Comparative Analysis of Returns and Standard Deviations of Automotive Companies' Stocks: A Five-Year Study (2019-2023)

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Abstract

In this study, returns and standard deviation of stock of automotive companies listed on the National Stock Exchange(NSE) are compared during a five-year period, from 2019-2023.The goal of the research is to help investors in the automotive sector balance risk and return by offerings insightful information. Using a descriptive research design, secondary data from journals, papers, and the NSE website are used. The data is analyzed using statistical methods including standard deviation and returns, The goals are to compare the accomplishments of automotive companies, evaluate risk tolerance, look at the average returns, and suggest investments for investors. The results provide investors looking to maximize their investment returns in automotive sector with practical advice.The examination looks at how the stocks of automotive companies performed on the NSE between 2019 and 2023. The goal is to support decision-making with knowledge. Secondary data was gathered using a descriptive design from multiple sources. To interpret the data, statistical methods like returns, and standard deviation are used. Examining average returns, assessing risk, and suggesting stocks to investors are some of the main goals. The findings are intended to offer helpful suggestions for investments in the healthcare industry.

Keywords: Risk and Return, Automotive sector, Standard deviation.

1. Introduction:

Knowing how automotive organization function is important when it comes to the world of financial markets. The goal of this study is to compare the returns and standard deviations of the stocks of automotive companies during a five-year span, from 2019 to 2023. The study intends to provide insight into these businesses' respective risk and return profiles in the automotive sector by closely examining their financial performance. Numerous aspects of automotive companies' performance have been examined in earlier research. Comprehending the financial dynamics of automotive organizations is crucial for investors, analysts, and policy makers due to the complicated regulatory landscape and high sensitivity to external factors like policy changes and technological improvements.The study's methodology include obtaining historical stock price information for chosen companies, calculating their

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standard deviations and annual returns, and using statistical methods to find patterns and relationships. By doing this, the research aims to provide information about the risk profiles and financial performance of businesses in the automotive sector. The comparative analysis of returns and standard deviations during the designated five-year period is the only area of the study that is covered. Although its objective is to furnish parties navigating the automotive market with useful information, it does not encompass wider economic considerations or company-specific tactics that go outside the specified boundaries. The present study enhances the comprehension of financial dynamics in the automotive domain and provides significant perspectives for investors, analysts, and policy makers who aim to maximize their decision-making procedures and proficiently handle risks in the constantly changing automotive terrain.

2. Statement of the problem:

Choosing to take on less risk or increase profits can be difficult for investors at times. They can make more informed decisions about where to invest their money by weighing the risks and possible rewards. companies. Investors can better comprehend the automotive sector according to this study. Investors can select the best options for their investments by weighing risk and return by comparing the stocks of various automotive

3. Need for the study:

Study is necessary because investors, especially those in the automotive industry, face complex decisions when making investments. Investors need assistance in order to effectively manage the trade off between risk and return given the abundance of investment possibilities accessible. This study addresses the requirements for actionable information that enable investors to make wise decisions by performing a comparative analysis of the stocks of automotive sector companies. Investors can minimize risks and maximize profits by comprehending the risk return dynamics of various automotive sector investment options, so improving their overall investment outcomes.

4. Objectives of the study:

- To assess the mean returns of the chosen Companies stocks.
- To find out the level of risk which is linked to the designated companies.
- To suggest the most suitable security for investors.

