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VALUE RELEVANCE IN INDIAN AUTOMOTIVE INDUSTRY

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Abstract

This research article is an attempt to empirically examine the value relevance of selected accounting parameters of the Indian automotive industry which is represented by three distinct companies – Tata Motors, Maruti Suzuki and Motherson Sumi. The selected parameters include total revenue, EBITDA, earnings per share, cash flow and book value per share. The effect of changes of these selected parameters is measured on the three companies over a ten year period from 2007 through 2016. The period has been carefully chosen to encompass significant changes taking place all over the world and also the changes in the world of Indian accounting.

The study is based on correlation analysis and a set of multiple regression equations with checks for goodness of fit, autocorrelation, and multi-collinearity. The final outcome suggests that for the chosen three companies and for the automotive industry in general, Earnings per share seem to be the best determinant of their share price.

Keywords: Value Relevance, Accounting Parameters, Automotive industry, Econometric model

JEL: C58, G14, O16

Introduction

Value relevance[1] in the world of Business Finance can be defined as the ability of disclosed financial information to capture and summarise firm value. It is measured by statistically relating

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information presented by financial statements with stock market returns.

Indian automotive industry is one of the success stories of modern India. The local engineering skills coupled with managerial talent have made many Indian companies global leaders from this industry. While most of the global brands have their presence in our country, some Indian brands have also started to venture out after conquering the domestic market like Tata (passenger vehicles), Bajaj (motorcycles) and Mahindra (Agricultural vehicles). Indian auto components companies are also highly regarded internationally. Many of them have global presence through manufacturing plants and design houses.

In this backdrop, this article aims to capture whether Indian auto companies are getting the value based on their accounting figures or not. This is basically an analytical study with three leading companies from the automotive industry – Tata Motors (leader in commercial vehicles), Maruti Suzuki (leader in passenger vehicles) and Motherson Sumi (leader in auto components)

Tata Motors (leader in commercial vehicles[2]) is one of India's largest automobile company with consolidated revenues of Rs. 488.68 billion in 2015-16. The Group has over 60,000 employees and was established in 1945. It has a strategic alliance with Fiat and has operations in the UK, South Korea, Thailand, South Africa and Indonesia. It acquired Daewoo Commercial Vehicles Company in 2004 and Jaguar Land Rover in 2008. In 2006, Tata Motors formed a joint venture with the Brazil-based, Marcopolo, a global leader in body-building for buses and coaches to manufacture fully-built buses and coaches for India. Its brief financial position highlighting five key accounting parameters over ten years from 2006 to 2017 is given (Table

Table 1 : Financial Highlights of Tata Motors Ltd.

	Rs. Crore	Rs. Crore	Rs. Crore	In Rs.	In Rs.
Financial Year	**TR**	**EBITDA**	**CF**	**EPS**	**BV/share**
2006-07	32,189	2,573	827	52.02	216.44
2007-08	33,886	2,617	2,397	16.44	231.52
2008-09	30,176	1,875	1,142	48.49	326.63
2009-10	40,390	4,170	1,753	34.07	338.98
2010-11	51,613	4,670	1,352	5.28	75.77
2011-12	59,854	4,259	920	4.07	74.08
2012-13	51,506	1,603	206	0.43	74.21
2013-14	41,878	-667	199	-13.81	56.57
2014-15	41,508	-975	862	-4.07	74.05
2015-16	48,868	2,378	212	-0.85	74.95

Source: CMIE Prowess database

1).

Maruti Suzuki (leader in passenger vehicles) currently holds more than 55% share[3] in the passenger vehicles market even after the entry of so many global brands in the car market. The revenues of the company have steadily increased over the years to over Rs. 659.83 billion in 2015-16. The new marketing initiatives like Nexa and Arena showrooms have added glamour to the otherwise value-conscious approach of the company.

Motherson Sumi Systems Limited (MSSL), the flagship company of the Samvardhana Motherson Group was established in 1986 in joint partnership with Sumitomo Wiring

Table 2 : Financial Highlights of Maruti Suzuki Ltd.

