Comparative Analysis of Risk and Return of AUTO Companies: A Five-Year Study 2019-2023

Veenashree[1], Chandrashekhar[2]

[1,2]Student, Department of Management Studies, Visvesvaraya Technological University, Kalaburagi, Karnataka, India

Abstract

The study focuses on evaluating the historical performance of selected companies within the auto sector in terms of risk adjusted returns, employing a blend of quantitative and qualitative research methodologies. It scrutinizes various financial metrics, including stock price volatility and beta coefficients, to gauge the risk and return profiles of these auto sector companies. Moreover, the research explores the interplay between economic and financial indicators and stock returns to furnish valuable insights for investors, financial analysts, and policymakers.

The research methodology entails meticulous data collection from primary and secondary sources, the selection of auto sector companies based on specific criteria, and the utilization of statistical analysis techniques.

The findings underscore the variance in financial performance and risk profiles across these auto sector companies, emphasizing the significance of well-informed decision making for investment strategies and market forecasts in the dynamic landscape of the auto industry. These insights furnish actionable guidance for investors aiming to optimize their investment outcomes within the auto sector.

KEY WORDS: Risk and Return, Auto sector, Standard deviation.

Introduction:

The automobile sector in India stands as one of the most vibrant and dynamic industries, contributing significantly to the country's economic growth and development. Over the years, it has evolved into a key driver of industrialization, employment generation, and technological advancement. This sector encompasses a wide range of vehicles, including two-wheelers, passenger cars, commercial vehicles, and three-wheelers, catering to diverse consumer needs and preferences.

Problem Statement:

The financial markets are dynamic and subject to various uncertainties. Investors face the challenge of balancing risk and return while making investment decisions. Understanding the trade-off between risk and return is crucial for optimizing portfolio performance. This research aims to conduct a comparative analysis of risk and return across different asset classes, considering factors such as volatility, historical

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[1]Student, Department Of Management Studies, Visvesvaraya Technological University, Kalaburagi, Karnataka, India
[2]Student, Department Of Management Studies, Visvesvaraya Technological University, Kalaburagi, Karnataka, India

performance, and market conditions. By examining these aspects, we seek to provide valuable insights for investors, enabling them to make informed choices and enhance their investment outcomes.

Historical Perspective:

The automotive industry in India has a rich historical legacy, dating back to the early 20th century. The sector witnessed its initial growth with the establishment of manufacturing units by pioneers such as Hindustan Motors and Premier Automobiles Limited (PAL). However, significant reforms and liberalization measures introduced in the 1990s paved the way for a major transformation in the sector, attracting substantial investments from domestic and international players.

Key Players and Market Landscape:

Today, the Indian automobile sector boasts a robust ecosystem comprising both domestic manufacturers and multinational corporations. Prominent players such as Maruti Suzuki, Tata Motors, Mahindra & Mahindra, and Hero MotoCorp dominate the market across various vehicle segments. Additionally, international automakers like Hyundai, Honda, Toyota, and Volkswagen have established a strong presence in the Indian market, leveraging the country's growing consumer base and manufacturing capabilities.

Government Initiatives and Policies:

The Indian government has played a pivotal role in shaping the growth trajectory of the automotive industry through policy interventions, incentives, and regulatory frameworks. Initiatives such as the Automotive Mission Plan (AMP), National Electric Mobility Mission Plan (NEMMP), and Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme have been instrumental in promoting innovation, sustainability, and technological advancement within the sector.

Challenges and Opportunities:

Despite its remarkable growth, the Indian auto sector faces various challenges, including fluctuating fuel prices, regulatory compliance, infrastructure bottlenecks, and environmental concerns. However, these challenges also present opportunities for industry stakeholders to embrace innovation, diversification, and strategic collaborations. The shift towards electric and hybrid vehicles, adoption of advanced manufacturing technologies, and emphasis on research and development (R&D) are key trends shaping the future of the automotive industry in India.

Review of the Auto Sector in India:

The automotive sector in India has undergone significant transformations over the years, emerging as a key contributor to the country's economic growth and development. This review highlights various aspects of the Indian auto industry, including its historical evolution, market dynamics, challenges, opportunities, and prospects.

Historical Evolution:

The Indian automotive industry has a rich historical legacy dating back to the early 20th century when the first indigenous automobile manufacturing units were established. However, it was the economic reforms and liberalization policies of the 1990s that paved the way for rapid growth and expansion of the sector.

