysis (also known as *trend analysis*) is a financial statement analysis technique that shows changes in the amounts of corresponding financial statement items over a period of time. It is a useful tool to evaluate the trend situations.

The statements for two or more periods are used in horizontal analysis. The earliest period is usually used as the base period and the items on the statements for all later periods are compared with items on the statements of the base period. The changes are generally shown both in dollars and percentage.

Dollar and percentage changes are computed by using the following *formulas*:

Percentage change=(dollor change/amount of the item in base year)*100

Here as we see for tatamotors the trend that the return on equity has decreased by time majorly during the march 15-16 as well as return on investment has also fallen down during this period.

The total current liabilities has decreased over time which a positive pmlication for the company. The trade paybales has also cited a decireasing trend which ensures that the company is working well and covering the due payments really well.

Now if we see the assets of Tatamotors, we see that tangible assets have been approximately same more or less during these 10 years but the intangible assets have changed drastically .Moreover fixed assests have seen a surge which is making the company stronger on its asset side.

Inventories have decreased overtime at slow rate .While total revenue has not seen much progress. On an average there has been slight increase im total revenue.

Horizontal analysis

	Mar 07	Mar-08	Mar-09	Mar-10	Mar-11	Mar 12	Mar-13	Mar-14	Mar-15	Mar 16
EQUITIES AND LIABILITIES										
SHAREHOLDER'S FUNDS										
Equity Share Capital	0.66	0.03	33.33	11.00	11.76	-0.46	0.52	0.89	0.00	5.50
Total Share Capital	0.66	0.03	33.33	11.00	11.76	-0.46	0.52	0.89	0.00	5.50
Revaluation Reserves	-1.67	-1.70	-1.72	-1.76	-1.79	-1.82	-1.85	-1.89	0.00	0.00
Reserves and Surplus	25.95	15.02	59.59	19.85	36.20	-1.98	-2.60	0.20	-23.31	52.62
Total Reserves and Surplus	25.81	14.95	59.38	19.81	36.13	-1.98	-2.60	0.20	-23.28	52.54
Total Shareholders Funds	24.07	14.12	58.10	19.44	35.19	-1.94	-2.50	0.22	-22.50	50.50
NON-CURRENT LIABILITIES										
Long Term Borrowings	-6.65	81.38	56.07	94.37	-17.87	-17.30	0.59	21.05	26.39	-13.24
Deferred Tax Liabilities [Net]	24.59	42.53	46.43	14.39	-12.04	4.07	-6.72	-97.80	-100.00	0.00
Other Long Term Liabilities						-11.77	-36.80	-6.70	-75.18	-26.74
Long Term Provisions						-48.43	6.95	17.94	158.12	-33.04
Total Non-Current Liabilities	1.22	69.33	53.55	74.45	7.75	-16.22	-6.06	-1.55	25.08	-16.33
CURRENT LIABILITIES										
Short Term Borrowings	190.49	28.29	196.47	-31.84	2.44	-39.36	106.74	-23.29	62.76	-56.82
Trade Payables	3.21	46.87	4.05	35.43	-25.43	-0.82	-3.31	14.40	-8.47	0.72
Other Current Liabilities	-23.19	-1.58	-17.61	1126.75	15.30	132.71	-34.10	-49.97	27.59	35.77
Short Term Provisions	12.29	45.82	-5.64	47.21	-27.12	46.71	-48.91	25.39	-67.61	98.26
Total Current Liabilities	18.92	41.49	37.43	23.84	-14.46	16.72	-4.84	-10.93	8.37	-12.86
Total Capital And Liabilities	17.34	36.20	46.87	33.06	6.04	0.61	-4.28	-4.70	0.42	4.97
ASSETS										
NON-CURRENT ASSETS										
Tangible Assets	7.96	40.25	40.34	48.05	-0.29	7.65	4.61	-1.25	1.05	-0.06
Intangible Assets	37.78	-4.56	111.10	2.71	864.17	30.65	-3.21	-1.92	13.38	-0.33
Capital Work-In-Progress	164.23	101.52	37.30	-24.76	-67.13	11.07	-21.07	13.86	-21.37	8.87
Intangible Assets Under Development						2.27	52.61	42.94	1.13	6.83
Fixed Assets	41.43	63.46	39.68	12.58	4.75	10.69	6.05	6.86	1.06	1.93

