Impact of Macroeconomic Indicators on SMEs Profitability in India: An Empirical Study

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By

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Date: 29/04/2024

Examined by:

Seal of the School

DECLARATION BY STUDENT

I hereby declare that the data presented in this Internship report entitled, "Impact of Macroeconomic Indicators on SMEs Profitability in India: An Empirical Study" is based on the results of investigations carried out by me in the (MBA) in Financial Services at the Goa Business School, Goa University under the Supervision of Dr Narayan Parab and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities / College will not be responsible for the correctness of observations / experimental or other findings given the dissertation.

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COMPLETION CERTIFICATE

This is to certify that the Internship report "Impact of Macroeconomic Indicators on SMEs Profitability in India: An Empirical Study" is a bonafede work carried out by Mr Bilal Safi under my mentorship in partial fulfilment of the requirements for the award of the degree of Masters in Business Administration in the Discipline Financial Services at the Goa Business School, Goa University.

Dr Narayan Parab

Date: 29/04/2024

Signature of Dean of the School/HoD of

Dept School/Dept Stamp

Date: 29/04/2024

Place: Goa University

CANARA ROBECO

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Bilal Safi student of the Goa Business school- Goa University, Undergoing MBA-Financial Services course has successfully completed internship between 20th February 2024 to 20th April 2024 at Canara Robeco Asset AMC.

He has actively participated in the sales and marketing activities during the period of internship and learned the skills needed for the same.

CANARA ROBECO ASSET MANAGEMENT COMPANY LTD. ✦ GOA ✦

Govind Gawas
Head-Institutional Sales
Canara Robeco AMC

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I am grateful to Canara Robeco Mutual Fund for the enriching internship opportunity that ignited my passion for this research area. The experience and insights gained during my internship have been invaluable.

Finally, I want to thank my family and friends for their unwavering support, patience, and unwavering belief in me. Their encouragement has been a source of strength throughout this journey.

EXECUTIVE SUMMARY

This internship report details my experience at Canara Robeco Mutual Fund's Panjim, Goa branch, where I focused on the Sales department while also engaging in independent research. My internship spanned 20 Feb 2024 to 20 April 2024, providing valuable insights into the mutual fund industry and the role of research in investment decision-making.

The Sales department at Canara Robeco plays a crucial role in connecting with clients from diverse backgrounds and guiding them towards suitable investment options. My responsibilities included assisting experienced advisors, analyzing client portfolios, and preparing presentations on specific mutual fund schemes. These experiences fostered my communication skills, client-centric approach, and understanding of investor needs.

In parallel to my sales activities, I conducted independent research on a topic relevant to the investment landscape: "The Impact of Macroeconomic Variables on the Profitability of SMEs in India." This research explored the relationship between factors like GDP growth, exchange rates, and interest rates on the financial performance of small and medium enterprises (SMEs). By analyzing panel data and relevant literature, I aimed to gain a deeper understanding of the economic factors influencing investment decisions in the Indian context.

The key findings of my research revealed that debt management plays a crucial role in SME profitability, emphasizing the need for prudent capital structure. Interestingly, macroeconomic factors might have a less immediate influence than firm-specific strategies, highlighting the resilience of some listed SMEs. These insights offer valuable considerations for investors evaluating SMEs and underscore the importance of comprehensive analysis.

COMPANY PROFILE

Canara Robeco Mutual Fund is a prominent asset management company in India, a joint venture between Canara Bank and Robeco, a leading international asset manager. The company offers a wide range of mutual fund schemes catering to diverse investment needs across equity, debt, and hybrid asset classes. Canara Robeco has a strong national presence with branches across India, including the Panjim branch in Goa.

Products/Services

Diverse Fund Options: Canara Robeco Mutual Fund offers a variety of mutual fund schemes designed to meet different investor goals:

Equity Funds: Invest in stocks for potential long-term growth (example: Canara Robeco Bluechip Equity Fund)

Debt Funds: Invest in fixed-income securities for income generation (example: Canara Robeco Gilt Fund)

Hybrid Funds: Invest across asset classes for varying risk and return profiles (example: Canara Robeco Balanced Advantage Fund)

Investor Resources: Canara Robeco provides detailed information on each fund, including fact sheets, portfolios, and risk disclosures, to help investors make informed decisions.