The entry of multinational corporations, technological advancements, and favourable government policies catalysed the transformation of the Indian auto industry into a global manufacturing hub.

Market Dynamics:

The Indian auto sector comprises a diverse range of vehicles, including passenger cars, commercial vehicles, two-wheelers, and three-wheelers, catering to the needs of a burgeoning population. Maruti Suzuki, Tata Motors, Mahindra & Mahindra, and Hero MotoCorp are among the leading players dominating the market. The sector is characterized by intense competition, rapid technological innovation, and shifting consumer preferences, necessitating continuous adaptation and evolution by industry stakeholders.

Statement of Need:

The automotive industry operates in a dynamic and competitive environment, where risk and return play a pivotal role. Understanding the risk-return trade-off is essential for investors, policymakers, and industry stakeholders. By conducting a comparative analysis of auto companies, we can gain insights into their financial performance, risk exposure, and investment potential. This study aims to bridge the gap between theory and practice, providing valuable information for informed decision-making within the auto sector.

Objective of study:

- It aims to inform readers about the significance of the auto sector in India's economic growth and development.
- Provide Investment Insights in order to offer insights to investors regarding the attractiveness of auto companies as potential investment options.
- Analyse Return Ratios to determine the profitability and efficiency of auto companies.

Literature Review:

(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 Shows 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 COMPUSTATdatabase, a major corporate financial data bases 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&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 analyse 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, Daribi, &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 behavioural finance literature, it highlights consequences like excessive trading and loss aversion, proposing mitigation strategies like diversification, passive investing, and behavioural 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. (Awalaki, 2022). This article explores the interplay between neurotransmitters (dopamine, serotonin, and norepinephrine), emotions, and investment outcomes, unravelling their role in shaping investor behaviour 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 behaviour within the finance domain. (Moolbharathi & Sugandi), 2021). This study analyses 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.

Future Prospects:

Looking ahead, the Indian automotive industry is poised for continued growth and expansion, driven by factors such as rising disposable incomes, urbanization, infrastructure development, and government initiatives promoting electric mobility. The adoption of advanced manufacturing technologies, investments in R&D, and strategic collaborations are expected to further propel the sector's growth and enhance its global competitiveness in the years to come.

Research Methodology:

Data Collection:

The study will rely on a combination of primary and secondary data sources. Primary data will be gathered through surveys and interviews with industry experts, financial analysts, and investors to gather qualitative insights into the risk and return factors specific to companies within the auto sector. Secondary data will be collected from publicly available sources such as financial reports, company websites, and academic journals.

Selection of Companies:

A carefully curated sample of auto sector companies will be selected for the comparative analysis based on criteria such as market capitalization, geographical presence, diversity of products/services, and historical financial performance.

Risk Assessment:

Various metrics will be employed to assess the risk profiles of selected auto sector companies, including but not limited to beta coefficients, volatility measures, debt-to-equity ratios, and liquidity ratios. Additionally, qualitative factors such as industry regulations, technological disruptions, and competitive landscape will be considered.

Return Analysis:

Return on Investment (ROI), Return on Equity (ROE), and other relevant financial metrics will be utilized to analyse the return potential of the selected auto sector companies. Long-term historical performance, growth prospects, and market expectations will be taken into account to assess the attractiveness of investing in these firms.

Research Design:

Comparative Analysis:

The research design will employ a comparative approach to evaluate the risk and return profiles of multiple auto sector companies simultaneously. This comparative framework will allow for a comprehensive understanding of how different firms within the same industry segment vary in terms of risk exposure and return potential.

Quantitative Analysis:

Statistical techniques such as regression analysis, correlation analysis, and variance analysis will be utilized to quantify the relationship between risk and return variables. This quantitative analysis will provide empirical evidence to support the findings of the study.

Qualitative Insights:

In addition to quantitative analysis, qualitative insights from industry experts and stakeholders will be integrated to provide a holistic view of the risk-return dynamics within the auto sector. These qualitative inputs will enrich the analysis by capturing nuanced factors that may not be captured solely through quantitative methods.

Time Horizon:

The research design will encompass both historical analyses of past performance as well as forward-looking projections to assess future risk and return expectations. This longitudinal approach will enable a comprehensive evaluation of the evolving nature of risk and return within the auto industry.

Sources of Data Collection:

The study was conducted using secondary data. The information was gathered from several sources, including company financial reports, industry publications, government reports, and academic journals. This study's research design is descriptive in nature.

