

Navigating Uncertainty: The Impact Risk Profile of India's Automobile Industry during COVID-19

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Abstract

This study aims to assess the financial stability of the top ten firms in the Indian automobile sector by analyzing their annual turnover rates over the research period from 2013 to 2023. The primary objective is to examine business risk and firm-specific risk resulting from shifts caused by a rapidly changing business environment. The study also seeks to identify the types of businesses that pose the greatest threat to the overall business environment. To achieve these goals, the return on capital employed (ROCE) was used to assess the level of business risk. In contrast, the capital productivity ratio (CPR), cost structure ratio (CSR), and liquidity ratio (LR) were used to assess company-specific risk. The Gini Coefficient of Concentration was employed to determine the susceptibility of companies to the dynamic nature of the commercial environment. The Altman's Z-score and the Ohlson O-score were calculated to assess the financial health and risk profiles of the selected firms. The Sustainable Growth Rate (SGR) was calculated to help corporations avoid financial difficulties and prevent over-leveraging. Additionally, a Pearson correlation coefficient and a t-test were conducted to determine the degree of correlation between Business Risk and Company-Specific Risk. Hence, resulting that the different categories of risk do not significantly differ among the majority of the organizations we examined here. On the other hand, one can see the complete reverse when it comes to the risk of liquidity.

Keywords

Automobile Industry, COVID-19, Financial Stability, Risk and Return, Z-score.

INTRODUCTION

Over time, the commercial environment has witnessed a surprising number of rapid changes. The globalization of the corporate world has resulted in exponential growth in the level of competition that exists between companies, sectors, and nations [1] [2]. The LPG model of New Economic Policy, implemented in India in 1991, had a significant impact on the country's commercial sectors. From 2019 to 2020, the threat posed by COVID-19 was significant, impacting both people's lives and the global economy. The policy of Demonetization in 2016 had a huge influence on the Indian businesses and the whole economy. From 2019 to 2020, COVID-19 posed a significant challenge. Due to these rapid changes and increasing competition, the risk profile of companies across various business sectors is becoming more severe and evolving in nature. One of the major business sectors in India, the automobile industry, is not exempt from these challenges. It is crucial to address the issues facing this industry, given its significant role in the Indian economy [3] [4].

No company can avoid facing risk, as it is an inherent aspect of business operations. However, to manage risks effectively and ensure continued growth, an organization must understand its risk profile. Upon examining the origins of business risk, it becomes clear that the dynamic business environment is a major contributing factor. This becomes apparent when considering changes in government policy, advancements in technology, significant global political

events, climate shifts, public health issues, and various other factors contributing to unprecedented shifts in the business environment, leading to business uncertainty [5] [6].

The Indian automobile industry is one of these industries that has experienced nearly all of these changes in its operating environment over the last decade. Changes resulting from new economic policies, the GST system, currency demonetization, updates in pollution control regulations, and, most recently, the COVID-19 pandemic are just a few examples of the various significant shifts that have occurred. Looking at the past ten years in particular, we can see that these shifts occurred at a lightning-fast pace and had a substantial impact on the sector as a whole. Given this context, conducting a risk assessment of the businesses within this industry is highly pertinent and timely. Additionally, appraising these companies' financial health in light of their evolving risk profiles is crucial and should not be overlooked [7].

Thus, the research paper is organized as follows to achieve the research objectives: (a) review of the previous studies giving insight into our research work, (b) framing of the objectives, (c) research methodology and model description, (d) findings & their analysis, (e) conclusion and constraints, and finally references of the study.

BIRD'S EYE VIEW

The COVID-19 pandemic has had profound effects on global industries, with the automobile sector being particularly vulnerable. This literature review examines the

