

Leverage Decision in Indian and Chinese Pharmaceutical Sector

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Abstract

The present research paper aims to measure financial leverage and analyze the leverage decision in pharmaceutical sector. For the purpose Indian and Chinese pharmaceutical companies have been selected and financial results of these companies have been used to carry out the research. These data have been retrieved from annual reports of respective company and various database software. Data has been processed through MS-Excel. Financial leverage has been measured in terms of EBIT-EBT and D-E ratio. The difference among financial leverage of sample companies of a particular country has been tested through one way ANOVA and both measures of leverage found significantly different. On the other hand, the difference among leverage of Indian and Chinese pharmaceutical sector has been tested through t test and the difference between EBIT-EBT ratio was found not significant while Debt-Equity ratio was found significant. Study shows that the pharmaceutical sector less concentrates on debt.

Key words: Indian pharmaceutical sector, Chinese pharmaceutical sector, Financial Leverage.

Introduction

Financial leverage is defined as relationship between two financial variables. When a firm uses a source of capital for which fixed financial cost has to be paid then financial leverage is emerged. In earlier stage of life of a company, large amount of debt may expose the company to greater financial risk. But as the company gains stability, use of debt funds can significantly increase earnings per share. Thus, use of financial leverage at various stages of business operation may have significant influence on earnings per share.

The present paper has been selected pharmaceutical sector. This sector incorporates discovery, development, production and marketing of medicines or pharmaceutical drugs with the aim of providing better health environment. This sector is governed by variety of laws and regulations of a country as well as of the world. In order to achieve the objectives, Indian and Chinese pharmaceutical sector have been considered. Indian pharmaceutical sector is the largest generic drugs provider globally and supplies over 50% of global demand for various vaccines. The Chinese pharmaceutical

sector is one of the leading sectors in the PRC and the second largest pharmaceutical market in the world. It has been constantly growing in recent years. As of 2018, it was valued at \$134.6 billion.

Literature Review

Abdulkareem (2020) examined and analyzed the financial performance of five Indian pharmaceutical companies and found that all three leverages and cost of capital were significant.

Bhattacharjee and Dash (2018) studied the capital structure determinants of Indian pharmaceutical sector. Pooled regression and panel regression methods were used and found that FL was positively correlated with Non-Debt Tax shield and negatively correlated with the profitability. Study suggests that pharma sector should be switched over from debt to retained earnings.

Haresh Kothari et al. (2018) analyzed and investigated the impact of liquidity and FL on profitability of selected pharma companies. Study finds that liquidity has adverse effect on leverage and leverage has insignificant impact on profitability.

Innocent et al. (2014) determined the effect of FL on financial performance of the listed Nigerian Pharmaceutical companies. FL was determined in the terms of Debt Ratio (DR), Debt-Equity Ratio (DER) and Interest Coverage Ratio (ICR) whereas financial performance was determined in the terms of Return on Assets (ROA). Study concludes that

DR and DER were negatively correlated with ROA whereas ICR was positively associated.

John (2011) attempted to analyze the variables influencing the use of debt and found positive correlation between FL and assets structure, intrinsic value of share, interest and retained earnings. They also stated that cash flow and interest coverage have negative association with FL.

Nicoleta Barbuta-Misu (2013) studied the effect of financial leverage on profitability of Romania's three large companies and found that leverage effect influences the ROA in function of degree of debts, but not entirely.

Pandey et al. (2017) examined the impact of leverage on profitability. Operating leverage (OL), Financial leverage (FL) and Combined leverage (CL) were considered as independent variable and ROA, ROE and EPS were taken as dependent variable. Further, study found that OL has significant impact on dependent variables whereas remaining leverages do not have significant impact.

Satyaki (2015) analyzed the leverage of Aurbindo Pharma and observed that DFL was positively correlated with ROI.

Need for the Study

Since researchers tried to analyze leverage decisions in the pharmaceutical sector at national level and international level but they could not make a comparative study between two countries' pharmaceutical industry. Hence there is a research gap exists and present study

tries to fulfill the gap by comparing the leverage decision between Indian and Chinese pharmaceutical sector (refer Annexure).