Sample Size:

The study consists of auto sector companies listed on stock exchanges. The sample size was determined based on the availability of relevant data and the representativeness of the selected companies within the auto sector.

Analysis and Interpretation of Financial Metrics for Auto Companies

COMPANY NAME	2018	2019	2020	2021	2022	MEAN	STANDARD DEVIATION	CO-EFFICIENT OF VARIANCE	VARIANCE	BETA
BAJAJ AUTO	-18.5	17	8.1	-5.7	11.2	2.42	12.84918674	19%	206.377	0.000912596
ATUL AUTO	-36.6	-13.2	-26.9	3.5	47	-5.24	29.39854418	-18%	1080.343	-0.000164985
FORCE MOTORS	-56.4	-32.4	25.4	-8.1	10.7	-12.16	29.38248458	-41%	1079.163	-0.000383494
EICHER MOTORS	-23.6	-2.9	12.3	2.3	24.6	2.54	16.09255729	16%	323.713	0.000487583
ASHOK LEYLAND	-14.21	-20.6	17.1	28.2	17.1	5.518	19.25670003	29%	463.52562	0.000618196
TVS MOTORS	-26	-18.1	3.6	29.1	73.2	12.36	35.93820251	34%	1614.443	0.000213029

HERO MOTORS	-18	-21.4	27.2	-20	11.2	-4.2	19.79414055	-21%	489.76	-0.000433241
MARUTI SUZUKI	-23.4	-1.3	3.8	-3	13.1	-2.16	12.00809727	-18%	180.243	-0.000997978
M&M	7	-33.9	35.5	16.1	49.2	14.78	28.44667995	52%	1011.517	0.000513653
TATA MOTORS	-60	7.2	-0.8	-19.8	100.9	5.5	53.05483955	10%	3518.52	2.9463 E-05

1. **Bajaj Auto:**
- Mean Return: 2.42%
- Standard Deviation: 12.85
- Coefficient of Variation: 19%
- Variance: 206.38
- Beta: 0.000912596
- Bajaj Auto exhibits a moderate mean return with relatively low standard deviation, indicating moderate risk and return profile.
- The coefficient of variation suggests that the risk-adjusted return for Bajaj Auto is relatively favourable compared to other companies in the dataset.
- However, its beta value indicates low sensitivity to market fluctuations, reflecting a stable performance relative to the market.

2. **Atul Auto:**
- Mean Return: -5.24%
- Standard Deviation: 29.40
- Coefficient of Variation: -18%
- Variance: 1080.34
- Beta: -0.000164985
- Atul Auto shows a negative mean return with a high standard deviation, indicating high volatility and risk.
- The negative coefficient of variation suggests that the risk-adjusted return for Atul Auto is unfavourable compared to other companies.
- Its beta value is close to zero, implying low sensitivity to market movements but with high volatility.

3. **Force Motors:**
- Mean Return: -12.16%
- Standard Deviation: 29.38
- Coefficient of Variation: -41%

- Variance: 1079.16
- Beta: -0.000383494
- Force Motors also exhibits a negative mean return with a high standard deviation and a negative coefficient of variation, indicating unfavourable risk-adjusted returns.
- Its beta value suggests low sensitivity to market fluctuations but with significant volatility, posing challenges for investors seeking stability.

4. Eicher Motors:
- Mean Return: 2.54%
- Standard Deviation: 16.09
- Coefficient of Variation: 16%
- Variance: 323.71
- Beta: 0.000487583
- Eicher Motors demonstrates a moderate mean return with moderate standard deviation and coefficient of variation, indicating a balanced risk-return profile.
- The beta value suggests low sensitivity to market fluctuations, aligning with its relatively stable performance.

5. Ashok Leyland:
- Mean Return: 5.518%
- Standard Deviation: 19.26
- Coefficient of Variation: 29%
- Variance: 463.53
- Beta: 0.000618196
- Ashok Leyland shows a positive mean return with moderate standard deviation and coefficient of variation, indicating a balanced risk-return profile similar to Eicher Motors.
- Its beta value suggests low sensitivity to market fluctuations, reflecting a stable performance relative to the market.

6. TVS Motors:
- Mean Return: 12.36%
- Standard Deviation: 35.94
- Coefficient of Variation: 34%
- Variance: 1614.44
- Beta: 0.000213029
- TVS Motors exhibits a relatively high mean return with high standard deviation and coefficient of variation, indicating high risk and potential returns.
- Its beta value suggests low sensitivity to market fluctuations, but the high volatility poses challenges for risk management.