Non-Current Investments	22.92	98.23	164.10	72.24	0.90	-20.56	1.50	1.02	-7.58	0.05
Deferred Tax Assets [Net]	17.15	125.06	188.06	-30.87	-100.00	0.00	0.00	0.00	0.00	0.00
Long Term Loans And Advances	0.00	0.00	0.00	0.00	0.00	1.70	2.50	-18.37	-17.64	-1.68
Other Non-Current Assets	-28.54	-40.04	-66.61	-100.00	0.00	188.23	-6.07	31.31	41.84	-22.13
Total Non-Current Assets	35.17	74.05	82.13	37.79	9.24	-6.18	3.70	2.25	-3.78	0.85
Foreign Currency Monetary Item Translation Difference A/C										
CURRENT ASSETS										
Current Investments					0.00	2911.93	-31.95	-94.28	-79.95	8485.56
Inventories	24.29	-3.16	-7.93	31.65	32.56	17.91	-2.90	-13.30	24.32	2.08
Trade Receivables	9.28	44.56	37.54	53.80	8.82	4.05	-32.87	-33.08	-8.40	40.73
Cash And Cash Equivalents	-26.14	189.96	-52.37	53.55	38.54	-24.21	-74.86	-51.14	317.75	-52.15
Short Term Loans And Advances	3.75	-26.49	7.46	-6.46	-58.48	1.14	-18.15	-20.12	28.65	13.97
OtherCurrentAssets	0.00	0.00	0.00	0.00	0.00	1.39	-8.07	4.60	7.31	116.06
Total Current Assets	4.97	2.39	-6.67	19.05	-4.91	24.98	-26.09	-33.51	27.21	24.88
Total Assets	17.34	36.20	46.87	33.06	6.04	0.61	-4.28	-4.70	0.42	4.97
Profit & Loss account of Tata Motors										
	0.94	0.94	0.92	0.92	0.91	0.90	0.89	0.88	0.88	0.87
INCOME										
Revenue From Operations [Gross]	32.35	6.54	-13.84	33.76	33.47	15.64	-16.96	-23.61	4.66	18.16
Less: Excise/Sevice Tax/Other Levies	30.09	-1.58	-33.94	-2.69	46.26	19.99	-7.33	-23.81	-6.93	32.43
Revenue From Operations	32.73	7.89	-10.80	37.85	32.46	15.26	-17.84	-23.59	5.85	16.88
Other Operating Revenues	0.00	0.00	0.00	0.00	0.00	29.23	30.39	-2.94	6.06	4.35
Total Operating Revenues	32.73	7.89	-10.80	37.85	33.12	15.33	-17.57	-23.41	5.85	16.74
Other Income	30.15	-34.13	25.49	32.52	-65.35	35.73	263.75	83.56	-50.92	13.37
Total Revenue	32.63	6.20	-9.90	37.67	29.83	15.51	-14.63	-18.64	0.14	16.57
EXPENSES										
Cost Of Materials Consumed	34.95	4.64	-13.72	25.34	27.54	25.27	-19.62	-24.78	8.11	9.74
Purchase Of Stock-In Trade	46.10	9.52	36.43	107.00	63.15	-12.62	-8.85	-13.89	14.17	-8.78
Operating And Direct Expenses	30.04	3.67	-4.23	48.80	-89.05	65.86	81.75	0.70	2.04	-2.94
Changes In Inventories Of FG,WIP And Stock-In Trade	36.11	-111.58	488.04	-354.84	-41.61	76.12	-76.98	-358.86	-336.42	-102.61
Employee Benefit Expenses	19.26	12.90	0.44	18.35	24.94	17.32	5.41	1.43	7.43	-2.09