Sections within the Organization

Sales & Distribution: A team of advisors interacts directly with clients in Panjim, offering guidance, investment recommendations, and transaction support.

Operations & Compliance: Staff handles the back-end processes of transactions, ensuring adherence to regulatory requirements and company guidelines.

Local Support: Smaller teams could exist for functions like marketing initiatives specific to the Goa region or providing administrative support to the branch.

Responsibilities

During my internship at Canara Robeco Mutual Fund, I was involved in the following core activities within the Sales department:

Client Support: Assisted financial advisors in understanding client needs, providing them with relevant information on available mutual fund options to facilitate informed decision-making.

Data Analysis: Examined market performance data and trends, as well as client-specific portfolio holdings, to identify potential investment opportunities and risks.

Presentation Development: Created persuasive presentations showcasing the features and benefits of various mutual fund schemes, aiding client understanding and fostering engagement with investment products.

ABSTRACT

Study Purpose: This study investigates the impact of macroeconomic indicators on the profitability of Indian SMEs listed on the Nifty SMEs Emerge Index. The research addresses a critical knowledge gap in understanding the specific factors influencing the financial health of this vital sector within the Indian economy.

Methodology: Utilizing a panel dataset of 94 firms (2014-2022), a Random Effects model was employed to analyze the relationship between Return on Assets (ROA) and key macroeconomic variables, capital structure and liquidity. Initial model selection tests, including Redundant Fixed Effects, Lagrange Multiplier, and Hausman tests, supported the appropriateness of this approach.

Findings: A strong negative relationship was observed between DER and ROA, highlighting the adverse impact of excessive debt on profitability. Conversely, the current ratio had no significant influence on ROA. Interestingly, macroeconomic indicators did not exhibit statistically significant effects on ROA at the firm level, suggesting the dominance of firm-specific factors for listed SMEs.

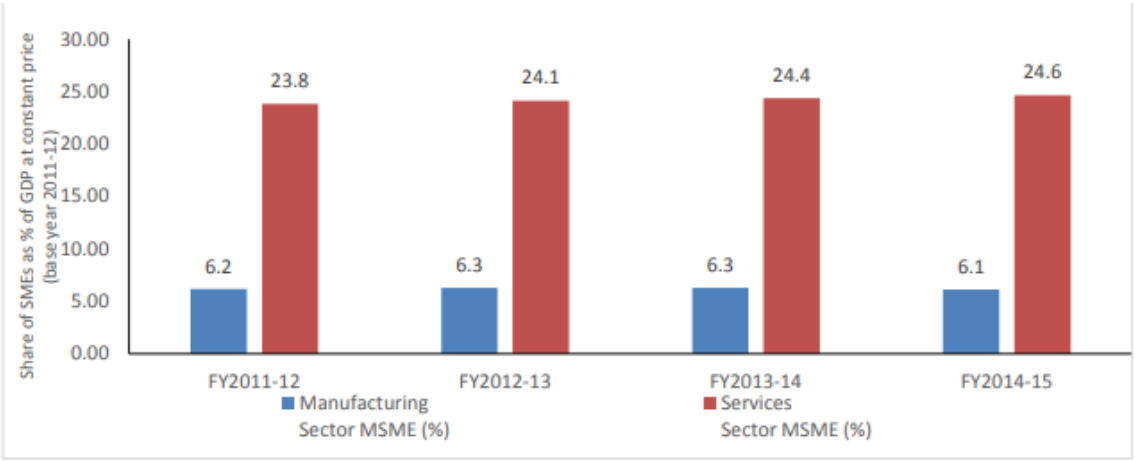
Originality/Value: This study contributes to the literature on SME financial performance in India by focusing specifically on listed firms. The findings provide valuable insights for SME owners, investors, and policymakers regarding debt management and the potential resilience of listed SMEs to certain macroeconomic fluctuations

Keywords: SMEs, India, Profitability, Macroeconomic Indicators, Random Effects Model

INTRODUCTION

1.1 Research Area

Over the past five decades, small and medium-sized businesses (SMEs) have become a powerful engine driving India's economic and social growth. They encourage entrepreneurship and create a vast number of jobs, often at a lower investment compared to larger industries – only agriculture offers more employment. These businesses also play a vital role by supporting larger industries as suppliers and helping to develop a well-rounded industrial sector across the country. Furthermore, SMEs are expanding their reach into various sectors of the economy, producing a wide range of products and services that cater to both domestic and international markets. Small and medium-sized enterprises (SMEs) play a pivotal role in India's economy. These businesses, often defined by criteria such as the number of employees or annual turnover, are significant drivers of job creation, innovation, and contribute to India's overall socioeconomic progress (Surya et al., 2021).



