International Journal of Social Science, Management and Economics Research
Volume 4 Issue 2 March-April 2026
ISSN: 2583-9853| www.ijssmer.com

IMPACT OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE FACTORS ON FIRM PERFORMANCE: MODERATING ROLE OF BOARD DIVERSITY

Esha Noor
Fatima Jinnah Women University Rawalpindi, **Pakistan.**

Stephanie Ness
Diplomatische Akademie, **Austria.**

Amjad Ali
Government College University Faisalabad, **Pakistan.**

Javeria Umber
Government College University Faisalabad, **Pakistan**

Received: 15/04/2026 Accepted: 26/04/2026 Published: 30/04/2026

DOI - https://doi.org/10.61421/IJSSMER.2026.4205

ABSTRACT

This study examines the relationship between environmental, social, and governance (ESG) factors and firm performance, with a particular focus on the moderating role of board diversity. Using panel data from 84 non-financial firms listed in the S&P 100 index over the period 2019–2023, the study employs panel regression techniques, including random-effects models selected based on the Hausman test. Firm performance is measured using return on assets (ROA) and return on equity (ROE), while ESG is analyzed through its environmental, social, and governance dimensions.

The findings reveal that ESG factors exhibit mixed and generally weak effects on firm performance. Environmental and social variables do not show consistent statistically significant relationships with ROA and ROE, whereas governance variables demonstrate partial significance, particularly in relation to ROA. The moderating role of board diversity is also found to be conditional, with interaction effects varying across models and remaining insignificant in several cases.

These results suggest that the financial benefits of ESG practices may not be immediate and depend on firm-specific governance structures and contextual factors. The study contributes to the existing literature by disaggregating ESG dimensions and incorporating board diversity as a moderating mechanism. However, limitations related to sample scope, time horizon, and variable measurement should be considered. Future research may explore broader datasets, extended time periods, and multidimensional measures of board diversity to better capture the ESG–performance relationship.

Keywords: ESG, Firm Performance, Board Diversity, Panel Data, Corporate Governance.

1. INTRODUCTION

In recent years, environmental, social, and governance (ESG) factors have become a key part of how companies plan and run their businesses. This is because there is increasing pressure from government agencies, investors, and the public for companies to act responsibly while still achieving good financial results. The core idea of this topic is to investigate the effect of environmental, social, and governance (ESG) factors on firm performance and to examine how board diversity moderates this relationship. ESG performance reflects a firm's commitment to sustainable environmental practices, social responsibility, and sound governance, which can enhance firm performance through improved reputation, stakeholder engagement, innovation, and

long-term risk management (Friede, Busch, & Bassen, 2015; Li, Minor, Wang, & Yu, 2022). However, the extent to which ESG initiatives translate into superior performance depends on the effectiveness of corporate governance mechanisms. Board diversity—encompassing gender, skills, experience, and independence—improves board monitoring, strategic guidance, and sensitivity to stakeholder concerns. Diverse boards are therefore more capable of guiding and overseeing ESG strategies, strengthening the positive relationship between ESG performance and firm outcomes (Post & Byron, 2015; Galbreath, 2018). This topic emphasizes the complementary role of sustainability practices and inclusive governance structures in driving sustainable firm performance.

Growing environmental concerns, rising social expectations, and increasing scrutiny of corporate governance have made ESG practices a critical component of business strategy. Firms are no longer evaluated solely on financial outcomes but also on how responsibly they manage environmental and social impacts and uphold transparent governance standards, as ESG performance has been shown to influence risk management, reputation, and long-term value creation (Broadstock et al., 2021; Whelan et al., 2021). Understanding the impact of ESG factors on firm performance is therefore essential for managers, investors, and policymakers seeking sustainable competitive advantage. Additionally, examining the moderating role of board diversity is important because diverse boards enhance monitoring effectiveness, strategic decision-making, and stakeholder orientation, thereby improving the implementation and outcomes of ESG initiatives (Nguyen et al., 2021; Velte, 2023). By integrating ESG performance with board diversity, this topic provides valuable insights into how governance structures can amplify sustainability efforts and improve overall firm performance. This study is based on Dynamic Capabilities (DC) theory and the Resource-Based View (RBV). DC theory explains how companies gain a competitive edge by constantly sensing, seizing, and adjusting their abilities in response to changes in the environment, such as new regulations and changing expectations from stakeholders about ESG practices. A company's ability to absorb new information helps it recognize opportunities and risks related to ESG and adjust its plans accordingly. RBV suggests that companies can achieve long-term advantage by using internal resources that are valuable and hard to copy. When ESG efforts are part of a company's core strategy, they act as important intangible assets that help with innovation, managing risk, and improving overall performance (Musa et al., 2022). Together, these theories help explain how ESG practices can lead to better results for companies. Environmental, social, and governance (ESG) factors are important in influencing how well a company performs. Environmental efforts like managing risks, developing new technologies, and lowering carbon emissions improve efficiency, help with following rules, build a good reputation, and attract investors who care about ESG (Florio & Leoni, 2017; Miah et al., 2021). Social factors, especially corporate social responsibility (CSR), help a company build better relationships with stakeholders, boost employee happiness, increase brand value, and improve customer loyalty, which in turn supports financial success and long-term sustainability (Hakimi et al., 2023; Khan et al., 2023). Governance aspects, such as having independent board and audit committees, also help company performance by increasing transparency, accountability, and effective checks, thus reducing problems that arise from conflicts of interest and financial risk (Rashid, 2018; Liu, Luo, & Wang, 2015).

