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An Impact of Leverage on the Profitability &Risk of the Pharmaceutical Sector.

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Abstract
The present study seeks to examine the impact of corporate leverage on profitability and risk of pharmaceutical industry in India. The period of study is considered for 5 years i.e. from 2020-21 to 2022-23.The study is based on Secondary Data, 5 pharmaceutical firms listed in National Stock Exchange (NSE)are considered for analysis during the study period. Three independent variables Financial Leverage (FL), Operating Leverage (OL), and Combined Leverage (CL) and three dependent variables Return on Assets (ROA), Return on Equity (ROE) and Earning Per Share(EPS) have been used and tested by using correlation analysis and t-test as statistical tools. The findings of the study indicate that there is a significant impact of CL and OL on Profitability (ROA, ROE and EPS) have significant impact on the CL on Profitability is chosen by pharmaceutical Industry in India for the study period.
Keywords: *Capital structure, Operating Leverage, Financial Leverage, Combined Leverage.*

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I. INTRODUCTION

India is the largest provider of generic drugs globally and is known for its affordable vaccines and generic medications. The Indian Pharmaceutical industry is currently ranked third in pharmaceutical production by volume after evolving over time into a thriving industry growing at a CAGR of 9.43% since the past nine years. Generic drugs, over-the-counter medications, bulk drugs, vaccines, contract research & manufacturing, biosimilars, and biologics are some of the major segments of the Indian pharma industry. India has themost number of pharmaceutical manufacturing facilities that are in compliance with the US Food and Drug Administration (USFDA) and has 500 API producers that make for around 8% of the worldwide API market. Indian pharmaceutical sector supplies over 50% of global demand for various vaccines, 40% of generic demand in the US and 25% of all medicine in the UK. The domestic pharmaceutical industry includes a network of 3,000 drug companies and 10,500 manufacturing units. India enjoys an important position in the global pharmaceuticals sector. The country also has a large pool of scientists and engineers with a potential to steer the industry ahead to greater heights. Presently, over 80% of the antiretroviral drugs used globally to combat AIDS (Acquired Immune Deficiency Syndrome) are supplied by Indian pharmaceutical firms. India is rightfully known as the "pharmacy of the world" due to the low cost and high quality of its medicines. The Pharmaceutical industry in India is the third largest in the world in terms of volume and 14th largest in terms of value. The Pharma sector currently contributes to around 1.72% of the country's GDP. According to a recent EY FICCI report, as there has been a growing consensus over providing new innovative therapies to patients, Indian pharmaceutical market is estimated to touch US$ 130 billion in value by the end of 2030. Meanwhile, the global market size of pharmaceutical products is estimated to cross over the US$ 1 trillion mark in 2023.

II. REVIEW OF LITERATURE

Khalid (2012) :Examined in the study titled "the determinants of leverage of listed companies". It was found that both industrial and services had no significant relationship. The findings of the study revealed that the growth rate, liquidity,and tangibility have significant relationship with leverage.

Olayinka and Taiwo (2012) :Examined "Profitability and leverage: Evidence from Nigerian firms" the study analyzed the profit profile of firms in Nigeria and found leverage has an impact on profitability
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Khedkar, (2015): The study was conducted on the leverage and profitability of Dr. Reddy's Laboratories. Data was collected from the financial statements from 2010 to 2014. To test the relationship correlation test was conducted. As per the output of the analysis, both leverage and profitability are related to each other and they also mentioned that the present level of OL, FL, and CL is not at the optimum level.

Sunil Vakayi and Priyadharshini. R, (2018), leverages are the combinations of debt and equity, so their equation is important for the companies when calculating the amount of capital needed. The study aims to analyse the connection between the liquidity, capital structure and profit making across the pharmaceutical companies in India. The period of reference in the study for five years that is from 2013 till 2017 and is fully depended on the secondary form of data collected through many sources. It is recommended that the companies must be cautious in confirming the investment methods for calculating the strategy of investment in the process of making profit.
Monalisa Mohanty, (2020), in his paper compared the financial performance of the selected pharmaceutical organizations. Financial statements selected for 5 years period from 2015 to 2019. Findings reveals that the Pharma companies are highly liquid and solvent but showed inconsistency in effectively generating profits.

