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The Impact of ESG Score on Financial Performance: A Study on Banks Listed on the NASDAQ

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Abstract

This study investigates the impact of Environmental, Social, and Governance (ESG) scores on the financial performance of NASDAQ-listed banks. It examines whether ESG scores are associated with better financial performance, as measured by Return on Assets (ROA) and Return on Equity (ROE), between 2010 and 2021. In addition, the study aims to provide practical guidance for bank managers, investors, and policymakers on the strategic importance of ESG integration in the banking sector. In this study, a panel regression analysis was conducted using data on 74 banks with ESG scores. ROA and ROE are examined as dependent variables, and ESG scores are treated as the primary independent variable. ROA and ROE are significantly affected by ESG scores, suggesting that banks with higher levels of corporate social responsibility tend to achieve better financial results. Despite the low average ESG ratings in our sample, moderately improving these ratings can lead to a moderate increase in profitability, even for the low-rated banks included. To increase profits and gain a competitive advantage, banks may be wise to include environmental, social, and governance issues in their strategic plans. Investors should benefit from such ESG ratings when deciding on their investments. This study contributes to the growing literature on the financial effects of ESG performance by providing empirical evidence from a unique dataset of NASDAQ-listed banks. Despite the traditionally low emphasis on ESG in the banking sector, it offers new insights into the positive role that ESG integration can play in improving bank profitability.

Keywords: ESG, NASDAQ, Banks' Financial Performance
JEL Code: M40, M42

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1. Introduction

Nowadays, climate crises, environmental pollution, depletion of natural resources such as water, soil, and energy, population growth, income inequality, inter-country disputes, and economic stagnation are the most common problems that societies face. With the development of the global economy, new national and international markets have emerged, and businesses have turned to social responsibility activities to make a difference. In addition, consumers have started to question not only the financial value of the products and services they purchase, but also the quality of the product and the contribution of the business they purchase from to society. These developments have led businesses to adopt socially responsible practices to achieve their desired profits. Activities such as resource conservation, minimizing energy consumption, and emphasizing recycling have given rise to the concept of sustainability. Sustainability activities have gradually become a strategic decision for businesses over time, becoming an integral part of their decision-making processes as a governance philosophy. Despite the growing body of research on sustainability and corporate responsibility, a significant gap remains in understanding how ESG scores specifically affect the financial performance of banks listed on NASDAQ. Most prior studies have focused on European or emerging markets, leaving a limited understanding of developed U.S. markets. This study aims to bridge that gap by providing new empirical evidence from a comprehensive dataset covering the 2010- 2021 period. In this context, various reporting models have begun to be developed to evaluate the business practices and performances of businesses, considering the demands of consumers and stakeholders.

When financial institutions, key factors in economic development, are considered in terms of their responsibilities and importance, the reason for their transition to a sustainable economy is not only environmental but also the failures, financial crises, and scandals experienced from the 2000s to the present day. Banks, as key actors, took very high risks in the short term, especially during the 2008 crisis. This situation not only caused a major crisis in the banking sector but also caused significant damage to all economies. In addition to scandals, corruption, and bribery incidents in bank management, the loans provided by banks have had a considerable impact on environmental, social, and economic life. All these events have directed the banking sector towards transitioning to a green economy. With this transformation, banks have started to provide more transparent information in their sustainability reports in the environmental, social, and governance (ESG) areas.

With the transition to a low-carbon, sustainable economy, banks have turned to environmentally friendly financial products such as green bonds and green loans and have started financing investment projects that will not harm the environment. They have also focused on promoting recycling, reducing energy and water consumption, waste reduction, and supporting renewable energy projects. In social terms, they have concentrated on issues such as equal opportunities, labor rights,

human rights, education, health, and combating bribery and corruption. In terms of governance, they have focused on ensuring equal voting rights for board directors and ensuring that all stakeholders are informed about the processes. Banks are aware that if they carry out their activities considering potential environmental, social, and corporate governance risks, they will gain a competitive advantage, enhance their prestige and brand value, and improve their profitability.