5. 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 basewidely 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&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&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&Archanna, 2023) This non-empirical research paper delves into the interplay between investor attention and financial market volatility, leveraging insights from behavioural 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&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, 2022). This article explores the interplay between 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 thesestructures 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. Mr. Pandya and Mr. Bhargav (2017), "Total Shareholder Return and Excess Return: An Analysis of Nifty Pharma Index Companies." The paper examines the total shareholder return (TSR) and excess return of pharmaceutical companies in the NIFTY pharma index from 2010 to 2016. Using financial data from the CMIE PROWESS database and risk-free rates from the Reserve Bank of India website, the study finds statistically significant positive TSR and excess return, indicating wealth creation for shareholders. Additionally, there is a positive association between return on net worth (RONW) and both TSR and excess return, suggesting that increasing RONW can enhance TSR and excess return, offering implications for managerial decision-making. Abhishek. V (2018) "A Study on Risk and Return Analysis of Selected Stocks in Bse Sensex". The aim of this study is to assess the risk and return associated with specific stocks and determine the optimal investment options. Standard deviation and beta values are utilized to gauge the risk of the chosen stocks within the Sensex index. Additionally, the research proposes that opting for short-term securities over long-term investments can help mitigate risk. The Sharpe's index model, developed by William Sharpe, is highlighted as an effective investment strategy. Consequently, investors can diversify their risk by investing in a portfolio of securities. (Rohit & Bhavna, 2018), "The Effect of Risk Return Analysis 0f Pharmaceutical Companies On Indian Stock Market". The study examines the risk-return relationship of selected pharmaceutical companies in the Indian stock market from 2013 to 2018. With India's pharmaceutical industry ranking third globally in volume and fourteenth in value, it is an attractive sector for investors. Using MS Excel for data analysis, the research highlights that while Sun Pharmaceutical Industries Ltd offers exceptional returns, its shares carry high market risk. Conversely, Divi's Laboratories Ltd presents a more favorable option due to its combination of high returns and lower associated risk. This analysis aids potential investors in making informed investment decisions within the pharmaceutical sector. Rahul Moolbharathi and Tukaram Sugandi (2021b) "A Comparison Study On Risk And Return Analysis Of SelectedCompanies With Benchmark Index In Nse". The research provides investors with insights into various statistical methods for assessing stock risk and return, with a focus on comparing index performance to benchmark indices. Additionally, it aims to determine the most favorable sector for risk and return investments. The primary goal is to analyze the statistical variation of stocks and indices using regression analysis. Findings reveal that HDFC Bank exhibits higher risk and returns compared to other stocks. Notably, all equities in the portfolio have a beta of one, indicating efficiency in terms of risk and return among the selected market stocks. Mr. S. Sathish, Ms. A. Nagarathinam (2021) "A Study On Risk And Return Analysis Of FMCG Companies In Indian Stock Market". This article was undertaken to analyse the risk and return of the selected NIFTY FMCG sectors. This research examines the optimal security for an investor seeking a high return with minimal risk. Descriptive research is been adopted and based on this it is highlighted that ITC Ltd. Has the lowest return among FMCG companies. They suggest that if an investor expects high returns then he has to face high risk. A stock with a higher beta value is not suggested since it has a significant market risk that cannot be diversified.

6. Research Methodology:

- **Sources of data collection**: The data of this research is collected through various sources such as NSE website, journals and publication which is secondary data.
- **Sample size:** The study consists of NIFTY automotive companies which are listed on NSE.
- **Statistical tools and techniques:**
  1. **Return analysis:** A number of reasons can cause a company's stock price to vary, with either positive or negative results. Profit over time is referred to as market return, where profit is viewed as positive and loss as negative a return's percentage change between the closing and opening prices is computed.
  2. **Standard deviation:** this statistical measure quantifies the degree of disarray within a dataset in relation to its mean. The square root of the variance is used to calculate it. The standard deviation of a stock that exhibits excessive volatility will be higher than that of a stable blue-chip stock.

