



Nexus between ESG Scores and Financial Performance of Select Indian Companies

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Abstract.

The research examines the link between financial performance and sustainable practices reflected by ESG (Environmental, Social, and Governance) scores in select Indian companies. We employ a sample of thirty companies with the highest ESG scores from the Nifty 100 ESG index, and examine how their financial performance is impacted by their performance in ESG criterion scores. The study analyses accounting as well as market data for a period of five years from 2020 to 2024 using Fixed Effect regression and System GMM (System Generalized Method of Moments) model and correlation matrix. The model includes Tobin's Q, Return on Asset (RoA), and Return on Equity (RoE) as dependent variables, while ESG performance as the main independent variable. The result of the study reveals a better ESG performance causes financial performance, reiterating the need for sustainability reporting-which includes disclosing ESG scores. This would help sustainable investment practices as well as company practices. The findings have significance for investors, corporations, regulators, and legislators.

Keywords: Sustainability, Financial Performance, ESG performance, GMM, FE Regression

1. Introduction

Sustainable practices in the business operations get substantial attention in the recent years. In business, sustainability refers to a company's approach and activities that minimize the adverse impacts that operations in a specific market have on the

environment and society [1]. Environmental, social, and governance (ESG) indicators are commonly used to evaluate an organization's sustainability efforts [2]. ESG is a corporation decision-making process for assessing social responsibility, corporate governance, and environmental performance [3, 4, 5]. It is crucial to attain a competitive advantage, revenue growth, manpower talent, longevity investment strategy, complaints of regulatory requirements, etc. [6]. It is challenging to implement and ensure the sustainability practices in the business due to increased costs, the rigidity of the regulatory framework, a lack of expertise, etc. The sustainability in business practices encourages the business to be responsible for resource management. This will help to minimize and mitigate unnecessary spending while doing the operation and make it more efficient. That will make a business more attractive to stakeholders seeking to standardize the operations to attain long-term growth, corporate reputations, capital acquisition, cost benefit strategies and innovation capacity in a business [7, 8, 9]. The concept attained its relevance after adopting SDG goal. Since the Sustainable Development Goals (SDGs) were adopted, companies have begun to prioritize the planet, people, and environment with the objective of improving their financial performance [10]. Sustainable and responsible investment strategies have significantly raised their relevance due to the concern regarding environmental, social, and governance practices in the countries [11]. The responsible investment strategies take environmental, social, and governance aspects into investment consideration to undertake the risk management strategies to enhance and generate substantial yield to the investors [12]. An embedded strategies and programmes are adopted by organizations due to the strict compliance of the regulations in the country. Organizations adhered to implementing ESG practices and their disclosure, which reflect the overall performance of the company, especially the financial performance. Better financial performance ensures proper disclosure of ESG, which indicates the attainment of a high score in the ESG matrix. In this study, the effect of Environmental, Social, and Governance (ESG) practices on the financial performance of Indian firms featured on the Nifty 100 ESG index will be experimentally investigated. The FE regression model and GMM estimate are used in the study to analyses 30 benchmarked organisations from 2020 to 2024. The purpose of this study is to investigate and assess how financial success influences environmental, social, and governance (ESG)

performance. Additionally, investigate the link between financial achievement and governance, social, and environmental concerns.

2. Review of literature

Numerous academics investigated the relationship between a company's financial success and ESG. Recent studies have primarily found favourable findings, but there are also several articles with negative results that support the shareholder theory, which holds that the firm's main goal is to maximise shareholder profit. The terms and concepts used in research on ESG and financial performance are sometimes contradictory. [13] found 33 definitions of corporate sustainability in usage. According to [14], the researchers began to examine the link between ESG standards and corporate financial success in the 1970s. By making ESG a priority, businesses increasingly prioritize sustainability over short-term profits [15]. According to [16], sustainability is a modern reporting perspective that emphasizes creating future value in relation to the company's policies. ESG measures sustainability in continuing education, which increases accountability for businesses, according to [17]. Companies with more sustainability offer a superior return, according to [18], who examine portfolios with and without higher sustainability.