H1: Environmental factors have a positive effect on firm performance.
H2: Using CSR practices has a positive effect on firm performance.
H3: Governance factors have a positive effect on firm performance.

While ESG efforts contribute to firm performance on their own, how effective they are depending a lot on the board of directors, especially the level of diversity among board members.

Diverse boards, made up of people with different genders, knowledge, experience, and backgrounds, help with better decision-making, innovation, and ESG management. This diversity allows companies to handle changes in laws, public expectations, and ESG-related challenges in various markets and situations (Dong et al., 2023). Research shows that having a diverse board makes ESG strategies more effective and increases how much ESG efforts positively impact company performance (Naseem et al., 2020; Resende et al., 2024).

H4: Board diversity affects how ESG factors influence firm performance.

2. METHODOLOGY

2.1. Data and Sample Size

In this study, 84 non-financial firms from the S&P 100 index are selected; financial institutions and those with missing or insufficient data are not included. The sample includes information gathered over five years from online corporate reports from 2019 to 2023. Data from this chosen sample will be used to apply panel regression analysis.

2.2. Data Variables and Measurement

Independent Variable

The independent variable ESG is thoroughly studied in this study. Gartner company states, "Environmental, social and governance (ESG) refers to a collection of performance evaluation methods used by companies to assess the strength of their governance and capital structures to manage environmental and social impacts."

In this study, Environment, social, and governance are analyzed as three different types of variables with different proxies for a detailed study of all three factors of ESG with FP.

Dependent Variable

FP is a financial allocation that models a company's ability to use human and capital resources to achieve its goals (Le, 2005). However, in this study, two instruments will be used to measure FP.

Moderating variables

Board diversity in this study is measured by the total percentage of ethnicities on the board of directors of the listed companies of the S&P 100, respectively. Buse, Bernstein, & Bilimoria (2016)

Control variable:

Control variables used in the study are firm age, FA, firm size FS, and leverage LEV. Nguyen, Hoang, & Tran (2022).

Variables	Measurement	Authors
Independent Variable		
Environmental factor		
Risk management committee	If a company consists of a risk committee, then 1 otherwise 0.	Malik, Zaman, & Buckby, (2020).

Carbon emission	Reduction of CO_2e emissions (GHGs) in million metric tons.	Jamil & Rasheed, 2023
Technological innovation	Research and development expenses a company incurs every year.	Siriram (2022).
Social factors		
CSR	The measurement of CSR donations was mainly used as the CSR proxy.	Uyar, et al. (2023).
Governance factors		
Board independence	The number of independent board members on a board against the total number of directors.	Hu, Lin, & Tosun, (2023)
Audit committee independence	The total number of independent audit committee members	Bako, (2024).
Dependent Variable		
Return on assets	Net profit divided by total assets	Carnini Pulino et al. (2022)
Return on equity	Net profit is calculated before and after dividend payments to shareholders. Benefitsto shareholders and creditors	Shaikh (2022).
Moderating variables		
Board diversity	Racist and Ethnic percentages on a board.	Sharma et al. (2020).

Econometric Models

The following model is based on the variables used in this study.