7. Data analysis and interpretation:

Table 1 : Table showing MEAN returns of the companies:

SI.NO	COMPANIES	AVERAGE RETURNS(%)
1	Apollo Tyres	26.07
2	TVS motors	39.73
3	Mahindra and Mahindra	15.86
4	Ashok Leyland	29.74
5	Bosch	15.90
6	Hero motor Corp	16.35
7	Maruti Suzuki	9.47
8	TATA Motors	53.48
9	Eicher motors	11.75
10	Bajaj Auto	25.01

**Chart: 1 : Graph showing the returns of automotive companies:**
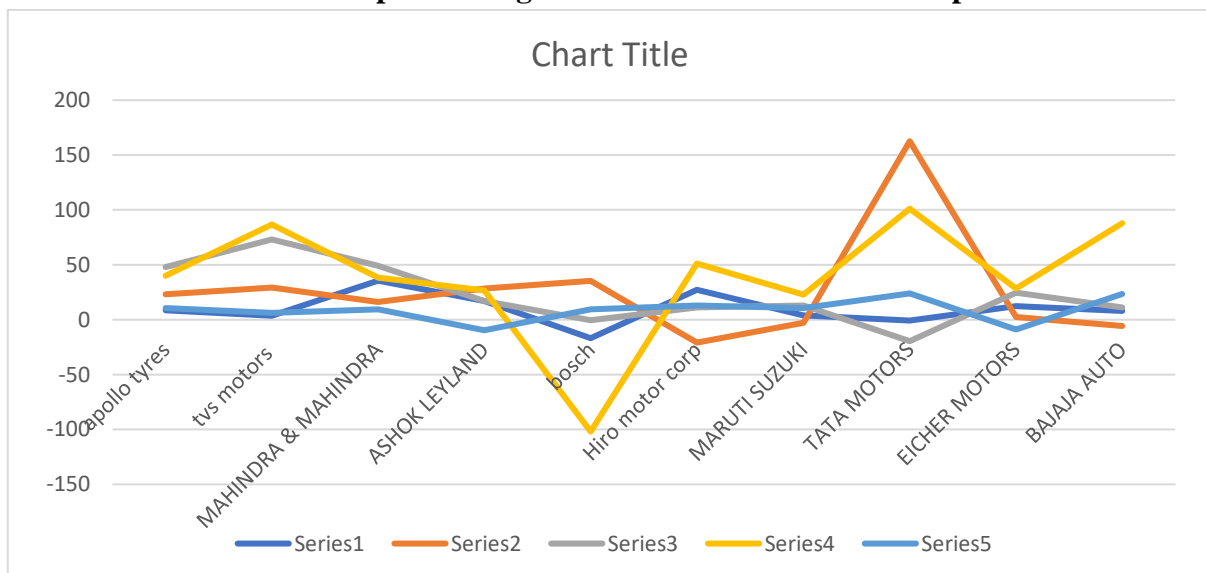
Interpretation:

The provided data presents the average returns, expressed as percentages, of several prominent companies in the automotive industry. Notably, TATA Motors exhibited the highest average returns at 53.48%, indicating robust performance and potentially attractive investment prospects for stakeholders. Following closely behind were TVS Motors and Ashok Leyland with returns of 39.73% and 29.74%, respectively, reflecting their strong market positions and effective business strategies. ApolloTyres and Bajaj Auto also demonstrated noteworthy returns at 26.07% and 25.01%, suggesting favorable performance within their respective market segments. However, Maruti Suzuki reported comparatively lower returns at 9.47%, potentially indicating challenges or slower growth within its market niche. Similarly, Eicher Motors and Bosch exhibited modest returns of 11.75% and 15.90%, respectively, which may reflect steady but less dynamic performance. Mahindra and Mahindra, Hero Motor Corp, and Bajaj Auto fell within the mid-range of returns, each showcasing results around 15-16%. Overall, these figures provide valuable insights into the financial health and performance trends of these automotive companies, guiding investors and industry analysts in making informed decisions regarding investment and market strategies.