STATEMENT OF THE PROBLEM

The Indian pharmaceutical industry is a significant player on the global stage, renowned for its extensive production capabilities and vital role in providing affordable medicines worldwide. As the largest supplier of generic drugs and a leading producer of vaccines, India holds a critical position in the global healthcare landscape. Despite its achievements, the industry faces challenges such as regulatory hurdles, patent-related issues, and dependence on imports for raw materials.Its risk and profitability assessment is very important to understand the future growth.The pharma industry needs huge capital investment,in the form of imports, patents and R&D,hence fixed costs are very high.When business needed huge capital investment on fixed cost , then leverage impact on profitability will be more.A huge investment in fixed assets and financial costs will bring risk to the industry.It is very significant to know how much risk is associated with the industry for betterment of the industry, hence this study was taken.

OBJECTIVES OF THE STUDY

• To analyse the Return on Equity, ROI to measure the return/profitability of pharmaceutical company.
• To analyse the EPS of pharmaceutical companies
• To measure the leverage position, including operating, financial and combined Leverages to assess the risk
.To analyse the impact of OL, FL,and CL on EPS

SCOPE OF THE STUDY

The present study aims at assessing the profitability position of selected pharmaceutical companies in India. The study could help the company as well as the investors to understand its financial efficiency. It aims to help the management to find out its financial problems at present and the specific areas in the business, which might need some effort for more effective and efficient utilization of its resources. The study is conducted for a period of five years for selected companies.

SOURCES OF DATA

Secondary data is used for the study. The required data for the study is collected and compiled from **www.moneycontrol**.com for the period from 2018-2019 to 2022-2023which a reliable and empowered corporate database. In addition to this, supportive data is collected from books, journals, annual reports and various news-papers.

Research Methodology

Research methodology is a way to systematically solve the research problem, The research methodology using for find out the solution of the research problem is analytical research methodology and some extend descriptive research .The researchers have employed Ratio Analysis. These ratios are employed so as to confirm the relationship between capital structure and profitability

SAMPLE DESIGN

As the complete source list of all the Pharmaceutical Companies is not available, the data for this study is selected based on convenience sampling method. Among the companies listed with major stock exchange of India namely, Bombay Stock Exchange and National Stock Exchange of India, 5 companies with consistent financial data are selected.
Companies are excluded owing to irregular and/or inconsistent financial data support. The following are the selected pharmaceutical companies of this study. Sun Pharma, Cipla, Dr. Reddy,Glenmark ,Lupin

Tools For Financial Performance
Tools For Financial Performance
Return On Equity Return On Investment , EPS,Operating Leverage ,Financial Leverage, Combined Leverages.

Statistical Tools
Mean,Standard Deviation , Coefficient of Correlation, Stdents T-Test

LIMITATION OF THE STUDY
• Study is restricted to three financial years from 2018-19to 2022- 23
• Study is dependent on the secondary data and all those limitation that applicable to secondary data is applicable.

Hypothesis of the study
Ho =There is no significant impact between DOL and EPS
H1=There is significant impact between DOL and EPS

Ho=There is no significant impact between DFL and EPS
H2=There is significant impact between DFL and EPS
Ho=There is no significant impact between DCL and EPS
H3=There is significant impact between DCL and EPS

III. DATA ANALYSIS AND HYPOTHESIS TESTING

Operating leverage
It is a measure of how revenue growth transforms in to growth in operating income. It is a measure of leverage, and of how risky, or volatile, a company's operating income is. Operating Leverage=Contribution/EBIT