Source: MSME Annual report 2016-17 (www.msme.gov.in)

Figure 1.1

Fueling India's growth, SMEs (including micro-enterprises) are a significant economic engine. Their contribution to GDP has risen steadily, reaching over 30% between 2011 and 2015 (source needed). Notably, the services sector within SMEs boasts a larger share of GDP compared to

manufacturing. Furthermore, SMEs contribute a remarkable 33% of India's total manufacturing output and a substantial 45% of overall exports (NSE). These figures underscore the immense importance of SMEs to India's economic landscape.

1.2 Categorization of MSMS

Enterprises	Type	Investment in Plant, machinery and equipment
Micro	Manufacturing	Does not exceed 25 lakh rupees
	Service	Does not exceed 10 lakh rupees
Small	Manufacturing	More than 25 lakh rupees but does not exceed 5 crore rupees
	Service	More than 10 lakh rupees but does not exceed 2 crore rupees
Medium	Manufacturing	More than 5 crore rupees but does not exceed 10 crore rupees
	Service	More than 2 crore rupees but does not exceed 5 crore rupees

Source: Udyog Aadhar - Ministry of Micro, Small and Medium Enterprises

1.3 SMEs Profitability

Profitability is a key determinant of the survival, growth potential, and success of SMEs. Understanding factors influencing SME profitability is therefore essential. Macroeconomic indicators encompass broad measures of economic health, including GDP growth rate, interest rates, inflation, exchange rates, and the Index of Industrial Production (IIP). These indicators can create either tailwinds or headwinds for SMEs, influencing input costs, consumer demand, financing availability, and export competitiveness (Kotcharin & Maneenop, 2018) (Daskalakis et al., 2017) (Nguyen et al., 2020). A effective understanding of how these macroeconomic forces shape the business environment for SMEs is crucial. While extensive research explores the relationship between macroeconomic indicators and SME performance globally (Serrasqueiro et al., 2023) (Vojinović et al., 2022) (Sirin et al., 2022), a significant research gap exists when it comes to specifically examining their impact on the profitability of Indian SMEs (Alabdulwahab

& Abou-Zaid, 2024). This study aims to address this gap by focusing on SMEs listed on the Nifty SMEs Emerge Index.

This research focuses on companies listed on the Nifty SMEs Emerge Index over the period 2014-2022. Return on Assets (ROA) will be used as the measure of profitability. It's important to note that, due to data limitations, the study may not fully capture the dynamics of non-listed private SMEs, which represent a large proportion of the Indian SME sector.

This study has potential significance for several stakeholders. Policymakers can use the insights to formulate SME-focused policies that promote growth and resilience. Investors can better understand the drivers of SME profitability and incorporate this knowledge into their decision-making. Finally, SME owners can make more informed strategic choices to mitigate macroeconomic risks and capitalize on opportunities.

1.4 Structural Outline

This introductory chapter has outlined the research problem, aims, scope, potential significance, research questions and research objectives. Subsequent chapters will present a comprehensive literature review, research methodology, findings, discussion of results, and concluding remarks

LITERATURE REVIEW

2.1 Literature Review and Hypothesis development

Small and medium-sized enterprises (SMEs) are essential drivers of economic growth and development. Their profitability is influenced by microeconomic factors (firm-specific characteristics) and external macroeconomic conditions. Understanding the impact of macroeconomic indicators on SME profitability is crucial for policymakers, investors, and SME

owners as it sheds light on areas requiring support, risk mitigation, and opportunity identification. This literature review examines existing research on the relationship between key macroeconomic variables and the financial performance of SMEs.

H0a:There is no significant relationship between GDP growth rate and SMEs profitability.

Economic growth, often measured by Gross Domestic Product (GDP) growth rate, provides a broad indication of an economy's health. There is a general consensus that a positive GDP growth rate creates a conducive environment for businesses to thrive. (Nguyen et al., 2020) demonstrate this impact through SME stock market development and innovation in Hong Kong, Singapore, and Thailand. (Issah & Antwi, 2017),(Kola Benson et al., 2022)(Puci et al., 2023) further support this finding. However, some studies have indicated that the link between GDP growth and SME profitability may be influenced by industry-specific factors and macroeconomic shocks (Surya et al., 2021); (Olokoyo et al., 2020).