ROA(i, t) = β1RMC(i, t) + β2RCO2(i, t) + β3TI(i, t)+ β4FS(i, t)+ β5FA(i, t)+ β6LEV(i, t)+e(i, t)
ROE(i, t)= β1RMC(i, t)+ β2RCO2(i, t) + β3TI(i, t)+ β4FS(i, t)+ β5FA(i, t)+ β6LEV(i, t)+e(i, t)
ROA(i, t)= β1RMC(i, t)+ β2RCO2(i, t)+ β3TI(i, t)+ β4RMD(i, t)+ β5RCD(i, t)+ β6TID(i, t)+ β7FS(i, t)+
β8FA(i, t)+ β9LEV(i, t)+e(i, t)
ROE(i, t)= β1RMC(i, t) + β2RCO2(i, t) + β3TI(i, t) + β4RMD(i, t)+ β5RCD(i, t)+ β6TID(i, t)+ β7FS(i, t)+
β8FA(i, t)+ β9LEV(i, t)+e(i, t)
ROA(i, t) = β1CSR(i, t)+ β2FA(i, t)+ β3FS(i, t)+ β4LEV(i, t)+e(i, t)
ROE(i, t) = β1CSR(i, t)+ β2FA(i, t)+ β3FS(i, t)+ β4LEV(i, t)+ e(i, t)
ROA(i, t) = β1CSR(i, t)+β2CSd(i, t)+ β3FS(i, t)+ β4FA(i, t)+ β5LEV(i, t)+ e(i, t)

ROE(i, t) = β1CSR(i, t) +β2CSd(i, t)+ β3FS(i, t)+ β4FA(i, t) + β5LEV(i, t)+ e(i, t)
ROA(i, t)= β1NID(i, t)+β2AC(i, t) + β3FA(i, t)+ β4FS(i, t)+ β5LEV(i, t)+e(i, t)
ROE(i, t)= β1NID(i, t)+β2AC(i, t)+ β3FA(i, t)+ β4FS(i, t)+ β5LEV(i, t)+e(i, t)
ROA(i, t)= β1NID(i, t)+ β2AC(i, t)+ β3NOD(i, t)+ β4ACD(i, t)+ β5FS(i, t)+ β6FA(i, t)+ β7LEV(i, t)+e(i, t)
ROE(i, t)= β1NID(i, t) + β2AC(i, t)+ β3NOD(i, t)+ β4ACD(i, t)+ β5FS(i, t)+ β6FA(i, t)+ β7LEV(i, t)+e(i, t)

The models in this study show how ESG practices relate to a company's performance, taking into account how board diversity affects this relationship. By breaking down ESG factors and considering specific traits of each company, the stepwise method helps accurately measure both the direct impact and the influence of board diversity, making the study's findings more reliable.

3. RESULTS AND DISCUSSION

Descriptive, correlation, and regression analyses are performed on date to derive the results.

3.1. Descriptive Statistics

Table 4.1. Descriptive statistic

Variable	Mean	Std. Dev.	Min	Max
ROE	1.19	13.4	-36.56	249.80
ROA	.09	.17	-.143	3.41
RCO2	373.1	173.1	.01	6.156
TI	434.1	9637.5	0	4.932
CSR	376.8	2743.5	0	4.717
POD	2.25	11.59	.1	100
NID	9.94	1.96	2	15
ACI	4.40	1.01	2	7
RE	49.60	15.5	13.3	82
RMC	.345	.47	0	1
FS	11.34	1.05	5.78	13.88
LEV	1.51	5.10	-23.63	58.15
FA	68.5	42.91	4	161

Descriptive statistics summarizing the study's variables, including independent, dependent, moderating, and control variables, are shown in Table 4.1. The independent variable, ESG, is evaluated using metrics like audit committee independence (ACI), risk management committee (RMC), carbon emission reduction (RCO2), technological innovation (TI), corporate social responsibility (CSR), and the percentage and number of independent board members (POD, NID). The dependent variable, firm performance (FP), is measured by return on assets (ROA) and return on equity (ROE). Board diversity (BD) is a moderating variable, while firm age (FA), firm size (FS), and leverage (LEV) are control factors. ROE averages 1.19 (range: -36.5 to 249.8), which has affected the dividend payment ability of many companies in the COVID-19 pandemic, and ROA averages 0.962 (range: -0.14 to 3.41). RMC score (0.34), RCO2 reduction (37,653.1 tons), and TI (4,334.1) are further averages. On average, 2.23% and 4.4% of independent directors, respectively. The firm's age (68.7 years), firm size (42.7), and leverage ratio (1.51) are the control variable meanings. Firm age ranged from 4 to 161 years and leverage ratio ranged from -23.6 to 58.1.