➤ *Positive correlation between ESG performance and firms' financial performance:*

Numerous studies show that financial success and ESG ratings are positively correlated. Through ESG disclosure, companies can effectively enhance transparency and reduce information asymmetry, thereby enhancing investor confidence in their long-term investments in the company [19, 20]. A new wave of research on the effect of ESG on corporate performance has also been sparked by the growth of ESG; however, some studies have found a positive and significant impact [15, 21, 22, 23, 24, 25, 26, 27, 28]. [29] found that the positive effect of current ESG on financial performance in the lag period would gradually weaken. [30] found that timely disclosure of information through announcements is crucial for companies to achieve short-term success. Approximately 90% of the more than 2000 ESG-related papers that [14, 29] compiled and examined showed a favourable correlation between ESG and financial success. Furthermore, ESG performance positively correlates with firm

performance, particularly in governance and social aspects, which are prioritized over environmental factors in Indian firms. This positive impact is more pronounced in firms with higher performance levels, as shown by quantile regression analysis [23]. Additionally, firms listed on ESG indices demonstrate superior operational and financial performance compared to non-listed firms. However, the impact on market performance is mixed, with governance being the only subcomponent showing a clear positive effect on financial performance [31, 4]. According to [32], a company's total ESG score has a considerable and favourable impact on its financial performance, although the consequences of different ESG performances varies. There is no reciprocal relationship between business value and the individual and overall components of ESG. In the Indian energy sector, [33] look into the connection between company value and ESG scores. They conclude that there is no bidirectional relationship between corporate value and the individual and overall components of ESG. According to [34, 35, 36], ESG score has a positive and highly significant relationship with profitability. There is an extremely significant positive association between profitability and the environment, society, and governance. These results give the stakeholder paradigm theoretical support. Additionally, [37] documented that the firm's participation in social and environmental activities resulted in a higher level of financial efficiency. These findings underscore the importance of ESG considerations in financial performance, influencing both internal and external financing strategies and overall firm performance.

➤ *Negative correlation between ESG performance and firms' financial performance:*

Some scholars argued that ESG investment has a negative relationship with financial performance. According to [38], who use market returns to examine the effects of corporate social performance on UK enterprises, companies with lower social scores outperform the market. After examining the relationship between ESG ratings and ETF (Exchange Traded Fund) financial returns during COVID-19 in Canada, [39] come to the conclusion that strong ESG performance in ETFs does not provide protection during a severe market downturn. [40] look at 104 Latin American multinational companies between 2011 and 2015. According to their research, these companies' financial success and ESG rankings are negatively correlated. [41] use 2165 companies

from 2007 to 2014 to compare industrialized and emerging nations. [42] they reveal that in emerging markets, there is a negative association between financial performance and ESG scores. Take note of how the correlation between financial performance and ESG standards differs depending on the return on equity (ROE) distribution. The social pillar score shows a generally negligible association with ROE, but the environmental and governance pillar scores consistently have a negative influence across nearly all quantiles with strong statistical significance. Although it has a negative effect, its statistical significance is only marginally significant at the bottom end of the ROE range. Another study also aligned with that examined by [43] in 54 publicly traded Italian firms between 2007 and 2015 and found an opposite relationship between their financial performance and their ESG rankings. Also, the study reveals that there is a statistically significant negative relationship between ESG scores and short-term firm performance. The negative effect may arise from additional ESG-related costs, long-term investments, or stricter standards affecting revenue. However, strong ESG practices could improve long-term sustainability and resilience [44].

➤ *Mixed relationship between ESG performance and firm value and profitability.*

Some of the researchers studied the link between financial performance and ESG in different perspectives based on the period of adverse conditions in the market. And reach the conclusion that there are mixed relationships of variables. According to [45], there is no substantial link between company performance and any of the ESG components. It is clear that the period of COVID-19 has had a major adverse effect on the sustainability of businesses in emerging nations and that the tangible effects of ESG-related activities on company performance have not yet been observed. When [46] looked at how ESG performance affected company value while taking ownership structure into account, they discovered that ESG performance significantly and favorably affected firm value in the eastern and western areas but not in the middle. Relations in the Chinese market throughout the research period had a mixed overall impact. Research conducted in the Malaysian market shows that there is no significant relationship between individual or combined ESG factors and company performance. For instance, company value (Tobin's Q) and profitability (ROE). The poor association

implies that companies with varying amounts of ESG data perform equally or worse. Additionally, both are valued equally by the market, indicating that ESG is not thought to raise business value [47]. [48] investigate the relationship between ESG reporting and quality across multiple countries and find no correlation between ESG ratings and the financial performance of businesses.

