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Impact of Capital Structure on Profitability and Market Price of Large Cap and Mid Cap Indian Pharmaceutical Companies

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Abstract: *The paper evaluates the impact of capital structure on profitability and market price of large cap and mid cap Indian pharmaceutical companies. The pharmaceutical companies listed in NSE and NSE midcap index were selected for the study. The secondary data was considered from 2013 to 2017. The study examines the validity of Modigliani Miller irrelevance theory of capital structure in large cap and mid cap pharmaceutical companies. It was found that market price had no significant correlation with debt equity ratio of large cap pharmaceutical companies. Ajanta pharma had shown significant negative correlation between debt equity ratio and market price. Capital structure was found to have varying impacts on profitability of different companies. Capital structure had no significant impact on profitability ratios of four large cap firms. Aurobindo and Ajanta pharma had shown a significant positive correlation between debt equity ratio and ROE. Biocon had shown a significant negative correlation between debt equity ratio and gross profit and operating profit.*
Keywords: *Capital Structure, Irrelevance, Large Cap, Mid Cap, Modigliani-Miller, Pharmaceutical*

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I. Pharmaceutical Industry In India

India enjoys an important position in the global pharmaceutical sector. The country also has a large pool of scientist and engineers who have the potential to steer the industry ahead to an even higher level. Presently over 80% of the antiretroviral drugs used globally to combat AIDS are supplied by Indian pharmaceutical firms. The UN backed medicines patent pool has signed six sub licenses with Aurobindo, Cipla, Desano pharmaceuticals, Emcure, Hetero Labs, and Laurus Labs allowing them to make generic anti AIDS medicines Tenofovir AlaFenamide (TAF) for 112 developing countries (ibef, 2017) [1].

The sector is expected to generate 58000 additional job opportunities by year 2025. Indian pharmaceutical industry is a leader in world generic drugs with largest supplier of generic drugs and accounting for 20% of exports in terms of value (ibef, 2017).Indian pharmaceutical industry is third largest in volume and thirteenth largest in value. Indian pharmaceutical industry is expected to grow three times the growth rate of global pharmaceutical industry. Global pharmaceutical industry is expected to grow at 5%, whereas Indian pharmaceutical industry is expected to grow at 15% from 2015 to 2020. Indian companies got 55 Abbreviated New Drug Application (ANDA) approvals by US Food and Drug Administration (USFDA) in 2017. ANDA approvals are expected to register year on year growth of 17% and cross 700 ANDA approvals. India's pharmaceutical exports stood at US$16.4 billion in FY17 and are expected to grow by 30% over the next three years to reach US$20 billion by 2020, according to the pharmaceuticals export promotion council (ibef, 2017) [1]. India is a dominant player in US generic market, with 30% share by volume and 10% by value. Biopharma segment is an upcoming and the largest subsector of Indian pharmaceutical industry with 62% share of revenues (ibef, 2017) [1].

Realising the potential of Indian pharmaceutical industry government has initiated "Pharma Vision 2020" to develop India as a global leader providing end to end product manufacturing. Indian government increased budgetary support for department of Biotechnology by 22% to Rs. 2,222.11 crore to support the biotech pharma segment of India (ibef, 2017) [1].

II. Capital Structure

Capital structure has been a referred to as mix between debt and equity by Modigliani and Miller (1958) [2]. Pandey (1999) [3] referred capital structure as debt level relative to equity in balance sheet. Sources of financing used for growth and to acquire assets. The seminal work of Modigliani and Miller provided the irrelevance theory of capital structure.

The relevance of capital structure is supported by net income approach and traditional views. Net income approach recommends 100% debt financing as optimal capital structure to minimize weighted average cost of capital (WACC) and maximize value of firm. Traditional theory recommends a judicious mix of debt and equity upto a point where average cost of capital is lowest and value of firm is maximized. Modigliani and Miller irrelevancy theory considered value of firm to be independent of capital structure, and considered value of firm to be dependent on earnings and business risk. Trade off theory justifies existence of an optimal capital structure by balancing the advantages of tax shield against the demerits of bankruptcy costs (Pandey, 2015) [3]. Existence of an optimal capital structure is challenged by pecking order theory. Pecking order theory states that there is no optimal capital structure by a hierarchy of financial sources through which a firm finances its business. First preference in the hierarchy is internal sources of funds (internal equity), followed by debt and last preference is external equity (Pandey, 2015) [3].