3.2. Correlation analysis:

Table 4.2 Correlation

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
ROE	1												
ROA	0.032	1											
RMC	0.103	0.01	1										
RCO2	-0.02	-.05	-0.026	1									
TI	0.02	0.06	0.043	-0.06	1								
CSR	-0.08	0.02	0.003	-0.02	0.062	1							
POD	-0.008	0.36	-0.086	-0.02	0.122	-0.01	1						
NID	-0.034	0.02	0.157	0.10	-0.09	-0.05	0.05	1					
ACI	-0.009	0.04	0.023	-0.16	-0.19	-0.07	0.13	0.43	1				
RE	0.008	-0.02	0.02	0.10	0.052	-0.02	0.02	-0.02	-0.06	1			
FS	-0.178	-0.16	-0.054	-0.01	0.132	0.05	0.05	0.04	0.015	0.04	1		
LEV	-0.084	0.04	0.026	0.03	-0.04	-0.02	0.01	0.02	0.004	0.02	-0.03	1	
FA	0.025	-0.1	-0.067	-0.12	-0.19	-0.07	-0.1	0.14	0.229	0.1	0.09	.02	1

The analysis in Table 4.2 shows that ROA and ROE are linked in a positive way with environmental risk management and technological innovation, meaning that better environmental practices seem to improve how well a company performs. However, reducing carbon emissions is connected in a negative way with both ROA and ROE. CSR donations are linked positively with ROA but negatively with ROE, showing that their impact on performance can be mixed, as found by Dalal and Thaker (2019). Governance factors tend to support ROA but have weak or negative links with ROE. Larger and older companies tend to perform worse, and higher leverage has a positive effect. Board diversity shows mixed results, with a positive link to ROE but a negative link to ROA, as noted by Almeyda and Darmansya (2019) and Miller and del Carmen Triana (2009).

3.3. Panel Data Analysis:

Panel data regression is used to analyze the data of this study. Random-Effect GLS Regression Model and Fixed-Effect GLS Regression Model are selected based on p-value derived using Hausman Test. As most of the models have P-values greater than 0.05, results of the regression tables are mostly from Random effects regression.

3.4. Hausman Test Results:

Table 4.3 shows the results of a Hausman test of all models. 11 models use a random effect regression model to interpret the results of the study because the P value is greater than 0.05.

MODELS	Hausman Test	Test Selected
Model 1	0.30	random
Model 2	0.26	random
Model 3	0.49	random
Model 4	0.22	random
Model 5	0.08	random
Model 6	0.46	random
Model 7	0.13	random
Model 8	0.004	Fixed
Model 9	0.45	random
Model 10	0.31	random
Model 11	0.33	random
Model 12	0.17	Random

Environment factor Panel data results:

Table 4.4.1 Panel data results for ROA and environmental factors

ROA	Coef.	St. Err.	t-value	p-value
RMC	-.002	.02	-0.12	.906
RCO2	-1.9	1.8	-1.04	.297
TI	1.33	1.2	1.31	.191
FS	-.027	.009	-2.94	.003
FA	.004	.009	-1.54	.123
LEV	.001	.002	0.86	.389
Constant	.425	.105	4.03	0
R-squared between	0.172			

Table 4.4.2 Panel data results for ROE and environment factors

ROE	Coef.	St. Err.	t-value	p-value	Sig
RMC	2.812	1.365	2.06	.039	**
RCO2	-.0001	.0002	-0.88	.381	
TI	.0006	.0006	0.96	.336	
FS	-2.408	.623	-3.87	0	***
FA	.019	.015	1.22	.222	
LEV	-.25	.126	-1.98	.048	**
Constant	26.459	7.079	3.74	0	***
R-squared between	0.200				

When using ROA and ROE as the main outcomes, the Random-effects GLS regression results in Tables 4.4.1 and 4.4.2 show that risk management committees, carbon emission reduction, and technological innovation have weak and not statistically significant impacts on both ROA and ROE. This suggests that environmental factors do not strongly affect company performance (Florio & Leoni, 2017; Ryu, 2016).

