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Financing Small and Medium Enterprises in India: Overcoming Volatility and Market Driven Challenges

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KEYWORDS

SMEs, SME Emerge Index, Nifty 50, Market Volatility

ABSTRACT

This study explores the financing challenges faced by small and medium enterprises (SMEs) in India, particularly focusing on market volatility and structural constraints in capital accessibility. Using daily data from the Nifty SME Emerge and Nifty 50 indices from April, 2018 to March 2025, the paper conducts trend and correlation analyses as well as a GARCH (1, 1) model to examine the return dynamics and volatility linkages between SME and broader market performances. Findings reveal that while SME returns exhibit sensitivity to the Nifty 50, the overall explanatory power remains limited, indicating significant idiosyncratic behaviour. Volatility clustering and asymmetric responses to market shocks further underscore the vulnerability of SME financing to external disturbances. The paper calls for the development of inclusive financial instruments, policy interventions, and investor engagement mechanisms to ensure the stability and scalability of the SME sector in India's evolving financial ecosystem.

1. INTRODUCTION

Small and Medium Enterprises, or SMEs, form the backbone of economic development both in developed and developing economies. These enterprises make a significant contribution to GDP, employment, innovation, entrepreneurship and economic diversification. Even though they play a critical role in promoting economic growth, SMEs constantly face challenges in obtaining adequate financing through traditional channels like bank lending, which has traditionally been their primary source of external funding.

In recent years, there has been an increase in alternative financing mechanisms due to the significant development of the financing gap for SMEs. Among these, equity financing through capital markets has gained attention. In India, the National Stock Exchange (NSE) introduced the EMERGE platform, a dedicated platform created especially to meet the capital requirements of SMEs and to gain market visibility. This marked a significant step towards democratizing public market participation for smaller firms. However, market dynamics and investor confidence have a significant impact on how well such alternative financing channels will perform. Getting a better understanding of how SME-specific indices behave in relation to broader market indices is crucial in understanding the challenges and opportunities of equity-based SME financing. Although stock market listing provides the advantage of access to a wider pool of investors to the SMEs, it also exposes them to market volatility and systematic risks that may affect their ability to efficiently raise and maintain capital.

In order to understand how broader market performance and volatility influence SME returns, this study investigates the relationship between the SME Emerge index and Nifty 50. The study employs regression analysis and GARCH modelling techniques on daily data from April 2018 to March 2025, and aims:

1. To examine the correlation between SME Emerge and Nifty 50 returns.
2. To analyse the volatility patterns in SME stocks compared to the broader market.
3. To propose strategies for effective risk management in SME investments.

Policymakers, investors, and SME stakeholders must understand these relationships in order to develop more effective market mechanisms and risk management strategies. The findings of this study have significant implications on how the policies are formulated and how the investment strategies are developed in the SME sector. As developing economies keep on relying heavily on SMEs for economic growth and employment generation, it is essential to ensure efficient access to capital markets for sustainable economic development.

2. LITERATURE REVIEW

Market performance and volatility relationships, SME financing constraints, capital market access and performance, alternative financing mechanisms, macroeconomic factors and SME performance, and success factors and challenges are some of the major themes that can be categorised from the existing literature on SME financing. The review examines the major findings from the existing research to develop a theoretical framework for understanding performance and volatility of SME markets.

Market Performance and Volatility

Numerous studies examine the relationship between SME exchanges and main stock markets. Singh et al. (2021) examine returns and volatility spillover between BSE SENSEX and the BSE SME exchange in India, providing insights into their interconnectedness. Similarly, Behera et al. (2024) provide a comparative cross-country perspective by examining volatility spillover between SME and main markets in India and China.

Pandey and Sehgal (2022) examine stock market volatility and its impact on SME performance in emerging markets and emphasise how vulnerable the smaller firms are to market fluctuations. Al-Nassar and Makram (2022) examine the risk-return spillovers between main and SME markets in the MENA region during COVID-19 in order to show how external shocks affect these relationships during times of crisis.