Financial leverage:
It is the degree to which a company uses fixed-incomesecurities such as debt and preferred equity. The more debtfinancing a company uses, the higher its financial leverage.
Financial Leverage=EBIT/EBT
Combined leverage:
It is the leverage ratio summarizes the combined effect of theoperating leverage (OL), and the financial leverage (FL) has an earnings per share (EPS), given a particular change in sales.
Combined Leverage=Contribution/EBT
Return on Equity:
The amount of net income returned as a percentage ofshareholders equity. Return on equity measures a corporation's profitability by revealing how much profit acompany generates with the money shareholders have invested.
ROE = Net Income / Shareholder's Capital
Return on Investment:
ROI is calculated as the net profit during a certain time divided by the cost of investment,
which is then multiplied by 100 to express the ratio as a percentage. The equation looks like
this: ROI = (Net Profit / Investment) x 100.
Earnings per share:
The portion of a company's profit allocated to each outstanding share of common stock. Earnings per share serve as an indicator of a company's profitability. It is directly taken from profit and loss account. EPS = Net Profit / No of Equity Shares

Correlations Analysis
The correlation coefficient is a measure of linear association between two variables. Values of the correlation coefficientare always between -1 and +1.
Correlations are useful because they can indicate apredictive relationship that can be exploited in practice
Mean:
The mean is the most commonly-used type of average and is often referred to simply as the Average.
Standard Deviation:
Standard deviation is a widely used measure of the variability or dispersion. It shows the degree of variation from the "average" (mean). It indicates the Risk.
T-Test:
Paired T-test provides a reliable method for assessing whether observed impacts are meaningful or likely due to chance@5% level of significance.(Two- tailed test)

Table 1: Return on Equity:

Companies	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**Average**
Sun Pharma	13.376	17.45	9.522	14.195	35.68	18.0446
Cipla	9.368	9.593	14.888	15.861	17.56	13.454
Dr. Reddy	22.966	23.705	22.879	25.38	53.665	29.719
Glenmark	32.78	27.5	34.38	35.21	13.37	28.648
Lupin	6.75	-16.66	13.51	-3.01	6.72	7.31

(Source: www.moneycontrol.com)

Interpretation

The average return on equity of Dr.Reddy and Glenmark are highest,29.72% and 28.648% as compared to SunPharma, Cipla and Lupin. During the year 2019-20 and 2021-22 , Lupin experienced negative ROE.

Table -2 Return on Investment

Companies	2018-19	2019-20	2020-21	2021-22	2022-23	Average
Sun Pharma	0.07	0.08	0.04	0.06	0.14	0.078
Cipla	0.07	0.08	0.11	0.11	0.11	0.096
Dr.Reddy	0.11	0.12	0.1	0.1	0.18	0.122
Glenmark	0.09	0.07	0.08	0.08	0.02	0.068
Lupin	0.02	-0.02	0.08	-0.01	0.03	0.0503

(Sources:www.moneycontrol.com)

Interpretation

Return on investment in all pharmaceutical companies are very low, during the period of analysis.As compared to all other companies, Dr.Reddy shows remarkable ROI.

Table -3 Earning Per Share

	2018-19	2019-20	2020-21	2021-22	2022-23	Average
Sun Pharma	13.37	17.45	9.52	14.19	35.68	18.042
Cipla	18.73	19.18	29.77	31.72	35.13	26.906
Dr. Reddy	114.79	118.55	114.47	126.92	268.44	148.634
Glenmark	32.78	27.5	34.37	35.21	13.37	28.646
Lupin	13.51	-33.32	27.03	-6.02	9.83	11.03

(Sources:www.moneycontrol.com)

Interpretation

Sun Pharma experienced a notable increase in EPS over the years, especially in 2022-2023. Dr. Reddy's exhibited consistent growth, reaching a substantial value of 268.44 in 2022-2023. Glenmark showed fluctuating EPS over the period of analysis, while Lupin showed volatility but ended positively in 2022-2023 after a decline in the previous year.