Objectives of the Study

The present research paper has following objectives:

1. To measure and analysis of financial leverage of Indian and Chinese pharmaceutical companies.
2. To compare financial leverage of Indian and Chinese pharmaceutical companies.

Research Hypothesis

Following hypotheses have been developed to achieve the above objectives of the study:

H₀₁: There is no significant difference among financial leverage of Indian pharmaceutical companies.

H₀₂: There is no significant difference among financial leverage of Chinese pharmaceutical companies.

H₀₃: There is no significant difference among financial leverage of Indian and Chinese pharmaceutical companies.

Research Methodology

Since the financial data of Indian pharmaceutical companies were for five financial years while financial data of Chinese companies were for five calendar years. In order to facilitate comparison between Indian and Chinese sample companies, financial data of Chinese sample companies were assumed to occur in uniform order (assuming occur evenly every month) and accordingly converted into financial years. Hence four financial years could be formed i.e., from 2015-16 to 2018-19.

Statistical Tools: Mean and coefficient of variation have been used as univariate technique. Further for comparing difference in financial leverage of various companies and of various years, one-way ANOVA has been applied. To compare the difference among financial leverage of Indian and Chinese companies, *t* test has been administered.

The following methodology has been processed to carry out the research -

Description	Indian Companies	Chinese Companies
Sample Size	10	10
Period of the study	5 financial year (2013-14 to 2017-18)	5 calendar year (2015 to 2019)
Type of data	Financial data as secondary data	Financial data as secondary data
Source of data	Annual reports of selected companies and ACE Equity Software	www.reuters.com, www.stockopedia.com, www.aastocks.com, www.yahoofinance.com www.gurufocus.com

(Source: Own work)

Results and Discussion

The present study measures the financial leverage in the following terms-

Accounting Dimension	Formula
Relationship between EBIT and EBT	$DFL = \frac{EBIT}{EBT} \text{ or } \frac{EBIT}{EBIT - Interest}$
Relationship between Debt and Equity	$DFL = \frac{Debt}{Equity}$

Table 1: Financial Leverage (EBIT/EBT) of Indian Pharmaceutical Industry

S. N.	Company Name	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	C. V. (%)
1	Aurobindo Pharma Ltd.	1.20	1.07	1.09	1.02	1.02	1.08	6.80
2	Cadila Healthcare Ltd.	1.10	1.05	1.03	1.04	1.04	1.05	2.59
3	Cipla Ltd.	1.08	1.10	1.12	1.13	1.07	1.10	2.41
4	Divis Lab. Ltd.	1.00	1.00	1.00	1.00	1.00	1.00	0.06
5	Dr. Reddys Lab. Ltd.	1.05	1.04	1.03	1.04	1.06	1.04	1.07
6	Glaxosmithkline Pharma. Ltd.	1.0006	1.0007	1.0005	1.0003	1.0008	1.0006	0.02
7	Glenmark Pharm. Ltd.	1.27	1.35	1.17	1.16	1.26	1.24	6.30
8	Lupin Ltd.	1.01	1.00	1.02	1.04	1.38	1.09	14.75
9	Sun Pharma. Ind. Ltd.	1.01	1.09	1.08	1.04	1.15	1.07	4.86
10	Torrent Pharma. Ltd.	1.07	1.19	1.08	1.19	1.33	1.17	9.07
Industry Average		1.08	1.09	1.06	1.07	1.13	1.09	4.79
Inter-firm Comparison		ANOVA		F	5.152	P-Value		0.00
Intra-firm Comparison		ANOVA		F	0.7842	P-Value		0.541

(Source: Own computation)

Results reveal that leverage, calculated using EBIT-EBT of firms of pharmaceutical industry, ranges between 1.0003 and 1.35. Average leverage of the industry was 1.09 with a CV of 4.79%. These low values show that not only overall the industry has very low debt liabilities and interest charges but the fluctuation in debt is also very low. None of the companies have an average leverage of greater than 2. All the companies have positive values of leverage for all the years. This shows that all the sample

companies are earning higher than their financial break-even level. Overall, the industry has the increasing trend in average leverage but that too at a very low rate.