3. Hypotheses

H1. Financial performance and the Environmental, Social, and Governance (ESG) score are significantly correlated.

H1a. Financial performance is significantly correlated with environmental performance.

H1b. Financial performance and social performance are significantly correlated.

H1c. Financial performance is significantly correlated with governance performance.

4. Methodology

4.1 Data Collection and Sampling

The study includes a sample of NSE Nifty 100 ESG-indexed Indian companies listed on the National Stock Exchange (NSE). Based on available data during the study period, 30 highly scored companies are chosen from among the index's 100 listed companies. Companies are rated in descending order of ESG performance. The survey covered companies with a composite score of higher than 40. The sample period covers from 2020 to 2024. Financial ratio data was gathered from the annual reports of Nifty 100 ESG firms, while ESG scores were taken from CRISIL and S&P Global.

4.2 Variables

Dependent variables: The primary dependent variables in this empirical study are financial performance indicators used to assess the impact of independent variables, such as the overall ESG score and the performance of individual ESG components. Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q ratio is employed to estimate the financial performance implications of a company's ESG performance. Tobin's Q, Return on Equity (ROE), and Return on Assets (ROA) are the dependent variables used in this study to indicate the financial performance of the company. While Tobin's Q offers a market-based viewpoint on business value, ROA and ROE reflect

efficiency and profitability based on accounting. In line with other studies, using all three guarantees a more rigorous and balanced evaluation of performance [24, 49, 50, 51, 52, 53].

Independent variables: The independent variables in this research are ESG performance and its three dimensions: environmental, social, and governance. To measure ESG performance, the NSE's sustainability disclosure index was used as a benchmark. Each company's sustainability disclosure index was determined by adding together all of the indicators' disclosure scores and dividing that total by the greatest possible score.

Control variables: In order to separate the impacts of the independent variables in the ESG score model and account for external factors, we incorporated a set of control variables, such as business size and financial leverage. Another element added to the ESG pillars was market capitalization. Dummy variables were also included to take temporal and industry variances into consideration.

4.3 Conceptual Framework

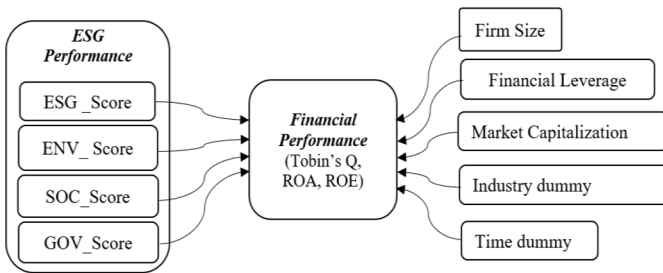


Fig. 1 Conceptual Framework

4.4 Empirical Model

Using fixed effect regression and System GMM (System Generalized Method of Moments) to address endogeneity among the variables, the following regression equations were created using three models to examine the impact of the ESG score and its environmental, social, and governance dimensions—both separately and together—on a firm's financial performance. Because of their association, we employ different models for each dependent variable (ROA, ROE, and Tobin's Q). We used three regression models to predict the outcomes. This research looks at the connection

between company financial success and ESG controversies, each ESG pillar, and overall ESG performance.

- *Model 1: Multiple regression for ESG Score and Financial Performance-Tobin's Q*

$$TBNQ_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 FL_{it} + \beta_3 FSZ_{it} + u_t + \varepsilon_{it} \quad \text{- Model 1.1}$$

$$TBNQ_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 MKT_{cp_{it}} + \beta_5 FL_{it} + \beta_6 FSZ_{it} + u_t + \varepsilon_{it} \quad \text{-Model 1.2}$$

- *Model 2: Multiple regression for ESG Score and Financial Performance-ROA*

$$ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 FL_{it} + \beta_3 FSZ_{it} + u_t + \varepsilon_{it} \quad \text{- Model 2.1}$$

$$ROA_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 MKT_{cp_{it}} + \beta_5 FL_{it} + \beta_6 FSZ_{it} + u_t + \varepsilon_{it} \quad \text{-Model 2.2}$$

- *Model 3: Multiple regression for ESG Score and Financial Performance-ROE*

$$ROE_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 FL_{it} + \beta_3 FSZ_{it} + u_t + \varepsilon_{it} \quad \text{- Model 3.1}$$

$$ROE_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 SOC_{it} + \beta_3 GOV_{it} + \beta_4 MKT_{cp_{it}} + \beta_5 FL_{it} + \beta_6 FSZ_{it} + u_t + \varepsilon_{it} \quad \text{- Model 3.2}$$

where: ENV, SOC, and GOV stand for the separate environmental, social, and governance factors, whereas ESG is the total score. TBNQ (Tobin's Q) signifies market value, ROE (Return on Equity) represents shareholder return, and ROA (Return on Assets) measures asset efficiency. Market capitalisation is represented by MKT_{cp}, financial leverage by FL, and company size by FSZ. Together, these factors encompass firm-specific traits, financial results, and ESG performance.