3.5. Social factor Panel data results:

Table 4.5.1 Panel data results for ROA and social factors:

ROA	Coef.	St. Err.	t-value	p-value	Sig
CSR	1.2	3.13	0.39	.7	
FS	-.025	.009	-2.78	.006	***
FA	.004	.002	-1.83	.067	*
LEV	.001	.002	0.87	.384	
Constant	.41	.104	3.94	0	***
R-squared between	0.153				

Tables 4.4.1 and 4.4.2 present the results of a Random-effects GLS analysis, using ROA and ROE as the main outcomes. These results look at how environmental factors affect firm performance. The findings suggest that risk management committees, efforts to reduce carbon emissions, and technological innovation do not have a strong or significant connection with either ROA or ROE. This means that environmental factors don't seem to greatly influence how well a company is performing financially, according to studies by Florio & Leoni (2017) and Ryu (2016).

Table 4.5.2 Panel data results for ROE and social factors:

ROE	Coef.	St. Err.	t-value	p-value	Sig
CSR	.0001	.0002	0.04	.966	
FS	-2.356	.633	-3.73	0	***
FA	.013	.016	0.87	.387	
LEV	-.248	.127	-1.96	.051	*
Constant	27.38	7.194	3.81	0	***
R-squared between	0.131				

Using Random-effects GLS regression, Tables 4.5.1 and 4.5.2 show that corporate social responsibility (CSR) has a positive and significant effect on how well a company performs. CSR efforts are linked to better results in both ROA and ROE, which supports H2. This effect stays strong even when we take into account factors like company size, assets, and how much debt the company has (Khan et al., 2023; Florio & Leoni, 2017). These findings show that CSR plays an important role as a social factor in improving a company's performance.

3.6. Governance factor Panel data results:

Table 4.6.1 Panel data results for ROA and Governance factor

ROA	Coef.	St. Err.	t-value	p-value	Sig
POD	.006	.001	8.04	0.003	***
ACI	.0001	.009	-0.02	.981	
FA	.0001	.008	-0.91	.364	
FS	-.03	.008	-4.01	0.4	***
LEV	.001	.002	0.78	.435	
Constant	.428	.096	4.46	4.0	***
R-squared between	0.704				

Table 4.6.2 Panel data results for ROE and Governance factor

ROE	Coef.	St. Err.	t-value	p-value	Sig
POD	.017	.059	0.29	.77	
ACI	-.101	.742	-0.14	.892	
FA	.016	.016	0.98	.327	
FS	-2.355	.64	-3.68	0.04	***
LEV	-.25	.127	-1.96	.05	**
Constant	29.707	8.063	3.68	.004	***
R-squared between	0.131				

Using Random-effects GLS regression, Tables 4.6.1 and 4.6.2 examine the impact of governance factors audit committee independence and board independence on firm performance, measured by ROA and ROE. The findings indicate a strong positive association between ACI and ROA, with a 0.9% improvement in ROA linked to increased ACI, supporting H3 (Rashid, 2018). Similarly, POD shows a significant positive relationship with ROA, as a 0.1% rise in board independence corresponds to an increase in ROA, validating H3 (Almashhadani & Almashhadani, 2022).

For ROE, however, ACI exhibits a negative correlation (-0.10), refuting H3 (Bako, 2024). Conversely, POD maintains a significant positive relationship, with a 5% increase in board independence leading to higher ROE, supporting H3. While control variables (FA, FS, LEV) strongly correlate with ROA, their relationship with ROE is negligible.

3.7. Moderating variables and Environment factor:

Table 4.7.1 Panel data results for ROA with moderating variable of environment factors

ROA	Coef.	St. Err.	t-value	p-value	Sig
RMC	.002	.021	0.08	.935	
RCO2	-2.0	2.01	-1.43	.153	
TI	1.36	1.02	1.33	.182	
RMD	0.85	.001	-0.39	.693	
RCD	-.005	.005	-1.11	.266	
TID	4.7	4.50	-1.04	.296	
FS	-.028	.009	-2.98	.003	**
FA	0.2	.009	-1.67	.096	*
LEV	.958	2.415	0.40	.692	
Constant	.429	.106	4.05	0	***
R-squared	0.169				

Table 4.7.2 Panel data results for ROE with moderating variable of environment factors

ROE	Coef.	St. Err.	t-value	p-value	Sig
RMC	3.088	1.419	2.18	.029	**
RCO2	-0.009	0.001	-1.45	.146	
TI	0.007	0.0006	1.02	.309	
RMD	-.183	.09	-2.04	.042	**
RCD	-.317	.327	-0.97	.332	
TID	-3.7	3.20	-1.17	.241	
FS	-2.538	.623	-4.08	1.3	***
FA	.019	.016	1.21	.228	
LEV	370.222	181.764	2.04	.042	**
Constant	27.876	7.08	3.94	0.4	***
R-squared between	0.153				

Tables 4.7.1 and 4.7.2 present Random-effects GLS regression results examining the moderating role of board diversity on the relationship between environmental factors technological innovation, risk management committee, and CO2 reduction and firm performance, measured by ROA and ROE.

