

Examining the Dynamic Interactions between Indicators of Sustainable Performance and Indian Stock Market

Sourav Das ^{1*}, Ashoke Mondal ²

¹ Department of Commerce, West Bengal State University, Kolkata, India

² Department of Management and Marketing, West Bengal State University, Kolkata, India

*Corresponding Author

To cite this paper

Das, S., & Mondal, A. (2025). Examining the Dynamic Interactions between Indicators of Sustainable Performance and Indian Stock Market. Orissa Journal of Commerce. 46(4), 01-10.

Keywords

Sustainability; Indian Stock Market; Vector Autoregression; Portfolio Choice

JEL Classification

Q01; O16; C32; G11

Abstract: This study examined the relationship between the sustainability (i.e., ESG Index) and major Indian equity market indices over the period January 2021 to March 2025. Sensex, BSE 500 and BSE 100 ESG indices have been opted for the study. Since unit root tests confirmed stationarity at levels, the VAR model is considered appropriate for the analysis. VAR results found that lagged ESG returns positively influence both Sensex and BSE 500 returns, underscoring that ESG-compliant firms respond to market movements. Furthermore, Granger causality tests revealed bidirectional causality between ESG and Sensex returns and unidirectional causality from ESG to BSE 500 returns. These findings indicate that ESG investments play an active and increasingly integral role in shaping short-run dynamics and enhancing efficiency in the Indian equity market. Notably, ESG returns appear relatively decoupled, as they are not significantly influenced by past movements of market indices, reflecting their distinct informational content.

1. Introduction

The global financial ecosystem is undergoing a profound transition, marked by a decisive shift toward sustainable and responsible investment practices. This paradigm recognises that a conventional system, focusing primarily on economic returns, is incomplete without accounting for Environmental, Social, and Governance (ESG) factors. ESG criteria, which assess a company's commitment to corporate responsibility and sustainability, are no longer peripheral concerns but core determinants of long-term value, risk, and resilience (Eccles et al., 2014; Clark et al., 2015). The emergence of ESG ought to be gleaned through various theoretical perspectives. Stakeholder theory posits that firms create sustainable value by addressing diverse stakeholders (Freeman, 1984). Similarly, Legitimacy theory explains that firms adopt ESG practices to uphold social approval and adhere to social expectations (Suchman, 1995). Thus, it is strengthening corporate legitimacy and public trust. Furthermore, signalling theory posits that ESG disclosure serves as a signal of ethical conduct and transparency (Spence, 1973). In India, the relevance of ESG has grown enormously in recent years. ESG criteria have transitioned from peripheral concerns to strategic imperatives, particularly in regulatory, labour and governance-related aspects. Regulatory initiatives, notably mandatory Business Responsibility and Sustainability Report (BRSR) disclosures, have enhanced transparency and reinforced firms to align their objectives with ESG goals (SEBI, 2021). These disclosures compel firms to report their ESG performance systematically, thereby improving accountability and aligning firms with global standards. Consequently, ESG has turned into a crucial part of business practice and financial decisions in India. Hence, these initiatives have pushed Indian companies closer to global sustainability norms. Further, these efforts reinforce India's alignment with Sustainable Development Goals (SDGs) and support inclusive and sustainable growth by 2030. Thus, these initiatives strengthen corporate accountability and expedite progress toward the SDG targets.

Previous studies showed that firms with superior ESG performance tend to have reduced risk exposure, lower capital cost, and stakeholder trust (Clark et al., 2015; Lunawat and Lunawat, 2022).

These advantages stem from improved risk mitigation and better regulatory compliance (Broadstock et al., 2021; Clark et al., 2015). Consequently, this shift has encouraged investors to evaluate how companies manage environmental risks, treat stakeholders, and maintain ethical governance factors that are recognised as critical for sustainable growth and financial resilience. In contrast, some studies contended that prioritising social and environmental objectives beyond a certain level may undermine the profit-maximisation of a firm (Friedman, 1970). Accordingly, prior research revealed that higher ESG can be linked with lower or insignificant returns due to the costs of non-financial priorities. (Brammer et al., 2006; Revelli and Viviani, 2015; Vuppuluri and Pandey, 2024).