5. Results and Discussions

5.1 Descriptive Analysis

The descriptive statistics analysis for the research variables is summarised in Table 1 and reveals that the mean overall ESG performance was 62.38%. Governance performance was the highest average among individual components (65.18%),

followed by environmental performance (59.14%) and social performance. This result aligns with the arguments, that Indian enterprises prioritize governance and social considerations over environmental concerns [23]. These findings contrast those of [54, 55] in the Jordanian context. The sample consists of 150 observations drawn from 30 benchmark companies listed in NSE Nifty 100 ESG for the past 5 years. From Table 1, it could be inferred that a wide range of values. The ESG variables (ENV, SOC, GOV, and ESG_Rating) have a moderate distribution with minor left-skewness, indicating a concentration of moderate-to-high scores and reasonably consistent performance across firms. Among financial indicators, Return on Assets (ROA) and Return on Equity (ROE) show significant variability, with ROE having a higher mean (20.93) but also wider dispersion. Another Tobin's Q exhibit significant skewness and kurtosis, suggesting extreme values. Firm size is highly steady, with a small range, but financial leverage has a low mean (1.77) and significant variation. Overall, the dataset contains a combination of ESG performance and financial features, with variable degrees of dispersion and skewness.

Table 1-Descriptive Statistics Summary

Variables	N	Min	Max	Mean	Std. Deviation	Varianc e	Skewnes s
Dependent Variables							
ROA	150	-12	66	12.08	11.83	139.97	1.642
ROE	150	-42	118	20.93	23.24	540.23	1.8
Tobins_Q	150	0	91	9.76	15.29	233.8	3.907
Independent Variables							
ENV	150	18	93	57.98	15.65	244.97	-0.222
SOC	150	10	88	59.14	13.25	175.46	-0.779
GOV	150	10	89	65.18	13.7	187.68	-1.757
ESG	150	27	88	62.38	10.85	117.82	-0.847
Control Variables							
MKTcp(million)	150	0.00 83	1.51 38	0.457	0.3316	0.11	1.046
Firm size	150	8.59	15.1	11.08	1.53	2.34	0.856
Finl Lvrg	150	1	6	1.77	1.09	1.18	1.573
Valid N (listwise)		150					

Source: Data Analysis

5.2 Correlation Matrix

Table 2 provides the correlation analysis for the study variables. The correlation matrix shows significant interrelationships across ESG components, with ESG

being substantially associated with Environmental Score (ENV), Social Score (SOC), and Governance Score (GOV), demonstrating its comprehensiveness. However, ESG characteristics have a negative association with financial performance metrics, including ROA ($r = -0.173$ to -0.440) and ROE ($r = -0.190$ to -0.287), implying that companies with stronger ESG performance may have poorer short-term profitability. Tobin's Q has poor correlations with ESG parameters, indicating a little influence on market valuation. Firm size is positively linked to ESG performance ($r = 0.22$) but adversely associated with profitability. Financial leverage (Fin_Lvrg) is inversely correlated with ESG scores, showing that companies with excellent ESG performance have lower debt. The findings show that every value of the variance inflation factor (VIF), which ranges from 1.268 to 9.703, is less than 10. Also, the tolerance values varied from 0.093 to 0.788, indicating that the study model did not have any significant issues regarding multicollinearity.