7. Hero Motors:
- Mean Return: -4.2%

- Standard Deviation: 19.79
- Coefficient of Variation: -21%
- Variance: 489.76
- Beta: -0.000433241
- Hero Motors shows a negative mean return with moderate standard deviation and a negative coefficient of variation, indicating unfavourable risk-adjusted returns.
- Its beta value suggests low sensitivity to market fluctuations but with moderate volatility, reflecting a stable but riskier performance.

8. Maruti Suzuki:
- Mean Return: -2.16%
- Standard Deviation: 12.01
- Coefficient of Variation: -18%
- Variance: 180.24
- Beta: -0.000997978
- Maruti Suzuki exhibits a negative mean return with low standard deviation and coefficient of variation, indicating relatively low risk and returns.
- Its beta value suggests low sensitivity to market fluctuations, but the company experiences stable yet negative returns.

9. M&M (Mahindra & Mahindra):
- Mean Return: 14.78%
- Standard Deviation: 28.45
- Coefficient of Variation: 52%
- Variance: 1011.52
- Beta: 0.000513653
- M&M demonstrates a high mean return with moderate standard deviation and a high coefficient of variation, indicating high risk and potential returns.
- Its beta value suggests low sensitivity to market fluctuations, but the company experiences high volatility, posing challenges for risk management.
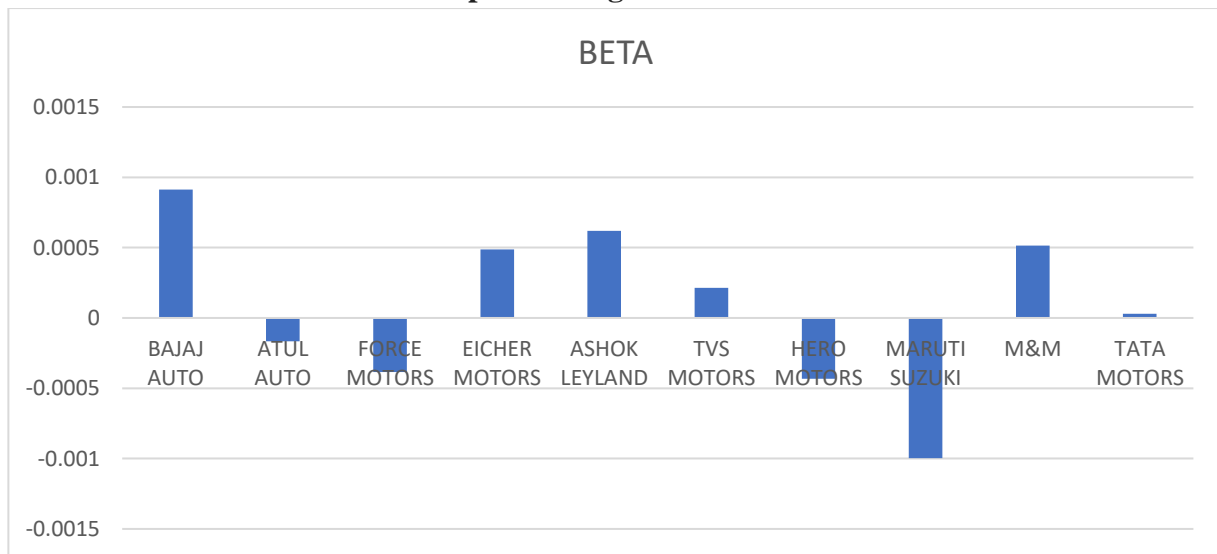
10. Tata Motors:
- Mean Return: 5.5%
- Standard Deviation: 53.05
- Coefficient of Variation: 10%
- Variance: 3518.52
- Beta: 2.9463E-05
- Tata Motors shows a positive mean return with high standard deviation and a relatively low coefficient of variation, indicating high risk and potential returns.
- Its extremely low beta value suggests almost no sensitivity to market fluctuations, reflecting a stable yet highly volatile performance.