Finance Costs	32.84	9.17	58.29	84.99	11.03	-11.93	13.88	-3.62	20.50	-8.10
Depreciation And Amortisation Expenses	12.54	11.26	34.07	18.22	31.62	18.08	13.12	13.90	25.74	-5.74
Miscellaneous Expenses Written Off	15.23	-24.31	-20.48	181.47	-100.00	0.00	0.00	0.00	0.00	0.00
Other Expenses	31.98	1.53	6.24	40.17	117.88	24.74	-7.40	-10.22	15.64	-0.48
Less: Amounts Transfer To Capital Accounts	0.00	0.00	0.00	0.00	0.00	10.94	5.14	5.80	10.87	-7.56
Total Expenses	33.42	6.83	-5.04	32.06	33.77	17.24	-12.64	-16.55	8.13	5.37
Profit/Loss Before Exceptional, ExtraOrdinary Items And Tax	25.32	0.10	-60.65	179.11	-17.17	-17.81	-69.31	-182.21	634.86	-114.38
Exceptional Items	0.00	0.00	0.00	0.00	0.00	297.80	-28.88	29.71	-25.21	-10.04
Profit/Loss Before Tax	25.32	0.10	-60.65	179.11	-22.37	-38.95	-86.96	-686.41	287.48	-103.78
Tax Expenses-Continued Operations										
Current Tax	31.00	-70.80	-100.00	0.00	0.00	-33.43	-78.41	-374.88	-121.73	-337.06
Less: MAT Credit Entitlement	0.00	0.00	0.00	0.00	0.00	-32.25	-78.56	-1281.47	6.20	-100.00
Deferred Tax	24.67	126.58	-100.62	-23678.40	-36.16	-73.89	-229.72	1406.84	-97.38	-109.31
Other Direct Taxes	-63.20	-2.10	114.29	-100.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Tax Expenses	25.80	-17.08	-97.72	4615.68	-34.74	-74.32	-228.42	972.13	-156.18	-110.97
Profit/Loss After Tax And Before ExtraOrdinary Items	25.15	6.03	-50.65	123.73	-19.12	-31.44	-75.70	10.84	-1516.64	-104.94
Profit/Loss From Continuing Operations	25.15	6.04	-49.90	120.36	-19.12	-31.44	-75.70	10.84	-1516.64	-104.94
Profit/Loss For The Period	25.15	6.04	-49.90	120.36	-19.12	-31.44	-75.70	10.84	-1516.64	-104.94
Costs of goods sold	30.75	6.39	-4.79	30.84	27.54	14.04	-17.60	-16.82	1.09	-8.93
gross profit	40.04	13.05	-30.22	68.76	52.18	19.02	-17.47	-41.46	24.41	97.95

VERTICAL ANALYSIS

Vertical analysis (also known as *common-size analysis*) is a popular method of financial statement analysis that shows each item on a statement as a percentage of a base figure within the statement.

To conduct a *vertical analysis of* balance sheet, the total of assets and the total of liabilities and stockholders' equity are generally used as base figures. All individual assets (or groups of assets if condensed form balance sheet is used) are shown as a percentage of total assets. The current liabilities, long term debts and equities are shown as a percentage of the total liabilities and stockholders' equity.

In a vertical analysis, the percentage is computed by using the following formula:

$$\text{Percentage change}=\left(\frac{amount\ of\ individual\ item}{amount\ of\ base\ item}\right)100$$

Where base item is total liability and capital in case of liability and for assets side total assets

The vertical analysis also has the same results as the horizontal. The current liabilities have decreased slightly over time.While the **percentage of profit has decreased a lot over time. This is a serious issue for Tata motors. This has been mainly due the decreasing net sales. Drop in demand for JLR cars in China and weak Indian operations seen as reasons for the tepid quarterly result**