Taking all these processes into account, with the increasing demand for banks' ESG disclosures and performance, databases such as Refinitiv (formerly Thomson Reuters) ASSET4, KLD, Bloomberg Terminal, Sustainalytics, EIRIS have specialized in this field and started measuring companies' performance based on their ESG disclosures using very detailed criteria. Individual and institutional investors are increasingly considering ESG disclosures before making other decisions, as they benefit from this performance information. In addition to individual and institutional investors, employees, labor organizations, unions, subsidiaries, affiliates, shareholders, government and public institutions, regulatory bodies, customers, media, international financial institutions, civil society organizations, and rating agencies, environmental, social, and corporate governance (ESG) scores and disclosures are important. Based on all these developments, in the context of the research topic determined, the average ESG scores of the 74 banks included in this study were calculated over the years using their ESG disclosures. The averages by year were obtained from the Bloomberg Terminal database, which is widely used and accessible, and presented in Table 1. Considering the scoring is out of 100, it has been revealed that the ESG scores of banks traded on the National Association of Securities Dealers Automated Quotations (NASDAQ) stock exchange are relatively low.

Table 1. Average ESG scores of banks traded on the NASDAQ stock exchange over the years

YEAR	ESG SCORE AVERAGES
2010	27,13
2011	27,25
2012	27,68
2013	27,77
2014	28,06
2015	29,59
2016	30,33
2017	31,30
2018	31,72
2019	32,11
2020	32,91
2021	33,45

Source: Authors' Calculations

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The purpose of this study is to investigate the impact of ESG scores of banks operating on the National Association of Securities Dealers Automated Quotations (NASDAQ) stock exchange on their financial performance. The research adheres to research and publication ethics, covering the period of 2010-2021 and 74 banks with ESG data. One of the most current topics discussed in financial literature in recent years is the impact of companies' ESG performance on financial performance. No study has been found that compares banks operating on the NASDAQ stock exchange and examines the impact of ESG scores on financial performance. Therefore, it is believed that the study will contribute to international literature. Additionally, understanding the impact of ESG scores on business performance is supposed to provide valuable insights for banks in planning their investments and activities in the environmental, social, and governance (ESG) areas. Empirically demonstrating the positive impact of ESG investments and activities on business performance contributes to a better understanding of the impact of sustainability activities and can also create awareness and incentivize businesses to make investments in this area. Given that investors are increasingly valuing the sustainability activities of businesses, this study can also provide valuable guidance for investment decisions. In the continuation of the study, the second section includes a literature review and hypotheses related to the topic. In the third section, the data and methods used in the study are explained, and the empirical findings obtained from the study are stated. The fourth section discusses the results of the study, including the findings and limitations of the study.

2. Literature Review

Upon reviewing the literature, it becomes evident that the impact of ESG scores on businesses is examined through various variables in both financial and non-financial sectors across different countries, with interest in the subject growing daily. There is a broad literature examining the influence of corporate governance and corporate social responsibility activities on the financial performance of banks. Upon reviewing the literature, it is predominantly seen in international studies that the independent variable examined is the ESG score.

Chang, Liang, and Liu (2021) surveyed how ESG affected cost-effectiveness in 145 banks in Asia (China, Hong Kong, Japan, Korea, Taiwan) and emerging economies (India, Pakistan, etc.) between 2015 and 2018. While researchers have concluded that environmental performance scores improve cost-effectiveness in developed Asian economies, they also lower the cost-effectiveness of social and corporate governance performance ratings. In emerging Asian countries, however, social and institutional governance scores increase cost efficiency. Simsek and Çankaya (2021) investigated the relationship between ESG scores and the financial performance of banks listed on the G-8 exchanges. They took capital profitability and asset profitability into account as indicators of commercial performance. They concluded that there was a statistically significant negative relationship between environmental performance scores and these

indicators, as well as a positive relationship with the social performance score. Ersoy, Swiecka, Grima, Özen, and Romanova (2022) examined the impact of ESG scores on the market value of US banks using data from 151 commercial banks over the 2016–2020 period. While researchers concluded that the ESG score had a short-term positive effect on the market value of banks, it was seen as having a long-term negative effect.

Erhemjamts, Huang, and Tehran (2022) have found a positive correlation between climate risk and ESG performance in commercial banks in the United States, but their ESG sensitivity has been negatively linked. They argue that the financial performance of banks is negatively affected by these risks, but stronger ESG performance mitigates this negative impact. In an analysis of five banks in the United Arab Emirates for the period 2014–2019, they found that the Time and Ellili (2022) ESG score had a positive effect on asset profitability but did not have a statistically significant relationship with asset return. Çetenak, Ersoy, and Işık (2022) used panel data estimates based on data from six depository banks between 2010 and 2020 to investigate the impact of ESG scores on financial performance. They found that overall ESG, social, and corporate management scores had a positive impact on accounting and market-based performance indicators. In contrast, the environmental score did not have a statistically significant impact on either performance indicator.