impact of COVID-19 on the risk profile of India's automobile industry, drawing from various studies and reports to provide a comprehensive understanding of the challenges faced and the strategies adopted by this sector during the pandemic. Therefore, it examined the risks faced by firms and their overall financial health through the lens of the Sustainable Growth Rate (SGR). They defined SGR as the rate at which a company's sales and assets could grow without altering its equity and capital structure. Their study concluded that private companies and financially troubled firms often have limited or no access to financing markets. Using the SGR formula, they determined that businesses with access to financial markets must secure new capital to achieve sales growth exceeding their SGR [8] [9] [10] [11] [12] [13] [14]. Further, the researchers concluded that there is a detrimental connection between leverage and future firms. The unfavorable connection holds even for companies that have relatively low Tobin's q ratios. As a result, the development of companies with excellent investment prospects is not hindered by leverage, whereas the development of companies with low growth opportunities is negatively associated with leverage [15]. The author developed a consolidated theoretical framework as a mentor for making decisions on financial risk management. His concept was founded on two fundamental ideas that determine how leverage should be used in companies or portfolios. The restrictions were not limited to normal distributions of returns; rather, they applied equally effectively to atypical distributions of results as well. His notion is a good candidate for applying portfolio standard deviation or value at risk [16]. The study noted that warning signs of an imminent company failure are often evident long before the formal declaration of bankruptcy, whether it be through reorganization or liquidation. The research findings demonstrated that the Z score model could accurately predict the impending failure of firms by precisely identifying the challenging financial situations of the businesses selected for the study. These organizations were chosen because they were suitable candidates for the research. Furthermore, the study provided additional evidence of a link between weak corporate governance and the collapse of businesses [17] [18]. Similarly, the researchers mentioned in [19] [20] evaluated the financial state of India's automobile industry and examined the effectiveness of Altman's Z score model in predicting financial hardships for companies in this sector. The study covered the years 2003–2004 and 2009–2010. It was found that the value of the Z score declined after 2007-2008, which coincided with the end of the global recession, a surprising finding for the researchers. This decline suggested that the overall financial position of the automobile industry in India might lead to the imminent bankruptcy of some corporations. In addition to this, the financial impact on seven major automakers from 2001-2002 to 2010-2011, encompassing a range of sizes from small to large companies, are examined. The study considered eleven distinct financial indicators, which were subsequently grouped into four categories: managerial efficiency, leverage,

profitability, and liquidity. This categorization aimed to reduce observable risk and financial performance volatility, a conclusion reached after thorough analysis [21] [22]. Moreover, to streamline financial ratios that accurately reflect the economic state of India's automobile industry. Ratios from audited financial reports were analyzed using factor analysis from 1999-2000 to 2013-2014. The study revealed that only three ratios significantly impact the profitability of the vehicle sector [23]. Additionally, [24] explored various aspects of corporate entities, including bankruptcy and financial troubles, presenting newer perspectives that can be distinguished from older viewpoints by both fundamental contrasts and similarities. This literature integrates the concepts of corporate entities and bankruptcy into a unified framework. The study highlighted the sociological, psychological/ behavioral, public policy, financial, political, and legal factors that influence the formation and growth of corporate organizations, which can sometimes lead to financial difficulties. The researchers developed a model called partial contracts to analyze how the control rights of unconnected financings impact firm expansion. This issue arises when both management and investors have the potential to divert business resources for personal gain before repaying loans. Their empirical research indicated that leverage is negatively associated with both growth and profitability [25]. Further, the financial struggle in the United States is deeply rooted in household contexts. The research aimed to understand the demographic and economic characteristics of individuals who declare bankruptcy, the choices that lead to their financial difficulties, the repercussions of bankruptcy, and the effectiveness of the insolvency system in helping them emerge from debt and transition into the middle class. The article provides a concise introduction to consumer bankruptcy for non-lawyers, explaining its benefits as a lens for studying financial hardship. Additionally, it emphasizes the advantages of using bankruptcy as a research tool [26]. On the contrary, the authors studied the association between corporate social performance (CSP) and financial risk using a panel data sample of 500 U.S. companies from 1992 to 2009. Their analysis revealed that Corporate Social Responsibility (CSR) is favorably related to financial risk. Furthermore, they found that investing in companies with varying levels of social and environmental performance does not yield a net gain or loss for investors. The study highlights that the relatively unstable conditions of the financial market significantly contribute to the CSP-risk linkage [27] [28]. Furthermore, the factors influencing the equity price risk of non-financial enterprises were investigated. They found that financial risk, represented by stock price volatility, was 15% for intermediary companies and had steadily decreased over the past three decades. Their analysis revealed that economic risk factors were the sole contributors to any fluctuations in equity discrepancies, which helps explain the financial difficulties faced by the non-financial sector between 2007 and 2009 [29]. It was asserted that business expansion is