Table 2 – Correlation Matrix

Variables	1	2	3	4	5	6	7	8	9
1. ENV	1								
2. SOC	.777**	1							
3. GOV	.624**	.702**	1						
4. ESG	.872**	.844**	.775**	1					
5. ROA	-.173*	-.353**	-.440**	-.291**	1				
6. ROE	-.190*	-.287**	-.265**	-.243**	.839**	1			
7. Tobins_Q	-.169*	-.089	-.001	-.138	.357**	.700**	1		
8. Firm_size	.223**	.123	.229**	.224**	-.384**	-.303**	-.352**	1	
9. Finl_Lvrg	-.277**	-.243**	-.208*	-.274**	.014	.158	.235**	.128	1
VIF	3.863	3.294	5.201	7.435	9.703	3.990	1.595	1.268	3.863
Tolerance	.259	.304	.192	.135	.093	.251	.627	.788	.259

Notes: * Significant at the 1% level; ** Significant at the 5% level

Source: Data Analysis

5.3 Regression Analysis

Model 1.1: ESG Score and Financial Performance-Tobin’s Q

Model 1.1 uses a fixed-effects panel regression framework to examine the impact of ESG performance on company performance as evaluated by Tobin's Q across a five-year period (150 observations) across 30 Indian enterprises, adjusting for firm size and financial leverage. The model is statistically significant ($F = 5.69, p = 0.0011$), and the within R^2 of 12.73% suggests moderate explanatory power. Firm size shows a strong and positive relationship with Tobin’s Q ($\beta = 6.05, p < 0.001$), consistent with prior findings that larger firms often enjoy higher market valuations due to scale advantages and investor confidence (Singh & Ghosh, 2021). However, ESG Score ($\beta = -0.0209, p = 0.668$) and financial leverage ($\beta = -0.319, p = 0.757$) were not significant predictors, echoing studies reporting inconclusive ESG impacts in emerging markets [56]. High firm-level heterogeneity ($\rho = 0.975$) justifies the fixed-effects estimation.

Table 3- Regression Analysis: ESG Score and Financial Performance-Tobin’s Q

Variable	FE Coef. (p-value)	GMM Coef. (p-value)
L.Tobins_Q	–	0.8596 (0.000)***
ESG	-0.0209 (0.668)	0.0416 (0.152)
Finl_Lvrg	-0.3191 (0.757)	0.7061 (0.240)
Firm_size	6.0537 (0.000)***	-0.7544 (0.147)
Constant	-55.3687 (0.002)**	6.8542 (0.232)
<i>Note: ***p < 0.01, **p < 0.05, p < 0.10. FE = Fixed Effects; GMM = System Generalized Method of Moments.</i>		

Source: Data Analysis

To address potential endogeneity and the dynamic nature of firm performance, a System GMM model was employed (120 observations), treating lagged Tobin’s Q and ESG Score as endogenous. This model confirms strong performance persistence (L.Tobin’s_Q: $\beta = 0.799, p < 0.001$), while ESG Score remains statistically insignificant ($\beta = -0.009, p = 0.825$), suggesting limited short-run impact of ESG practices on firm value [57]. Interestingly, firm size exhibits a significant negative effect in the dynamic model ($\beta = -0.922, p = 0.002$), indicating that once firm-level dynamics are accounted for, larger size may not always enhance valuation. The model

passed key diagnostic tests, including no second-order autocorrelation (AR (2) $p = 0.322$) and valid instruments (Hansen $p = 0.039$; Difference-in-Hansen $p = 0.158$). Overall, results suggest that ESG efforts did not significantly affect firm market valuation in the Indian context during the study period (2020–2024), although firm size and past performance remain important drivers.

Model 1.2: ESG Pillars Score and Financial Performance-Tobin's Q

Model 1.2 uses a fixed-effects panel regression with 150 company-year data to investigate the impact of the ESG pillar scores—Environmental (ENV), Social (SOC), and Governance (GOV) on firm value, as measured by Tobin's Q. The model is statistically significant ($F = 3.37$, $p = 0.0043$), explaining around 15% of within-firm variation, though none of the ESG components emerge as significant predictors of firm value. Firm size shows a strong positive association ($\beta = 5.41$, $p = 0.001$), while market capitalization and financial leverage remain insignificant. The high intra-class correlation ($\rho = 0.974$) and significant group effect test confirm the relevance of firm-specific heterogeneity, consistent with recommendations for using fixed-effects models in panel data settings [58].