Table 2: Table showing standard deviation of companies:

SI.NO	COMPANIES	Standard Deviation(%)
1	Apollo Tyres	17.50
2	TVS motors	38.28
3	Mahindra and Mahindra	16.50
4	Ashok Leyland	15.18
5	Bosch	23.19
6	Hero motor Corp	26.23
7	Maruti Suzuki	9.68
8	TATA Motors	76.35
9	Eicher motors	15.45
10	Bajaj Auto	36.67

Chart 2: Graph showing the returns of automotive companies:
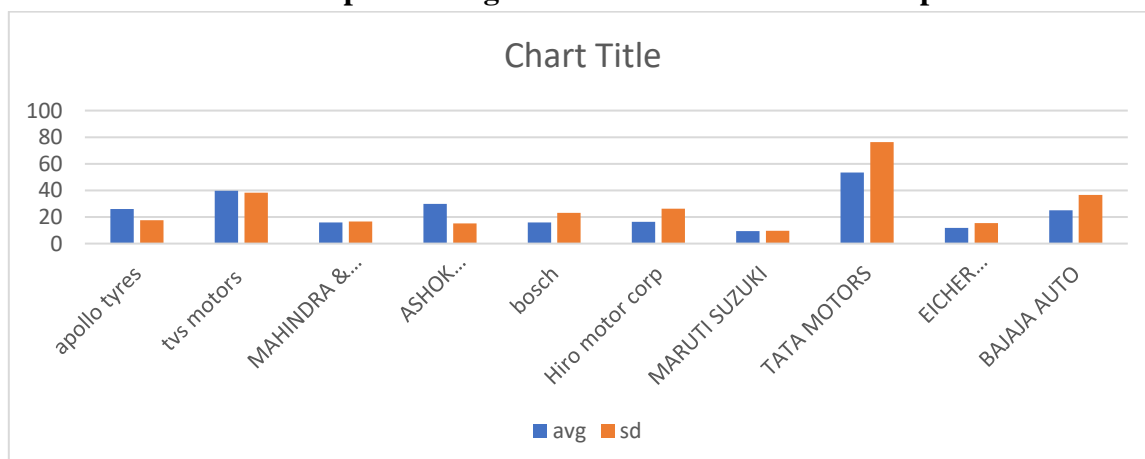
Interpretation:

The data provided offers insights into the average returns of various companies within the automotive sector. Topping the list is TATA Motors, boasting an impressive average return of 53.48%. This suggests that TATA Motors has been highly successful in generating returns for its investors, potentially indicating strong performance and effective management. Following closely behind are TVS Motors and Ashok Leyland, with average returns of 39.73% and 29.74% respectively, showcasing their competitive positions and profitability within the industry. Apollo Tyres and Bajaj Auto also exhibit notable returns of 26.07% and 25.01%, indicating their resilience and market appeal. However, Maruti Suzuki trails with a comparatively lower average return of 9.47%, possibly signaling challenges or slower growth in its market segment. Similarly, Eicher Motors and Bosch display modest returns of 11.75% and 15.90% respectively, suggesting steady but less dynamic performance. Meanwhile, companies like Mahindra and Mahindra and Hero Motor Corp fall within the mid-range of returns, around 15-16%, reflecting decent performance but with room for improvement. Overall, the data provides valuable insights for investors, allowing them to gauge the financial health and performance trends of these automotive companies, and make informed investment decisions.