Thus, earlier literature remains inconclusive. Moreover, most prior studies have relied on a static analytical framework, thereby overlooking dynamic interaction. Further, in the Indian context, empirical evidence remains scarce, especially amid recent regulatory development, notably mandatory ESG disclosure. By incorporating recent data from January 2021 to March 2025, this study seeks to address the prevailing empirical gap. Hence, study objectives are adhered to, offering deeper insights into the dynamic interaction between indicators of sustainable performance and the Indian stock market.

2. Review of Literature

Early studies by Derwall et al. (2005) demonstrated that a portfolio with superior environmental performance outperformed conventional benchmarks, indicating that sustainability-driven efficiency gains enhance long-term firm value. Similarly, subsequent studies reported a generally positive association between ESG performance and financial outcomes (Fride et al., 2015; Lins et al., 2017; Lunawat and Lunawat, 2022; Broadstock et al., 2021). Further research at the Cross-country and firm-level stated that ESG adherence is positively associated with profitability and stakeholder trust (Wang et al., 2022; Soana, 2011). Khan et al., (2016); Sunitha et al. (2024); Bhavasar and Shah, (2025) revealed that ESG disclosure is positively associated with ROA and ROE. They highlighted that ESG disclosure serves as a credible insight for stakeholders, thereby minimising information asymmetry and positively influencing firm performance. Engle et al. (2020) and Ding et al., (2021) revealed that businesses with elevated ESG are resilient to financial upheaval and lower downside exposure. Makkar et al., (2023) found that sustainable indices outperformed standard indices in terms of risk-adjusted return and resilience, especially during the COVID-19. Conversely, the classical view articulated by Friedman (1970) contended that an excessive emphasis on social objectives could divert resources away from profit maximisation. Similarly, Brammer et al., (2006) and Hong and Kacperczyk (2009) revealed that firms exhibiting higher social performance might, in certain contexts, experience lower stock returns, thereby indicating potential costs associated with overinvestment in non-financial objectives. This highlights that capital markets may penalise firms whose social initiatives are perceived as misaligned with shareholder value. Moreover, Revelli and Viviani (2015) and Kurnoga et al., (2022) argued that the linkage between ESG performance and financial outcomes varies contingent upon market conditions and geographical settings. Furthermore, Vuppuluri and Pandey (2024) reported an insignificant or negative association between ESG scores and firm performance indicators, i.e., ROA and ROE. Their findings imply that ESG performance does not necessarily translate into improved firm profitability. Therefore, prior literature indicates that the financial impact of ESG practices is not uniformly positive, while others report negative or insignificant effects. These findings are shaped by firm-specific strategies and stakeholder expectations. Further, most studies focus on developed economies, with limited evidence on emerging economies such as India. Moreover, prior studies have relied on a static analytical framework, thereby overlooking dynamic interaction. Thus, the dynamic relationship between the stock market and sustainable performance remains underexplored. Consequently, these mixed outcomes underscore the need for a nuanced evaluation of ESG initiatives and their interaction with the Indian equity market. Hence, the study has the following objectives:

- To examine the association between indicators of sustainable performance and the Indian stock market.
- To assess the directionality and nature of causal linkages between indicators of sustainable performance and the Indian stock market.

3. Research Methodology

3.1. Variables and Period

This study is based on secondary data comprising daily closing prices from January 2021 to March 2025. For a sustainable performance indicator, the BSE 100 ESG index has been chosen. It represents the overall sustainability perspective of ESG-compliant companies. Furthermore, the Sensex and BSE 500 indices have been opted as a representation of the Indian stock market. Here, Sensex represents leading large-cap firms and serves as a benchmark for overall market movements. Whereas, BSE 500 captures broader market dynamics across all capitalisation segments. In addition, these indices enable an examination of how sustainability-focused companies and broad market trends affect and interact with each other.

Table 1: Variables Description

Sl. No.	Variables Description	Notation
i.	Natural logarithm of Daily Return on BSE Sensex	r_t
ii.	Natural logarithm of Daily Return on BSE 500	r_{B500_t}
iii.	Natural logarithm of Daily Return on BSE 100 ESG	r_{ESG_t}

Source: Authors’ collection.

Furthermore, the daily returns for each index are estimated using the formula listed below

$$r_t = \ln\left(\frac{Price_t}{Price_{t-1}}\right)$$

Where, $Price_t$ = closing price of the respective index at time t. $Price_{t-1}$ = closing price of respective index at time t-1. \ln = Natural logarithm.