To address potential endogeneity and capture the dynamic nature of firm value, a two-step System GMM estimator is employed [59, 60]. The lagged Tobin's Q is highly significant ($\beta = 0.873$, $p < 0.01$), indicating persistence in firm valuation. ESG scores again show no significant impact: ENV is weakly positive ($\beta = 0.071$), SOC is negative ($\beta = -0.053$), and GOV has no effect ($\beta = 0.0001$). In contrast to the fixed-effects model, firm size now shows a marginally negative association ($\beta = -0.825$, $p = 0.069$), potentially reflecting diminishing marginal returns to scale. Model diagnostics support the robustness of the GMM estimates, with no second-order autocorrelation (AR (2) $p = 0.325$) and valid instruments based on the Hansen test ($p = 0.619$), despite the Sargan test being significant. Overall, the findings suggest that ESG scores especially social and governance components—are not yet systematically integrated into

firm valuation by investors in the Indian context, aligning with prior literature on emerging markets where ESG considerations are often underweighted [61, 62].

Table 4- Regression Analysis: ESG Pillar's Score and Financial Performance-Tobin's Q

Variable	FE Coef. (p-value)	GMM (Coef. (p-value))
L.Tobin's Q	—	0.8826 (0.000)***
ENV	0.0412 (0.305)	0.0666 (0.133)
SOC	-0.0685 (0.128)	-0.0510 (0.217)
GOV	0.0158 (0.801)	-0.0056 (0.910)
MKTcap_million	1.52 (0.613)	0.2113 (0.835)
Finl_Lvrg	0.4287 (0.482)	0.6119 (0.286)
Firm_size	-0.5923 (0.076)*	-0.7572 (0.040)**
Constant	8.4125 (0.022)**	8.9129 (0.007)***
<i>Note: ***p < 0.01, **p < 0.05, p < 0.10.</i>		

Source: Data Analysis

Model 2.1: ESG Score and Financial Performance-ROA

To investigate the relationship between ESG performance and financial outcomes in Model 2.1, both Fixed Effects (FE) and two-step System GMM estimations were employed. The FE model, with Return on Assets (ROA) as the dependent variable, controls for firm-specific time-invariant heterogeneity, ensuring that the results reflect within-firm variations. Findings indicate a negative but statistically insignificant association between ESG and ROA ($\beta = -0.092$, $p = 0.179$), suggesting that ESG engagement does not produce immediate improvements in profitability. Firm Size also showed an insignificant negative effect ($\beta = -2.732$, $p = 0.203$), while Financial Leverage was marginally significant and negative ($\beta = -2.777$, $p = 0.057$), consistent with the notion that excessive debt burdens profitability. Complementing these results, the System GMM model, which addresses potential endogeneity and dynamic effects, found that ROA is highly persistent over time (L.ROA: $\beta =$

0.997, $p < 0.01$). ESG again showed a negative but insignificant effect ($\beta = -0.036$, $p = 0.305$), reinforcing the FE results that ESG engagement may have delayed rather than immediate financial returns. Firm Size remained insignificant, whereas Financial Leverage exhibited a positive and marginally significant effect ($\beta = 0.339$, $p = 0.073$), hinting that moderate debt could enhance profitability through efficient capital utilization. Diagnostic tests (Hansen J test $p = 0.153$; AR (2) $p = 0.308$) confirmed model validity, suggesting that the instruments were appropriate and that no second-order autocorrelation was present. Overall, both estimation methods converge on the conclusion that ESG performance does not significantly influence short-term accounting-based profitability, aligning with prior literature that emphasizes the long-term nature of ESG benefits [18, 14].

Table 5- Regression Analysis: ESG Score and Financial Performance-ROA

Variable	FE Coef. (p-value)	GMM Coef. (p-value)
L1.ROA	—	0.9443 (0.000) ***
ESG	-0.0924 (0.179)	-0.0579 (0.102) *
Finl_Lvrg	-2.7768 (0.057) *	0.2984 (0.187)
Firm Size	-2.7317 (0.203)	-0.1919 (0.549)
Constant	53.2371 (0.031) **	6.7368 (0.268)
Note: *** $p < 0.01$, ** $p < 0.05$, $p < 0.10$.		