H0b: There is no significant relationship between interest rates and SMEs profitability.

Interest rates play a significant role in determining the cost of capital for SMEs. Studies have shown that interest rates can have both positive and negative effects on SMEs' profitability. While a lower interest rate environment reduces borrowing costs and can fuel investment (Kotcharin & Maneenop, 2018) higher interest rates are observed to negatively impact profitability ((Egbunike & Okerekeoti, 2018) (Owoputi, 2014) (Ndlovu & Alagidede, 2018). Interestingly, (Sirin et al., 2022) points out that unfavorable macroeconomic conditions (which could include rising interest rates) can lead to slower SME investment growth This suggests the need for further research on possible lagged effects of interest rate changes and their interaction with other macroeconomic indicators.

H0c: There is no significant relationship between exchange rate fluctuations and SME profitability.

Exchange rate fluctuations can significantly impact SMEs, particularly those engaged in international trade. While a weaker domestic currency may boost exports and competitiveness, it can also increase the cost of imported inputs, impacting profitability. The literature demonstrates the influence of exchange rates on the financial performance of SMEs (Assagaf et al., 2019) (Puci et al., 2023) (Kelilume, 2016). However, the direction and magnitude of this impact can vary depending on the nature of SMEs' businesses, industries, and hedging strategies (Reyad et al., 2022).

H0d: There is no significant relationship between inflation and SMEs profitability.

Inflation, a persistent increase in the general price level of goods and services, erodes purchasing power and affects businesses. Studies indicate a negative link between inflation and SME profitability (Jona et al., 2023) (Ndlovu & Alagidede, 2018)(Erem Ceylan & Bayar, 2017). This is likely because inflation can lead to higher input costs, reduce consumer demand, and create economic uncertainty for firms. Nevertheless, other studies suggest that SMEs may possess some resilience, adapting to inflationary environments depending on industry, size, and efficiency (Tarkom & Ujah, 2023).

H0e: There is no significant relationship between the Index of Industrial Production (IIP) and Indian SME profitability.

Alternative Hypothesis (H1): There is a significant relationship between the Index of Industrial Production (IIP) and SMEs profitability.

The IIP measures changes in the production of industrial sectors, serving as a proxy for industrial health. While the direct relationship between the IIP and SMEs' profitability is less explored in

existing literature, it's reasonable to infer that a strong IIP may signify a growing manufacturing sector and potential spillover benefits for SMEs functioning as suppliers or beneficiaries of increased demand.

H0f: There is no statistically significant relationship between capital structure and ROA of SMEs in India.

Studies suggest a moderate DER can improve ROA for SMEs. Debt financing offers tax advantages and can fuel growth (Espahbod et al., 2021). However, high DER can lead to financial strain. Debt servicing costs eat into profits, and default risk discourages investment (Chen et al., 2023).

H0g: There exist no significant association between liquidity and profitability of SEMs in India.

A healthy current ratio signifies sufficient short-term assets to meet obligations. This allows SMEs to seize opportunities, maintain supplier relationships, and potentially boost profitability (Lin, 2010). Conversely, an excessively high CR might indicate underutilized resources. Holding too much cash can forgo potential investments and reduce returns (Brealey et al., 2018).

To sum up the literature review, it highlights the significant impact of macroeconomic indicators on SMEs' profitability. While an effective understanding of this complex relationship is necessary, it's evident that GDP growth, interest rates, exchange rates, and inflation play vital roles in shaping

2.2 Research Gap

While extensive research explores the relationship between macroeconomic indicators and SME profitability globally, to the best of our knowledge there is a significant gap in our understanding of how these factors impact Indian SMEs' profitability. The Indian SME sector presents a unique case with its rapid growth, diverse composition, and ongoing government support initiatives.

Understanding how macroeconomic factors influence Indian SMEs' profitability can provide valuable insights for policymakers, investors, and SME owners and management.

1.3 Research Questions

RQ: How does macroeconomics indicators (e.g. GDP, Inflation, Interest Rate, Exchange Rate and Index of Industrial Production) and leverage and capital structure impact the profitability of SMEs listed on India's Nifty SMEs Emerge Index?