Brogi and Lagasio (2018) highlight the significant positive relationship between ESG and bank profitability and how strong the relationship between environmental awareness and profitability is, especially in banks. Tommaso and Thornton (2020) also support this idea, stressing the positive relationship between ESG scores and bank profitability and suggesting that higher ESG participation could increase the value of banks. Besides, Shakil, Mahmood, Tasnia, and Munim (2019) and Chiaramonte, Dreassi, Girardone, and Piserà (2022) found results reinforcing the positive impact of ESG on bank performance. While Shakil and others (2019) emphasized a positive relationship between ESG and the performance of European banks, Chiaramonte and others (2022) supported these findings with studies showing that high ESG scores helped reduce the sensitivity of banks during financial turmoil.

In contrast, Yuen et al. (2022) studied the impact of ESG activities on the profitability of global banks during the COVID-19 outbreak. They offer a different perspective, suggesting that ESG activities can reduce the profitability of banks, and they conclude that adopting ESG standards can increase costs while reducing the rate of profitability. To support this study, Gutiérrez-Ponce (2023) stressed that sustainability practices, including ESG initiatives, could lead to a reduction in the short-term profitability of banks due to rising costs. In addition, Buallay (2019) investigated its impact on sustainability reporting and ROA and ROE variables. The findings suggest that environmental disclosure has a positive impact on the ROA. In contrast, social responsibility and corporate governance disclosures have a negative impact on the ROA and ROE, suggesting that there is a potential compromise between the ESG statement and the profitability of banks.

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Overall, the reviewed literature provides evidence that research on ESG and bank profitability is relatively new. When looking at the studies in the literature, it can be observed that the relationship between environmental, social, and corporate governance performance and bank profitability can vary in terms of being positive, negative, or neutral. Banks engaging in environmental, social, and corporate governance activities with high ESG ratings are interpreted to have a positive relationship with profitability. These activities are believed to increase transparency and enhance corporate governance performance in banks, thereby improving brand value, creating a competitive advantage, and enhancing the bank's reputation, ultimately leading to improved performance. Some studies suggest a positive relationship between ESG practices and bank profitability, while others emphasize the potential trade-offs and costs that ESG activities can impose on profitability.

On the other hand, during the environmental, social, and corporate governance activities stage, banks may not be able to anticipate environmental, social, and governance risks. Especially if they implement the wrong policies during the lending stage, such activities can lead to increased operational costs and decreased profitability for banks. The varying results suggest the need for further research to comprehensively understand the nuanced relationship between ESG scoring and bank profitability.

The relationship between ESG performance and financial outcomes can be theoretically justified through multiple perspectives. From the legitimacy theory standpoint, firms disclose ESG information to maintain social approval. The stakeholder theory suggests that companies engaging with ESG principles are more likely to meet stakeholder expectations and thus improve long-term profitability. Additionally, the slack resource theory argues that financially strong firms can allocate more resources to ESG initiatives, which in turn reinforce their competitive advantage. Theories that help explain the characteristics of businesses disclosing ESG information include legitimacy theory, slack resource theory, and stakeholder theory. Legitimacy Theory is generally used to explain voluntary information sharing by businesses regarding their ESG practices (El Khoury, Nasrallah, & Alareeni, 2023; Dyduch & Krasodomska, 2017). Suchman (1995) defines corporate legitimacy as a relative perception or assumption that an organization's actions are appropriate, desirable, or entirely fitting, in conjunction with socially constructed norms, values, beliefs, and attitudes. In simpler terms, legitimacy involves aligning business rules and principles with those of society (Indrianingsih & Agustina, 2020, p. 117). Businesses aim to gain a legitimate status within society by providing explanations that demonstrate how their sustainable practices related to products and services can benefit different stakeholder groups and be a preference factor. Businesses with greater social visibility face pressures from the media, regulators, and the majority of society. Such businesses use the publication of ESG information as a tool not only to show that they engage in socially acceptable behavior recognized by stakeholders but also to avoid the pressures created (Abdul Rahman & Alsayegh, 2021; Baldini, Dal Maso, Liberatore, Mazzi, & Terzani, 2018). Considering legitimacy theory, factors such as financial performance, profitability,

leverage, size, cross-listing, ownership structure, foreign ownership share, listing duration, analyst coverage, among others, being strong, increase the visibility and legitimacy needs of businesses, which is reflected in ESG reporting.