3.2. Data Source

The data on selected indices have been collected from the websites of BSE.

3.3. Tools for the Study

Several statistical tools have been used for analysing the dataset. Initially, descriptive statistics have been computed to outline the basic features of variables. As the study uses time series data, unit root tests have been carried out to assess stationarity and integration order. For this purpose, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) have been employed. Thereafter, the Vector Autoregressive (VAR) model has been applied to capture bivariate associations among the variables (Stock & Watson, 2001). Thus, the VAR(p) model is specified for the Sensex (r_t) and BSE 100 ESG (r_{ESG_t}), where each variable depends on its own and the other variable’s lagged values. The model is expressed as:

$$r_{1,t} = c_1 + \beta_{11,i} r_{1,t-i} + \beta_{12,i} r_{ESG_{2,t-i}} + \varepsilon_{1,t} \dots \dots \dots (1) \quad [i= 1,2,\dots,p]$$

$$r_{ESG_{2,t}} = c_2 + \beta_{21,i} r_{1,t-i} + \beta_{22,i} r_{ESG_{2,t-i}} + \varepsilon_{2,t} \dots \dots \dots (2) \quad [i= 1,2,\dots,p]$$

Where,

$r_{1,t}$ and $r_{ESG_{2,t}}$ = two endogenous variables at time t.

c_1 and c_2 = intercept terms.

$\beta_{11,i}$ and $\beta_{22,i}$ = coefficient of each variable’s own i lag.

$\beta_{12,i}$ = coefficient of the i lag of r_{ESG_2} on r_1 .

$\beta_{21,i}$ = coefficient of the i lag of r_1 on r_{ESG_2}

$\varepsilon_{1,t}$ and $\varepsilon_{2,t}$ = error terms.

Subsequently, a separate VAR(p) model is specified for the BSE 500 (r_{B500_t}) and BSE 100 ESG (r_{ESG_t}), following the same dynamic structure. The model is expressed as:

$$r_B500_{1,t} = c_1 + \beta_{11,i} r_B500_{1,t-i} + \beta_{12,i} r_ESG_{2,t-i} + \varepsilon_{1,t} \dots \dots (3) \quad [i= 1,2,\dots,p]$$

$$r_ESG_{2,t} = c_2 + \beta_{21,i} r_B500_{1,t-i} + \beta_{22,i} r_ESG_{2,t-i} + \varepsilon_{2,t} \dots \dots (4) \quad [i= 1,2,\dots,p]$$

Where,
 $r_B500_{1,t}$ and $r_ESG_{2,t}$ = two endogenous variables at time t.
 c_1 and c_2 = intercept terms.
 $\beta_{11,i}$ and $\beta_{22,i}$ = coefficient of each variable's own i lag.
 $\beta_{12,i}$ = coefficient of the i lag of r_ESG_2 on r_B500_1 .
 $\beta_{21,i}$ = coefficient of the i lag of r_B500_1 on r_ESG_2
 $\varepsilon_{1,t}$ and $\varepsilon_{2,t}$ = error terms.

Additionally, the VAR-Granger Causality test has been applied on the estimated VAR(p) model to identify the direction of short-run causality among the variables (Stock & Watson, 2001). Since autoregressive models are sensitive to lag length, the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) have been used for optimal lag selection. Furthermore, diagnostic tests have been undertaken to assess the reliability and stability of the model. The serial correlation LM test and heteroskedasticity test have been employed to examine autocorrelation and constancy of error variance, respectively. Additionally, the inverse roots polynomial test has been performed to satisfy the stability conditions of the model.

4. Results and Discussion

Table 2: Descriptive Statistics

Statistic	r_t	r_B500_t	r_ESG_t
Mean	0.000457	0.000572	0.000517
Median	0.000519	0.001229	0.000846
Maximum	0.048802	0.040754	0.043858
Minimum	-0.059119	-0.069614	-0.053249
Std. Dev.	0.009105	0.009262	0.009096
Skewness	-0.415084	-0.892853	-0.496054
Kurtosis	6.973478	8.270798	6.459546
Jarque–Bera	722.2727	1357.521	566.6824
Prob.	0.0000	0.0000	0.0000

Source: Authors' compilation.