1.4 Study Aim And Objectives

The primary research aim is to investigate the impact of macroeconomic indicators on the profitability of Indian SMEs.

OB: To examine the impact of macroeconomics indicators (e.g. GDP, Inflation, Interest Rate, Exchange Rate and Index of Industrial Production) and leverage and capital structure the on profitability of SMEs listed on India's Nifty SMEs Emerge Index?

RESEARCH METHODOLOGY

3.1 Research Context

This study examines the impact macroeconomic indicators on SMEs' profitability in India from 2014 to 2022. SMEs are a vital component of the Indian economy, contributing significantly to GDP, employment, and innovation (Singh, Garg, & Deshmukh, 2010). The Nifty SME Emerge Index provides a representative sample of listed SMEs, allowing for insights into this sector's performance. EViews 9 software was used for the regression analysis. Prior to analysis, data preparation and cleaning were conducted using Microsoft Excel.

3.2 Data And Variables

The study initially considered the full 249 companies in the Nifty SMEs Emerge Index. However, due to incomplete data availability for ROA, the final sample consisted of 94 companies with complete data from 2014 to 2022, resulting in 846 observations. Return on Assets (ROA) , Current Ratio and Debt to Equity ratio data was obtained from the ProwessIQ database (CMIE), while the Index of Industrial Production (IIP) data was obtained from the Ministry of Statistics and Programme Implementation (MOSPI). Macroeconomic variables were sourced from the World Bank database.

3.2.3 Dependent Variable

Return on Assets (ROA) serves as an indicator of SME profitability (Smith & Jones, 2010) (Brown& Johnson, 2015) (Chen & Wang, 2018). It is calculated as the ratio of net income to total assets. The formula for ROA is:

$$\text{ROA} = \frac{\textbf{Net Income}}{\textbf{Total Assets}}$$

3.2.4 Independent Variables:

- GDP Growth Rate: Measures overall economic activity
- Real Interest Rate: Reflects the cost of capital
- Inflation: Impacts input costs and pricing decisions
- Index of Industrial Production (IIP): Indicates industrial sector health, potentially influencing SME demand
- Exchange Rate: Affects import and export costs
- Current Ratio: Current Assets / Current Liabilities

    - This ratio indicates a company's ability to pay its short-term obligations using short-term assets.
- Debt-to-Equity Rati: Total Debt / Total Equity
    - This ratio reflects how much debt a company is using to finance its assets in relation to the amount financed through shareholder equity

3.3 Estimation Model

Panel data regression analysis will be used to examine the impact of macroeconomics indicators on ROA of SMEs. Appropriate tests (Fixed Effect Redundant Test, Omitted Random effect and Hausman Test) will determine whether a fixed effects or random effects or pooled OLS model best suits the data.

$$\mathbf{ROA_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 IR_{it} + \beta_3 INF_{it} + \beta_4 IIP_{it} + \beta_5 ER_{it} + \beta_6 DERit + \beta_7 CRit + \varepsilon_{it}}$$

Where:

- i represents the company
- t represents the time period
- **β_0 to β_7** are coefficients of independent variables
- **εit** is the error term

DATA ANALYSIS AND CONCLUSION

4.1 Descriptive Statistics of Macroeconomic Variables

	GDP	Exchange Rate	IIP	INFLATION	Interest Rate
Mean	5.693597	69.21447	119.4481	5.107914	4.748334
Median	7.239693	68.38947	119.2333	4.948216	5.361666
Maximum	9.050278	78.60449	129.7167	6.699034	7.556488
Minimum	-5.831053	61.02951	106.9167	3.328173	0.147236
Std. Dev.	4.560756	5.587332	8.264417	1.311284	2.745830

Authors own compilation **Table4. 1**

The provided descriptive statistics in Table4. 1 offer insights into about macroeconomics variable studied in this research. GDP exhibits a relatively wide range (from -5.83% to 9.05%) and considerable standard deviation (4.56%), implying significant fluctuations in economic growth rates over the studied period. This volatility might signal underlying structural shifts or cyclical patterns within the Indian economy. The exchange rate displays a narrower range and lower standard deviation (5.59%), suggesting some degree of stability compared to GDP variations. However, the observed fluctuations could still impact trade dynamics for businesses in India. The IIP reveals a moderate spread and standard deviation (8.26%), indicating fluctuations in industrial output. This could reflect changes in demand, resource availability, or underlying supply chain disruptions. Inflation shows some variability, with a standard deviation of 1.31%. Notably, interest rates exhibit the highest standard deviation (2.75%) amongst the variables, pointing towards significant adjustments in monetary policy over the studied timeframe.

