IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Comparative Analysis of Risk and Return of Pharma Companies: A Five-Year Study-(2019-2023)

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ABSTRACT

This comparative study examines risk and return dynamics in the pharmaceutical sector, assessing financial metrics, market trends, and regulatory landscapes. By focusing on publicly traded companies across various segments, it aims to provide insights for investors and policymakers to understand risk profiles and inform decision-making. Utilizing quantitative analysis techniques and historical data, the study seeks to offer a comprehensive evaluation of risk-return trade-offs and their implications for stakeholders in the pharmaceutical industry.

Key words: Risk and Return, Pharma Sector and Beta.

Introduction

The pharmaceutical industry stands at the forefront of innovation and public health, playing a crucial role in the development and distribution of life-saving medications. As a sector characterized by significant research and development investments, regulatory scrutiny, and market volatility, it offers a unique landscape for analyzing risk and return dynamics. Conducting a comparative analysis of risk and return among pharmaceutical companies provides valuable insights for investors, policymakers, and stakeholders alike. At its core, risk refers to the uncertainty surrounding potential returns, encompassing factors such as regulatory challenges, patent expirations, pipeline success, and market competition. The pharmaceutical sector is subject to regulatory changes that can profoundly impact company operations and profitability. Moreover, the expiration of patents on blockbuster drugs can expose companies to generic competition, affecting revenue streams and market share.Conversely, return represents the financial gains or losses accrued by investors,

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reflecting the profitability and growth prospects of pharmaceutical companies. Factors influencing returns include successful drug launches, market expansion, mergers and acquisitions, and research breakthroughs. High returns often correlate with successful product development, effective marketing strategies, and a strong global presence.

Understanding the interplay between risk and return is essential for investors seeking to optimize their investment portfolios within the pharmaceutical industry. By evaluating risk factors against potential returns, investors can make informed decisions to maximize profitability while managing exposure to uncertainties. Additionally, comparative analysis allows for benchmarking performance against industry peers, identifying outliers and assessing competitive positioning. In this analysis, we will delve into the risk and return profiles of prominent pharmaceutical companies, examining key metrics such as financial performance, product pipelines, regulatory environments, and market dynamics. By analyzing historical data and current trends, we aim to provide a comprehensive understanding of the risk-return tradeoff within the pharmaceutical sector. Through this comparative analysis, stakeholders can gain actionable insights to navigate the complexities of investing in pharmaceutical companies and capitalize on opportunities while mitigating risks.

1. Review of Literature

(Horne & James , 2001) argued that although beta may not be a good indicator of the realized returns, it remains a reasonable measure of risk (Horne & James, 2001). Study of the Meric et al (2010) in the stock market of US shows a positive risk-return relationship between Industries listed in US stock market. There are many controversial results have been revealed in empirical literature; therefore, this study reviews Capital Asset Pricing Model (CAPM) to explore the relationship between expected return and systematic risk. The COMPUSTAT database, a major corporate financial data base widely used in both academia and businesses, provides market beta estimates for individual firms. Investment services firms also provide beta estimates as “risk attributes” or “volatility measures” of their bond and stock funds. No other theoretically well-founded model alternative to the CAPM has been implemented for the estimation of the cost of equity capital (Kaplan & Peterson, 1998). (Awalakki M. & Archanna , 2021)The study examines the relationship between economic and financial indicators and stock returns for 28 selected firms listed on the National Stock Exchange over an eight-year period (2010-2017). Utilizing panel data regression, the results indicate that Return on Equity (ROE) and Price to Book Value (PB) exert a positive and significant impact on stock returns. The findings suggest that managers can enhance stock valuation by understanding and effectively utilizing key resources, emphasizing the importance of informed decision-making for investment strategies and market predictions. (Awalakki M. & Archanna, 2021). The research paper investigates the impact of key accounting ratios, including ROE, ROA, P/E, P/B, P/S, and P/C, on stock prices of the National Stock Exchange over a 15-year period (2005-2020). The study aims to analyze how these financial indicators influence stock returns, emphasizing their importance for investors, creditors, and stakeholders in evaluating the financial condition and profitability of companies listed on the exchange. (Markowitz, , 1952) Portfolio investment theory was the first modern theory proposed by Markowitz (1952). assumed that the rates of return of individual assets covariance with one another, and there is a rather stable covariance, or correlation coefficient, between the rates of return of every two assets. Thus, he stated that it is theoretically possible to construct a variance-covariance matrix of all risky assets. (Awalakki M. & Archanna, 2023) This non-empirical research paper delves into the interplay between investor attention and financial market volatility, leveraging insights from behavioral finance. It explores the determinants of investor attention, including cognitive biases and social factors, and analyses their impact on market dynamics, offering a thorough review of existing literature and theoretical frameworks to enhance comprehension of this intricate relationship. (Abedi , Dargiri, & Rasiah, 2012). This study emphasizes the importance of the risk-return relationship in aiding investors and organizations in decision-making. By reviewing theories, empirical studies, and performance measures like Treynor, Sharpe, and Jansen Indices derived from the Capital Asset Pricing Model (CAPM), it aims to enhance the understanding of industry sectors' risk-return constructs for improved decision support. (Awalakki M. & Archanna, 2023). This study explores the impact of overconfidence biases on investment portfolios, examining cognitive and emotional mechanisms such as illusion of knowledge and emotional attachment. Rooted in behavioral finance literature, it highlights consequences like excessive trading and loss aversion, proposing mitigation strategies like diversification, passive investing, and behavioral coaching for more