Source: Data Analysis

Model 2.2: ESG Pillers Score and Financial Performance-ROA

Model 2.2's Fixed Effects (FE) model reveals that, whilst the environmental and social scores are statistically insignificant, the governance score ($\beta = -0.201$, $p < 0.001$) is strongly and adversely correlated with ROA. 16% of the within-firm variance in ROA can be explained by the model, with firm size having a moderately negative influence ($p = 0.053$) and other control variables remaining negligible. By comparison, the two-step System GMM model shows a positive, substantial correlation between the

environmental score and ROA ($\beta = 0.158$, $p < 0.001$) and a considerable persistence in profitability (delayed ROA $\beta = 0.892$, $p < 0.001$). But the profitability is significantly impacted by the governance ($\beta = -0.160$, $p = 0.003$) and social ($\beta = -0.126$, $p = 0.016$) ratings. Diagnostic tests (Hansen $p = 0.665$; AR (2) $p = 0.258$) confirm that the GMM specification is legitimate. Together, these findings imply that, although environmental performance often increases business profitability, particularly when dynamic impacts are taken into consideration, social and governance measures may have short-term financial consequences. The findings that ESG factors have diverse effects on financial performance and that dynamic modelling can uncover effects that static FE techniques miss is supported by this [18,14, 58].

Table 6- Regression Analysis: ESG Pillers Score and Financial Performance-ROA

Variable	FE Coef. (p-value)	System GMM Coef. (p-value)
L.ROA	—	0.892 (0.000) ***
ENV	0.079 (0.221)	0.158 (0.000) ***
SOC	-0.0003 (0.996)	-0.126 (0.016) **
GOV	-0.201(0.000) ***	-0.160 (0.003) **
MKTcap million	0.00003 (0.548)	-0.0002 (0.105)
Finl Lvrgr	-0.011 (0.763)	-0.013 (0.590)
Firm size	-4.170 (0.053) *	-0.366 (0.736)
<i>Note.</i> *** $p < 0.01$, ** $p < 0.05$, $p < 0.10$		

Source: Data Analysis

Model 3.1 : ESG Score and Financial Performance-ROE

The Fixed-Effects (FE) model demonstrates that, for the sampled companies in model 3.1, financial leverage, company size, and ESG score are not significant predictors of ROE. A little negative correlation is shown by the ESG ($\beta = -0.070$, $p = 0.660$), which is in line with research showing that there is no immediate ESG–ROE impact in several emerging economies [53, 16, 64]. Both business size ($\beta = -6.368$, $p = 0.203$) and financial leverage ($\beta = -2.113$, $p = 0.532$) are unimportant but negative. Significant unobserved heterogeneity is indicated by the very significant firm-level fixed effects, although the model only explains a small amount of variance in ROE (R^2 within = 0.0175).

Conversely, the System GMM results show that ROE is persistent and that delayed

ROE has a positive and substantial impact on present ROE ($\beta = 0.801$, $p < 0.01$). With $\beta = -0.114$ and $p > 0.05$, ESG is still negative and not significant. Financial leverage notably turns positive ($\beta = 1.913$, $p < 0.10$), indicating possible advantages of debt financing. While the Sargan test raises moderate concerns about over-identification, diagnostics (AR (1), AR (2), Hansen) verify the validity of the model. Although profitability persists and leverage effects differ depending on the estimating approach, overall ESG performance has no direct short-term influence on ROE, which is consistent with other findings on emerging markets [63, 60, 65].

Table 7- Regression Analysis: ESG Score and Financial Performance-ROE

Variable	FE Coef. (p-value)	GMM Coef. (p-value)
L.ROE	—	0.801 (0.000) ***
ESG	-0.070 (0.660)	-0.114 (0.482)
Finl Lvrgr	-2.113 (0.532)	1.913 (0.089) *
Firm size	-6.368 (0.203)	-0.702 (0.614)
Constant	99.728 (0.087)	15.327 (0.225)
<i>Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$</i>		

Source: Data Analysis

Model 3.2 : ESG Pillers Score and Financial Performance-ROE

The fixed-effects regression model for Return on Equity (ROE) was generated. The model has an overall explanatory power of 10.08%, explaining 7.46% of the variation in ROE within firms and 11.01% of the variation across firms. At the five percent significance level, the model did not, however ($F(6,114) = 1.53$, $p = 0.1741$). GOV, one of the independent variables, had a significant negative correlation with ROE ($\beta = -0.329$, $p = 0.015$), indicating that companies with higher governance scores often had lower ROE across the period. Market capitalisation, financial leverage, environmental score (ENV), and social score (SOC) did not significantly affect ROE, however firm size was somewhat inversely correlated with it ($\beta = -8.834$, $p = 0.087$). Keeping all other factors equal, the significant constant ($\beta = 130.019$, $p = 0.029$) showed a positive baseline ROE. A significant test verified firm-specific effects ($F(29,114) = 15.57$, $p < 0.0001$), and the intra-class correlation ($\rho = 0.805$) showed that variations across businesses account for about 80.5% of ROE variance. The two-step System GMM model included delayed ROE, which was significantly positive ($\beta = 0.799$, $p < 0.001$) and accounted for endogeneity and persistence. In contrast to the social ($\beta = -0.284$, p