From Table 2, the mean and median values of all return series, namely Sensex returns (r_t), BSE 500 returns (r_B500_t), and ESG index returns (r_ESG_t), have been found to be very close to zero. This indicates that returns remain centred around zero. The maximum and minimum values have shown noticeable fluctuations in all indices during the sample period. All series have been negatively skewed, indicating asymmetry toward left tails. The kurtosis values have been found to be much higher than the reference value of three, indicating a highly leptokurtic distribution. Furthermore, the Jarque-Bera statistics have been found to be significant for all variables, confirming that none of the series follows normality.

Table 3: Results of Unit Root Test

Returns	ADF Test (t-Stat.)		PP Test (Adj. t-Stat.)		Result
	Intercept Without Trend	Intercept With Trend	Intercept Without Trend	Intercept With Trend	
r_t	-31.82170* (0.0000)	-31.81131* (0.0000)	-31.82048* (0.0000)	-31.80980* (0.0000)	I(0)

r_{B500_t}	-31.29666* (0.0000)	-31.29208* (0.0000)	-31.28144* (0.0000)	-31.27665* (0.0000)	I(0)
r_{ESG_t}	-31.85343* (0.0000)	-31.84787* (0.0000)	-31.85376* (0.0000)	-31.84822* (0.0000)	I(0)

Note: () MacKinnon (1996) one-sided p-values;

* Significant at 1% level; ** Significant at 5% level; I(0): Stationary at level.

Source: Authors' compilation.

From Table 3, the results of the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests have been found statistically significant at the 1% level under both intercept and trend specifications, indicating that all selected variables are stationary at their levels, i.e., I(0). This implies that data series are suitable for further time series modelling.

Table 4: Result of VAR Lag Order Selection (Sensex and ESG Index)

Lag	AIC	SIC
0	-13.98805	-13.97852
1	-13.98866	-13.96008
2	-14.23794	-14.19030
3	-14.23789	-14.17119
4	-14.29384	-14.20809*
5	-14.29314	-14.18833
6	-14.29905	-14.17519
7	-14.29285	-14.14993
8	-14.31515*	-14.15317
9	-14.30775	-14.12672
10	-14.30887	-14.10878
11	-14.30150	-14.08236
12	-14.29579	-14.05759

Note: * Indicates lag order selected by the criterion.

Source: Authors' compilation.

From Table 4, the VAR lag order selection for r_t and r_{ESG_t} has shown a divergence between AIC and SIC, with AIC favouring lag 8 and SIC selecting lag 4. However, to avoid over-parameterisation, the SIC model (lag 4) has been preferred for VAR estimation.

Table 5: Results of Vector Autoregressive Model (Sensex and BSE 100 ESG)

Independent Variables	Dependent Variables	
	r_t	r_{ESG_t}
$r_t (-1)$	-0.005256 [-0.10292]	0.103566 [1.90605]
$r_t (-2)$	-0.542608* [-10.5746]	-0.082088 [-1.50353]
$r_t (-3)$	-0.053619 [-1.08562]	-0.053714 [-1.02212]
$r_t (-4)$	-0.174285* [-3.54130]	-0.017539 [-0.33494]
$r_{ESG_t} (-1)$	0.047011 [0.96404]	-0.059830 [-1.15310]

$r_ESG_t (-2)$	0.588516* [12.0153]	0.039167 [0.75154]
$r_ESG_t (-3)$	-0.028975 [-0.56051]	-0.036834 [-0.66968]
$r_ESG_t (-4)$	0.301173* [5.85535]	0.083180 [1.51989]
C	0.000341 [1.28462]	0.000514 [1.81963]

Note: * Significant at 1% level; ** Significant at 5% level; [] t-statistics.

Source: Authors' compilation.

From Table 5, Sensex returns (r_t) have been significantly affected by their own past values, with the second and fourth lags showing negative effects. Meanwhile, lagged r_ESG_t have been found to exert positive effects on r_t , indicating that the past performance of ESG firms enhances Sensex. For ESG returns (r_ESG_t), none of the lags of either r_t or r_ESG_t has been statistically significant. This indicates that ESG returns have not been altered by past values of either itself or Sensex during the period.

Table 6: Results of VAR Granger Causality (Sensex and BSE 100 ESG)

Independent Variable	Dependent Variables	
	r_t	r_ESG_t
r_ESG_t	152.5013* (0.0000)	—
r_t	—	9.636005** (0.0470)

Note: * Significant at 1% level; ** Significant at 5% level; () Probability values.

