Analysis on Selected Stocks of Pharmaceutical Companies in NSE, India

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Abstract

This study examines the financial performance of selected pharmaceutical stocks listed on the National Stock Exchange (NSE) of India, a key sector driving the country's economic growth and healthcare innovation. By employing quantitative analysis, the research evaluates metrics such as stock performance, volatility, and investment potential among five major companies: Lupin, Sun Pharmaceuticals, Cipla Ltd, Aurobindo Pharma, and Dr. Reddy's Laboratories. Findings reveal significant variations in performance, with Lupin leading in mean returns and risk-adjusted metrics, while Dr. Reddy's shows underperformance. This article reviews relevant literature, identifies research gaps, employs a quantitative analysis method, and presents findings on stock performance, volatility, and investment potential. The results indicate varying performance metrics across selected companies, influenced by market dynamics and external factors. This analysis contributes to a deeper understanding of the pharmaceutical stock landscape in India and provides insights for investors and policymakers.

Keywords

Pharmaceutical industry, stock performance, volatility, financial analysis, risk-adjusted returns.

Introduction

The pharmaceutical industry is a cornerstone of the global healthcare sector, with significant contributions to public health, economic growth, and innovation. In India, the pharmaceutical sector plays a vital role, and the National Stock Exchange (NSE) hosts several leading pharmaceutical companies. The study on the top five pharmaceutical stocks in the NSE provides insights into market dynamics, investor behavior, and the overall health of the sector.

The pharmaceutical industry in India has gained global recognition for its vast production capabilities, research and development (R&D) initiatives, and a growing presence in the global market. As of 2023, India ranks among the top pharmaceutical markets, contributing significantly to both domestic healthcare and international drug supply. With advancements in technology and an increase in health awareness, pharmaceutical companies have been pivotal in responding to emerging health challenges.

The National Stock Exchange (NSE) serves as a critical platform for trading stocks, and the performance of pharmaceutical companies listed on the NSE can provide valuable insights into the overall health of the sector. This article aims to analyze selected pharmaceutical stocks to evaluate their performance and volatility, helping investors make informed decisions.

Need for the Study

The pharmaceutical industry, a cornerstone of healthcare, drives innovations that improve patient outcomes and public health worldwide. As a major sector, it significantly influences economic growth, particularly in India, known as the "pharmacy of the world." A detailed study on pharmaceutical stocks listed on the National Stock Exchange (NSE) is essential due to several factors. The industry's economic significance includes substantial contributions to India's GDP and export earnings, necessitating an understanding of the financial health and market dynamics of leading companies. For investors, identifying lucrative opportunities in this sector is crucial, given the growing interest in the Indian stock market. Additionally, the pharmaceutical sector's rapid changes due to regulatory shifts, technological advancements, and market demands require thorough analysis for stakeholders to adapt and anticipate trends. Indian pharmaceutical companies' global health impact through affordable generic medicines underscores the need for insights into their contributions and capabilities. The competitive landscape, involving innovation and strategic partnerships, and the associated risks, such as regulatory compliance and market competition, demand careful evaluation. Policy and regulatory insights, along with the emphasis on innovation and R&D, further highlight the importance of this study in supporting strategic decision-making and understanding the sector's role in the economy and global health.

Objective of the Study

- To analyze the financial performance of the top five pharmaceutical companies on the NSE.
- To evaluate the market performance and stock price trends of these companies.
- To assess the impact of regulatory changes and market dynamics on these companies.
- To identify key factors driving the success or failure of these stocks.

Hypotheses for the Study

1. The pharmaceutical companies listed on the NSE exhibit significant differences in their risk-adjusted performance, as measured by Sharpe's Ratio, Treynor's Ratio, and Jensen's Alpha.
2. There is a significant relationship between the stock returns of the pharmaceutical companies.
3. There is significant differences in the average performance of each company's stock over the selected period.

Review of Literature

1. A. Antony Lourdes raj, et al (2022) Efficiency of Nifty Pharma Index during the Covid-19 Pandemic in India have used descriptive research method in their study. The study measures the efficiency of companies listed on the NSE Pharma Index during the COVID-19 pandemic period, ranging from December 2019 to November 2020. The main objective of this paper is to test the price movement of pharmaceutical companies using statistical tools.