crucial for maintaining performance and avoiding financial difficulties. The research indicated that a sustainable growth rate positively correlated with the level of financial leverage a company employs. Additionally, the study found that higher leverage levels were associated with increased gearing and risk for the organization. However, excessive leverage can lead to significant challenges, particularly in debt management [30] [31] [32] [33]. Moreover, an analysis of the risk and return of various Indian stocks was conducted. Their report emphasizes the importance of considering both risk and potential reward in investment decisions. They suggest that long-term investors would find it easier to profit from the market if it were less volatile. These assessments can help long-term investors determine when stock prices might rise or fall. The study also found that investments in the banking and automotive industries yield lower returns [34]. Similarly, an analysis of the risk and return of CNX Bank Nifty stocks in relation to each other was executed. Their study focused on evaluating financial market risk and return. They gathered secondary data on the 12 members of the NIFTY bank index. They examined the market return and risk of individual stocks, comparing the results across different banks while also considering other economic factors [35]. However, a study aimed at identifying the indicators of financial distress among companies in Pakistan was organized. They used various financial indicators to examine aspects such as profitability, liquidity, leverage, and cash flows. Additionally, they considered the size of each firm and its standard deviation of stock returns as significant market factors (SIG). The study utilized logit regression to forecast the probability of financial distress [36] [37]. In the case of the banking sector, it was emphasized that banks are crucial to a nation's economic and financial system. Any decline in their performance or stability significantly impacts not only the banking sector but also dependent industries. The study's Altman Z score results show Yes Bank, Axis Bank, and HDFC Bank in the "financial distress zone," while IndusInd Bank is in the "safe zone," and others are in the "grey zone." Regression analysis on BSE 30-listed banks reveals that most banks' ROA negatively affects their sustainable growth rate while their profit margins are positively significant [38]. In addition to this, companies will go to great lengths to avoid insolvency, as it is critical to their survival. An Artificial Neural Network model was used to analyze the Return on Assets (ROA) and Return on Equity (ROE) of various Indian public and private sector banks. This model can predict the likelihood of a bank filing for bankruptcy with high accuracy. The analysis revealed that public sector banks were in a dire situation, with most having a high percentage of non-performing assets (NPA), a rate expected to rise. The increasing NPAs prompted the Reserve Bank of India (RBI) to implement new rules, leading to a wave of consolidation across India's public banking sector [39]. Furthermore, the impact of COVID-19 on the performance of the automobile sector listed on the National Stock Exchange was diagnosed. The study's data was collected over six months, from October

7, 2019, to March 19, 2020. Using GARCH and RSI models, the study found that an unexpected decrease in stock prices affected the production processes of industries and influenced the stock market throughout the investigated period. They concluded that CSR significantly positively impacted CFP, with a stronger correlation for companies maintaining higher consistency. The study suggests that to comply with state obligations, enterprises should engage in CSR and simultaneously strive to enhance their stability to strengthen the role of social responsibility in improving financial performance [40].

Thus, the COVID-19 pandemic has significantly impacted the risk profile of India's automobile industry, highlighting vulnerabilities in financial health, supply chains, and operational capabilities. However, the crisis has also spurred strategic adaptations and policy interventions aimed at enhancing the industry's resilience. As the sector navigates the post-pandemic landscape, a focus on sustainability, digital transformation, and robust risk management practices will be essential for ensuring long-term stability and growth.

RESEARCH OBJECTIVES

The study has the following main objectives.

1. To evaluate and research the business risk and company-specific risk of the selected firms in response to the rapidly shifting business environment.
2. The goal is to determine how the chosen organizations' business risks relate to their unique, company-specific risks.
3. In light of the COVID-19 pandemic crisis, evaluating the financial stability of the companies is crucial.

RESEARCH METHODOLOGY AND MODEL DESCRIPTION

For this research, we focused on the top ten businesses in the Indian vehicle sector based on their annual revenue during our research period from 2013 to 2023. The average turnover has been considered the basis for selection, as it is the most evident quantitative indicator of the company's activity size and its success in maintaining stability. As indicated by [41], "sales represent the ability of a business to cover its expenses, establish stable operations, and provide opportunities for growth. Sales appear as the top line number on any financial statement and typically indicate the health of the organization".

This study relied on secondary sources of data gathered from the annual reports of the selected organizations. These reports were accessed from the CAPITALINE database, the companies' official websites, and Moneycontrol.com.

For this study, we have utilized the approach outlined by Altman's Z-score model [42] [43]. This model employs various balance sheet figures and income amounts to effectively estimate the level of financial difficulty a corporation may be experiencing. The Z-score model combines five different financial ratios to assess the likelihood of businesses. The following is the numerical

presentation and description of the Z-score model:

$$Z\text{-Score} = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E,$$

Where,

Table 1. Describing Z-score Model

| Represents | Formula | Description |
|------------|--|--|
| A | Working Capital/Total Assets | Measuring companies' liquidity and operational efficiency |
| B | Retained Earnings/Total Assets | Measuring companies' profitability and their retained earnings |
| C | EBIT/Total Assets | Measuring companies' operational performance & efficiency for generating profits |
| D | Market value of Equity/Book value of Total Liabilities | Measuring companies' financial stability |
| E | Sales/Total Assets | Evaluating the usage of companies' assets efficiently |