Source: Authors' compilation.

Although from Table 6, a significant bidirectional causal link has been found between r_ESG_t and r_t . This finding indicates that past values of each series influence the short-run dynamics of the other.

Table 7: Results of VAR Residual Serial Correlation LM Test

Lags	LM Test Statistics
1	7.6478 (0.105)
2	6.2026 (0.184)
3	8.2235 (0.084)
4	7.7785 (0.100)

Note: () P-values.

Source: Authors' compilation.

Table 8: Results of VAR Residual Heteroskedasticity Tests (Includes Cross Terms)

Test	Chi-square Statistic	df	Prob.
Joint Test	148.3015	132	0.158

Source: Authors' compilation.

Inverse Roots of AR Characteristic Polynomial

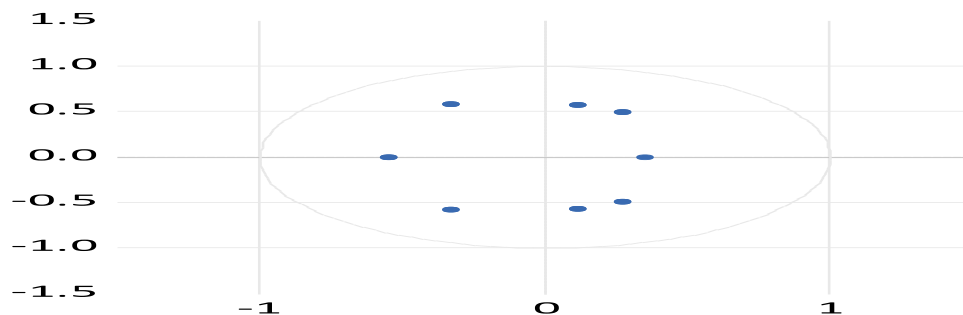


Figure 1: Inverse Roots of AR Characteristic Polynomial

Source: Authors' work.

From Table 7, the LM test confirms the absence of serial correlation in residuals up to lag 4. Further, Table 8 reveals that the chi-square statistic is insignificant at 5% level, indicating the absence of heteroskedasticity in residuals. Figure 1 shows that all plotted points lie inside the unit circle, indicating stability of the model. Therefore, diagnostic tests imply that the VAR model is properly specified.

Table 9: Result of VAR Lag Order Selection (BSE 500 and ESG Index)

Lag	AIC	SIC
0	-13.86829	-13.85876
1	-13.86622	-13.83764
2	-14.09982	-14.05218*
3	-14.09821	-14.03151
4	-14.13508	-14.04933
5	-14.13884	-14.03403
6	-14.14076	-14.01689
7	-14.13758	-13.99466
8	-14.15602*	-13.99404
9	-14.15095	-13.96992
10	-14.14787	-13.94779
11	-14.14269	-13.92354
12	-14.14082	-13.90262

* Indicates lag order selected by the criterion.

Source: Authors' compilation.

From Table 9, VAR lag order selection for r_{B500_t} and r_{ESG_t} has also revealed a divergence between AIC and SIC, with AIC favouring lag 8 and SIC selecting lag 2. Similarly, we have selected the SIC model (lag 2) to avoid model complexity and over-parameterisation for VAR estimation.

Table 10: Results of Vector Autoregressive Model (BSE 500 and BSE 100 ESG)

Independent Variables	Dependent Variables	
	r_{B500_t}	r_{ESG_t}
$r_{B500_t}(-1)$	-0.022810 [-0.52097]	0.058045 [1.28431]
$r_{B500_t}(-2)$	-0.364281* [-8.31848]	-0.044404 [-0.98232]
$r_{ESG_t}(-1)$	0.068599 [1.53857]	-0.026416 [-0.57397]
$r_{ESG_t}(-2)$	0.471511* [10.5666]	0.004447 [0.09655]
C	0.000503 [1.84037]	0.000508 [1.80153]

Note: * Significant at 1% level; ** Significant at 5% level; [] t-statistics.

Source: Authors' compilation.

From Table 10, BSE 500 returns (r_{B500_t}) have been adversely associated with their own second lag but positively affected by lagged r_{ESG_t} . This indicates that previous ESG performance supports overall market returns while self-correction constrains it. For the ESG return (r_{ESG_t}), none of the lags of BSE 500 or ESG returns have been statistically significant. This finding indicates that ESG returns remain largely unaffected by former market or ESG movements.