informed and rational portfolio decisions. (Subramanyam, Nalla, & Kalyan, 2018). The study aims to educate investors on mutual funds, emphasizing the potential for maximizing returns amidst India's growing capital market. It sheds light on investor awareness, risk tolerance, and preferences, showcasing the role of mutual funds in diversifying investments for optimal returns and risk mitigation. (Awalakki M. , 2022). This article explores the interplay between neurotransmitters (dopamine, serotonin, and norepinephrine), emotions, and investment outcomes, unraveling their role in shaping investor behavior and decision-making. It emphasizes the neural mechanisms driving decision diversification and addresses biases, underscoring the significance of education for cognitive function and bias mitigation in managing investor behavior within the finance domain. (Moolbharathi & Sugandi, 2021). This study analyzes the Risk and Return of stocks in the Auto, Banking, Finance, FMCG, and IT sectors from 2017-2021, using statistical tools like Standard Deviation, Beta, and Regression Analysis. It guides investors by assessing sector-wise performance against benchmark indices, aiding in informed investment decisions based on risk and return considerations. (Awalakki S. M., 2015). The study in Kalaburagi, Karnataka, reveals that salaried employees predominantly consider investments for retirement, and recent survey results indicate a lack of significant increase in their investment levels compared to businesspersons. Despite a historical focus on retirement, the growing awareness of investment options suggests an evolving landscape with increased choices for salaried individuals. (AWALAKKI, 2015)This study examines the capital structures of five prominent cement companies (ACC, Ultratech, Ambuja, J.K., Chettinad) from 2008-09 to 2013-14, assessing the impact of these structures on investment patterns and emphasizing the importance of debt-equity mix in effective financing decisions. The intra-company analysis aims to provide insights into the financial dynamics of these firms.

2. Objective of the Study

The primary objective of this comparative study is to analyze the risk and return profiles of IT companies within the broader financial market context.

3. Scope of the Study:

Investors require accurate and timely information to assess the risk-return tradeoff of investing in pharmaceutical companies. Additionally, policymakers need insights into the financial performance of the pharmaceutical sector to formulate regulations and policies that promote innovation and access to essential medications.

4. Research Methodology:

5.1 Define the Scope and Objective: Clearly outline the purpose of your analysis. Are you comparing specific pharmaceutical companies within a certain region or across the globe? Are you focusing on a particular segment of the pharmaceutical industry (e.g., generic drugs, biotechnology, etc.)

5.2. Selecting Companies: Choose a representative sample of pharmaceutical companies for your analysis. Consider factors such as market capitalization, geographical presence, and revenue to ensure diversity in your sample.