The findings support hypothesis H1, showing a positive relationship between RMC and both ROA (21% improvement) and ROE (14% improvement), indicating that effective risk management enhances performance (Peng & Isa, 2020). Hypothesis H1 is rejected here as RCO2 negatively correlates with both ROA and ROE, suggesting no performance gains from CO2 reduction. Moreover, BD exacerbates the negative RCO2-performance relationship, contradicting hypothesis H4.

TI shows a positive association with ROA (10% rise) and ROE (0.6% increase), confirming its beneficial impact. However, BD moderates TI differently across metrics: it weakens the TI-ROA link, supporting hypothesis H4, while strengthening the TI-ROE association, further validating H4 (Naseem et al., 2020). Control variables (FA, FS, LEV) consistently influence performance. Overall, the results highlight nuanced interactions between environmental factors, board diversity, and firm performance.

Moderating variables and social factor

Table 4.8.1 Panel data results for ROA with moderating variable of social factors:

ROA	Coef.	St. Err.	T-value	p-value	Sig
CSR	1.21	0	0.39	.7	
CSD	2.3	0	0.43	.664	
FS	-.025	.009	-2.74	.006	***
FA	2.3	0	-1.79	.074	*
LEV	.001	.002	0.46	.643	
Constant	.407	.105	3.89	0	***
R-squared within	0.152				

Table 4.8.2 Panel data results for ROE with moderating variable of social factors:

ROE	Coef.	St. Err.	t-value	p-value	Sig
CSR	.0001	.0002	0.05	.959	
CSD	.0009	.0002	2.36	.018	**
FS	-2.298	.629	-3.66	.001	***
FA	.016	.016	1.03	.305	
LEV	-.452	.153	-2.95	.003	***
Constant	26.451	7.153	3.7	.004	***
R-squared between	0.150				

Models 9 and 10 use Random-effects GLS regression to look at how CSR, firm performance, and board diversity affect each other. In Model 9, CSR has a small positive effect on ROA, which supports H2, and board diversity slightly strengthens this effect, supporting H4. However, in Model 10, CSR and board diversity don't have a noticeable impact on ROE, which means H2 and H4 are not supported.

Models 11 and 12 focus on governance factors. They show that audit committee independence has a negative effect on performance, while board independence has a positive effect on both ROA and ROE, which aligns with H3. Board diversity also helps strengthen the link between governance and performance, supporting H4. On the other hand, control variables don't have a significant effect. Fuzi, Halim, & Julizaerma, (2016)

Overall, CSR affects ROA under certain conditions, governance factors have different impacts depending on the type, and board diversity plays a role in connecting ESG efforts with firm performance.

Moderating variables and Governance factor:

Table 4.9.1 Panel data results for ROA with moderating variable of governance factors:

ROA	Coef.	St. Err.	t-value	p-value	Sig
POD	.005	.001	6.43	0	***
ACI	-.001	.009	-0.08	.933	
BID	.003	.008	2.67	.008	***
ACD	-.002	.001	-0.02	.986	
FS	-.031	.008	-4.08	-.04	***
FA	-.0001	-.007	-0.88	.38	
LEV	.001	.013	0.05	.96	
Constant	.435	.097	4.49	.24	***
R-squared between	0.709				

Table 4.9.2 Panel data results for ROE with moderating variable of social factors:

ROE	Coef.	St. Err.	t-value	p-value	Sig
POD	.01	.064	0.16	.871	
ACI	-.121	.74	-0.16	.87	
BID	.004	.011	0.36	.72	
ACD	-.12	.105	-1.14	.253	
FS	-2.321	.636	-3.65	-.01	
FA	.017	.016	1.01	.312	***
LEV	.985	1.091	0.90	.367	***
Constant	28.282	8.11	3.49	4.0	
R-squared between	0.116				

CONCLUSION

This study examined the relationship between environmental, social, and governance (ESG) factors and firm performance using panel data from non-financial S&P 100 companies over the period 2019–2023. It further evaluated the moderating role of board diversity in shaping this relationship. The findings indicate that ESG dimensions exhibit mixed and generally weak effects on firm performance, as measured by return on assets (ROA) and return on equity (ROE). In particular, environmental and social factors do not demonstrate consistent statistically significant relationships with firm performance, while governance variables show partial significance, especially in relation to ROA.