One way ANOVA results for inter-firm comparison reveal that the calculated value of F is 5.152 with a p value of 0.00. Thus, null hypothesis is rejected and concluded that there is significant difference among the leverages of different firms. Further, intra-firm comparison disclosed the results – the calculated value of F

is 0.784 with a p value of 0.541. Thus, null hypothesis is accepted at 5% level of significance and concluded that there is no significant difference among financial leverage of Indian pharmaceutical industry over the years.

It is found that the range of debt-equity ratio of various pharmaceutical firms is 0.0003 to 2.13. The average leverage of the industry is 0.48

with a C. V. of 41.69%. This shows that the sample companies are using very less amount of debt and that too with very less variability. Glenmark Pharmaceuticals Ltd. has the highest average D-E ratio of 1.25 as the company has observed the highest D-E ratio of 2.13 in the year 2014-15.

Table 2: Financial Leverage (Debt-Equity Ratio) of Indian Pharmaceutical Industry

S. N.	Company Name	2013-14	2014-15	2015-16	2016-17	2017-18	Mean	C. V. (%)
1	Aurobindo Pharma Ltd.	1.01	0.86	0.69	0.36	0.41	0.67	42.18
2	Cadila Healthcare Ltd.	0.79	0.62	0.43	0.75	0.62	0.64	21.83
3	Cipla Ltd.	0.12	0.16	0.45	0.33	0.29	0.27	49.21
4	Divis Lab. Ltd.	0.006	0.008	0.01	0.007	0.01	0.008	23.97
5	Dr. Reddys Lab. Ltd.	0.57	0.44	0.27	0.40	0.40	0.42	25.98
6	Glaxosmithkline Pharma. Ltd.	.002	.0007	.0008	.0005	.0003	.0008	68.85
7	Glenmark Pharma. Ltd.	1.10	2.13	1.10	1.05	0.90	1.25	39.55
8	Lupin Ltd.	0.09	0.06	0.64	0.59	0.53	0.38	73.69
9	Sun Pharma. Ind. Ltd.	0.14	0.35	0.26	0.27	0.27	0.26	29.64
10	Torrent Pharma. Ltd.	0.59	1.10	0.67	0.58	1.40	0.87	41.99
Industry Average		0.44	0.57	0.45	0.43	0.48	0.48	41.69
Inter-firm Comparison		ANOVA		F	12.859	P-Value		0.00
Intra-firm Comparison		ANOVA		F	0.1623	P-Value		0.956

(Source: Own computation)

The company is bearing higher financial risk as compared to other sample companies. All other companies are not showing any kind of pattern in D-E ratio over the years.

Results of inter-firm comparison disclose that the calculated value of F is 12.859 with a p value of 0.00 and conclude that Indian pharmaceutical companies' leverage was significantly different at 5% level of significance. On the other hand, intra-firm comparison shows that the calculated value of

F is 0.162 with a p value of 0.956 and accepts the null hypothesis.

Table 3 presents the financial leverage of Chinese sample companies of pharmaceutical industry. It is found from the results that overall, the average leverage of the industry is 1.21 with a very low C. V. of 5.91%.