5.3. Data Collection: Gather financial data and relevant metrics for the selected companies. Key data points typically include:

Financial statements (income statement, balance sheet, cash flow statement)

Stock prices and returns

Market indices (e.g., S&P 500 Healthcare Index)

Analyst reports and industry publications

5.3 Risk Measurement: Assess the risk associated with each pharmaceutical company using various financial and non-financial metrics:

Volatility: Calculate historical volatility of stock prices or returns.

Beta: Measure the sensitivity of a stock's returns to market movements.

Debt levels: Analyze the company's leverage through debt-to-equity ratios.

Liquidity: Evaluate current and quick ratios to assess the company's ability to meet short-term obligations.

Regulatory risks: Consider factors such as FDA approvals, patent expirations, and litigation.

5. Research Design

6.1 Control Variables: Consider including control variables that may impact risk and return, such as company size, debt levels, research and development expenditure, regulatory environment, and competitive landscape.

6.2 Timeframe: Define the timeframe for the analysis, ensuring consistency across all variables and data points. Consider both short-term and long-term perspectives to capture different aspects of risk and return.

6.3 Statistical Analysis: Employ statistical techniques to analyze the collected data and compare the risk and return profiles of different pharmaceutical companies. This may include descriptive statistics, correlation analysis, regression analysis, and hypothesis testing.

6. Statistical tools and techniques

6.1.Returns

A company's share price may increase or decrease based on multiple factors. A market return is the profit earned over the period of time. The returns can resemble as positive or negative outcomes. Profit can be considered as positive and loss can be considered as negative.

$$\textbf{Stock Return}_i = \frac{(\textbf{Closing price}_i - \textbf{Opening price}_i)}{\textbf{Opening price}_i} \times 100$$

- Stock Return: This represents the return of the stock for a specific period i. It's expressed as a percentage.
- Closing price: This is the price of the stock at the end of the period i, usually at the end of the trading day.
- Opening price : This is the price of the stock at the beginning of the period i typically at the opening of the trading day.

6.2. Beta

A measure of how an individual asset moves (on average) when the stock market as a whole rises or falls is called the beta. Beta becomes a useful indicator of an asset's contribution to the risk of a market portfolio when a little quantity of the asset is included.

$$\beta_i = \frac{\sum xy - \frac{(\sum x)(\sum y)}{N}}{\sum x^2 - \frac{(\sum x)^2}{N}}$$