8. Findings:

The provided data outlines the average returns (%) of several prominent companies in the automotive sector. Among the companies listed, TATA Motors exhibited the highest average returns at 53.48%, signifying robust performance and potentially attractive investment opportunities. TVS Motors also demonstrated substantial returns, standing at 39.73%, suggesting strong market performance and investor confidence in the company's endeavors. Apollo Tyres and Ashok Leyland followed closely behind, with average returns of 26.07% and 29.74% respectively, indicating healthy growth and market competitiveness. Bajaj Auto and Bosch displayed moderate returns at 25.01% and 15.90% respectively, highlighting steady performance within their respective niches. On the other hand, Maruti Suzuki and Eicher Motors showed relatively lower average returns, standing at 9.47% and 11.75% respectively, possibly indicating challenges or slower growth compared to their counterparts. Mahindra and Mahindra and Hero Motor Corp fell within the middle range, with average returns of 15.86% and 16.35% respectively, indicating stable but not exceptional performance. Overall, these findings illustrate the diverse landscape of the automotive industry, with companies demonstrating varying levels of growth, stability, and market appeal. Investors may consider these factors when making decisions regarding their investment portfolios within this sector. The provided data offers insights into the standard deviation (%) of various leading companies within the automotive sector, indicating the degree of volatility or dispersion of returns around their respective average returns. TATA Motors displayed the highest standard deviation at 76.35%, suggesting considerable variability in its returns over the observed period. This volatility might imply higher risk associated with investments in TATA Motors compared to other companies listed. TVS Motors and Hero Motor Corp followed closely behind, with standard deviations of 38.28% and 26.23% respectively, indicating relatively high levels of fluctuation in their returns. Bajaj Auto also exhibited significant volatility, with a standard deviation of 36.67%, indicating potential fluctuations in its performance. On the other hand, Maruti Suzuki displayed the lowest standard deviation at 9.68%, suggesting relatively stable returns and potentially lower risk associated with investments in this company. Other companies such as Ashok Leyland, Eicher Motors, and Mahindra and Mahindra demonstrated moderate levels of volatility, with standard deviations ranging from 15.18%

to 16.50%. Bosch displayed a slightly higher standard deviation at 23.19%, indicating a moderate level of volatility in its returns. Overall, these findings provide valuable insights into the risk profiles of various automotive companies, assisting investors in making informed decisions regarding portfolio diversification and risk management strategies within this sector.

9. Suggestions:

To reduce risk, investors should spread their assets among a variety of asset classes and industries, such as technology, automotive, finance, and commodities. Within each industry, investors should also mix large, mid and small cap stocks. Further enhancing the benefits of diversification is the integration of non-correlated assets like bonds, real estate, and alternative investments. The emphasis is on adopting a long- term investment approach rather than trying to time the market. This involves concentrating on the long-term growth potential and company fundamentals in order to make advantage of compound returns and weather market fluctuations.it is essential to customize risk management plans to each person's risk tolerance and goals. This includes taking steps such adding, hedging tactics, diversifying investments and establishing stop-loss orders. It's also advised to regularly examine and analyze the portfolio to make sure it's in line with evolving market conditions and individual financial objectives. This will help investors adjust to shifting market dynamics and maximize their portfolios for long-term success.

10. Conclusions:

The data presents a snapshot of the average returns for various companies, providing insights into their investment performance. Notably, TATA Motors emerges as the top performer with an impressive average return of 53.48%, showcasing robust investment potential. Following closely is TVS Motors, exhibiting a strong performance with an average return of 39.73%. Both Apollo Tyres and Ashok Leyland also demonstrate notable returns above 25%, reflecting positively on their investment attractiveness. Bajaj Auto and Hero Motor Corp show decent average returns around 25% and 16.35% respectively, indicating stability and potential for growth. On the other hand, Maruti Suzuki lags behind with a relatively lower average return of 9.47%. Mahindra and Mahindra, Bosch, and Eicher Motors fall within the mid-range of returns, with average returns ranging from 11.75% to 15.90%. In conclusion, investors may find opportunities for favorable returns in companies like TATA Motors and TVS Motors, while considering factors such as market dynamics and company fundamentals when making investment decisions.The standard deviation measures the dispersion or volatility of returns, with higher values indicating greater variability. In this dataset, TATA Motors exhibits the highest standard deviation at 76.35%, suggesting considerable volatility in its returns. TVS Motors and Hero Motor Corp follow with standard deviations of 38.28% and 26.23% respectively, indicating relatively high variability in their returns. Conversely, Maruti Suzuki demonstrates the lowest standard deviation at 9.68%, implying more stable returns compared to others. Generally, companies with higher standard deviations may present higher risk but also potentially higher rewards, while those with lower standard deviations may offer more predictable returns. Investors should consider these factors along with other metrics when evaluating investment opportunities.

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