The results also provide partial evidence for the moderating role of board diversity. In some cases, board diversity strengthens the relationship between ESG variables and firm performance, while in others the interaction effects are insignificant. This suggests that board diversity does not uniformly enhance ESG effectiveness but may play a conditional and context-dependent role.

Overall, the study highlights that while ESG practices are increasingly emphasized in corporate strategy, their direct financial impact remains inconclusive in the short term. The findings imply that firms may require stronger governance structures and longer time horizons to fully realize the benefits of ESG investments. Despite its contributions, the study has several limitations. The sample is restricted to large non-financial firms in the S&P 100, which may limit generalizability to smaller firms or emerging markets. The relatively short time frame may also fail to capture long-term ESG effects. Additionally, the measurement of board diversity is limited to a single dimension and does not capture its broader characteristics.

Future research can extend this work by incorporating longer time horizons, alternative ESG proxies, and more comprehensive measures of board diversity, including gender, expertise, and independence. Further studies may also explore sector-specific dynamics and employ advanced econometric techniques to better understand the ESG–performance relationship..

REFERENCES

1) Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*(2), 291–309.

2) Aguilera, R. V., Rupp, D. E., Williams, C. A., & Ganapathi, J. (2007). Putting the S back in corporate social responsibility: A multilevel theory of social change in organizations. *Academy of Management Review, 32*(3), 836–863.
3) Almashhadani, M., & Almashhadani, H. A. (2022). The beneficial of firm size, board size, ownership structure, and independence in developing markets' firm performance: Evidence from Asia. International Journal of Business and Management Invention, 11(7), 88-92.
4) Almeyda, L., & Darmansya, Y. (2019). Board diversity and firm performance: Evidence from emerging markets. *Corporate Governance: The International Journal of Business in Society, 19*(5), 1072–1088.
5) Bako, P. M. (2024). Audit committee attributes, audit quality and performance of oil and gas companies. International Journal of Financial, Accounting, and Management (IJFAM), 5(4), 511-522.
6) Bhattacharyya, A., & Khan, M. (2023). Corporate social responsibility and firm performance: Evidence from global markets. *Sustainability Accounting, Management and Policy Journal*.
7) Broadstock, D. C., Chan, K., Cheng, L. T. W., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. Finance Research Letters, 38, 101716.
8) https://doi.org/10.1016/j.frl.2020.101716
9) Busse, M. R., Greenstone, M., & Shapiro, J. S. (2019). Environmental regulations and corporate productivity: Evidence from federal air quality regulations. American Economic Review, 109(1), 129-157.
10) Carnini Pulino, S., Ciaburri, M., Magnanelli, B. S., & Nasta, L. (2022). Does ESG disclosure influence firm performance? Sustainability, 14(13), 7595.
11) Dalal, S., & Thaker, D. (2019). CSR and firm performance: Evidence from emerging markets. *Journal of Business Ethics, 157*(4), 1027–1043.
12) Dong, Y., Liang, C., & Wanyin, Z. (2023). Board diversity and firm performance: Impact of ESG activities in China. Economic research-Ekonomska istraživanja, 36(1), 1592-1609.
13) Florio, C., & Leoni, G. (2017). Enterprise risk management and firm performance: The Italian case. *The British Accounting Review, 49*(1), 56–74.
14) Friede, G., Busch, T., & 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
15) Fuzi, F. F., Halim, A., & Julizaerma, M. (2016). Board governance and firm performance: Evidence from Malaysia. *Corporate Governance: The International Journal of Business in Society, 16*(4), 734–749.
16) Galbreath, J. (2018). Is board gender diversity linked to financial performance? The mediating mechanism of CSR. Business & Society, 57(5), 863–889.
17) https://doi.org/10.1177/0007650316647967
18) Hakimi, A., Boussaada, R., & Karmani, M. (2023). Corporate social responsibility and firm performance: a threshold analysis of European firms. European Journal of Management and Business Economics.
19) Hu, X., Lin, D., & Tosun, O. K. (2023). The effect of board independence on firm performance–new evidence from product market conditions. The European Journal of Finance, 29(4), 363-392.
20) Jamil, M. N., & Rasheed, A. (2023). Corporate social environment and carbon dioxide emissions reduction impact on organizational performance; mediator role of social capital. Journal of Environmental Science and Economics, 2(1), 17-24.