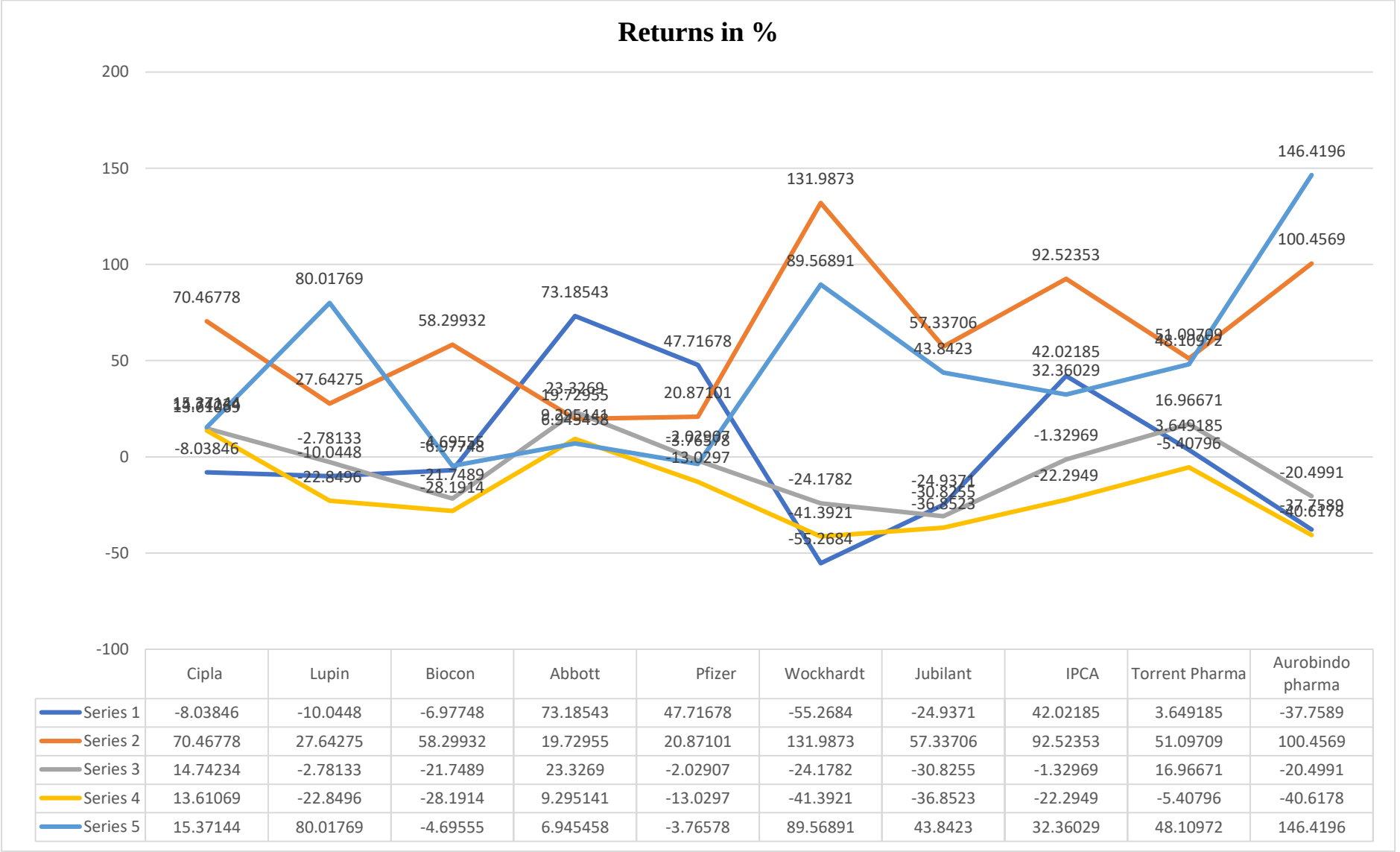
- βi: This represents the beta of the stock i.
- ∑xy: This term represents the sum of the products of the corresponding values of two variables x and y. In finance, x typically represents the returns of the market index and y represents the returns of the stock.
- ∑x and ∑y: These terms represent the sum of all values of variables x and y respectively.
- N: This represents the number of observations (i.e., data points) in the dataset.
- ∑x2: This term represents the sum of the squares of all values of variable x.

8.0. Data Analysis and Interpretation

Table: 1; Table showing the Returns of Pharma companies (%)

Companies	2019	2020	2021	2022	2023
Cipla	-8.03846	70.46778	14.74234	13.61069	15.37144
Lupin	-10.0448	27.64275	-2.78133	-22.8496	80.01769
Biocon	-6.97748	58.29932	-21.7489	-28.1914	-4.69555
Abbott	73.18543	19.72955	23.3269	9.295141	6.945458
Pfizer	47.71678	20.87101	-2.02907	-13.0297	-3.76578
Wockhardt	-55.2684	131.9873	-24.1782	-41.3921	89.56891
Jubilant	-24.9371	57.33706	-30.8255	-36.8523	43.8423
IPCA	42.02185	92.52353	-1.32969	-22.2949	32.36029
Torrent Pharma	3.649185	51.09709	16.96671	-5.40796	48.10972
Aurobindo pharma	-37.7589	100.4569	-20.4991	-40.6178	146.4196

Chart: 1; Graph showing the Returns of Pharma companies



	Cipla	Lupin	Biocon	Abbott	Pfizer	Wockhardt	Jubilant	IPCA	Torrent Pharma	Aurobindo pharma
Series 1	-8.03846	-10.0448	-6.97748	73.18543	47.71678	-55.2684	-24.9371	42.02185	3.649185	-37.7589
Series 2	70.46778	27.64275	58.29932	19.72955	20.87101	131.9873	57.33706	92.52353	51.09709	100.4569
Series 3	14.74234	-2.78133	-21.7489	23.3269	-2.02907	-24.1782	-30.8255	-1.32969	16.96671	-20.4991
Series 4	13.61069	-22.8496	-28.1914	9.295141	-13.0297	-41.3921	-36.8523	-22.2949	-5.40796	-40.6178
Series 5	15.37144	80.01769	-4.69555	6.945458	-3.76578	89.56891	43.8423	32.36029	48.10972	146.4196