The study evaluates the impact of leverage on profitability and market price of large cap and mid cap Indian pharmaceutical companies. The market capitalization of seven selected companies is given in table 1.

Table 1: Market Capitalisation of Selected Large Cap and Mid Cap Pharmaceutical Companies

Name of Company	Free Float Market Capitalisation* (Rs Crore)	P/E*	52 Week High (Rs.)	52 Week Low (Rs.)	Face Value (Rs.)
Lupin	19,858.99	20.6	1,573.60	818.5	2
Sun	60,647.28	34.78	730.95	432.7	1
Cipla	31,213.02	42.13	663.4	480.2	2
DrReddys	27,787.45	31.54	3,247.25	1,901.15	5
Aurobindo	20,110.30	17.42	809.45	503.05	1
Biocon	8,956.44	55.47	438.85	282.92	5
Ajanta	3,041.71	24.79	1,927.00	1,120.05	2

* As on 27th November 2017

Source: National Stock Exchange [14], Money Control [15]

III. Objective

1. To analyse the correlation of debt equity ratio and profitability of large cap and mid cap Indian pharmaceutical companies
2. To analyse the correlation of debt equity ratio and market price of large cap and mid cap Indian pharmaceutical companies

IV. Literature Review

Bhardwaj, Chaudhary, and Bargal (2010) [4] examined the impact of capital structure on Indian pharmaceutical companies. It was found that leverage had varying impact on profitability of companies. It was useful for some companies while it had opposite effect for some companies. No conclusive result was found on the impact of leverage on financial performance of pharmaceutical companies.

Azhagaiah and Gavoury (2011) [5] analysed the impact of capital structure on profitability of IT firms in India. The study considered firms listed on Bombay Stock Exchange. It was found that there is a negative relation of debt on profitability of IT firms. Increased use of debt leads to decline in net profit.

Kumar, Anjum and Nayyar(2012) [6] analysed the impact of capital structure on performance of pharmaceutical companies in India. It was found that financing decisions had no impact on value of firm. It was also argued that the financing decisions are influenced by the risk appetite of the management and tendency to use internal funds for financing. Mohammadzadeh et al. (2013) [7] investigated the association between capital structure and profitability of Iranian pharmaceutical companies. It was found that Iranina pharmaceutical companies had a significant negative relationship between capital structure and profitability. It was argued that Iranian pharmaceutical companies follow pecking order theory of capital structure and rely on internal source of funds for financing, and this has contributed to better profitability.

Nicoleta(2013) [8] analysed impact of leverage on profitability of pharmaceutical companies in Romania. It was found that leverage influences the return on equity partially not entirely in case of pharmaceutical companies in Romania. Innocent, Ikechukwu and Nnagbogu (2014) [9] investigated the impact of leverage on financial performance of companies in Nigeria. It was found that debt equity ratio had a negative correlation with retrun on assets, and regression results showed that only 16.4% of variation in profitability was explained by leverage. Bagga and Kaur (2016) [10] examined the capital structure of manufacturing and service firms in India. It was found that non debt tax shield and tax has a significant impact on capital structure of manufacturing companies, whereas profitability and tangibility were found to have a significant impact on capital structure of service firms. Abbasi and Delghandi (2016) [11] evaluated the association between profitability and capital structure of Iranian companies. It was found that profitability is inversely proportional with debt equity ratio. It was found that capital structure on Iranian firms follow pecking order theory of capital

structure. Babu and Chalam (2016) [12] examined the determinants of capital structure in Indian automobile industry in India. It was found that profitability is negatively correlated with leverage. On the other hand it was found that size, non-debt tax shield, growth; risk had no significant impact on capital structure.

Shalini and Biswas (2017) [13] examined the impact of capital structure on Indian pharmaceutical companies. Data from 2012 to 2016 was considered for the study. It was found that capital structure had no significant impact on profitability of Indian pharmaceutical firms.

V. Research Methodology

The descriptive research design was used for the study. The Pharmaceutical companies listed in NIFTY and NIFTY large cap index were used for the study. Five pharmaceutical companies are part of NIFTY, and two pharmaceutical companies are part of NIFTY midcap index. The large cap companies were: Lupin, Sun pharma, Cipla, DrReddys, Aurobindo and mid cap companies were Biocon and Ajanta. The share price data was obtained from website of National Stock Exchange. The average of closing stock price of April was considered for the yearly correlation. The financial ratios were collected from money control. The data of five years was collected from 2013 to 2017. The data was variables considered for the study were debt equity ratio, gross profit ratio, operating profit ratio, return on equity, earning price per share and market price per share. The data was analysed by descriptive tools and Pearson Correlation using SPSS.

