



The impact of ESG scores on corporate financial performance: A study of non-financial firms listed in the UK



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ABSTRACT

Article History

Received: 16 July 2024

Revised: 7 October 2024

Accepted: 25 October 2024

Published: 15 November 2024

Keywords

Environmental

ESG

Firm value

Governance

Profitability

Social.

JEL Classification:

G32; C33; L25; Q56; M14.

This study investigates the relationship between Environmental, Social, and Governance (ESG) scores and firm financial performance, measured by Tobin's Q and Return on Assets (ROA), for non-financial firms listed in the UK. The study sample included 188 firms from 2015 to 2023. Panel regression was used to account for the firm- and time-specific unobservable variables, while the Generalized Method of Moments (GMM) estimation was used to account for endogeneity concerns. The results reveal a significant negative relationship between ESG combined score and Tobin's Q, suggesting that higher ESG ratings are associated with lower firm valuation. Additionally, the impact of the Governance score on Tobin's Q is negative and statistically significant at the 1% level. The results validate the trade-off theory, indicating that investors may view investments in ESG initiatives less favorably at least in the short run, suggesting that listed companies with strong stakeholder-oriented practices are not rewarded with a premium price. The findings underscore the importance of ESG initiatives for management and decision makers to enhance investor awareness about the role of ESG initiatives in contributing to long-term shareholder value through sustainable growth, improved stakeholder relationships, and effective risk management.

Contribution/ Originality: This study is, to our best knowledge, the first to examine the impact of ESG scores on financial performance of UK non-financial firms. Given the UK's unique context, it provides valuable insights into this relationship and conducts out-of-sample robustness checks on existing findings using various estimation methods, including GMM.

1. INTRODUCTION

Recently, great attention has been given to the role of environmental, social, and governance factors in determining firms' performance. The growing focus on ESG has been driven by a recognition that a firm's success and stability cannot be measured merely by its financial achievements but also by its capacity to mitigate its environmental impact, social influence, and governance procedures (Gao, Meng, Wang, & Chen, 2023). Currently, numerous studies point out that firms with good ESG practices have a positive influence not only on the environment and society but also tend to generate higher returns than their counterparts. Research also shows that firms with strong ESG scores benefit from lower cost of capital, higher stock performance, and greater profitability. Additionally, these firms are better positioned to face fewer risks and capitalize on new business opportunities as the global market

shifts toward sustainability. Therefore, many view the integration of ESG issues into overall business management and planning as a significant factor that can support both corporate value creation and longevity (Khan, Hassan, Maraghini, Paolo, & Valentinuz, 2024; Yang & Han, 2023). Although the focus on ESG may be valuable in terms of social and environmental outcomes, their consideration by firms leads to higher costs of compliance and lower short-term returns, which might result in reducing firm's value (Halid, Rahman, Mahmud, Mansor, & Wahab, 2023). This research, consequently, aims at providing further empirical evidence on the impact of ESG on firm's performance.

Several studies have attempted to link the potential impact of ESG factors on performance with various relevant theories. For example, the stakeholder theory shows that, by applying ESG standards, firms should act in the interest of different stakeholders to establish better relations and increase overall value. In other words, since interests of the stakeholders are the major concern, addressing ESG in firm's policies and objectives should reflect a strong concern in aspects related not only to shareholders but also to customers and the broader community (Wong, Nguyen, & Kwansa, 2024). Chen, Song, and Gao (2023) perceives this approach as ultimately contributing to enhanced financial performance and value creation.

In addition, agency theory supports the idea of governance as a mechanism to control managers' actions in favor of shareholders, improving the alignment of interests between managers and shareholders. While some argue that the agency problem presents information asymmetries and negative externalities that contribute to corporate fraud and firm failure, strong governance practices can reduce agency costs and minimize the risk of corporate fraud and failure, thus improving overall firm performance. It is possible, therefore, to enhance the implementation of the ESG within the firm's corporate governance to provide mechanisms that will effectively address the goals of managers and shareholders with reference to social and environmental responsibility. This can serve as a basis for improving credibility with investors and other stakeholders, as well as enhancing firm value and profitability (Xie, Nozawa, Yagi, Fujii, & Managi, 2019).

Furthermore, according to the resource-based view theory, firms with effective ESG policies gain a competitive advantage in attracting and retaining knowledgeable worker talent and customers and leveraging technologies, markets, and resources. Investment in ESG, therefore, can create tangible static assets that span across various business divisions and lead to higher financial performance (Ji & Feng, 2024).

The debate over ESG's impact on firm performance continues, with valid arguments on both sides. Evidence suggests that firms with strong ESG performance often outperform their peers financially, while critics argue that focusing on ESG factors may increase costs and reduce short-term profitability. Although previous research has established a link between ESG and overall firm performance, most studies have adopted a cross-country perspective, including both developed and developing markets (D'Amato, D'Ecclesia, & Levantesi, 2024; De Lucia, Paziienza, & Bartlett, 2020). Additionally, few studies have focused on emerging markets (Cheng, Kim, & Ryu, 2024; Dinarjito, 2024; Duan, Yang, & Xiong, 2023) limiting the generalization of findings to specific market contexts. Therefore, conducting country-specific research focused on developed markets is essential, as it reveals further empirical evidence on the link between ESG and firm performance. This study specifically aims to examine the impact of ESG on the financial performance of non-financial firms listed on the UK market. This study, therefore, represents a novel contribution to the literature by being the first, to the researcher's best knowledge, to exclusively examine this relationship for UK non-financial firms. Given the UK's unique economic, regulatory, and cultural context, as well as its leading role in ESG integration, this research offers valuable insights into the ESG-performance link and provides an opportunity to conduct out-of-sample robustness checks on existing findings. Ultimately, this study contributes to a deeper understanding of sustainable business practices and informs corporate decision-making.