In summary, businesses that prioritize sustainability and integrate ESG practices into their operations are likely to enhance their reputation, foster stakeholder trust, and achieve long-term success in a rapidly evolving market environment. According to Slack Resources Theory, businesses that have access to financial resources such as cash flow and accumulated profits tend to have higher levels of ESG activities, indicating that they have more resources available for these activities. Financial slack resources and situations that increase these slack resources encourage businesses to invest more in ESG practices (Chen et al., 2021; DuqueGrisales & AguileraCaracuel, 2021; El Khoury, Nasrallah, & Alareeni, 2023; Özçelik, Avcı Öztürk, & Gürsakal, 2014).

Stakeholder Theory posits that businesses must consider the needs of all stakeholders and provide them with necessary information, particularly sustainability reports, to exist successfully and sustainably in the market. Therefore, the theory suggests that the foundation of a business's ESG reporting lies in providing information to stakeholders. It predicts that a business can achieve a positive reputation and receive support from stakeholders by fully disclosing sustainability information. Stakeholder Theory claims that there is a positive relationship between strong financial structure and sustainability reporting, as this is mainly carried out by financially strong businesses (Sharma, Panday, & Dangwal, 2020; Indrianingsih & Agustina, 2020).

Hypotheses established considering the reviewed literature and theories:

Ho: ESG scores have no effect on the financial performance of banks traded on Nasdaq.

H1: ESG scores affect the financial performance of banks traded on Nasdaq.

3. Methodology

The data set consists of 179 banks listed on the Nasdaq Stock Exchange. Data was obtained from the Bloomberg database. The scope of the study started in 2010, when ESG scores started to be widely reported, and the time period until 2021 was selected. Due to the lack of ESG Score data for the selected time period, 105 banks were excluded from the analysis, and 74 banks remained within the scope of the analysis.

Following the previous literature (Velte, 2017; Dalal et al., 2019; Azmi et al., 2021; Nirino et al., 2021; DasGupta, 2022; Chen & Zie, 2022; Chen et al., 2023), Return on Assets (ROA) and Return on Equity (ROE), which are frequently used in testing the financial performance of businesses, are determined as dependent

variables in this study. The PCSE estimator was chosen due to the presence of cross-sectional dependence among banks, as indicated by the Breusch-Pagan and Pesaran tests. This method provides more robust standard errors compared to traditional fixed-effects models and has been widely applied in recent ESG–finance studies (Chen et al., 2023; DasGupta, 2022).

An ESG score is a metric that measures a firm's Environmental, Social, and Governance performance. The ESG score is expected to affect the financial performance of firms. We examine whether financial performance will improve as the ESG score increases.

To isolate the impact of ESG Scores on the financial performance of banks from the effects of fixed bank characteristics, several control variables are used in line with the financial performance literature.

FRMSZE is the firm size, which is a control variable created by taking into account the number of personnel of banks. Since it loses its stationarity when we take it as the logarithm of Total Assets, it is taken as the number of employees (Kumar et al., 1999; Kean & Baumann, 2003; Eriki & Osifo, 2015). It is expected that FRMSZE affects ROA and ROE positively (Aebi et al., 2012; García-Meca et al., 2015; Psillaki & Mamatzakis, 2017; Gafoor et al., 2018).

As a control variable, we select leverage, which is the ratio of total liabilities to total assets (Stock & Watson, 2015; Brindelli et al., 2018; Atan et al., 2019; Giannopoulos et al., 2022; Naeem et al., 2022).

NPL is the non-performing loans of banks. We expect that NPL has a negative effect on bank performance (Berger & DeYoung, 1997; Fries & Taci, 2005). As a control variable, NPL is added to our model (Karim et al., 2010; Partovi & Matousek, 2019; John, 2018; Ozili, 2019).

LQR is a type of financial ratio used to determine a company’s ability to pay its short-term debt obligations. LQR is calculated as the ratio of Current Assets to Current Liabilities. We expect that LQR will have a positive effect on bank performance. As a control variable, LQR is added to our model (Hays et al., 2009; Pradhan et al., 2014; Marozva, 2015; Tamunosiki et al., 2017; Khursheed et al., 2021).