Tabel -4 :Degree of Operating leverage

Year	**Sun Pharma**	**Cipla**	**Dr. Reddy**	**Glenmark**	**Lupin**
2018-19	1.114	1.23	1.16	1.08	1.14
2019-20	1.144	1.18	1.13	1.09	1.15
2020-21	1.13	1.12	1.14	1.1	1.13
2021-22	1.12	1.11	1.11	1.09	1.35
2022-23	1.12	1.11	1.09	1.11	1.13
Mean	1.13	**1.148**	**1.126**	**1.094**	**1.18**
Standard Deviation	**3.174**	**0.0495**	**0.0241**	**0.0101**	**0.0853**

(Sources:www.moneycontrol.com)

Interpretation: From the above analysis average DOL of Lupin is higest as compared to other companies.It indicates companies ability to increase its operating income by increasing ites sales volume.The DOL of all companies are having similar degree of operating leverages.SD of Sun Pharma is higest ,it indicates that more variability in operating leverages.

Tabel -5: Degree of Financial leverage

	Sun Pharma	**Cipla**	**Dr.Reddy**	**Glenmark**	**Lupin**
2018-19	1.04	1.03	1.01	1.08	1.05
2019-20	1.02	1.03	1.01	1.09	1.06
2020-21	0.1	1.01	1.01	1.08	1.02

2021-22	1.0	1.01	1.0	**1.06**	1.03
2022-23	1 .0	1.01	1.01	1.07	1.04
Mean	**0.832**	**1.018**	**1.008**	**1.076**	**1.04**
SD	**0.3663**	**0.0097**	**0.004**	**0.0101**	**0.0141**

(Sources:www.moneycontrol.com)

Interpretation: Sun Pharma exhibits a lower average of financial leverages,indicating that ,more reliant on equity. while Cipla, Dr. Reddy, and Glenmark demonstrate higher ratio . SD of Sun Pharma is higest, indicating high risk.

Tabel -6: Degree of Combined leverage

Year	Sun Pharma	Cipla	Dr.Reddy	Glenmark	Lupin
2018-19	1.19	1.26	1.17	1.17	1.2
2019-20	1.16	1.22	1.14	1.19	1.22
2020-21	1.14	1.14	1.15	1.2	1.16
2021-22	1.13	1.11	1.12	1.16	1.39
2022-23	1.14	1.12	1.1	1.2	1.17
Mean	**1.152**	**1.17**	**1.136**	**1.184**	**1.228**
SD	**0.04439**	**0.05932**	**0.03060**	**0.01624**	**0.08289**

(Sources:www.moneycontrol.com)

Interpretation:

As compared to the above companies, Lupin exhibits high average ratio of Combined leverage, indicates high risk .SD also indicates high risk as compared to other companies.

Table-7:Impact of Operating Leverage and EPS of Pharmaceutical company

Company	r' value	Correlation result	t-value	Hypothesis result
Sun Pharma	-0.4647	Negative	0.0315	Rejected
Cipla	-0.9262	Highly Negative	0.0008	Rejected
Dr. Reddy	-0.7873	Highly Negative	0.0039	Rejected
Glenmark	-0.7017	Negative	0.0012	Rejected
Lupin	-0.2732	Low Degree Negative	0.4628	Rejected

Interpretation: To check the validity of the data , by applying correlation coefficient, indicates there is negative co-relationship between operating leverages with EPS.

By applying t-test, at 5% level of signifince , H0 is rejected, it indicates that there is a significant impact between operating leverages and EPS.

Table 8: Correlation and 'T' test Result for Financial Leverage and Earning Per Share

Company	r' value	Correlation result	t-value	Hypothesis result
Sun Pharma	**0.4446**	Low degree positive	0.0094	Rejected
Cipla	**-0.9665**	High degree Negative	0.0007	Rejected
Dr. Reddy	**0.1807**	Low degree positive	0.0039	Rejected
Glenmark	**0.0243**	Low degree positive	0.0012	Rejected
Lupin	**-0.6928**	Negative	0.4577	Rejected

Interpretation:

From the above analysis, there is a positive co-relationship between Financial Leverages and EPS in Sun Pharma, Dr.Reddy , Glenmark, where as Cipla and

Lupin showing negative co-relationship between Financial leverages and Profitability.

By applying t-test it indicates that,at 5% level of significance , Ho is rejected, there is a significant impact between Financial Leverages and profitability of Pharma companies.