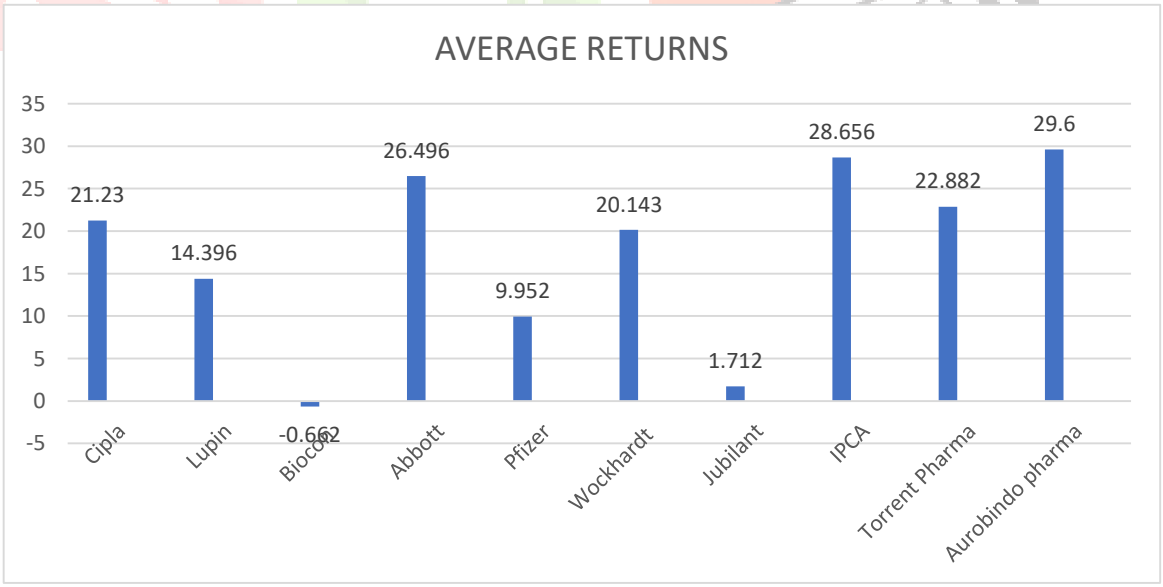
Interpretation:

The table illustrates the annual percentage changes in stock prices for pharmaceutical companies from 2019 to 2023. Companies like Abbott and Aurobindo Pharma showed overall positive growth trends, while others like Wockhardt experienced significant volatility with both sharp declines and steep increases. Lupin exhibited a remarkable recovery in 2023 after a challenging 2022. Torrent Pharma demonstrated consistent growth, while Biocon and Pfizer experienced mixed results over the period. Overall, the table showcases varied performance trajectories among the listed pharmaceutical companies during the specified timeframe.

Table:2 Table showing the Average Returns of Pharma companies

COMPANIES	AVERAGE RETURNS
Cipla	21.230
Lupin	14.396
Biocon	-0.662
Abbott	26.496
Pfizer	9.952
Wockhardt	20.143
Jubilant	1.712
IPCA	28.656
Torrent Pharma	22.882
Aurobindo pharma	29.600

Chart 2: Graph showing the Average Returns of Pharma companies



Interpretation:

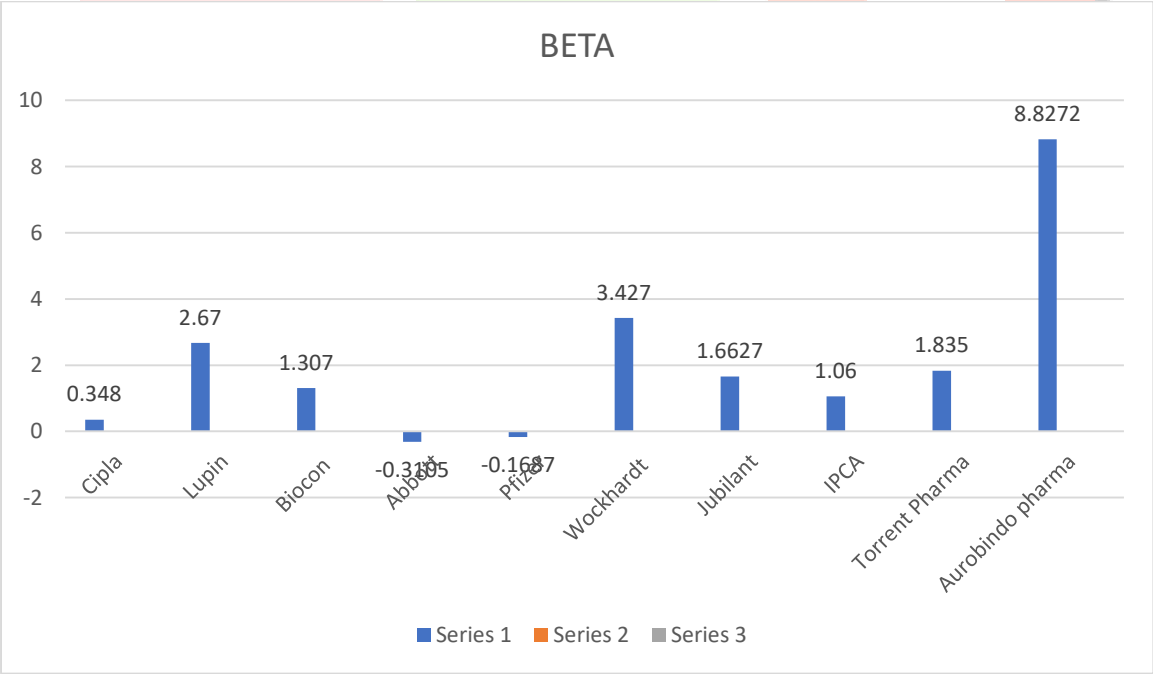
The table presents the average returns of various pharmaceutical companies over a specific period. Companies like Abbott, IPCA, Torrent Pharma, and Aurobindo Pharma exhibited comparatively high average returns, indicating strong performance. On the other hand, Biocon had negative average returns, suggesting a downturn in performance. Lupin and Pfizer showed moderate average returns,

while Cipla and Wockhardt demonstrated above-average returns. Overall, the table highlights variations in the performance of pharmaceutical companies during the specified period, with some outperforming others in terms of average returns.

Table: 3 Table showing the Beta of Pharma Companies

COMPANY	BETA
Cipla	0.348
Lupin	2.670
Biocon	1.307
Abbott	-0.3105
Pfizer	-0.1687
Wockhardt	3.427
Jubilant	1.6627
IPCA	1.06
Torrent Pharma	1.835
Aurobindo pharma	8.8272

Chart: 3 Graph showing the Beta of Pharma Companies



Interpretation:

The table presents the beta values of various pharmaceutical companies, indicating their relative volatility compared to the market. Companies with betas less than 1 are considered less volatile than the market, while those above 1 are more volatile. A beta of 1 suggests the company's volatility matches that of the market. A

negative beta, like Abbott and Pfizer, implies an inverse relationship with the market. Notably, Aurobindo Pharma stands out with a significantly high beta, indicating a high level of volatility compared to the market

Findings:

The interpretations analyze the annual percentage changes, average returns, and beta values of pharmaceutical companies from 2019 to 2023. Abbott and Aurobindo Pharma consistently demonstrate positive growth, while Wockhardt exhibits significant volatility. Biocon's negative average returns indicate a downturn, while Aurobindo Pharma's high beta suggests high volatility. Overall, the findings highlight varying performance trajectories and levels of volatility among the pharmaceutical companies during the specified period.