	Rs. Crore	Rs. Crore	Rs. Crore	In Rs.	In Rs.
Financial Year	**TR**	**EBITDA**	**CF**	**EPS**	**BV/share**
2006-07	17,922	2,189	64	1,422.80	286.84
2007-08	21,951	2,483	41	330.50	325.05
2008-09	24,302	1,767	69	1,939.00	387.18
2009-10	33,127	3,586	78	98.20	466.02
2010-11	41,573	3,299	68	2,508.50	507.33
2011-12	40,575	2,481	58	176.10	565.57
2012-13	50,125	4,381	106	125.00	680.68
2013-14	49,934	5,264	103	69.70	774.8
2014-15	56,229	6,593	171	18.30	913.41
2015-16	65,983	9,043	185	39.10	1022.62

Source: CMIE Prowess database

Systems, Japan. MSSL including its subsidiaries and JVs is one of the leading manufacturer of automotive wiring harnesses, mirrors for passenger cars and a leading supplier of plastic components and modules to the automotive industry. The last ten years' financial highlights of Motherson are given (Table 3).

Industry Overview

The automobile industry comprises of two parts – the component manufacturers and the vehicle manufacturers. The Society of Indian Automobile Manufacturers (SIAM) comprises of the vehicle makers and has fifty members (August, 2018) both from inside and outside the country. The industry clocked a turnover of Rs. 4,537.5 billion[4] as at March, 2017.

Table 3 : Financial Highlights of Motherson Sumi Systems Ltd.

	in Rs. cr.	in Rs. cr.	in Rs. cr.	in Rs.	in Rs.
Financial Year	**TR**	**EBITDA**	**CF**	**EPS**	**BV/share**
2006-07	1,276	191	37	3.43	11.42
2007-08	1,573	224	33	1.98	12.77
2008-09	1,482	197	18	3.81	15.03
2009-10	1,961	298	37	5.7	25.38
2010-11	3,163	432	35	7.18	28.52
2011-12	3,982	579	19	7.63	26.64
2012-13	4,861	779	64	5.64	21.96
2013-14	5,112	888	17	6.49	25.68
2014-15	5,588	887	144	4.65	19.44
2015-16	6,148	997	14	4.62	37.94

Source: CMIE Prowess database

The Auto Component Manufacturer's Association (ACMA) is the apex body of automobile component makers and has about 782 members (March, 2017). The industry had a turnover of Rs. 2,928.1 billion[5] as at March, 2017.

However in order to discover the market value of these companies, the listed companies in BSE provide the correct picture. BSE Auto index comprises of fourteen (14) Companies and is calculated on free-float methodology.

The sectoral index BSE Auto presents the best companies from this sector. The table 4 gives a snapshot of the key companies from BSE Auto present in this index as on March, 2017.

Literature Review

There are many studies on value relevance both from India and abroad. Some of the papers that have been thoroughly studied are named below.

Bagherzadeh, *et. al.* (2013), Dawar (2012), Sharma (2014), Soltes (2012) and Ganguli (2011) have confirmed the effect of accounting parameters on share prices with greater precision.

Bhatt *et. al.* (2012) has highlighted the impact of earnings per share (EPS), **Gee-Jung (2009)** has empirically indicated that book value and cash flows have more value relevance than earnings, while **Shamki (2011) *et. al.*** has showed that net income is value relevant.

Bernard (1990) *et. al.* has given contrarian evidence, while **Fama, *et. al.* (1969)** has given

Table 4 : List of BSE Auto Companies

Scrip Code	Company	ISIN No.
500877	Apollo Tyres Ltd	INE438A01022
500477	Ashok Leyland Ltd	INE208A01029
532977	Bajaj Auto Ltd	INE917I01010
502355	Balkrishna Industries Ltd	INE787D01026
500493	Bharat Forge Ltd	INE465A01025
500530	Bosch Ltd	INE323A01026
500480	Cummins India Ltd	INE298A01020
505200	Eicher Motors Ltd	INE066A01013
500086	Exide Industries Ltd	INE302A01020
500182	Hero MotoCorp Ltd	INE158A01026
500520	Mahindra & Mahindra Ltd	INE101A01026
532500	Maruti Suzuki India Ltd	INE585B01010
517334	Motherson Sumi Systems Ltd	INE775A01035
500290	MRF Ltd	INE883A01011
500570	Tata Motors Ltd	INE155A01022
532343	TVS Motor Co Ltd	INE494B01023

Source: https://www.bseindia.com/sensexview/IndicesWatch_weight.aspx?iname=AUTO&index_Code=42

empirical evidence that indicates successive price changes in individual common stocks are very nearly independent. The analysis by **Udhaya (2014)** has shown that the BSE and the sectors analysed have reflected semi-strong form market efficiency in India.

Halonen, *et. al.* (2013) have found that value relevance from the balance sheet, measured by Book Value per share (BVPS), has increased over time. **Sharma (2011)** observed that earnings, dividend and book value per share have significant impact on the market price of share.