VERTICAL ANALYSIS										
	Mar 07	**Mar-08**	**Mar-09**	**Mar-10**	**Mar-11**	**Mar 12**	**Mar-13**	**Mar-14**	**Mar-15**	**Mar 16**
EQUITIES AND LIABILITIES										
SHAREHOLDER'S FUNDS										
Equity Share Capital	2.01	1.47	1.34	1.12	1.18	1.16	1.22	1.29	1.29	1.30
Total Share Capital	2.01	1.47	1.34	1.12	1.18	1.16	1.22	1.29	1.29	1.30
Revaluation Reserves	0.14	0.10	0.07	0.05	0.04	0.04	0.04	0.05	0.05	0.04
Reserves and Surplus	33.64	28.41	30.87	27.80	35.71	34.79	35.40	37.22	28.42	41.33
Total Reserves and Surplus	33.77	28.50	30.93	27.85	35.75	34.83	35.44	37.26	28.47	41.37
Total Shareholders Funds	35.78	29.98	32.27	28.97	36.93	36.00	36.67	38.56	29.76	42.67
NON-CURRENT LIABILITIES										
Long Term Borrowings	11.16	14.86	15.79	23.06	17.86	14.68	15.43	19.60	24.67	20.39
Deferred Tax Liabilities [Net]	5.02	5.25	5.24	4.50	3.73	3.86	3.76	0.09	0.00	0.00
Other Long Term Liabilities	0.00	0.00	0.00	0.00	4.10	3.59	2.37	2.32	0.57	0.40
Long Term Provisions	0.00	0.00	0.00	0.00	2.31	1.19	1.32	1.64	4.21	2.69
Total Non-Current Liabilities	16.17	20.11	21.02	27.56	28.01	23.32	22.89	23.65	29.45	23.48
CURRENT LIABILITIES										
Short Term Borrowings	9.73	9.16	18.49	9.47	9.15	5.52	11.91	9.59	15.54	6.39
Trade Payables	29.76	32.09	22.73	23.14	16.27	16.04	16.20	19.45	17.73	17.01
Other Current Liabilities	1.46	1.05	0.59	5.45	5.92	13.70	9.43	4.95	6.29	8.14
Short Term Provisions	7.11	7.61	4.89	5.41	3.72	5.42	2.89	3.81	1.23	2.32
Total Current Liabilities	48.05	49.91	46.71	43.47	35.06	40.68	40.44	37.80	40.79	33.86
Total Capital And Liabilities	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
ASSETS										
NON-CURRENT ASSETS										
Tangible Assets	19.56	20.14	19.25	21.42	20.14	21.55	23.55	24.40	24.55	23.37
Intangible Assets	0.65	0.46	0.66	0.51	4.62	6.00	6.07	6.25	7.05	6.70
Capital Work-In-Progress	13.09	19.37	18.11	10.24	3.17	3.50	2.89	3.45	2.70	2.80
Intangible Assets Under Development	0.00	0.00	0.00	0.00	3.84	3.90	6.22	9.33	9.39	9.56
Fixed Assets	33.30	39.97	38.01	32.16	31.77	34.95	38.72	43.42	43.70	42.43
Non-Current Investments	12.90	18.78	33.77	43.71	41.59	32.84	34.82	36.91	33.97	32.38
Deferred Tax Assets [Net]	0.92	1.52	2.98	1.55	0.00	0.00	0.00	0.00	0.00	0.00
Long Term Loans And Advances	0.00	0.00	0.00	0.00	6.33	6.40	6.85	5.87	4.81	4.51
Other Non-Current Assets	0.05	0.02	0.01	0.00	0.06	0.18	0.18	0.25	0.35	0.26
Total Non-Current	47.18	60.29	74.77	77.42	79.75	74.37	80.58	86.45	82.83	79.58

Assets										
Foreign Currency Monetary Item Translation Difference A/C	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00
CURRENT ASSETS										
Current Investments	0.00	0.00	0.00	0.00	0.16	4.75	3.38	0.20	0.04	3.31
Inventories	13.03	9.26	5.81	5.74	7.18	8.42	8.54	7.77	9.62	9.35
Trade Receivables	4.07	4.32	4.05	4.68	4.80	4.97	3.48	2.45	2.23	2.99
Cash And Cash Equivalents	4.31	9.17	2.97	3.43	4.48	3.38	0.89	0.45	1.89	0.86
Short Term Loans And Advances	31.42	16.96	12.41	8.72	3.42	3.43	2.94	2.46	3.15	3.42
OtherCurrentAssets	0.00	0.00	0.00	0.00	0.21	0.21	0.20	0.22	0.23	0.48
Total Current Assets	52.82	39.71	25.23	22.58	20.25	25.15	19.42	13.55	17.17	20.42
Total Assets	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

ALTMAN Z-SCORE MODEL OF TATA MOTORS

Altman Z-Score is a quantitative balance-sheet method of determining a company's financial health. “Safe” companies, i.e. companies that have a low probability of bankruptcy, have an Altman Z-Score greater than 3.0.

The Altman Z-Score is a measure of a company's health and likelihood of bankruptcy. Several key ratios are used in the formulation of an Altman Z-Score Value.

The Z-Score model is the 1960's brainchild of Professor Edward Altman of NYU. It consists of 5 variables:

The original model to calculate the Z score for public automobile companies is as follows.