Hypothesis:

H_0: There is no correlation between debt equity ratio and earnings per share
H_0: There is no correlation between debt equity ratio and market price per share
H_0: There is no correlation between debt equity ratio and profitability

VI. Findings

This section presents the findings of the study. The trend or profitability is discussed followed by correlation of debt equity ratio with profitability and market price.

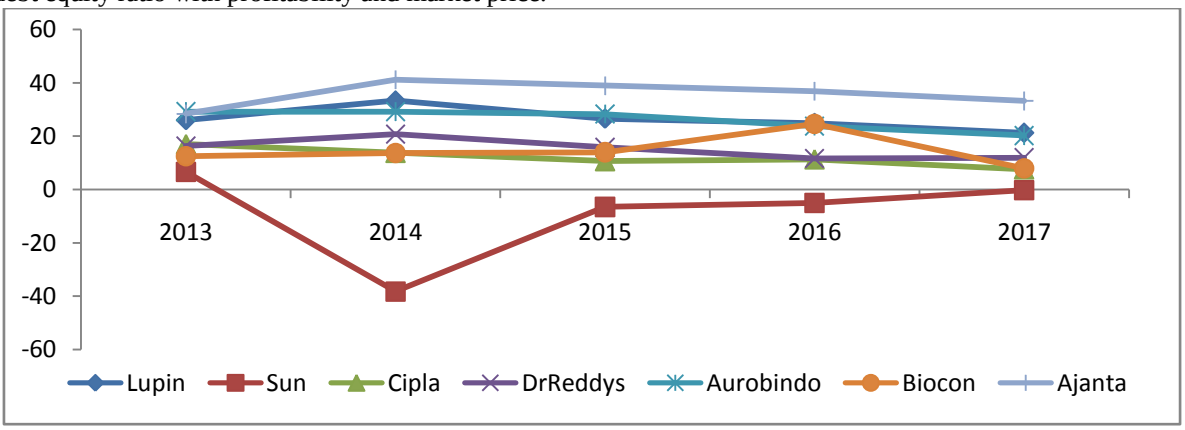

Figure 1: Return on Equity of Large Cap and Mid Cap Pharmaceutical Companies
Source: Secondary Data from Money Control

The return on equity has shown a downward trend after 2014. The largest downfall in ROE was observed in Sun pharma. The ROE declined from 6.63% in 2013 to -38.18% in 2014.

Table 2: ROE of Pharmaceutical Companies

Company	Mean	Rank
Ajanta	35.718	1
Lupin	26.396	2
Aurobindo	26.144	3
DrReddys	15.27	4
Biocon	14.532	5
Cipla	12.07	6
Sun	-8.636	7

Source: Researcher Calculation

The highest return on equity was achieved by Ajanta with an average of 35.71%, Lupin had the second highest ROE with an average of 26.39%, Aurobindo had third rank with ROE of 26.14, followed by DrReddys (15.27%), Biocon (14.53%), Cipla (12.07%). Sun pharma has the lowest rank with a negative average ROE of -8.63%.

Table 3: Gross Profit Ratio of Pharmaceutical Companies

Company	Mean	Rank
Lupin	30.314	1
Ajanta	28.292	2
Aurobindo	23.816	3
DrReddys	18.172	4
Cipla	15.67	5
Biocon	15.122	6
Sun	-3.328	7

Source: Researcher Calculation

Lupin had the highest gross profit ratio of 30.31%, Ajanta was second with a gross profit of 28.29%, followed by Aurobindo (23.81%), DrReddys (18.71%), Cipla (15.67%), Biocon (15.12%). Sun pharma had a negative gross profit margin of -3.32%.