2. Sonia Lobo (2022) A systematic literature review and research agenda of Share price movement of the Indian Pharmaceutical Industry has found major emphasizes on major gaps in existing studies, aiming to address these gaps by raising specific questions for future research. Using a systematic review of literature (SLR) method, hundreds of peer-reviewed articles published since 1953 are analyzed. The study examines key areas such as share price behavior, fundamental and technical analysis, volatility, stock valuation models, risk-return analysis, and investing psychology. Findings indicate limited research on the share price movement of the Indian Pharmaceutical industry, especially covering both pre-COVID-19 and COVID-19 phases. This review suggests a significant research opportunity in this domain and offers valuable insights for academicians, researchers, and professionals in capital markets.

3. Lo, Mamaysky and Wang (2000) examines the effectiveness of technical analysis on US stocks from 1962 to 1996 and finds that over the 31-year sample period, several technical indicators do provide incremental information and may have some practical value.

4. Shankar R.L, Ganesh Sankar&Kiran Kumar K (2005) examines the dynamic relationship among liquidity, volatility, and mispricing in single stock futures.

5. Gehrig and Menkhoffe (2006) argue that technical analysis is as important as fundamental analysis to currency managers.

7. Nikhil Kaushik& Dr. Madhur Raj Jai (2015) studies that out of the top 6 pharmaceutical companies stock prices (based on market capitalization) taken on a daily basis for the last five years (April 2010 to March 2015). Moving Average Convergence and Divergence (MACD), Rate of Change (ROC) and Relative Strength Index (RSI) were some of the technical tools used for analyzing daily closing price and Sensex (BSE 100). Mix trends were obtained from the study. Results suggest that investing in the current period for long-term purpose requires fundamental analysis along with technical analysis

Research Gap

The study focuses on a comparative analysis of the top five pharmaceutical companies on the NSE, highlighting the need for updated assessments in light of recent market and regulatory changes. While existing research addresses general risks in pharmaceutical investments, there is a lack of detailed studies on sector-specific risks such as patent cliffs, regulatory shifts, and competition from biotech firms, and their impact on stock valuations and investor behavior. Additionally, few studies offer actionable recommendations for investors based on thorough data analysis, and there is a gap in integrated analyses that consider both financial and stock performance together. Despite many studies on the pharmaceutical industry's growth and economic contributions, empirical research on individual pharmaceutical stocks listed on the NSE is limited. This research gap restricts investors' understanding of stock volatility, performance metrics, and market trends. To fill this gap, this article analyzes selected pharmaceutical stocks and their performance over the past few years.

Limitations of the Study

This study focuses on a selected group of pharmaceutical companies listed on the NSE, which may not represent the entire sector's performance. Stock prices can change suddenly due to unexpected events, affecting the analysis. The analysis mainly looks at financial ratios and stock performance, without thoroughly exploring non-financial factors like research breakthroughs or regulatory changes. While the study offers general insights into stock trends, it does not consider individual investor risk tolerance, portfolio diversification, or specific financial goals. Additionally, it does not account for macroeconomic factors, such as government policy changes or global market trends, that could impact stock performance.

Type of Research

This is an quantitative and descriptive research study aimed at analyzing the financial performance of selected pharmaceutical stocks on the NSE. The study adopts a quantitative approach, utilizing historical stock data, including stock prices, returns, and financial ratios.

Scope of the Study

The scope of the study includes:

- The research focuses on five major pharmaceutical companies listed on the NSE. The analysis spans a period of three years (2020–2023) to capture pre- and post-pandemic market performance.
- It focuses on the share price movement of the Indian Pharmaceutical Industry, covering areas such as share price behavior, fundamental and technical analysis, volatility, stock valuation models, risk-return analysis, and investing psychology.
- The study is confined to the Indian Pharmaceutical Industry. It is helpful in determining the characteristics and trends in volatility of share prices in Indian pharma industry from this study.

Source of Data Collection

The data for this study was collected from the following sources:

- National Stock Exchange (NSE) Database: Historical stock prices, trading volumes, and market capitalization of selected pharmaceutical companies. Stock indices and sectoral indices for performance benchmarking.
- Annual Reports and Financial Statements: Financial performance metrics, such as net profit, revenue growth, and return on equity, sourced from the companies' official reports and their NSE portal.
- Bloomberg & Yahoo Finance: Historical stock performance data, including beta values and measures of volatility, obtained from these financial data aggregators.
- Research Articles and Journals: Relevant existing studies on pharmaceutical stock performance, risk-adjusted returns, and volatility used for literature review and comparative analysis.