SME Financing Constraints

Beck (2007) provides an early but thorough analysis of financing constraints that SMEs in developing countries face, identifying the key determinants and the possible solutions. This study is extended by Singh and Kaur (2021), who examined factors determining financial constraints for SMEs in the unorganized manufacturing sector in India. Madrid-Guijarro et al. (2016) analyse how financing constraints impact SME innovation during economic crises, showing that financial limitations can significantly limit their capacity for innovation. Klonowski (2012) highlights challenges in emerging markets by identifying liquidity gaps in financing the SME sector in Poland.

Capital Market Access and Performance

Afrifa and Tauringana (2022) examine the relationship between working capital management and SME performance. They show that stock market access improves working capital efficiency. Dhamija and Arora (2017) provide empirical evidence on their effectiveness as financing vehicles by analyse the before and after-market performance of SME IPOs in India. Chen (2024) explores data assetization and capital market information efficiency using evidence from "Hidden Champion" SMEs in China, showing how data transparency improves decision making of the investors. Singh and Rastogi (2023) emphasise the governance factors that influence market performance by examining corporate governance and financial performance for listed SMEs in India.

Alternative Financing Mechanisms

Several papers explore alternative financing options for SMEs. Ceocea et al. (2019) and Shah and Al-Malkawi (2024) suggest that technology and innovative finance models can improve access to financing. Kawimbe (2024) provides insights from a developing economy perspective by analysing alternative financing instruments for SMEs in Zambia. Fenwick and Vermeulen (2024) examine the effectiveness of trading venues, especially with respect toliquidity and regulatory oversight, in facilitating SME growth.

Macroeconomic Factors and SME Performance

Mitra et al. (2023) investigate the impact of macroeconomic factors on firm performance using empirical evidence from India that significantly shapes the SME financing strategies. The OECD (2023) provides data on SME financing trends across various countries through their Financing SMEs and Entrepreneurs Scoreboard.

Success Factors and Challenges

Gupta et al. (2022) identify critical success factors, like the financing aspects, that influence the success of SMEs. Das (2007) identifies the opportunities and challenges for SMEs in India during globalization. Yadav (2014) specifically addresses key issues in financing for the SMEs in India.

Data and Methodology

Data

The study analyses the behaviour of daily closing prices of two Indian market indices: NSE SME EMERGE Index (representing the SME sector) and NIFTY 50 Index (representing the broader market) from April 1, 2018 to March 31, 2025. Daily returns for both indices were calculated using first differences:$R_t = P_t - P_{t-1}$, where R_t represents the return on day t, and P_t represents the closing price on day t.

Methodology

The analysis employs a three-stage approach:

1. Preliminary Analysis

The preliminary analysis includes the descriptive statistics of price levels and returns, trend analysis of both indices and correlation analysis between the price levels of both the indices and between the return series of both the indices.

2. Regression Analysis

The relationship between SME EMERGE returns and NIFTY 50 returns was estimated using the following equation:

$$DSME_t = \alpha + \beta(DN50_t) + \varepsilon_t$$

Where $DSME_t$ and $DN50_t$ represent the returns of SME EMERGE and NIFTY 50 respectively at time t. Stationarity of return series was confirmed using the Augmented Dickey-Fuller test before regression analysis.

3. Volatility Analysis

A GARCH (1, 1) model was employed to capture volatility dynamics using the following equations:

Mean equation:

$$DSME_t = \alpha + \beta(DN50_t) + \varepsilon_t$$

Variance equation:

$$\sigma_t^2 = \omega + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2$$

Where σ_t^2 is the conditional variance, ε_{t-1}^2 represents previous period's squared residual, and σ_{t-1}^2 represents previous period's conditional variance.