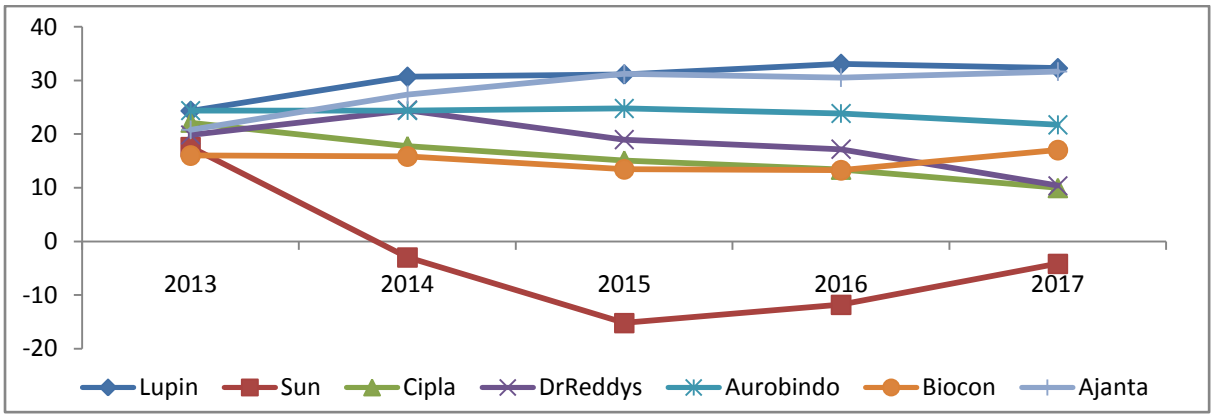

Figure 2: Gross Profit Ratio of Large Cap and Mid Cap Pharmaceutical Companies
Source: Secondary Data from Money Control

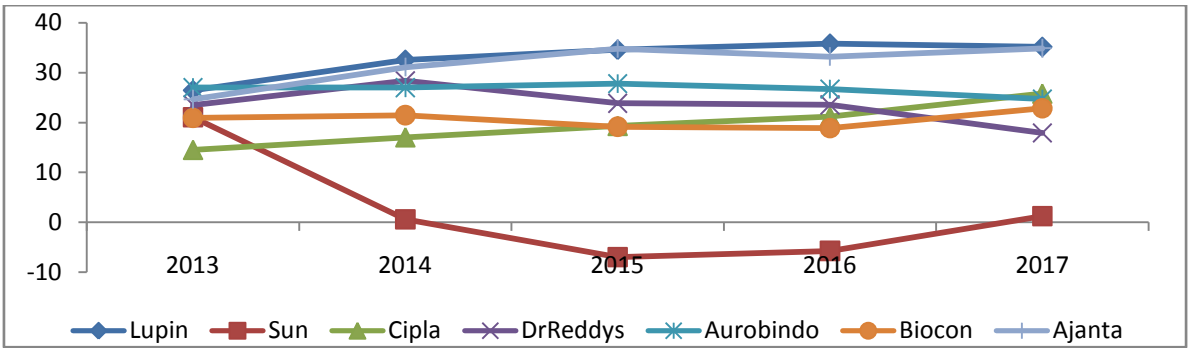

Figure 3: Operating Profit Ratio of Pharmaceutical Companies
Source: Secondary Data from Money Control

Lupin has consistently maintained a good gross profit margin. Ajanta pharma had improved its gross profit margin from 20.8% in 2013 to 31.63% in 2017. Aurobindo's gross profit margin had declined from 24.37% in 2013 to 21.73% in 2017. Biocon had shown a decline in gross profit from 16.02% in 2013 to 13.26% in 2016 and improved to 17.03% in 2017. Sun pharma had shown a negative gross profit after 2013, and shown a recovery in 2016 and 2017.

Lupin has retained its superior performance in operating profit also. Lupin had highest average operating profit of 32.91%, followed by Ajanta (31.75%). Aurobindo had shown a decline in operating profit from 27.79% in 2015 to 24.71% in 2017. Cipla had significantly improved its operating profits from 17.06% in 2014 to 25.83% in 2017. Biocon had shown a fluctuating trend in operating profit. Sun pharma had recovered from operational loses and shown a marginal operating profit of 1.26% in 2017.

Table4: Operating Profit Ratio of Pharmaceutical Companies

Company	Mean	Rank
Lupin	32.916	1
Ajanta	31.758	2
Aurobindo	26.638	3

DrReddys	23.46	4
Cipla	21.116	5
Biocon	20.666	6
Sun	2.046	7

Source: Researcher Calculation

Lupin, Sun pharma, Sipla, DrReddys had shown no correlation between debt equity ratio and profitability (ROE, Gross profit, operating profit). Aurobindo had shown a significant positive correlation (0.949) between debt equity ratio and ROE (P=0.016), Biocon had shown a significant positive correlation between debt equity ratio and ROE, Ajanta had shown a significant negative correlation between debt equity ratio andgross profit, operating profit.

Thus null hypothesis is rejected and it is concluded that debt equity ratio has a significant correlation with profitability of Indian pharmaceutical companies.