Table 3: Financial Leverage (EBIT/EBT) of Chinese Pharmaceutical Industry

S. N.	Company Name	2015-16	2016-17	2017-18	2018-19	Mean	C. V. (%)
1	China Meheco Group Co. Ltd.	1.06	1.05	1.04	1.06	1.05	0.99
2	China National Medicines Corp. Ltd.	1.02	1.03	1.09	1.07	1.05	3.06
3	China Resource Pharmaceutical Group Ltd.	1.40	1.23	1.28	1.37	1.32	5.83
4	Huapont Life Sciences Co. Ltd.	1.54	1.59	1.71	1.55	1.60	4.83
5	Hubei Guangji Pharmaceutical Co. Ltd.	2.72	1.24	1.23	1.18	1.59	47.32
6	Nantong Jinghua Pharmaceutical Co. Ltd.	1.01	1.02	1.03	1.15	1.05	6.35
7	Shanghai Fosun Pharmaceutical (Group) Co. Ltd.	1.12	1.14	1.17	1.25	1.17	5.15
8	Sinopharm Group Co. Ltd.	1.21	1.17	1.19	1.20	1.19	1.53
9	Yunnan Baiyao Group Co. Ltd.	1.03	1.04	1.04	1.04	1.04	0.75
10	Zhejiang NHU Co. Ltd.	1.03	1.03	1.03	1.03	1.03	0.27
Industry Average		1.31	1.15	1.18	1.19	1.21	5.91
Inter-Firm Comparison		ANOVA	F	3.365	P Value		0.006
Intra-Firm Comparison		ANOVA	F	0.541	P Value		0.658

(Source: Own computation)

This shows that leverage remained consistent over the study period. Further, it ranged between 1.15 (2016-17) and 1.31 (2015-16) only. This indicates that the overall the industry is using minimum debt.

Huapont Life Science Co. Ltd. has the highest average leverage of 1.60 but with a very low value of C. V. of 4.83%. Remaining all other companies are using minimal amount of debt leading to low values of leverage. Further no company is having negative leverage in any of the years neither any one is having leverage of less than 1 in any of the years. C. V. of these companies are also very low, showing consistency over the study period.

One way ANOVA has been used and indicates significant difference among the measures of financial leverage of the sample firms of this

industry at 5% level of significance while significant difference among financial leverage over the years does not exist.

Table 4 presents the leverages of Chinese sample pharmaceutical companies, which has been calculated using debt-equity relationship.

Results reveal that pharmaceutical industry of China has the average leverage of 0.58 with a C. V. of 10.44%. Thus, the industry is using debt less as compares to equity. Highest D-E ratio during the study period was observed for Huapont Life Sciences Co. Ltd. in 2017-18 as 1.41 whereas the lowest was 0.04 by Nantong Jinghua Pharmaceutical Co. Ltd. in 2016-17. Huapont Life Sciences Co. Ltd., China Resource Pharmaceutical Group Ltd. and Sinopharm Co. Ltd. have the average D-E ratio of more than 1. This shows that these

companies are using debt more than equity. In other words, they are creating financial risk for themselves.

Table 4: Financial Leverage (Debt-Equity Ratio) of Chinese Pharmaceutical Industry

S. N.	Company Name	2015-16	2016-17	2017-18	2018-19	Mean	C. V. (%)
1	China Meheco Group Co. Ltd.	0.25	0.24	0.32	0.60	0.35	47.53
2	China National Medicines Corp. Ltd.	0.26	0.33	0.26	0.23	0.27	16.66
3	China Resource Pharmaceutical Group Ltd.	1.32	0.74	0.98	1.22	1.07	24.56
4	Huapont Life Sciences Co. Ltd.	0.82	1.16	1.41	1.26	1.16	21.70
5	Hubei Guangji Pharmaceutical Co. Ltd.	0.90	0.59	0.70	0.60	0.70	20.60
6	Nantong Jinghua Pharmaceutical Co. Ltd.	0.05	0.04	0.14	0.20	0.11	71.40
7	Shanghai Fosun Pharmaceutical (Group) Co. Ltd.	0.58	0.61	0.81	0.80	0.70	17.27
8	Sinopharm Group Co. Ltd.	0.99	1.03	1.06	1.25	1.08	10.79
9	Yunnan Baiyao Group Co. Ltd.	0.14	0.18	0.15	0.12	0.15	16.47
10	Zhejiang NHU Co. Ltd.	0.23	0.22	0.19	0.28	0.23	16.71
Industry Average		0.56	0.51	0.60	0.66	0.58	10.44
Inter-Firm Comparison		ANOVA	F	31.152	P Value	0.00	
Intra-Firm Comparison		ANOVA	F	0.198	P Value	0.897	

(Source: Own computation)

It is also found that the calculated value of F for inter-firm comparison is 31.152 with a p value of 0.00. Thus, there is significant difference among the D-E ratios of different firms. Further, results of one-way ANOVA for intra-firm comparison disclosed that the calculated value of F is 0.198 with a p value of 0.897. Hence for intra-firm comparison the null hypothesis is accepted at 5% level of significance.