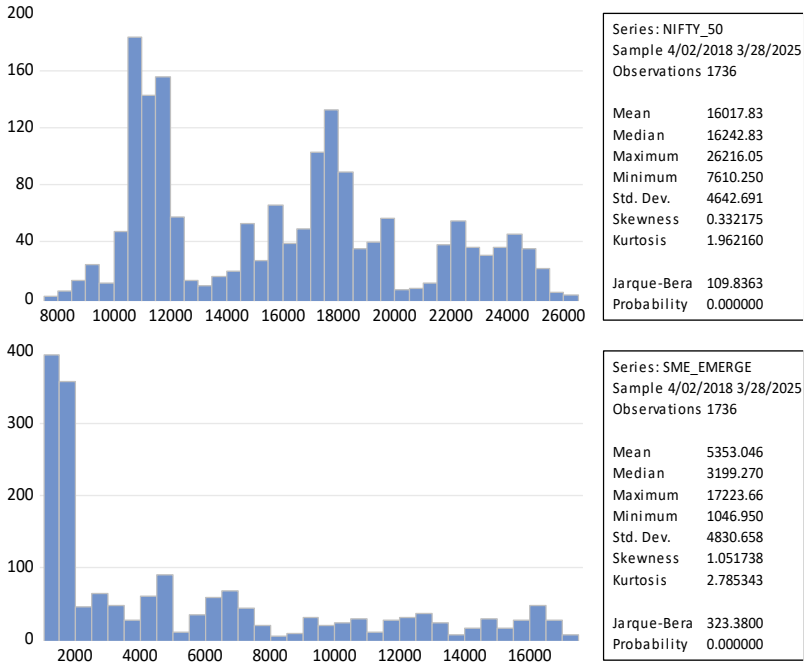
All analyses were conducted using MS Excel and EViews statistical software, with significance levels set at conventional thresholds of one per cent, five per cent, and 10 per cent.

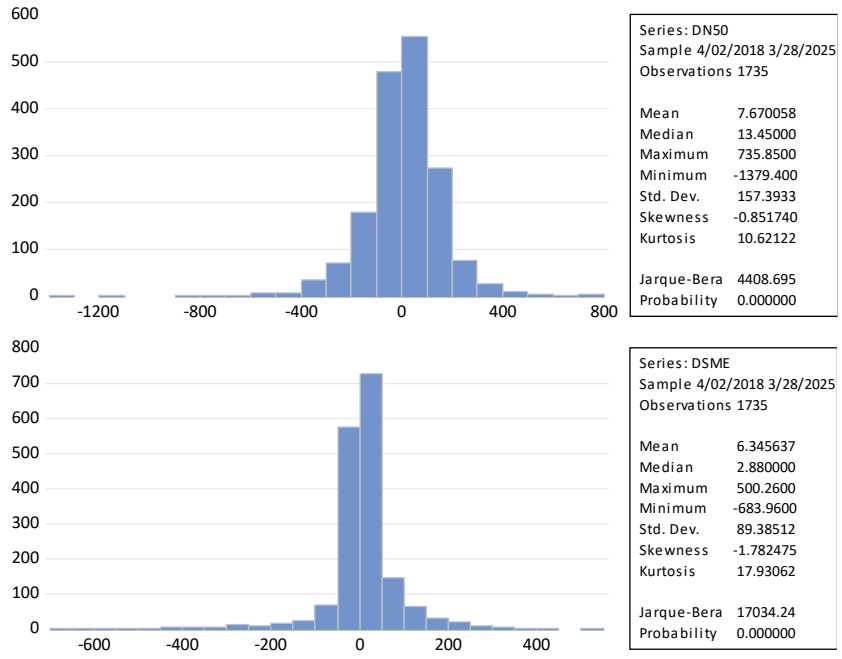
Empirical Results

Descriptive Statistics

The descriptive statistics of the price levels and their returns are presented in Figure 1.