Conclusion:

The comparative analysis of risk and return dynamics in the pharmaceutical sector from 2019 to 2023 reveals varying performance trajectories among listed companies. Abbott and Aurobindo Pharma consistently demonstrated positive growth trends, while Wockhardt experienced significant volatility. Biocon showed negative average returns, indicating a downturn, while Aurobindo Pharma exhibited high volatility with a notably high beta. Overall, the findings underscore the importance of understanding risk-return trade-offs for investors and policymakers in navigating the pharmaceutical industry landscape. This study contributes to informed decision-making by providing insights into the financial performance and risk profiles of pharmaceutical companies, aiding stakeholders in evaluating investment opportunities and regulatory strategies

References:

- Abedi , H. S., Dargiri, M. N., &Rasiah, D. (2012). A Review Study of Risk-Return Relationship and Performance Measures Comparing Different Industry Sectors. Australian Journal of Basic and Applied Sciences, 6(12), 14-22. Retrieved from https://www.ajbasweb.com/old/ajbas/2012/Nov%202012/14-22.pdf
- Abhishek.V (2018)A study on Risk and Return analysis of selected stocks in BSE SENSEX, Acharya Institute of Technology.
- Awalakki , M., &Archanna . (2021). Impact of Economic and Financial Performance Indicators ratios on Determination of Stock Returns – A Study with reference to National Stock Exchange. PSYCHOLOGY AND EDUCATIO, 58(5 (2021)), 6665-6685. Retrieved from http://psychologyandeducation.net/pae/index.php/pae/article/view/6706
- Awalakki , M., &Archanna. (2023). OVERCONFIDENCE BIAS AND ITS EFFECTS ON PORTFOLIO DECISIONS. International Journal of Creative Research Thoughts (IJCRT), 11(8), g74-g83. Retrieved from https://www.ijcrt.org/papers/IJCRT2308664.pdf
- Awalakki, M. (2022). Neurotransmitters Impact on Emotional Responses and Decision-Making in Investment: A Comprehensive Exploration. International Journal of Food and Nutritional Sciences, 11(5),

690-708. Retrieved from https://www.ijfans.org/uploads/paper/fb4237bf576c3b3020696d18585588f8.pdf

- Awalakki, M., &Archanna. (2021). A Study On Accounting Ratios And Stock Returns With Reference To National Stock Exchange Of India. Turkish Online Journal of Qualitative Inquiry, 12(7), 6858-6888. Retrieved from https://www.tojqi.net/index.php/journal/article/view/4940
- Awalakki, M., &Archanna. (2023). Exploring the Dynamics of Investor Attention and Market Volatility: A Behavioral Finance Perspective. International Journal of Science and Research (IJSR), 12(8), 2245-2251. Doi:10.21275/SR23823155339
- Awalakki, S. M. (2015). A Study on Investment Patterns and Awareness of Salaried Class Investors. INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH, 4(8), 348-350. Retrieved from https://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/fileview.php?val=August_2015_1441174222__112.pdf
- AWALAKKI, S. M. (2015). FINANCING DECISIONS: A CASE STUDY OF SELECTED CEMENT COMPANIES OF INDIA. International Journal of Advanced Research, 3(8). Retrieved from https://www.journalijar.com/uploads/701_IJAR-6789.pdf
- Horne, V., & James , C. (2001). Financial Management and Policy. Prentice Hall Publishing.
- Markowitz, H. (1952). Portfolio selection. Journal of Finance, 7(1), 77-91. Doi:https://doi.org/10.2307/2975974
- Moolbharathi, R., &Sugandi, T. (2021). A Comparison Study on Risk and Return Analysis of selected companies with Benchmark Index in NSE. International Journal of Business and Management Invention, 10(10), 04-13. Doi:DOI: 10.35629/8028-1010010413
- Mr. S. Sathish, Ms. A. Nagarathinam (2021) A Study on Risk and Return Analysis of FMCG companies in Indian stock market, Annals of R.S.C.B., ISSN:1583-6258, Vol. 24.
- Subramanyam, P., Nalla, B., &Kalyan, N. B. (2018). A Study on Risk & Return Analysis of Selected Securities in India. International Journal of Engineering Technologies and Management Research, 5(4), 79-86. Doi:DOI: 10.5281/zenodo.1244735