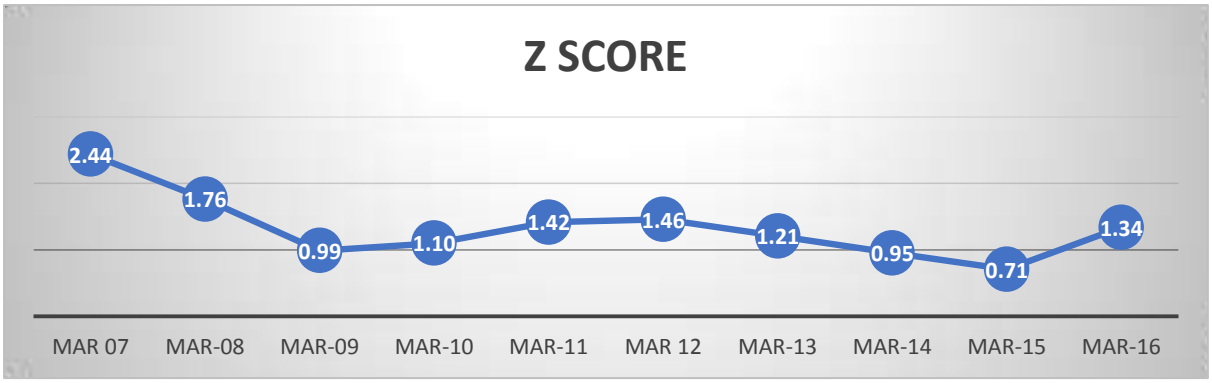
Z = 1.2*X1 + 1.4*X2 + 3.3*X3 + 0.6*X4 + 1.0*X5

Where:

- X1 = Working Capital / Total Assets
- X2 = Retained Earnings / Total Assets
- X3 = EBIT / Total Assets
- X4 = Market Value of Equity / Total Liabilities
- X5 = Net Sales / Total Asset

Table of Altman Z Score for Tata motors:

Z SCORE TABLE										
	Mar 07	**Mar-08**	**Mar-09**	**Mar-10**	**Mar-11**	**Mar 12**	**Mar-13**	**Mar-14**	**Mar-15**	**Mar-16**
X1	0.05	-0.10	-0.21	-0.21	-0.15	-0.16	-0.21	-0.24	-0.24	-0.13
X2	0.34	0.29	0.31	0.28	0.36	0.35	0.35	0.37	0.28	0.41
X3	0.15	0.11	0.04	0.08	0.07	0.05	0.03	0.01	-0.05	0.03
X4	0.02	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.04	0.02
X5	1.39	1.10	0.67	0.69	0.87	1.00	0.86	0.69	0.73	0.81
Z SCORE	2.44	1.76	0.99	1.10	1.42	1.46	1.21	0.95	0.71	1.34



- Here its X1 (Working capital/total assets) ratios shows negative except only in 2006-07. it means major part of its working capital is financed by debt. Proper credit policy or collection of overdue on time would increase this ratio.
- The company is able to maintain it's retained earnings. According to the result of X2, the company is able to generate and retain its profit out of its total assets.
- X3 indicates the company's ability to generate profit out of its total assets. But the company has shown a decline trend from 2008-2009.
- X4 shows the company's market value to overcome its liabilities. The ideal number is 1. Tata Motors X2 ratio is above 1. it showed an increasing trend and after that a sudden dip with market in period 2008-09 maked.
- Analyzing X5 ratio, Tata Motors was not able to utilize its fixed assets fully after 2008-2009 to 20015-16.
- When Z is 3.0 or more, the firm is most likely safe based on the financial data. However, be careful to double check as fraud, economic downturns and other factors could cause unexpected reversals.
- When Z is 2.7 to 3.0, the company is probably safe from bankruptcy, but this is in the grey area and caution should be taken.
- When Z is 1.8 to 2.7,. This is the lower portion of the grey area and a dramatic turnaround of the company is needed.
- If a company is generating lower than 1.8, serious studies must be performed to ensure the company can survive.

CONCLUSION

Overall Z score of Tata motors is lies between 0.71 to 2.44, lowest in 2015. Company needs serious studies. We can say that its main reason is company's working capital to total assets is negative during the periods. Its all profitability ratios are under the average and negative during the years. Debt to total assets is approx. 60-70% which is above the average. Debt to equity ratio is moving between 1.5 to 2.2 which is bad for any company. In the case of the liquidity ratios which are very low relatively to industry. On an average tata motors financial ratios indicates that its financial conditions are under performance.

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