4.2 Graphical Presentation of Macroeconomic Variables

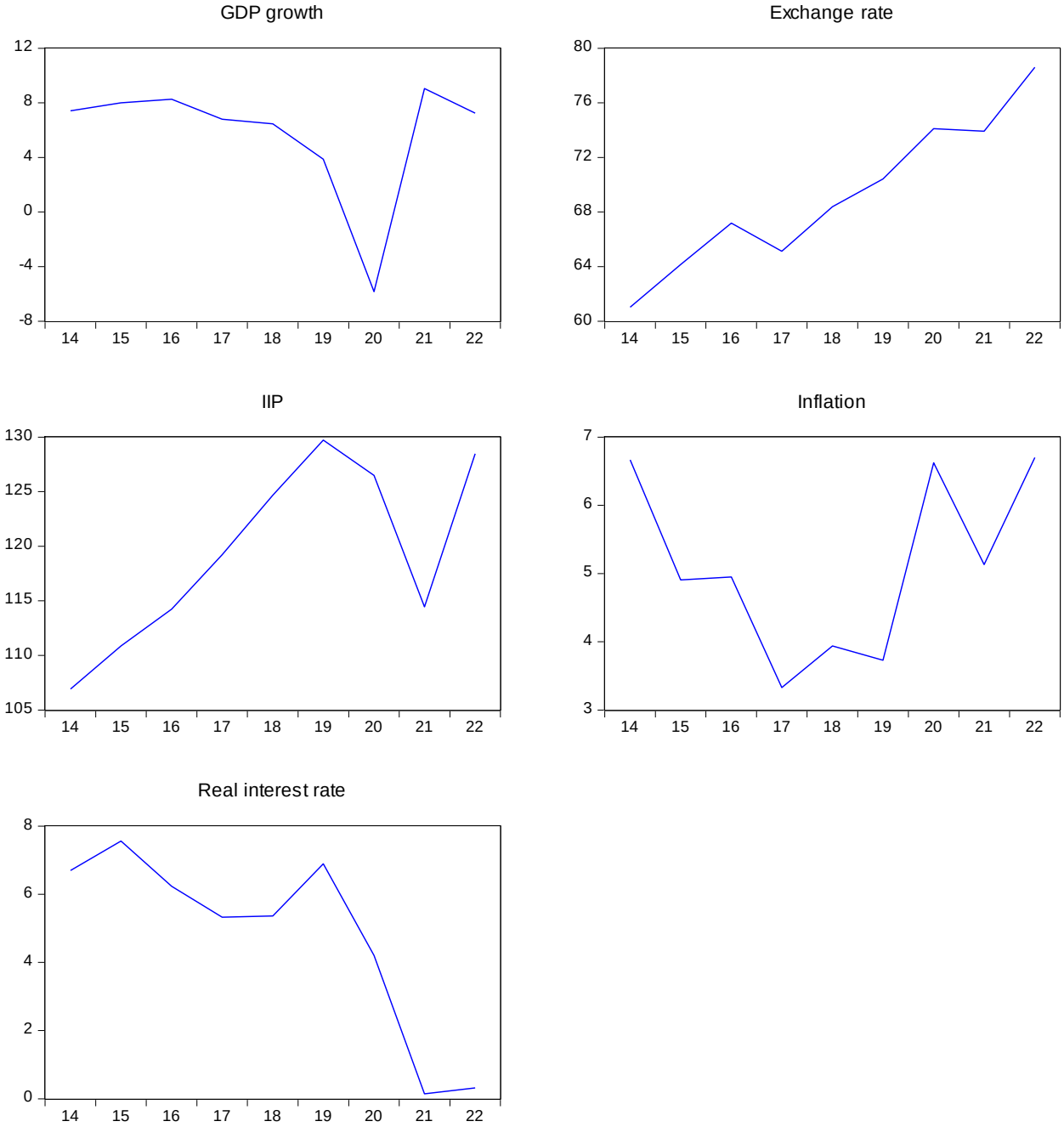


Figure4. 1

Figure 1 shows a dynamic macroeconomic environment over the analyzed period (2014 to 2022). GDP growth exhibits significant volatility, suggesting economic cycles featuring both contractions and expansions. In contrast, the exchange rate displays relative stability despite some fluctuations.