Table 11: Results of VAR Granger Causality (BSE 500 and BSE 100 ESG)

Independent Variable	Dependent Variables	
	r_B500_t	r_ESG_t
r_ESG_t	112.5125* (0.0000)	—
r_B500_t	—	2.717427 (0.2570)

Note: * Significant at 1% level; ** Significant at 5% level; () Probability values.
 Source: Authors’ compilation.

From Table 11, the results have demonstrated significant unidirectional causality from r_ESG_t to r_B500_t , indicating that ESG returns affect overall market returns in the short run.

Table 12: Results of VAR Residual Serial Correlation LM Tests

Lags	LM Test Statistics
1	5.4742(0.242)
2	7.5357 (0.109)

Note: () P-values.
 Source: Authors’ compilation.

Table 13: Results of VAR Residual Heteroskedasticity Tests (Includes Cross Terms)

Test	Chi-square Statistic	df	Prob.
Joint Test	51.3022	42	0.116

Source: Authors’ compilation.

Inverse Roots of AR Characteristic Polynomial

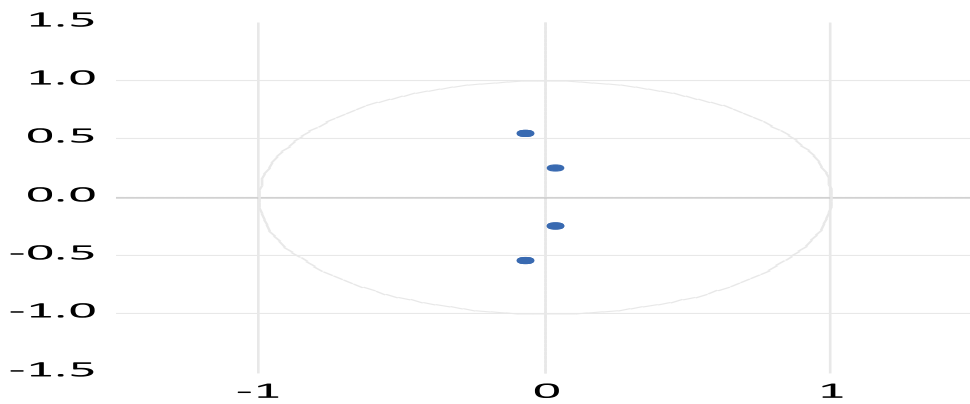


Figure 2: Inverse Roots of AR Characteristic Polynomial

Source: Authors’ work.

From Table 12, the LM test confirms the absence of serial correlation in residuals up to lag 2. Further, Table 13 reveals that the chi-square statistic is insignificant at 5% level, indicating the presence of homoskedasticity in residuals. Figure 2 shows that all points lie within the unit circle, indicating stability of the model. Therefore, diagnostic tests suggest that the VAR model is appropriately specified.

5. Conclusion

This study examined the association and short-run causal linkages between the ESG Index and major Indian market indices from January 2021 to March 2025. The empirical results provide important insights into the role of ESG-oriented investments within the Indian equity market. Descriptive statistics revealed that return distributions across chosen indices are characterised by negatively

skewed, leptokurtosis, and non-normality. Moreover, unit root tests confirmed stationarity at levels, enabling VAR-based analysis.

VAR estimates disclosed that lagged ESG returns exert a positive influence on both Sensex and BSE 500 returns, underscoring that ESG-compliant firms respond to market movements. Additionally, Granger causality results revealed a bidirectional causality between ESG returns and Sensex returns. In contrast, a unidirectional causality from ESG returns to BSE 500 returns is observed. These findings imply that ESG outcomes play an active role in shaping short-run market dynamics. Notably, ESG returns are not significantly influenced by past movements of market indices, reflecting their distinct informational content. This study has profound managerial implications; Since ESG integration enhances information transparency and market efficiency, thereby becoming increasingly pertinent in the Indian equity market. Therefore, policymakers should strengthen ESG disclosure standards and ensure uniform reporting. Firms are also encouraged to integrate ESG factors, given their growing influence on market dynamics. Thus, investors would take well-informed decisions regarding ESG performance and market movements. However, the analysis is confined to aggregate index-level data, thereby overlooking sectoral variations. This study is also limited to the Indian market and doesn't capture ESG and market movements across various countries. Therefore, future research may incorporate sector-specific, cross-country comparisons and longer time horizons to offer in-depth insights into ESG-market linkage.