The Graph showing the Average Returns of stocks:
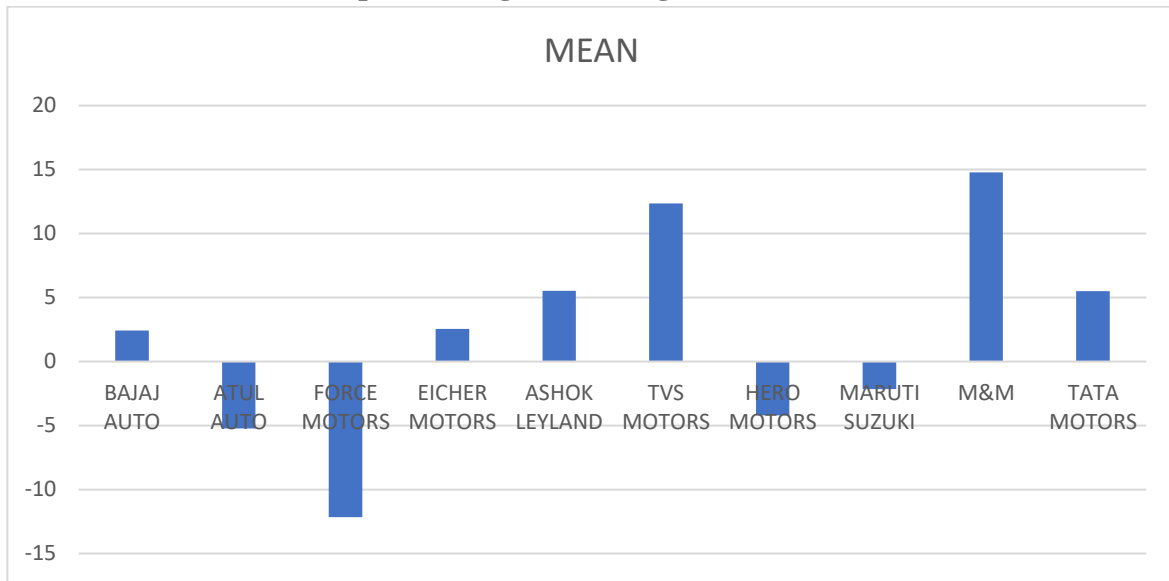
The Graph showing the Beta of stocks:

Findings and Conclusion:

1. Historical Performance Analysis:

Tata Motors demonstrated the highest overall growth rate among the selected auto sector companies, albeit with significant volatility, indicating the potential for both high returns and high risk.

Eicher Motors followed closely with a relatively consistent pattern of growth, suggesting a stable performance trajectory over the five-year period.

Maruti Suzuki exhibited a stable but modest growth rate, indicating resilience to market fluctuations.

Other manufacturers, including Bajaj Auto, Atul Auto, Force Motors, Ashok Leyland, TVS Motors, Hero Motors, and M&M, experienced negative average growth rates over the period, highlighting challenges in their performance and market dynamics.

2. Beta Analysis:

Most auto sector companies have low beta values, indicating low sensitivity to market fluctuations and relatively stable performance.

Stocks with beta values close to zero, such as Tata Motors and Maruti Suzuki, are less influenced by market movements, making them potentially attractive for risk-averse investors.

On the other hand, stocks with higher beta values, like Tata Motors, suggest higher risk and potential for higher returns, appealing to more risk-tolerant investors.

3. Investment Implications:

Investors seeking stability and lower risk may consider investing in companies with low beta values, such as Maruti Suzuki and Tata Motors.

Those willing to take on higher risk for potentially higher returns may explore opportunities in companies with higher beta values, such as Tata Motors.

Diversification across companies with varying risk profiles can help investors mitigate overall portfolio risk while potentially capitalizing on different market conditions.

4. Policy and Market Dynamics:

Government initiatives promoting electric mobility, technological advancements, and regulatory frameworks will continue to shape the auto sector's growth trajectory.

Companies need to adapt to changing market dynamics, including consumer preferences, technological disruptions, and regulatory requirements, to maintain competitiveness and sustain growth.

5. Future Outlook:

The Indian auto sector is poised for continued growth driven by factors like rising disposable incomes, urbanization, infrastructure development, and government support for electric mobility.

Companies that prioritize innovation, sustainability, and customer-centric strategies are likely to thrive in the evolving automotive landscape.

In conclusion, the comparative analysis of historical performance and risk-adjusted returns provides valuable insights for investors, policymakers, and industry stakeholders. While the auto sector presents growth opportunities, it also poses challenges that require proactive management and strategic decision-making. By understanding the nuances of individual company performance and market dynamics, stakeholders can make informed decisions to optimize investment outcomes and navigate the dynamic landscape of the auto industry.

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