Research Objectives

In order to capture the value generated by this industry, three top companies were chosen representing passenger and commercial vehicles and auto components - Maruti Suzuki, Tata Motor and Motherson Sumi respectively. The key objectives are –

a) To identify the linkage between share price and result declaration of select companies

b) To identify the specific accounting parameters affecting share price of select companies

Research Methodology

In order to identify the value relevance of accounting information, some parameters were selected based on past research. The finally selected parameters this include Total revenue (TR), EBITDA (Earnings before Interest, Tax, Depreciation and Amortisation), Earnings per share (EPS), Cash Flow (CF) and Book value (BV). The audited figures were sourced from the commercial database CMIE Prowess. The share prices of select companies were sourced from the official website of Bombay Stock Exchange over a ten year period from 2007 to 2016.

In order to find out the specific accounting variables (all or some of them) that influence the market price of shares and to ensure that optimum number of variables are used in the final regression equation, the objective of the study is based on the methodology outlined by Srivastava and Rego (2008). It has been done by two different statistical techniques as follows–

a) Bivariate correlation analysis[6] among YEP (Year end Price) and RDDP (Result Declaration Day Price) with the five selected accounting parameters has been done in order to discover the 'Price' that has the maximum relation with accounting parameters. The price having the highest correlation coefficient with a particular accounting parameter has been considered for the first regression analysis in the second part.

b) Framing of eleven multiple regression models for all companies with the selected accounting parameters have been done next. A hypothetical example has been given in the next table 5 (Table 5) to illustrate the process.

The aim is to identify the parameter(s) singly or jointly that are best able to explain the share price changes in the selected top companies. The outcome may also highlight the inability of the accounting figures to have any effect on share price. In that case, some external variables may be examined later to consider their effect on share price.

Analysis and Interpretation

The correlation analysis (and thereafter multiple regression equations) applied on the parameters of three selected companies show that RDDP is the most relevant price having the maximum correlation with declared accounting results. The correlation also seems to be significant with TR, EBITDA and EPS in most companies. The output is given in the next table (Table 6).

The chain of eleven multiple regression equations that follow the correlation output finally put forward the ***final three*** relevant equations (R3, R9 and R4 respectively) which are relatively free from statistical aberrations. The equations also provide the specific accounting parameters that may be considered responsible for share price changes.

In case of Motherson Sumi, the best-fitted regression equation is the third one **(R3)** that is

Table 5 : Hypothetical explanation of Multiple Regression equations

Equation No.	Dependent variable (hypothetical)	Independent variable(s)
R1	RDDP (Assuming having highest correlation coefficient)	TR
R2	RDDP	TR, EBITDA
R3	RDDP	TR, EPS
R4	RDDP	TR, BV
R5	RDDP	TR, CF
R6	RDDP	TR, BV, EBITDA (If TI, BV model has the **'best fit'**)
R7	RDDP	TR, BV, EPS
R8	RDDP	TR, BV, CF
R9	RDDP	TR, BV, EPS, OP (If TI, BV, EPS model has the **'best fit'**)
R10	RDDP	TR, BV, EPS, CF
R11	RDDP	All five parameters

now exhibited below (Table 7) with all its parameter values.

As we can see from the above table, TR and EPS happen to be the statistically significant variables that can explain about 85% (adjusted $R^2 = 0.85$) of the share price changes in Motherson. However, the coefficient of TR being close to zero makes it almost irrelevant. Hence it can be said that 1.5 times change in EPS changes the share price of the company by 1 unit.

In case of Tata Motors, the best-fitted regression equation is the ninth equation **(R9)** that is given below (Table 8) with all its parameter values.

In this case, four of the variables prove to be the determinants of its share price. However, TR and EBITDA become useless due to zero coefficients. But while the effect of cash flow is very small (0.105), the relation with book value is negative, which is quite surprising.

In case of Maruti Suzuki, the best-fitted regression equation (**R4**) is given below (Table 9) with all its parameter values.

Maruti provides an interesting case, too. CF is important but with too low coefficient value it is practically useless. So EPS remains as the sole variable where 22 times change is EPS changes the share price by just 1 unit.