Figure 1 ***Descriptive statistics of Nifty50, SME Emerge and their Returns, DN50 and DSME***



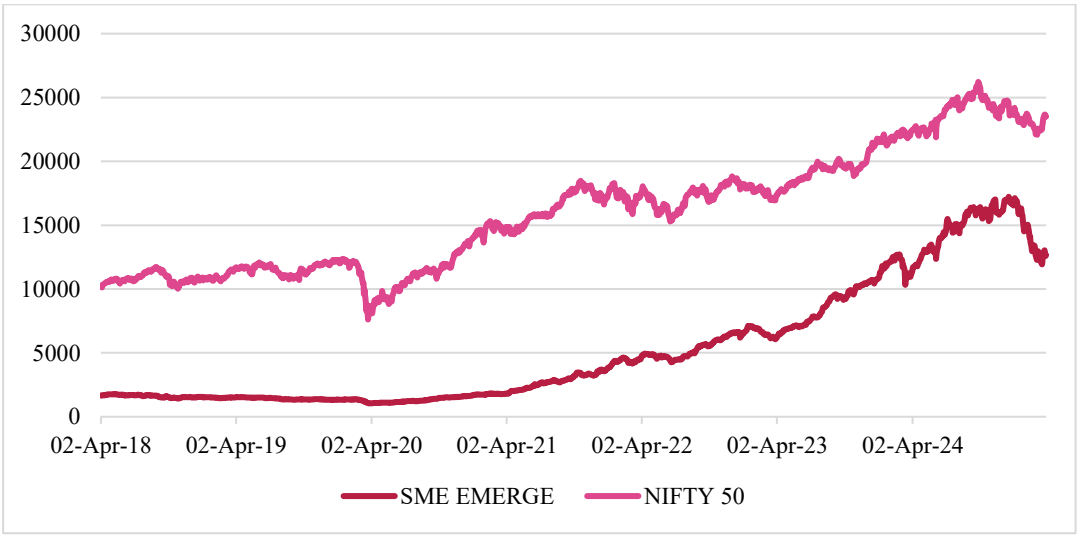


The histograms and descriptive statistics summarise the distributional properties of both the index levels and returns of Nifty 50 and SME Emerge. The index values show a positively skewed distribution, with the SME Emerge Index especially skewed, indicating a concentration of observations at lower levels. The return series for both indices exhibit a more symmetric, bell-shaped pattern, though still with noticeable deviations from normality, as reflected in high kurtosis and significant Jarque-Bera statistics. The returns of both DN50 and DSME show non-zero skewness and leptokurtic distributions. This suggests the presence of fat tails. These characteristics justify the use of models like GARCH for capturing volatility clustering in financial return data.

Trend Analysis

Figure 2 shows the trend analysis of Nifty 50 and SME Emerge.

Figure 2 Trend Analysis of Nifty50 and SME Emerge



The Nifty 50 shows a steady upward trend with moderate fluctuations, including a sharp dip in early 2020 due to COVID-19, whereas, the SME Emerge index remains almost constant until mid-2020, after which it shows a significant rise. SME Emerge exhibits a much higher relative growth rate post-2020 compared to Nifty 50, indicating rapid expansion in the SME sector. However, this fast growth goes hand-in-hand with higher volatility, as seen in the sharp rise and subsequent decline in early 2024. On the other hand, Nifty 50 demonstrates more stable, long-term growth, suggesting a stable market with

lower risk compared to the emerging SME segment. The SME Emerge index shows a higher capacity for growth compared to the Nifty 50, mainly due to its smaller base, evolving market presence, and greater potential for expansion.

Correlation Analysis

Table 1 and Table 2 shows the correlation between Nifty50 and SME Emerge, and between returns of Nifty50 Index and returns of SME Emerge index respectively.

Table 1 Correlation between Nifty50 and SME Emerge

	NIFTY_50	SME_EMERGE
NIFTY_50	1	0.93598547
SME_EMERGE	0.93598547	1

Table 1 highlights a strong positive correlation (0.9359) between Nifty 50 and SME Emerge. It shows that both indices generally move in the same direction over time. This indicates that macroeconomic conditions, investor sentiment, and market-wide trends affect both indices similarly, leading to the movement in the same direction.

Table 2 Correlation between Returns of Nifty50 Index and Returns of SME Emerge index

	DN50	DSME
DN50	1	0.34817973
DSME	0.34817973	1

Table 2 examines the correlation between the returns of Nifty 50 (DN50) and SME Emerge (DSME). It presents a much weaker correlation of 0.3482. This suggests that while both indices follow a similar long-term trend, their short-term price movements are less co-ordinated. The lower correlation in returns implies that SME Emerge is influenced by factors beyond Nifty 50, like sector-specific developments, liquidity constraints, and investor risk appetite for smaller stocks. This lower return correlation suggests that SME Emerge can provide some level of diversification for investors focused on large-cap stocks.