EAR is the equity ratio and is calculated as Shareholders’ Equity / Total Assets (Prabavo et al., 2018; Budi & TN, 2018). We expect EAR to have a positive effect on the Bank’s financial performance (Prabowo et al., 2018).

LDR is the ratio of total loans to total deposits (Liyana & Indrayani, 2020; Kusmana & Sumilir, 2019; Pronowo et al., 2020). We expect this ratio to have a positive effect on the Bank’s financial performance (Anggari & Dana, 2020).

EFFR is an efficiency ratio calculated as Non-Interest Expense divided by Revenue. We expect that when EFFR rises, the financial performance of banks decreases. (Hays et al., 2009).

The models created within the scope of the study are as follows.

$$ROA_{it} = \beta_{0it} + \beta_{it}ESG_{it} + \beta_{it}FRMSZE_{it} + \beta_{it}LVRG_{it} + \beta_{it}NPL_{it} + \beta_{it}LQR_{it} + \beta_{it}EAR_{it} + \beta_{it}LDR_{it} + \beta_{it}EFFR_{it}$$

$$ROE_{it} = \beta_{0it} + \beta_{it}ESG_{it} + \beta_{it}FRMSZE_{it} + \beta_{it}LVRG_{it} + \beta_{it}NPL_{it} + \beta_{it}LQR_{it} + \beta_{it}EAR_{it} + \beta_{it}\mathrm{LDR}_{it} + \beta_{it}EFFR_{it}$$

The descriptions of the main variables used in our study are presented in Table 2.

Table 2. Descriptive Statistics of the Data Set

	ROA	ROE	NPL	LQR	(L/D)	*LVRG*	EFFR	ESG	*FRMSZE*	*EAR*
Mean	0.96	9.00	0.36	66.84759	83.82950	7.872755	62.59476	29.64798	3.485591	10.60112
Median	1.00	9.58	0.20	67.29385	84.02520	6.825400	61.66415	29.54935	3.389104	10.30585
Maximum	3.47	52.10	5.46	87.06140	136.2473	36.38790	121.3168	59.45080	5.324521	20.52240
Minimum	-4.31	-66.68	-0.98	36.73340	47.46950	0.000000	34.88070	3.259200	2.447966	2.746100
Std. Dev.	0.55	6.02	0.59	9.899221	15.12809	5.588746	11.35057	4.002228	0.529955	2.380356
Observations	888	888	888	888	888	888	888	888	888	888

Source: Authors' Calculations

As shown in Table 2, the Average ESG score of the banks that are listed on the Nasdaq Stock Exchange is 29,64. Considering that the rating is made out of 100, we can say that the ESG scores of the banks in this sample are low. These banks earned a period net profit of an average of 96% of their assets and an average of 9 times their equity. This shows that the financial performance of these banks is at a good level. These banks need to reduce their NPL score, currently at around 36%, to further enhance their performance. Another indication of these banks' good performance is that they converted the deposits they collected into loans with an average rate of 83.82%.

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Table 3. Correlation between variables

	ROA	ROE	NPL	LVRG	LQR	LDR	FRMSZE	ESG	EAR	EFFR
ROA	1.000000	0.864531	-0.561177	-0.091984	-0.080605	-0.060048	0.224066	0.128497	0.308130	-0.615004
ROE	0.864531	1.000000	-0.505267	-0.079236	-0.059575	-0.079657	0.120481	0.120625	0.051684	-0.502848
NPL	-0.561177	-0.505267	1.000000	0.061876	0.039622	0.038792	-0.020304	-0.106122	-0.148961	0.135599
LVRG	-0.091984	-0.079236	0.061876	1.000000	0.120604	0.564695	0.108644	-0.147957	0.035186	-0.084516
LQR	-0.080605	-0.059575	0.039622	0.120604	1.000000	0.848761	0.006600	0.234810	0.015613	0.043895
LDR	-0.060048	-0.079657	0.038792	0.564695	0.848761	1.000000	0.109128	0.149862	0.199200	-0.053484
FRMSZE	0.224066	0.120481	-0.020304	0.108644	0.006600	0.109128	1.000000	0.267057	0.234880	-0.387290
ESG	0.128497	0.120625	-0.106122	-0.147957	0.234810	0.149862	0.267057	1.000000	0.020824	-0.066050
EAR	0.308130	0.051684	-0.148961	0.035186	0.015613	0.199200	0.234880	0.020824	1.000000	-0.306195
EFFR	-0.615004	-0.502848	0.135599	-0.084516	0.043895	-0.053484	-0.387290	-0.066050	-0.306195	1.000000

Source: Authors' Calculations

Table 3 displays correlations for all the variables used in the models. It shows that LDR and LQR have a high level of correlation. This high correlation negatively affects the predictive ability of the model; therefore, LDR was removed from the model. The correlation coefficients of the remaining variables are below 0.65.