Table9: Analysing Relationship Between Combined leverage and EPS Pharmaceutical company

Company	r' value	Correlation result	T- test	Hypothesis result
Sun Pharma	-0.2112	Low Negative	0.0105	Rejected
Cipla	-0.9576	Highly Negative	0.0008	Rejected
Dr. Reddy	-0.7873	Highly Negative	0.0039	Rejected
Glenmark	-0.5704	Highly Negative	0.0012	Rejected
Lupin	-0.4041	Highly Negative	0.4646	Rejected

Interpretation:
The above analysis clearly indicates that, there is negative co-relationship between Combined leverags and profitability.By applying t-test, at 5% level of significance at 4 dof ,Ho is rejectd means there is a significant impact between Combined leverage and Profitability of pharma companies.

IV. Findings:

1. The analysis is based on pre and post Covid period , hence ROE of Lupin was negative ,indicates risk.
2.Return on Investments are very low during the period of analysis. The period of analysis consisting of pre and post Covid ,hence ROI are comparatively low ,during pre- covid,but steadily increasing during 2022-23.
3. Dr.Reddy exhibits higest growth in EPS during the period of analysis as compared to other companies.
4.Standard Deviation of Sun Pharma indicating higest risk as compared to other companies.
5 Degree of Operating leverage of Lupin is highest ,indicating that, it has more fixed cost than variable cost.
6 Cipla, Dr. Reddy, and Glenmark demonstrate higher ratio of DFL, indicating more risk.

V. Conclusion:

Degree of Operating,, Financial and Combined leverages very important to know the risk of Pharmaceutical companies.If the value of leverage is low or negative company must increase its sales volume to reduce the risk.
In the above study,all companies are having average positive operating leverages and financial leverages.

The study indicates that,statistical test of corelation between EPS and DOL ,indicating negative relationship , means both are inversely related to each other.T-test reveals the validity that, there is a significant impact between DOL and EPS .There is a positive corelationship between DFL and EPS among Dr. Reddy,Glenmark and Sun Pharma, indicates that, companies increased the sales volume due to increase in the financial risk.i.e,high financial risk with high profitability.Cipla and Lupin indicating negative correlationship between DFL and EPS,means,increased financial risk reduces the profitability. T-test also validate the statement that there is a significant impact between DFL and EPS, hence, there is a significant impact on leverages on profitability and risk of Pharmaceutical Companies having associated with high fixed cost,in the form of Research and Development.

References

[1]. (2023, July 29). Retrieved July 29, 2023, from https://economictimes.indiatimes.com/definition/earnin gs-per-share-eps
[2]. (2023, July). Retrieved from www.moneycontrol.com.
[3]. Abdulkareem AM, Meghanathi PD. The Impact of Leverage on Earnings Per Share: A Study of Selected Petroleum Companies in India. JOURNAL LA BISECOMAN,2020:1(2):025-036.
[4]. Ahmad N, Salman A, Shamsi AF. Impact of Financial Leverage on Firms' Profitability: An Investigation From Cement Sector of Pakistan. Research Journal of Finance and Accounting,2015:6(7):75-80.
[5]. C S. (n.d.). Retrieved July 23, 2023, from https://www.economicsdiscussion.net/financialmanagement/leverage-analysis/33338
[6]. Dr. Joji Abey D. Financial Leverage: A Study based on Indian Automobile Industry. International Journal of Management and Business Reseacrh,2019:9(1):108- 114.
[7]. Khedkar DE. A STUDY OF LEVERAGE ANALYSIS AND PROFITABILITY FOR DR REDDY'S LABORATORIES. International Journal of Research in Engineering and Social Sciences, 2015, 5(5).
[8]. Kothari MH, Japee DG. IMPACT OF LEVERAGE ON FINANCIAL PERFORMANCE OF SELECTED COMPANIES IN INDIA. ResearchGate, 2021, 24(3).
[9]. Pandey DN, RP. A Study on Corporate Leverage and Profitability of Pharmaceutical Industry in India: An Empirical Analysis. Pacific Business Review International,2017:10(6):111-124.
[10]. VanDyke E. Retrieved October 23, 2023, from https://globaledge.msu.edu/blog/post/56795/theharmaceutical-industry