Comparison among Financial Leverage of Indian and Chinese Sample Companies

Due to mismatch between years for which their data have been collected, three common years could be found for both Indian and Chinese sample companies i.e., 2015-16, 2016-17 and 2017-18. Hence comparison has been made using these three years only.

Table 5: Comparison among Financial Leverage of Indian and Chinese Companies

Financial Leverage	Indian Companies					Chinese Companies					t	P Value
	2015-16	2016-17	2017-18	Mean	C. V. (%)	2015-16	2016-17	2017-18	Mean	C. V. (%)		
EBIT/EBT	1.06	1.07	1.13	1.09	3.51	1.31	1.15	1.18	1.22	7.08	-2.378	0.098
D-E Ratio	0.45	0.43	0.48	0.46	5.45	0.56	0.52	0.60	0.56	7.80	-3.52	0.039

(Source: Own Computation)

EBIT/EBT Relationship

It is found from Table 5 that average leverage values for pharmaceutical sector are greater than 1 but not greater than 2. Thus, the sector is able to provide sufficient cover for interest expense and at the same time they are not financially risky too much. Chinese pharmaceutical sector has observed continuous increase in leverage over the years (Table 3) whereas no fixed trend was observed for Indian pharmaceutical sector (Table 1). Further, the hypothesis testing results showed that the calculated value of t is -2.378 with a p value of 0.098. Hence the null hypothesis is accepted and concluded that financial leverage in terms of EBIT/EBT of Indian and Chinese sample companies are almost same.

Debt-Equity Ratio (D-E ratio)

Table 5 reveals that the Indian pharmaceutical sector is using debt less than 50% to equity while the Chinese sector is using debt more than 50% to equity. It shows that pharmaceutical sector less concentrates on debt. Further, the hypothesis testing results disclose that t statistics as -3.52 with a p value of 0.039 and reject the null hypothesis. It can be concluded that the Debt-Equity ratio of Indian and Chinese sample companies is significantly different.

Conclusion

The present paper has tried to study the financial leverage in pharmaceutical sector. Debt-Equity ratio and EBIT-EBT measure of FL have been applied to analyze the leverage

decision as well as financial risk of pharmaceutical companies. Study finds that all the sample firms were able to meet their financial cost and indicates significant difference among financial leverage of sample companies. Further, results show that EBIT-EBT measure has insignificant difference between Indian and Chinese sector whereas D-E ratio of both the countries were significantly different. Results also show that Indian and Chinese sector less rely on using of debt than to equity. Study suggests that pharmaceutical sector should employ more debt to avail the benefit of trading on equity.

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Appendix

Indian and Chinese Sample companies from Pharmaceutical Sector

S. N.	Indian Companies	Chinese Companies
1	Aurobindo Pharma Ltd.	China Meheco Group Co. Ltd.
2	Cadila Healthcare Ltd.	China National Medicines Corp. Ltd.
3	Cipla Ltd.	China Resource Pharmaceutical Group Ltd.
4	Divis Lab. Ltd.	Huapont Life Sciences Co. Ltd.
5	Dr. Reddy's Lab. Ltd.	Hubei Guangji Pharmaceutical Co. Ltd.
6	GlaxoSmithKline Pharma. Ltd.	Nantong Jinghua Pharmaceutical Co. Ltd.
7	Glenmark Pharm. Ltd.	Shanghai Fosun Pharma. (Group) Co. Ltd.
8	Lupin Ltd.	Sinopharm Group Co. Ltd.
9	Sun Pharma. Ind. Ltd.	Yunnan Baiyao Group Co. Ltd.
10	Torrent Pharma. Ltd.	Zhejiang NHU Co. Ltd.

(Source: Own Work)