In the first model, Breusch-Pagan LM, Pesaran LM, and Pesaran CD horizontal cross-section dependence tests were used to determine whether there is horizontal cross-section dependence in the data. The test applied in this context showed that there is horizontal cross-section dependence in the data. The test result is shown in Table 4.

Table 4. Breusch-Pagan LM, Pesaran LM, and Pesaran CD horizontal cross-section dependence tests

Dependent Variable (ROA)	Statistics	Pesaran's Prob.
Breusch-Pagan LM	7170.113	0,000
Pesaran Scaled LM	60.80567	0,000
Pesaran CD	53.73346	0,000

Source: Authors' Calculations

In the presence of horizontal cross-section dependence, the CIPS test should be performed (Pesaran, 2006). As a result of the CIPS test, all variables are stationary. It is shown in Table 5.

Table 5. Result Of The CIPS Test

Variables	t-stats	P Value
ROA	-2,9678	<0.01
ESG	-3.9854	<0.01
FRMSZE	-4.4363	<0.01
LVRG	2.0346	>=0,10
NPL	-4.8386	<0.01
LQR	-3.7965	<0.01
EAR	-2.3348	<0.01
EFFR	-3.9550	<0.01
Source: Authors' Calculations		

Leverage Ratio is excluded from the model since it is non-stationary. The final version of the model is given below.

$$ROA_{it} = \beta_{0it} + \beta_{it}ESG_{it} + \beta_{it}FRMSZE_{it} + \beta_{it}NPL_{it} + \beta_{it}LQR_{it} + \beta_{it}EAR_{it} + \beta_{it}EFFR_{it}$$

Since all variables in the final model of ROA are stationary, we can perform panel regression using the PCSE (panel-corrected standard error) estimator. The results of PCSE analysis with ROA as the dependent variable are given in Table 6.

Table 6. PCSE results by ROA dependent variable

ROA	Coef.	Prob.
ESG	0.0085	0,016
FRMSZE	-0.0272	0,237
NPL	-0.4388	0,000
LQR	-0.0030	0,084
EAR	0.0190	0,010
EFFR	-0.0259	0,000
Constant	2.5901	0,000
Source: Authors' Calculations		

In the model where ROA is the dependent variable, the independent variable FRMSZE is insignificant. The constant term of the model is 2.59. Accordingly, when all variables are zero, ROA is 2.59. As expected, as NPL and EFFR increase, the performance of banks is negatively affected, which is the same as the literature. While bank performance is expected to increase as LQR increases, the coefficient in our model was negative. It has been revealed that the ESG score also has an impact on the financial performance of the banks in the sample at a 5% significance level. The banks' financial performance is expected to improve as their ESG scores

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increase. These findings are consistent with prior studies such as Brogi and Lagasio (2018) and Tommaso and Thornton (2020), who also reported a positive relationship between ESG engagement and bank profitability. However, unlike Yuen et al. (2022), who argued that ESG initiatives could increase short-term costs and reduce profitability during the COVID-19 period, our results suggest that even moderate ESG improvements contribute positively to performance in the long term.

In the second model, Breusch-Pagan LM, Pesaran LM, and Pesaran CD horizontal cross-section dependence tests were used to determine whether there is horizontal cross-section dependence in the data. The test applied in this context showed that there is horizontal cross-section dependence in the data. The test result is shown in Table 7.

Table 7. Breusch-Pagan LM, Pesaran LM, and Pesaran CD horizontal cross-section dependence tests

Dependent Variable (ROE)	Statistics	Pesaran's Prob.
Breusch-Pagan LM	6158.230	0,000
Pesaran Scaled LM	47.0382	0,000
Pesaran CD	37.4204	0,000

Source: Authors' Calculations

In the presence of horizontal cross-section dependence, the CIPS test should be performed (Pesaran, 2006). As a result of the CIPS test, all variables are stationary. It is shown in Table 8.