References

- Bhavasar, J., & Shah, M. (2025). ESG scores influencing the financial performance of Indian companies. *Journal of Informatics Education and Research*, 5(2), 1–12.
- Brammer, S., Brooks, C., and Pavelin, S. (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. *Financial Management*, 35(3), 97–116.
- Broadstock, D. C., Chan, K., Cheng, L. T. W., and Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38, 101716. <https://doi.org/10.1016/j.frl.2020.101716>
- Clark, G. L., Feiner, A., and Viehs, M. (2015). From the stockholder to the stakeholder: How sustainability can drive financial outperformance. University of Oxford.
- Derwall, J., Guenster, N., Bauer, R., and Koedijk, K. (2005). The eco-efficiency premium puzzle. *Financial Analysts Journal*, 61(2), 51–63.
- Ding, W., Levine, R., Lin, C., & Xie, W. (2021). Corporate immunity to the COVID-19 pandemic. *Journal of Financial Economics*, 141(2), 802–830.
- Eccles, R. G., Ioannou, I., and Serafeim, G. (2014). The impact of corporate sustainability on organisational processes and performance. *Management Science*, 60(11), 2835–2857.
- Engle, R. F., Giglio, S., Kelly, B., Lee, H., & Stroebel, J. (2020). Hedging climate change news. *The Review of Financial Studies*, 33(3), 1184–1216.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman Publishing.
- Friede, G., Busch, T., and Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2,000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), 210–233. <https://doi.org/10.1080/20430795.2015.1118917>
- Hong, H., and Kacperczyk, M. (2009). The price of sin: The effects of social norms on markets. *Journal of Financial Economics*, 93(1), 15–36. <https://doi.org/10.1016/j.jfineco.2008.09.001>
- Khan, M., Serafeim, G., and Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review*, 91(6), 1697–1724.

- Kurnoga, N., Šimurina, N., and Fučkan, F. (2022). Performance Differences between ESG Indices and Conventional Market Indices: A Multivariate Analysis of Indices. *Zagreb International Review of Economics & Business*, 25(1), 85-103.
- Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *Journal of Finance*, 72(4), 1785-1824.
- Lunawat, A., and Lunawat, D. (2022). Do environmental, social and governance performance impact firm performance? Evidence from Indian firms. *Indonesian Journal of Sustainability Accounting and Management*, 6(1), 133–146.
- Makkar, M. K., Ghayas, A., and Gupta, N. (2023). Performance of Conventional and Sustainable Index in Pre and During the COVID-19 Pandemic: A Comparative Analysis. *Indian Journal of Finance*, 17(5), 39–52. <https://doi.org/10.17010/ijf/2023/v17i5/172736>
- Revelli, C., and Viviani, J. L. (2015). Financial Performance of Socially Responsible Investing (SRI): What Have We Learned? *Business Ethics: A European Review*, 24(2), 158-185.
- SEBI (2021). *Business Responsibility and Sustainability Report (BRSR) framework*. Securities and Exchange Board of India.
- Soana, M.-G. (2011). The Relationship Between Corporate Social Performance and Corporate Financial Performance in the Banking Sector. *Journal of Business Ethics*, 104(1), 133-148.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>.
- Stock, J. H., and Watson, M. W. (2001). Vector Autoregressions. *Journal of Economic Perspectives*, 15(4), 101-115. <https://doi.org/10.1257/jep.15.4.101>.
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *The Academy of Management Review*, 20(3), 571–610.
- Sunitha, S., Prasad, S. S., Manjula, K. R., and Gurusamy, M. (2024). Analysing The Impact of ESG Factors on Financial Performance: A Study of Indian corporations. *Library Progress International*, 44(1), 215–228.
- Vuppuluri, R., and Pandey, A. (2024). Impact of ESG Scores on Financial Performance: Evidence From NSE ESG- Listed Companies In India. *Journal of Research Administration*, 6(2), 320-338.
- Wang, W., Yu, Y., and Li, X. (2022). ESG performance, auditing quality, and investment efficiency: Empirical evidence from China. *Frontiers in Psychology*, 13, 1-14.