Source: Author's Compilation

FINDINGS AND THEIR ANALYSIS

Table 2. Rank of Business Risk of the Selected Companies in the Automobile Industry

| Company | Business Risk | Rank |
|--------------------------|---------------|------|
| Maruti Suzuki India Ltd. | 56.655 | 2 |
| Hero MotoCorp Ltd. | 0.156 | 10 |
| Tata Motor Ltd. | 4.335 | 4 |
| Mahindra & Mahindra Ltd. | 20.912 | 3 |
| Bajaj Auto Ltd. | 197.675 | 1 |
| Ashok Leyland Ltd. | 1.986 | 6 |
| Sundaram Clayton Ltd. | 0.978 | 8 |
| TVS Motor Company Ltd. | 0.756 | 9 |
| Eicher Motor Ltd. | 1.178 | 7 |
| Force Motor Ltd. | 2.116 | 5 |

Source: Author's Compilation

Table 3. Calculation of Spearman's Rank correlation coefficient

| Particulars | r-square | t-calculated | Tabulated Value | Decision |
|---|----------|--------------|-----------------|---------------|
| Degree of Association between Business Risk and Capital Productivity Risk * = | -0.157 | -0.438 | 2.236 | Insignificant |
| Degree of Association between Business Risk and Cost Structure Risk* = | -0.199 | -0.556 | 2.236 | Insignificant |
| Degree of Association between Business Risk and Liquidity Risk* = | 0.273 | 0.796 | 2.235 | Insignificant |

Source: Author's Compilation

Utilizing Spearman's correlation coefficient method, an effort has been made in Table 3 to analyze the degree of the link that exists between business risk and each of the company-specific risk components of the businesses that were selected. This evaluation was carried out using the firms that were chosen. This was done in order to determine the level of risk that is associated with the business. A t-test was carried out in order to determine whether or not these

coefficients have a statistically significant impact on the overall results.

According to the data presented in Table 3, the coefficient of correlation between BR (Business Risk) and CPR (Capital Productivity Risk) is -0.15, while the correlation between BR and CSR (Cost Structure Risk) is -0.19. However, none of these indicators are significant at the 5% level, suggesting that the different categories of risk do not significantly differ

among the majority of the organizations we examined. On the other hand, one can see the complete reverse when it comes to the risk of liquidity. When looking at BR and LR (Liquidity Risk), a positive correlation, i.e., 0.24, is shown, which is not very strong. Thus, the estimated correlations do not reach the required level of significance.

CONCLUSION

The most noticeable and unavoidable aspect of our everyday lives is change, and the economic environment is no exception to this rule. Alterations to business plans are necessary in our country and all across the world as a result of the constantly shifting nature of the business environment. This rapid change in a number of aspects of the company's environment elevates the operational and financial risk, which is also referred to as the total business risk. This, in turn, has a substantial impact on the profitability of the investment projects that are now underway. According to the findings of our research, we have concluded that in order to maintain and enhance the growth opportunities of business houses, it is necessary to investigate the potential investment avenues available in new areas of competition in order to survive, thrive, and be successful in the new normal.

CONSTRAINTS OF THE STUDY

We are well aware of the restrictions that apply to our study. In the first place, the research period only covers ten years, which makes it impossible to draw clear conclusions from the data. Second, our research relies on secondary data, which aren't exempt from the problems associated with using them. Thirdly, additional statistical methods can be utilized to validate the reliability of our findings. Fourthly, we have only considered ten companies, which means that we cannot draw any conclusions on the entire industry. Finally, there is room for comparison with different approaches and other sectors. When we continue our investigation in the future, we will undoubtedly make sure to cover all of the topics that were left out here.

Acknowledgements

Nidhi Mittal is currently pursuing a Ph.D. in finance as a recipient of the UGC's Junior Research Fellowship at Haryana School of Business, Guru Jambheshwar University of Science & Technology, Hisar. She holds a Master's degree in commerce, and her area of interest is corporate finance. Her paper "Voluntary Disclosure of Financial and Non-Financial Information: A Literature Review" was published in an edited book titled *Florilegium-Management Theory, Research, and Practices* in February 2023 & presented the paper "To study the COVID-19 spread in India and its impact on GDP- Insights from the SIR Model" at an International Conference in 2022. The paper titled "Does R&D Intensity Affect the Firms' Performance?: A Meta-Analytical Review" was published in an Emerald edited book named- *Finance Analytics in Business* in June 2024.

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