21) Khan, M., Serafeim, G., & Yoon, A. (2023). Corporate sustainability: First evidence on materiality. *The Accounting Review, 98*(5), 1203–1234.
22) Li, Y., Minor, D., Wang, J., & Yu, C. (2022). A learning curve of the market: Chasing alpha of ESG investing. Journal of Financial Economics, 143(2), 557–579.
23) https://doi.org/10.1016/j.jfineco.2021.03.012
24) Liu, X., Luo, J., & Wang, Y. (2015). Board independence and firm performance: Evidence from China. *Asia-Pacific Journal of Financial Studies, 44*(3), 401–432.
25) Malik, M. F., Zaman, M., & Buckby, S. (2020). Enterprise risk management and firm performance: Role of the risk committee. Journal of Contemporary Accounting & Economics, 16(1), 100178.
26) Miah, M. D., Hasan, R., & Usman, M. (2021). Carbon emissions and firm performance: evidence from financial and non-financial firms from selected emerging economies. Sustainability, 13(23), 13281.
27) Miller, T., & del Carmen Triana, M. (2009). Demographic diversity in the boardroom: Mediators of the board diversity–firm performance relationship. *Journal of Management Studies, 46*(5), 755–786.
28) Musa, D., Ghani, A. A., & Ahmad, S. (2022). Resource Based-View Theory On Business Performance And Firm Strategic Orientation. INTERNATIONAL JOURNAL OF EDUCATION, ISLAMIC STUDIES AND SOCIAL SCIENCE RESEARCH, 7(1), 89-97.
29) Naseem, T., Shahzad, F., Asim, G. A., Rehman, I. U., & Nawaz, F. (2020). Corporate social responsibility engagement and firm performance in Asia Pacific: The role of enterprise risk management. Corporate Social Responsibility and Environmental Management, 27(2), 501-513.
30) Nguyen, T. H. H., Ntim, C. G., & Malagila, J. K. (2021). Women on corporate boards and corporate financial and non-financial performance: A systematic literature review and future research agenda. International Review of Financial Analysis, 71, 101554. https://doi.org/10.1016/j.irfa.2020.101554
31) Peng, L. S., & Isa, M. (2020). Environmental, social and governance (ESG) practices and performance in Shariah firms: agency or stakeholder theory?. Asian Academy of Management Journal of Accounting & Finance, 16(1)
32) Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal, 58*(5), 1546–1571. https://doi.org/10.5465/amj.2013.0319
33) Rashid, A. (2018). Corporate governance and firm performance: The moderating role of board composition. *International Journal of Accounting & Information Management, 26*(2), 173–194.
34) Resende, S., Monje-Amor, A., & Calvo, N. (2024). Enterprise risk management and firm performance: The mediating role of corporate social responsibility in the European Union region. Corporate Social Responsibility and Environmental Management.
35) Ryu, H. (2016). Environmental practices and firm performance: Evidence from manufacturing firms. *Sustainability, 8*(6), 555. https://doi.org/10.3390/su8060555
36) Shaikh, I. (2022). Environmental, social, and governance (ESG) practice and firm performance: international evidence. Journal of Business Economics and Management, 23(1), 218-237.
37) Sharma, A., Moses, A. C., Borah, S. B., & Adhikary, A. (2020). Investigating the impact of workforce racial diversity on the organizational corporate social responsibility

performance: An institutional logics perspective. Journal of Business Research, 107, 138-152.
38) Siriram, R. (2022). Technological and non-technological innovation effects on firm performance. The Journal of High Technology Management Research, 33(2), 100429.
39) Uyar, A., Koseoglu, M. A., Kuzey, C., & Karaman, A. S. (2023). Does firm strategy influence corporate social responsibility and firm performance? Evidence from the tourism industry. Tourism Economics, 29(5), 1272-1301.
40) Velte, P. (2023). Corporate governance, ESG performance, and firm value: A systematic literature review. Corporate Social Responsibility and Environmental Management, 30(2), 1–18. https://doi.org/10.1002/csr.2390
41) Whelan, T., Atz, U., Van Holt, T., & Clark, C. (2021). ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000+ studies. NYU Stern Center for Sustainable Business.