The Index of Industrial Production (IIP) shows a generally upward trajectory with moderate variation, indicating growth and possible structural shifts in industrial output. Similarly, inflation exhibits a slight increasing trend with year-to-year fluctuations. These visual representations highlight the diverse patterns of macroeconomic indicators that might influence businesses and industries in India.

4.3 Model Estimation Result

Table4. 2. Panel Data Regression Output of All three model

Variable	Pooled OLS	Fixed Effect	Random Effect
C	7.412009	6.918526	7.067646
Current Ratio	-0.000261	-0.028495	-0.021211
Debit to Equity Ratio	-0.721593*	-0.633338*	-0.660458*
GDP Growth	0.050431	0.048233	0.048837
Exchange Rate	-0.113505	-0.110440	-0.111357
IIP	-0.004320	-0.001405	-0.002256
Inflation	-0.143911	-0.137254	-0.139226
Interest Rate	-0.145402	-0.144712	-0.144991
		Model Fit Information	
R-squared	0.118642	0.461054	0.095687
Prob(F-Statistic)	0.000000	0.000000	0.0000
Durbin-Watson stat	0.682959	1.102883	0.985137

P*< 0.05 Authors own compilation

4.4 Model Selection Criteria

Residual Fixed/Random Effects Test	**Cross -Section P-value**	**Null Hypothesis**
Redundant Fixed Effects Tests	0.0000	H0=Rejected
LM Tests for Random Effects (BPT)	0.0000	H0=Rejected
Random Effects - Hausman Test	1.00	H0=Accepted

Authors own compilation **Table4. 3**

To establish the most appropriate modeling strategy, a series of diagnostic tests were conducted. Firstly, the Redundant Fixed Effects Test examined the presence of unobserved, time-invariant heterogeneity across cross-sectional units. Both the F-statistic (5.089517, $p < 0.0001$) and Chi-square statistic (416.103460, $p < 0.0001$) strongly rejected the null hypothesis, indicating significant cross-sectional differences that a Fixed Effects model could accommodate.

Subsequently, the Lagrange Multiplier (LM) Test assessed the potential existence of random effects. The Breusch-Pagan test yielded highly significant results for both cross-sectional ($p < 0.0001$) and time-period ($p < 0.0753$) effects, confirming the presence of random variation not explained by the model's observed variables. This finding supports the use of a Random Effects model. Finally, the Hausman Test was used to compare the consistency of Fixed Effects and Random Effects estimators. Despite a warning concerning invalid cross-section test variance, the results ($p = 1.0000$) failed to reject the null hypothesis. This suggests that the Random Effects model might be the more efficient choice.

Based on these comprehensive diagnostics, the Random Effects model was determined to be the most appropriate for analyzing the data. The results demonstrate the influence of unobserved variations between individual entities within the dataset, as well as across time periods. This modeling approach will account for these variations, maximizing the reliability and explanatory power of the study's findings.

4. 5 Final Model

Variable	Random Effect Model
C	7.067646
Current Ratio	-0.021211
Debit to Equity Ratio	-0.660458*
GDP Growth	0.048837
Exchange Rate	-0.111357
IIP	-0.002256
Inflation	-0.139226
Interest Rate	-0.144991
Model Fit Information	
R-squared	0.095687
Prob(F-Statistic)	0.000000
Durbin-Watson stat	0.985137

P*< 0.05 **Table4.4** Authors own compilation

4.6 Result and Interpretation

A Random Effects EGLS regression model was employed to examine the determinants of profitability, measured by Return on Assets (ROA), among Indian SMEs listed on the Nifty SMEs Emerge Index. The panel dataset spanned the period 2014-2022, encompassing 94 firms.

The analysis highlighted a critical finding: a strong negative relationship exists between a firm's debt-to-equity ratio (DER) and its ROA (coefficient: -0.660458, $p < 0.0001$). This underscores the potential adverse impact of excessive debt financing on the profitability of listed SMEs. Conversely, the firm's current ratio (CR) did not significantly influence ROA within this model.