Table 6 : Correlation coefficients (r) of Select Companies

Motherson Sumi					
	T.R.	EBITDA	EPS	C.F.	B.V.
YEP [Sig. level]	**0.780**** **[0.008]**	**0.764*** **[0.010]**	**0.754*** **[0.012]**	0.231 [0.521]	0.321 [0.366]
RDDP [Sig. level]	**0.812**** **[0.004]**	**0.804**** **[0.005]**	**0.705*** **[0.023]**	0.255 [0.48]	0.382 [0.28]
Tata Motors					
	T.R.	EBITDA	EPS	C.F.	B.V.
YEP [Sig. level]	-0.006 [0.987]	0.429 [0.216]	0.083 [0.820]	0.447 [0.195]	0.026 [0.942]
RDDP [Sig. level]	-0.132 [0.716]	0.474 [0.167]	0.226 [0.530]	**0.484** **[0.157]**	0.166 [0.646]
Maruti Suzuki					
	T.R.	EBITDA	EPS	C.F.	B.V.
YEP [Sig. level]	**0.848**** **[0.002]**	**0.937**** **[0.000]**	**0.952**** **[0.000]**	-0.488 [0.153]	**0.921**** **[0.000]**
RDDP [Sig. level]	**0.889**** [0.001]	**0.960**** [0.000]	**0.978**** [0.000]	-0.480 [0.160]	**0.947**** [0.000]

* = Correlation is significant at the 0.05 level (2-tailed)
** = Correlation is significant at the 0.01 level (2-tailed)
Source: Author's own calculations

Table 7 : Details of selected Equation from Motherson

Dependentv ariable	**= constant**	**variable**	**variable**	**Error term**
RDDP =	**-9.54**	**0.00TR**	**1.571EPS**	**48.002**
s.e.	34.704	0.00	0.433	
t-value	-0.275	4.772	3.626	
p-value	0.791	0.002	0.008	
Table Value	2.26	2.26	2.26	

Adj. R^2 = 0.85; d-statistic = 2.10; Average VIF= 1.112; F= 26.07(0.001)

Limitations of Study

In spite of focussing on the best automotive companies in the Indian market and using commonly understood tools for analysis, the study also has its share of limitations.

The time period of the study should be extended further to better capture the changing dynamics

Table 8 : Details of selected Equation from Tata Motors

Dependent variable	= constant	variable	variable	variable	Variable	Error term
RDDP =	**1820.48**	**0.00 TR**	**0.00 EBITDA**	**0.105 CF**	**-2.53 BV**	**220.38**
s.e.	869.54	0.00	0.00	0.147	1.452	
t-value	2.09	-1.70	1.01	0.72	- 1.74	
p-value	0.09	0.150	0.110	0.507	0.142	
Table Value	2.26	2.26	2.26	2.26	2.26	

Adj. R^2 = 0.25; d-statistic = 1.99; Average VIF= 3.909; F= 1.754(0.27)

Table 9 : Details of selected Equation from Maruti Suzuki

Dependent variable	= constant	variable	variable	Error term
RDDP =	**-303.81**	**22.23 EPS**	**-0.00 CF**	**237.00**
s.e.	34.704	0.000	0.433	
t-value	-0.275	4.772	3.626	
p-value	0.791	0.002	0.008	
Table Value	2.26	2.26	2.26	

Adj. R^2 = 0.95; d-statistic = 2.20; Average VIF= 1.24; F= 82.169(0.00)

of the Indian automotive scenario where Tata Motors has fallen back while Maruti has surged ahead.

The use of five accounting variables may be refined further. With frequent changes in accounting rules, some of the variables may become less effective than others.

The introduction of BS VI norms, wild changes in the price of fuel, electric mobility and introduction of self-driven cars are having long term structural effect on the industry. This will also extend to the use of statistical tools that can be effectively applied in studying the future value of companies in this field.

Last but not the least, the ongoing pandemic situation across the globe has forced shutdown on the industry and are changing the sales and marketing approach substantially. This makes the current year 2020 abnormal and should not be included in time series analysis.

Conclusion

The above research proves the value relevance of accounting information on the share price of Indian automotive industry. The share price of the companies as on the day of its annual

result declaration has significant correlation with certain accounting parameters. This shows that the market price at least partially reflects the declared results of the company.

In all the chosen three companies there are statistically significant variables. However different variables are relevant for different companies. But after taking into account the coefficient values, only EPS come out as the most important factor for passenger vehicles and auto components sectors. The commercial vehicles sector is a bit hazy where many factors come into play apart from the performance of the company.

Hence in overall summary it can be said that the Indian capital market rewards the performance of automotive companies. So more and more company from this sphere must join the capital market thereby increasing their value and give the public shareholders a chance to share their growth stories.

End Notes

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4. http://www.siamindia.com/statistics.aspx?mpgid=8&pgidtrail=10
5. https://www.acma.in/docmgr/ACMA_Industry_Data/Industry-Statistics.pdf
6. Correlation analysis measures the comparative movement of two related variables in the same or opposite direction. Movement in same direction indicates positive correlation, while movement in opposite direction indicates negative correlation.

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