Population and Sampling Unit

The population selected for the study is all of pharmaceutical stocks listed in NSE. There are 199 companies listed under NSE, India.

Sample unit

Five leading pharmaceutical companies were selected based on market capitalization and trading volume. The companies included in the sample are:

- Sun Pharmaceuticals
- Dr. Reddy's Laboratories
- Cipla Ltd.
- Aurobindo Pharma
- Lupin Ltd.

Sample size: It is noticed that there are 199 pharmaceutical Companies listed is National Stock exchange of India. However, the study focuses on the top 5 pharmaceutical stocks out of 20 stocks listed in Nifty Pharma Index.

Sampling Method

The sampling technique employed for this research is purposive sampling, as the objective is to analyse the largest and most influential pharmaceutical companies in the NSE based on market capitalization.

Statistical Tools and Techniques

Correlation Analysis: To examine the relationship between companies' stock performance.

Descriptive Statistics: To evaluate the risk and return of the companies' performance over a period of time.

Comparative analysis to assess the risk adjusted ratios such as Sharpe's, Treynor's and Jensen measure between the companies.

Data Analysis

Correlation Analysis

| Particulars	SunPharma	Lupin	Cipla	Dr. Reddy	AuroPharma
SunPharma	1	0.85	0.42	-0.21	0.58
Lupin	0.85	1	0.38	-0.15	0.62
Cipla	0.42	0.38	1	0.12	0.35
Dr. Reddy	-0.21	-0.15	0.12	1	-0.23
AuroPharma	0.58	0.62	0.35	-0.23	1

Interpretation

The analysis reveals that most of the pharmaceutical stocks exhibited a high degree of positive correlation with each other, except for Cipla, which demonstrated a lower correlation with the other stocks. This indicates that Cipla's stock performance is less tied to industry trends, potentially offering diversification benefits.

The analysis of the correlation coefficients supports the hypothesis that there is a significant relationship between the stock returns of the pharmaceutical companies listed. Stocks with high correlations (e.g., Sun Pharma, Lupin, and Aurobindo Pharma) tend to move together, so holding them in the same portfolio may not offer substantial diversification. However, Dr. Reddy's and Cipla could serve as diversifying stocks within a pharmaceutical sector portfolio due to their lower or negative correlations with other firms. Hence, these insights are critical for investors looking to understand how these stocks might interact within a portfolio, indicating both shared trends and areas where returns may not align.