Table 8. Result Of The CIPS Test

Variables	t-stats	P Value
ROE	-3,2980	<0.01
ESG	-3.9854	<0.01
FRMSZE	-4.4363	<0.01
LVRG	2.0346	>=0,10
NPL	-4.8386	<0.01
LQR	-3.7965	<0.01
EAR	-2.3348	<0.01
EFFR	-3.9550	<0.01

Source: Authors' Calculations

Leverage Ratio is excluded from the model since it is non-stationary. The final version of the model of ROE is given below.

$$ROE_{it} = \beta_{0it} + \beta_{it}ESG_{it} + \beta_{it}FRMSZE_{it} + \beta_{it}NPL_{it} + \beta_{it}LQR_{it} + \beta_{it}EAR_{it} + \beta_{it}EFFR_{it}$$

Since all variables in the final model of ROE are stationary, we can perform panel regression using the PCSE (panel-corrected standard error) estimator. The results of the PCSE analysis, with ROE as the dependent variable, are presented in Table 9.

Table 9. PCSE results by ROE dependent variable

ROE	Coef.	Prob.
ESG	0.1019	0,018
FRMSZE	-0.7626	0,018
NPL	-4.5907	0,000
LQR	-0.0196	0,272
EAR	-0.3970	0,000
EFFR	-0.2704	0.000
Constant	32.7466	0,000

Source: Authors' Calculations

In the model where ROE is the dependent variable, the independent variable LQR is insignificant. The constant term of the model is 32.74. Accordingly, when all variables are zero, ROE is 32.74. As expected, as NPL and EFFR increase, the performance of banks is negatively affected, which is the same as the literature. While bank performance is expected to increase as FRMSZE and EAR increase, the coefficient was negative in our model. It has been revealed that the ESG score also has an impact on the financial performance of the banks in the sample at a 5% significance level. The banks' financial performance is expected to improve as their ESG scores increase.

5. Conclusions

As the importance of sustainability continues to grow each year, businesses should integrate this concept into all their business strategies and processes. By highlighting their activities and investments not only in their relationships with investors but also with all stakeholders, they can increase awareness of sustainability and reap the benefits of these activities in terms of performance.

In this study, the impact of sustainability activities of banks listed on the Nasdaq stock exchange through ESG scores on their financial performance was investigated. The study, which covered 74 banks and included ESG data from 2010 to 2021, employed panel regression analysis.

The study found that the total of environmental, social, and corporate governance scores, which constitute the components of ESG scores, had a positive and significant impact on financial performance indicators (ROA and ROE). The results of the analysis using PCSE panel data estimators led to the rejection of the Ho hypothesis and acceptance of the H1 hypothesis. This suggests results in favor of both developing and supporting activities and investments related to ESG. For

bank owners and managers, emphasizing the importance of ESG activities and even non-financial reporting could be beneficial for enhancing bank performance. Additionally, investments made within the scope of ESG are predicted to enhance business performance and provide a competitive advantage to businesses.

Based on empirical evidence, this study suggests several actionable recommendations. First, banks should integrate ESG criteria into their lending and investment decision frameworks to enhance transparency and reduce risk exposure. Second, investors are encouraged to consider ESG scores as a long-term indicator of financial stability rather than a short-term cost. Finally, regulators should develop incentive mechanisms—such as tax benefits or reporting advantages—for banks that demonstrate consistent ESG improvement. Given its positive impact on business performance, investors may benefit from considering ESG scores when making investment decisions. Legislators who demonstrate regulatory and encouraging attitudes in this field will benefit the integration of sustainability awareness in more businesses, and this will occur more quickly in both developed and developing economies.

Although some businesses, managers, and even investors may view investments in sustainability as unnecessary and costly, the increasing importance of this issue for both society and other investors will ensure that businesses receive manifold returns on their long-term investments. Therefore, it is possible to consider investments in sustainability as long-term, future-oriented, and positive investments for businesses in terms of their image in society.

A statistically significant relationship was found between ESG scores and asset profitability and equity profitability. Individuals and investors are becoming increasingly sensitive to sustainability, and investments and activities in this area can be a key factor in selecting businesses for service purchases and investments. Therefore, making banks' environmental activities and investments more visible can lead to increased preference among individuals and investors, who will then purchase their services, ultimately contributing to improved financial performance in the long run.

Although a significant effect was observed in regression models, the level of impact is relatively low. This could be attributed to the low ESG scores of the banks in the sample. Negative effects could have been expected at such low scores, but according to the data, a positive impact on ROA and ROE was observed. Based on this result, businesses should pay more attention to ESG reporting.

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