Table 5: Correlation of Debt Equity Ratio with ROE, Gross Profit, Operating Profit

Name of Company	ROE		GP		OP	
	Corr.	P Value	Corr.	P Value	Corr.	P Value
Lupin	-0.214	0.73	-0.837	0.077	-0.848	0.069
Sun	-0.742	0.151	-0.803	0.102	-0.858	0.063
Cipla	0.658	0.228	0.707	0.181	-0.69	0.198
DrReddys	0.414	0.489	0.602	0.283	0.71	0.18
Aurobindo	.943*	0.016	0.76	0.136	0.663	0.223
Biocon	.949*	0.014	-0.604	0.281	-0.642	0.242
Ajanta	-0.403	0.501	-.976**	0.004	-.961**	0.009

The market price of large cap pharmaceutical firms shows no correlation with debt equity ratio, but Ajanta pharma, a midcap company had shown a significant negative correlation with market price. Thus null hypothesis 2 is rejected and it is concluded that debt equity ratio has a correlation with market price of midcap pharmaceutical company. The Modigliani and Miller irrelevance theory of capital structure holds good in case of large cap pharmaceutical companies in NSE, but does not hold good in case of mid cap pharmaceutical firm.

Table 6: Correlation of Debt Equity Ratio with Market Price

	Correlation	P Value	Null Hypothesis
Lupin	-0.79	0.112	Retained
Sun	-0.432	0.468	Retained
Cipla	-0.061	0.922	Retained
DrReddys	0.708	0.181	Retained
Aurobindo	-0.383	0.524	Retained
Biocon	-0.318	0.602	Retained
Ajanta	-.979**	0.004	Rejected

The debt equity ratio had no significant correlation with earnings price per share, as all P values were more than 0.05. Thus it is concluded that earning per share is independent of capital structure of pharmaceutical companies.

Table 7: Correlation of Debt Equity Ratio with Earnings Price per Share

	Correlation	P Value	Null Hypothesis
Lupin	0.364	0.547	Retained
Sun	-0.622	263	Retained
Cipla	-0.06	0.924	Retained
DrReddys	0.176	0.777	Retained
Aurobindo	-0.011	0.986	Retained
Biocon	0.087	0.889	Retained
Ajanta	-0.016	0.98	Retained

Table8: Debt Equity Ratio of Pharmaceutical Companies

Name of Company				
	Minimum	Maximum	Mean	Std. Deviation
Aurobindo	0.34	0.7	0.542	0.16069
Dreddys	0.2	0.29	0.25	0.04637
Sun	0.01	0.33	0.214	0.12054
Ajanta	0	0.35	0.134	0.14398
Cipla	0.03	0.12	0.088	0.03493
Biocon	0.02	0.11	0.05	0.03536
Lupin	0	0.11	0.04	0.04183

It is found that degree of leverage varies across firms in pharmaceutical industry in India. Aurobindo had the highest average debt equity ratio of 54%, followed by DrReddys (25%), Sun pharma (21.4%), Ajanta (13.4%). Lupin had the lowest debt equity ratio of 4%, followed by Biocon (5%) and Cipla (8.8%). Lupin had shown overall best rank in profitability. On the other hand Aurobindo despite having the highest debt equity ratio has done better than Sun pharma. It is found that midcap pharmaceutical firms have low leverage as compared to large cap pharmaceutical firms.

VII. Conclusion

The capital structure had no significant correlation with market price of large cap pharmaceutical firms, and midcap, Ajanta showed significant negative correlations. Profitability had shown a declining trend from 2014 in pharmaceutical companies. Lupin and Ajanta were able to maintain the operational performance despite decline in profitability of other firms. It shows that capital structure is not a significant determinant of stock price of pharmaceutical firms. Capital structure theirs have been designed with data of developed economies having perfect markets. India is an emerging economy; capital structure in India may not have same influence on profitability and value of a firm due to market imperfections.

Under same business environment, firms with good management have the ability to sustain operational performance. Capital structure is not a significant factor in Indian large cap and mid cap pharmaceutical profitability and market price performance. Midcap pharmaceutical stocks should be used to diversify as midcap stock; Ajanta had shown better performance that some of the large cap stocks. Portfolio diversification by using stocks of different market capitalisation can reduce risk and provide better returns. Investors should consider product portfolio, operational performance, Research & Development, ANDA plans, USFDA approvals and quality of management, market capitalization instead of capital structure of Indian pharmaceutical companies.

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