Regression Analysis

The stationarity test for Returns of Nifty50 (DN50) and Returns of SME Emerge (DSME) is shown in Table 3. This helps in confirming that both return series are stationary, making them suitable for further econometric analysis. The Regression Analysis of Returns of Nifty50 (DN50) and Returns of SME Emerge (DSME) is shown in Table 4. This examines the linear association between the returns of the broader market and the returns of the SME sector.

Table 3 Stationarity test for Returns of Nifty50 (DN50) and Returns of SME Emerge (DSME)

Null Hypothesis: DN50 has a unit root			
Exogeneous: Constant			
Lag Length: 0 (Automatic- based on SIC, maxlag=24)			
		t-Statistic	Prob*
Augmented Dicky-Fuller test statistic		42.50755	0.0000
Test critical values:	1% level	-3.433918	
	5% level	-2.863003	
	10% level	-2.567596	
*MacKinnon (1996) one-sided p-values.			
Null Hypothesis: DSME has a unit root			
Exogenous: Constant			
Lag Length: 0 (Automatic - based on SIC, maxlag=24)			
		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-30.38183	0.0000
Test critical values:	1% level	-3.433918	
	5% level	-2.863003	
	10% level	-2.567596	
*MacKinnon (1996) one-sided p-values			

Table 4 Regression Analysis of Returns of Nifty50 (DN50) and Returns of SME Emerge (DSME)

Dependent Variable: DSME
Method: Least Squares
Date: 04/03/25
Sample (adjusted): 4/03/2018 - 3/28/2025
Included observations: 1735 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DN50	0.197735	0.012788	15.46197	0.0000
C	4.829002	2.014624	2.396974	0.0166

R-squared	0.121229	S.D. dependent var	6.345637
Adjusted R-squared	0.120722	Mean dependent var	89.38512
S.E. of regression	83.81627	Akaike info criterion	11.69628
Sum squared resid	12174615	Schwarz criterion	11.70258
Log likelihood	-10144.53	Hannan-Quinn criter	11.69861
F-statistic	239.0727	Durbin-Watson stat	1.366516
Prob(F-statistic)	0.000000		

Table 4 presents the results of a simple linear regression between SME Emerge returns (DSME) and Nifty 50 returns (DN50). The coefficient for DN50 is 0.1977 with a highly significant p-value. This indicates that Nifty 50 returns have a positive impact on SME Emerge returns. However, the R-squared value is only 0.1212, meaning that only 12.12 per cent of the variations in SME Emerge returns can be explained by Nifty 50 returns. Though Nifty 50 influences SME stocks, there are several other significant factors affecting SME Emerge returns, such as SME sector policies, investor risk sentiment, and market liquidity conditions. The highly significant F-statistic confirms that the overall model is statistically meaningful, but it has relatively low explanatory power which suggests that further models incorporating additional macroeconomic and financial variables would be more appropriate for understanding the dynamics of SME Emerge index.

Volatility Analysis

Table 5 shows GARCH (1,1) Model Estimation for SME Emerge Index Returns. It provides a framework for volatility analysis by capturing time-varying variance and identifying patterns such as volatility clustering in the return series.