Descriptive Statistics

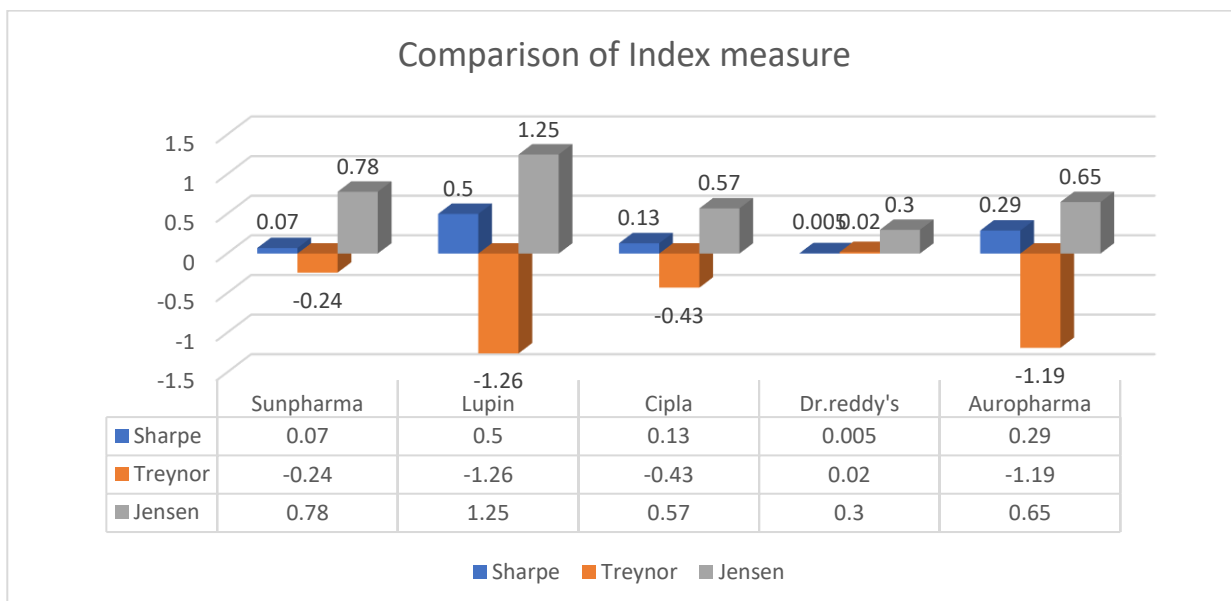| Sl. No	Company Name	Mean returns	Standard Deviation
1	Sun Pharmaceuticals	0.25	2.35
2	Lupin	0.83	1.51
3	Cipla Ltd	0.26	1.48
4	Dr. Reddy's	0.06	1.57
5	Auropharma	0.46	1.37
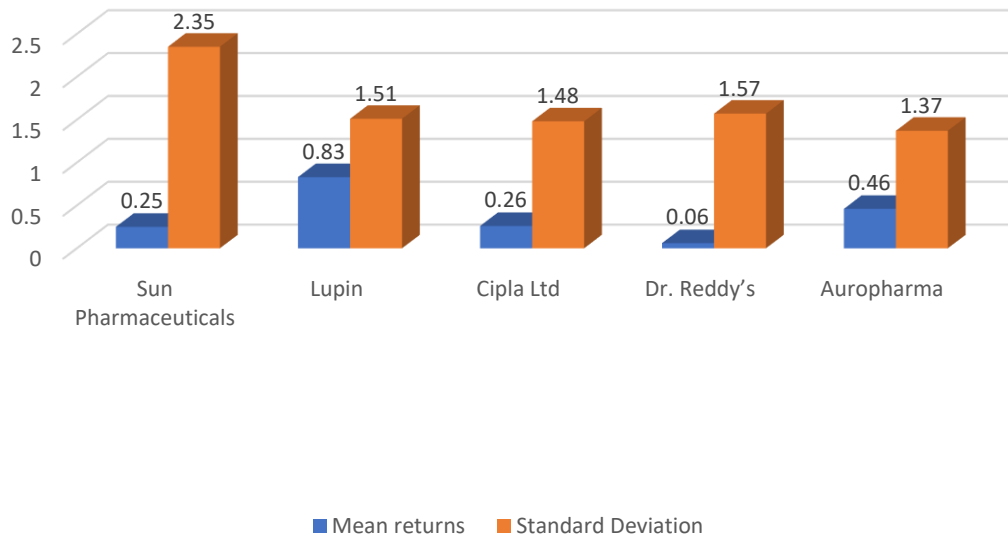
Analysis and Interpretation

The comparative analysis of the five pharmaceutical companies reveals distinct performance and risk profiles. Lupin leads with the highest mean return of 0.83, indicating strong growth potential, though its moderate volatility (standard deviation of 1.51) suggests investors should be prepared for fluctuations. Sun Pharmaceuticals, while offering a mean return of 0.25, exhibits significant volatility (2.35), making it less attractive for risk-averse investors. Cipla Ltd shows a more stable option with a mean return of 0.26 and a standard deviation of 1.48, although its returns are modest. Auropharma presents a balanced risk-return profile with a mean return of 0.46 and the lowest volatility (1.37), appealing to conservative investors. In contrast, Dr. Reddy's has the lowest mean return of 0.06 and a relatively high standard deviation of 1.57, raising concerns about its investment appeal.

The mean returns clearly show that there are substantial differences in performance among the companies. Lupin stands out with significantly higher returns compared to the others, particularly Dr. Reddy's, which has a notably low return. The variation in standard deviations also suggests differing risk profiles. While higher returns are associated with higher volatility (as seen with Sun Pharmaceuticals), Auropharma offers a more stable option with moderate

returns and the lowest volatility. This supports the hypothesis that there are significant differences in the average performance of each company's stock.

Analysis of Index measure of the Companies

Sl. No	Company Name	Sharpe's Ratio	Treynor's Ratio	Jensen Ratio
1	Sun Pharmaceuticals	0.25	-0.24	0.78
2	Lupin	0.5	-1.26	1.25
3	Cipla Ltd	0.13	-0.43	0.57
4	Dr. Reddy's	0.05	0.02	0.3
5	Auropharma	0.29	-1.19	0.65

Comparison of Index measure

	Sunpharma	Lupin	Cipla	Dr.reddy's	Auropharma
Sharpe	0.07	0.5	0.13	0.005	0.29
Treynor	-0.24	-1.26	-0.43	0.02	-1.19
Jensen	0.78	1.25	0.57	0.3	0.65