= 0.032) and governance ($\beta = -0.261$, $p = 0.008$) scores, which indicated short-term profitability trade-offs, the environmental score had a positive impact on ROE ($\beta = 0.315$, $p = 0.004$). There were no significant control factors. Diagnostic tests using reliable instruments and no second-order autocorrelation validated the validity of the model. As a result of the inherent trade-offs in ESG strategies, environmental initiatives generally seem to improve financial performance, while increased social and governance obligations may momentarily lower profitability.

Table 8- Regression Analysis: ESG Pillar's Score and Financial Performance-ROE

Variable	FE Coef. (p-value)	GMM Coef. (p-value)
L1.ROE	—	0.7991 (0.000) ***
ENV	0.157 (0.312)	0.315 (0.004) **
SOC	0.029 (0.852)	-0.284 (0.032) **
GOV	-0.329 (0.015) **	-0.261 (0.008) **
MKTcap_million	2.612 (0.494)	-2.858 (0.478)
Finl_Lvrg	-0.977 (0.771)	1.692 (0.187)
Firm_size	-8.834 (0.087) *	0.698 (0.554)
Constant	130.019 (0.029) **	11.572 (0.431)
<i>Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$</i>		

Source: Data Analysis

6. Conclusion

The goal of this study is to investigate the impact of ESG scores on corporate financial performance. For the study, we used financial performance metrics Tobin's Q, ROA, and ROE and ESG factors to examine the link between these variables over the period of 2020 to 2024. There are 30 companies with a high score on the ESG index were selected to examine the relationship in Indian market. The research demonstrates that ESG performance has a mixed influence on companies' financial performance. Overall, ESG performance does not have a significant short-term impact on firm valuation (Tobin's Q) or profitability (ROA, ROE) among Indian firms during 2020–2024. Firm size and past financial performance are the strongest predictors of valuation and profitability. While environmental scores show some positive effects on profitability in

dynamic models, social and governance scores tend to have negative or insignificant impacts. Overall, ESG factors appear to exert limited influence on market valuation and financial returns in the short run within this emerging market context. According to the examination of 30 Indian companies between 2020 and 2024, company size and firm valuation (Tobin's Q) are consistently positively correlated in fixed-effects models but negatively correlated in System GMM models when dynamics are taken into consideration. According to research by [56, 62], who document equivocal ESG impacts in developing markets, ESG scores including comprehensive and individual Environmental, Social, and Governance pillars do not substantially affect Tobin's Q in either estimating technique.

ESG scores do not significantly affect accounting profitability (ROA) (Devi and Sapna, 2024), on the other hand, ROA is favourably impacted by environmental performance, although social and governance scores also have negative impacts. According to [18, 14], who draw attention to the long-term and diverse character of ESG benefits, financial leverage has a negative impact on ROA in fixed effects models but a little beneficial impact in dynamic models.

Governance scores have a considerable negative impact on return on equity (ROE), according to fixed-effects studies; other ESG components are not significant. Similar to findings from [53, 16], Dynamic System GMM models validate high profitability persistence, a positive impact of environmental scores on ROE, and negative impacts from social and governance scores.

The implications of this research are significant for both academic and practical purposes. For policymakers and regulators, the study highlights the importance of creating a supportive regulatory environment that incentivizes firms to adopt sound financial measures while pursuing ESG initiatives. For corporate managers, the findings emphasize the need to align financial strategies with sustainability objectives to enhance long-term value creation. Lastly, for investors, this study reinforces the relevance of ESG disclosures and performance in evaluating a firm's financial and non-financial value drivers. In conclusion, this study bridges the gap in understanding the interplay between ESG scores and financial performance in emerging economies like India, providing valuable insights for stakeholders across the financial and sustainability ecosystems. It calls for further research to explore the dynamic

interactions between ESG dimensions and capital structure decisions in diverse industry contexts and regions.

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Disclosure of Interest

We confirm that there are no financial conflicts of interest or personal relationships that might have influenced the outcomes of this work.

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