Importantly, the macroeconomic indicators included (GDP growth, exchange rate, IIP, inflation, and interest rate) did not exhibit statistically significant effects on ROA at the firm level. This suggests that firm-specific factors, such as debt management, might outweigh the influence of broader macroeconomic conditions on profitability within this sample of listed SMEs.

The model's explanatory power, while not exceptionally high (R-squared: 0.095687), is within an acceptable range for studies involving macroeconomic variables. The significant cross-section random effects component confirms the appropriateness of the Random Effects modeling approach.

4.7 Residual Cross-Section Dependence Test

Test	P-value	Null Hypothesis
Breusch-Pagan	0.0000	H0=Rejected
Pesaran Scaled ML	0.0000	H0=Rejected
Pesaran CD	0.1796	H0=Accepted

Authors own compilation

Table 4.5

Following the primary regression analysis, a Pesaran CD test was conducted to assess cross-sectional dependence within the model's residuals. The test result (CD = 1.341931, p-value = 0.1796) did not reach statistical significance. This suggests that, while other residual diagnostic tests indicate some potential dependence, we cannot definitively conclude the presence of strong cross-sectional correlation in the errors based on the Pesaran CD test alone.

4.8 Findings and Discussion

The empirical analysis in this study provides insights into the factors shaping the profitability of SMEs listed on India's Nifty SMEs Emerge Index. A key finding is the robust negative relationship observed between a firm's debt-to-equity ratio (DER) and its Return on Assets (ROA). This outcome aligns with prior research (Chen et al., 2023), emphasizing that excessive reliance on debt financing can adversely impact SME profitability. The evidence highlights the importance of prudent debt management strategies within this sector.

Interestingly, the macroeconomic indicators incorporated into this model (GDP growth, exchange rate, IIP, inflation, and interest rate) did not exhibit statistically significant effects on ROA at the firm level. While seemingly counterintuitive, this finding suggests that within the context of listed SMEs, firm-specific factors such as capital structure may have a more substantial impact on profitability than broader macroeconomic conditions. This observation invites several possible explanations:

Characteristics of Listed SMEs: SMEs gaining access to listing on an index may possess inherent characteristics or resilience mechanisms that mitigate the direct impact of macroeconomic fluctuations on profitability.

Competing Influences: The influence of macroeconomic variables could be moderated by firm-level strategic responses. Effective hedging strategies, operational efficiency, or cost management practices adopted by firms might lessen their vulnerability to these external forces

4.9 Conclusion

This study has investigated the impact of macroeconomics indictors on the profitability of SMEs listed on India's Nifty SMEs Emerge Index. The findings offer valuable insights for stakeholders within the SME sector. A pivotal finding is the robust negative relationship between a firm's debt-to-equity ratio and its ROA. This underscores the detrimental impact of excessive debt financing and emphasizes the crucial role of prudent debt management strategies for optimizing SME profitability.

While the macroeconomic indicators analyzed did not display statistically significant effects on ROA at the firm level, this finding offers several key takeaways. It suggests that firm-specific factors like operational efficiency and financial management may hold greater sway over profitability within the context of listed SMEs. Additionally, it invites consideration of indirect macroeconomic effects and the potential for sector-specific variations.

4.10 Managerial Implications

This study offers several key takeaways for SME owners and managers:

Prioritize Debt Management: The strong negative impact of excessive debt underscores the importance of prudent capital structure decisions. Overreliance on debt financing can significantly hinder profitability. Managers should carefully consider the optimal debt-to-equity ratio that balances growth needs with financial risk, considering their industry and specific business model.

Strategic Focus on Internal Factors: While macroeconomic conditions should be monitored, managers of listed SMEs might derive greater benefit by focusing on the factors they can directly control. Optimizing operations, implementing cost-efficiency measures, and pursuing revenue-generating initiatives seem to be crucial for enhancing profitability within this sector.

Proactive Risk Mitigation: Even for listed firms with inherent resilience, it's vital for managers to develop proactive hedging strategies for minimizing risks associated with exchange rate fluctuations. Diversification of markets, effective financial hedging instruments, and exploring alternative financing models can lessen the impact of macroeconomic volatility.

4.11 Limitations

As with any research, this study has limitations:

Focus on Listed SMEs: The findings might not fully translate to the broader landscape of non-listed SMEs, which might exhibit different dynamics and vulnerabilities.

Unexplored Variables: Other firm-specific factors beyond those included in this model could influence SME profitability.

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