Table 5 GARCH (1, 1) Model Estimation for SME Emerge Index Returns

Dependent Variable: DSME

Method: ML ARCH - Normal distribution (BFGS/Marquardt steps)

Date: 04/03/25

Sample (adjusted): 4/03/2018 - 3/28/2025

Included observations: 1735 after adjustments

Convergence achieved after 37 iterations

Coefficient covariance computed using outer product of gradients

Presample variance: backcast (parameter = 0.7)

GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DN50	0.028895	0.001823	15.85169	0.0000
	Variance Equation			
C	0.085212	0.210061	0.405654	0.6850
RESID(-1)^2	0.084404	0.006662	12.66982	0.0000
GARCH(-1)	0.929593	0.004636	200.5202	0.0000

R-squared	0.028145	Mean dependent var	6.345637
Adjusted R-squared	0.028145	S.D. dependent var	89.38512
S.E. of regression	88.11827	Akaike info criterion	9.660047
Sum squared resid	13464213	Schwarz criterion	9.672632
Log likelihood	-8376.090	Hannan-Quinn criter.	9.664701
Durbin-Watson stat	1.370868		

Table 5 presents the GARCH (1, 1) model, which is used to analyse the volatility of SME Emerge returns (DSME). The coefficient for DN50 in the mean equation (0.0289, p = 0.0000) indicates that Nifty 50 returns have a statistically significant but small impact on SME Emerge returns. However, the R-squared value is extremely low (0.0281), showing that the explanatory power of Nifty 50 for SME Emerge returns is limited. This shows that SME Emerge returns are influenced by idiosyncratic risks and market-specific factors rather than just Nifty 50 movements.

The variance equation highlights the persistence of volatility in SME Emerge. The GARCH (-1) coefficient indicates that past volatility significantly influences future volatility, i.e., shocks to SME Emerge returns have a long-lasting effect. The highly significant RESID (-1)² coefficient (0.0844, p = 0.0000) further confirms that past return shocks contribute to volatility clustering, a common characteristic in financial markets. This suggests that SME Emerge is highly volatile, and price fluctuations tend to persist. This makes it riskier as compared to Nifty 50 in terms of investment stability.

3. CONCLUSION

The analysis reveals that while the SME Emerge index and Nifty 50 exhibit a strong long-term correlation, their short-term returns differ significantly. The SME Emerge index demonstrates greater volatility and potential for higher growth. Stationarity in returns ensures the stability of the series which validates the use of econometric models. Regression analysis suggests a statistically significant but weak dependency of SME Emerge returns on Nifty 50, confirming that SME performance is driven by distinct market forces. The GARCH model further supports the high volatility and persistence of shocks in SME Emerge, emphasising the risk-intensive nature of SME investments.

Implications for SME Financing Through Public Markets

The observed trend in the SME Emerge index indicates a promising growth trajectory, especially after 2020, which points to increased investor interest and the potential of SMEs to leverage public markets for capital. However, the relatively low explanatory power of Nifty 50 on SME returns and high volatility shows that SMEs operate under different financial pressures and market perceptions. Hence, capital markets can offer valuable financing opportunities but the problems like volatility, low investor awareness and information asymmetry must be addressed. Policymakers should support SMEs through fiscal incentives, simplified regulations, and market-making mechanisms. A well-functioning SME platform like Emerge can thus fill the financing gaps that traditional credit facilities may fail to provide.

Risk Management Strategies for SME Investments

Investors need to adopt robust risk management strategies to overcome the high volatility and persistence of shocks in SME returns. Diversification is essential to mitigate unsystematic risks. Tools like Value-at-Risk (VaR), stress testing, and GARCH-based forecasting can help the investors to monitor and to manage the potential downside risks. Even though SMEs offer high returns, the fact that they have a greater probability of value erosion during downturns should be recognised and accordingly risk-adjusted return expectations should be clearly established. Re-evaluation of portfolio exposure to SMEs should be done periodically to maintain an optimal risk-return profile. Additionally, the introduction of SME EMERGE based derivative markets would help the investors to reduce the risk through hedging.

Policy Recommendations

To strengthen SME financing through public markets, policy efforts should focus on deepening the SME capital market ecosystem. Regulatory bodies must focus on enhancing transparency, improving investor literacy and providing protective instruments, like credit guarantees or SME-focused investment insurance schemes, to strengthen investor confidence and to attract more investors. Incentivising SMEs to go public through tax benefits or reduced listing fees can encourage participation. Finally, promoting collaboration between SME exchanges, banks, venture capitalists, and fintech platforms would ensure diversified funding access and improve the long-term viability of SME growth through public equity.

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