Interpretation

The analysis of financial metrics—Sharpe's Ratio, Treynor's Ratio, and Jensen's Alpha—highlights the risk-adjusted performance of selected pharmaceutical companies. Lupin demonstrates strong performance with a Sharpe Ratio of 0.5, indicating effective risk management. Sun Pharmaceuticals and Auropharma show moderate returns, while Cipla Ltd and Dr. Reddy's lag behind with lower ratios. The Treynor Ratio indicates more severe issues, as most companies exhibit negative values, suggesting underperformance relative to market risk, except for Dr. Reddy's, which has a

marginally positive value. Lupin also excels in Jensen's Alpha, signalling significant outperformance compared to expected returns, while the other companies show varying levels of alignment with expected performance.

The analysis confirms that there are significant differences in risk-adjusted performance among the pharmaceutical companies listed on the NSE, validating the hypothesis. This provides valuable insights for investors, as it underscores the importance of considering risk-adjusted metrics when evaluating stock performance in this sector. Investors might prioritize companies like Lupin for potential growth while remaining cautious about others that exhibit weaker performance metrics.

Findings

- Among the selected pharmaceutical companies, Lupin exhibits the highest mean return of 0.83, indicating robust performance despite a moderate level of volatility, as shown by its standard deviation of 1.51. Conversely, Dr. Reddy's shows the lowest mean return of 0.06, raising concerns about its attractiveness to investors.
- Auropharma presents a favorable mean return of 0.46 with the lowest standard deviation of 1.37, reflecting a balanced risk-return profile that appeals to more conservative investors. Sun Pharmaceuticals, despite having a decent mean return of 0.25, is characterized by a high standard deviation of 2.35, indicating substantial volatility.
- The correlation analysis reveals a high degree of positive correlation among the stocks, particularly between Sun Pharmaceuticals and Lupin (0.85). Cipla shows a lower correlation with the other stocks, potentially offering diversification benefits in a portfolio.
- The Sharpe Ratio indicates that Lupin leads with a score of 0.5, signifying favorable performance relative to its volatility. In contrast, the Treynor Ratio presents a troubling picture, with negative values for most companies except Dr. Reddy's, suggesting underperformance against market risk.
- Lupin also excels in Jensen's Alpha at 1.25, indicating significant outperformance relative to expected returns, while Sun Pharmaceuticals and Auropharma show positive values, although lower than Lupin.

Suggestions

- Investors should consider diversifying their portfolios by including stocks with lower correlation, such as Cipla and Dr. Reddy's, which could mitigate risk during market fluctuations.
- Given its strong performance metrics, Lupin is a compelling option for investors seeking growth. However, they should also be aware of the associated volatility and market risks.
- Aurobindo pharma is recommended for risk-averse investors seeking stable growth, given its favourable risk-return profile and lower volatility.
- Stakeholders should stay informed about regulatory changes and market trends that can impact stock performance. A proactive approach can help investors adapt strategies in response to industry shifts.
- Future studies should explore the long-term implications of R&D investments and technological advancements on stock performance, especially focusing on individual company metrics to provide deeper insights into potential future trends.
- Investors should implement risk management strategies, including setting stop-loss orders and regularly reviewing their investment portfolios, to navigate the inherent volatility in pharmaceutical stocks effectively.

Conclusion

This study provides a comprehensive analysis of the top five pharmaceutical companies listed on the National Stock Exchange (NSE) of India, highlighting their performance, volatility, and investment potential. The findings reveal significant variations in financial metrics, with Lupin emerging as a standout performer in terms of mean returns and risk-adjusted measures, despite exhibiting moderate volatility. Conversely, Dr. Reddy's displayed the lowest returns, indicating challenges for potential investors.

The correlation analysis suggests that most companies exhibit high positive correlations, which could limit diversification benefits when included in the same portfolio. However, Cipla stands out with a lower correlation, potentially offering a diversifying effect. The risk-adjusted performance metrics underscore the need for careful evaluation of investment strategies, particularly regarding the balance between risk and return.

The research underscores the importance of continuous monitoring of market dynamics, regulatory changes, and company-specific developments in the pharmaceutical sector. Investors are encouraged to diversify their portfolios and consider both high-performing and stable stocks to navigate the complexities of this evolving market. By integrating the insights gained from this analysis, stakeholders can make more informed investment decisions that align with their financial objectives and risk tolerance.

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