The study analyzed the impact of ESG on firm performance using a sample of 188 firms, comprising 1,692 firm-year observations. The results are estimated using a panel regression to control for firm- and time-specific unobserved factors, while GMM estimation, as a robust check, is used to address potential endogeneity concerns. Results indicate a significant and negative relationship between the combined ESG score and governance score and firm value, as

measured by Tobin's Q . These findings highlight the importance of ESG initiatives in enhancing long-term shareholder value and underscore the need for firms to re-evaluate their governance practices. By illuminating the intricate relationship between ESG and financial performance, this research offers valuable practical insights for diverse parties. Scholars will benefit from a deeper understanding of ESG's impact on financial outcomes, fostering future research in this critical domain. Moreover, investors, regulators, and businesses can leverage these findings to make informed decisions as ESG considerations become increasingly central to strategic planning.

The rest of this study is structured as follows: Section 2 outlines the literature review and the development of hypotheses. Section 3 describes the data, variable measurement, and methodology. Section 4 discusses the empirical results, and Section 5 provides conclusion remarks.

2. LITERATURE REVIEW

Previous research has examined the impact of ESG on firm's financial performance. For instance, [Xie et al. \(2019\)](#) find that moderate ESG disclosure is positively associated with corporate efficiency, with governance having the most significant positive effect. Their study suggests that various ESG activities generally have a non-negative impact on financial performance, indicating that responsible corporate actions can contribute to financial success. Similarly, [Bhaskaran, Ting, Sukumaran, and Sumod \(2020\)](#) use mean difference tests and find that firms with robust ESG practices perform better than those with weak ESG practices. They identify a positive relationship between firm performance and commitment to internal stakeholder well-being and strong corporate governance, though they note that the market responded less favorably to anti-takeover measures compared to pollution control measures. [De Lucia et al. \(2020\)](#) focus on public enterprises, using machine learning techniques and ordered logistic regression for predictive and causal analysis. Their findings reveal a positive effect of ESG practices on the financial performance of European firms, particularly when companies emphasize environmental innovation and inclusive employment policies. [Naeem, Cankaya, and Bildik \(2022\)](#) study the impact of ESG practices on performance for 1,042 firms in developing countries and conclude that both individual ESG components and their combined score positively affect firm value and profitability. Similarly, [Aydoğmuş, Gülay, and Ergun \(2022\)](#) argue that ESG initiatives can yield financial returns in terms of both value and profitability. [Duan et al. \(2023\)](#) find that high ESG scores significantly boost the value of Chinese manufacturing firms and support sustainable development. However, they note that heavy Research and Development (R&D) investments might reduce the positive effect of ESG on firm value, with variations in ESG impact based on regional, ownership, and industry pollution factors. [D'Amato et al. \(2024\)](#) use a machine learning approach to analyze data for 400 companies in the Euro-Stoxx 600 Index from 2011 to 2020. They find that higher ESG scores lead to better financial performance, as measured by EBIT, impacting investment strategies and climate policy expectations. [Cheng et al. \(2024\)](#) also find that ESG disclosures significantly increase the value of Chinese firms, and this effect becomes more pronounced post COVID-19 pandemic. [Chen, Sugiyama, Tasaka, Kito, and Yasuda \(2024\)](#) use an artificial intelligence-based approach to study the relationship between ESG initiatives and firm value among listed Japanese firms. They find that firms engaged in ESG practices experience increased volatility and higher firm value. Overall, these positive findings across various contexts—whether in developed or developing countries, during normal times or crises—highlight ESG's strategic importance. Engagement in ESG initiatives not only contributes to long-term financial benefits but also helps firms navigate challenges and seize opportunities in a dynamic market, demonstrating ESG's role as a driver of corporate resilience and long-term financial success.

Conversely, some research suggests a more nuanced relationship between ESG performance and financial outcomes. High implementation costs and market conditions that hinder immediate recognition of ESG efforts can lead to a negative or insignificant impact on firm performance, as indicated by certain studies. For instance, [Landi and Sciarelli \(2019\)](#) investigate the relationship between ESG ratings and stock performance for Italian companies during the period from 2007 to 2015 and conclude that there is no significant effect of socially responsible investments on market returns, which implies that ethical practices have not yet been associated with superior returns for these

firms in the stock market. On the contrary, Pellegrini, Caruso, and Mehmeti (2019) argue that better ESG reporting reduces the cost of equity, according to the Easton model. Furthermore, their analysis reveals a negative correlation between ESG performance and profitability in the Oil and Gas sector, based on the selection and analysis of 182 public firms from 2002 to 2018. Their result shows that firms with higher ESG scores have lower profitability. The results exhibit a U-shaped pattern, indicating that the impact changes with the size of the company. In a similar context, Garcia and Orsato (2020) examine 2,165 companies from developed and emerging markets during the period from 2007 to 2014 and suggest that, in emerging economies, there is a negative relationship between ESG scores and financial performance. However, Fain (2020) uses the GMM estimation method to control for endogeneity problem and suggests that ESG performance does not significantly impact short-term financial results, indicating that firms can pursue sustainability without harming their short-term profitability. Whereas, Duque-Grisales and Aguilera-Caracuel (2021) find a significant negative relationship between ESG scores and financial performance for 104 Latin American multinationals. Additionally, Demraj, Dsouza, and Demraj (2023) consistently find that higher ESG scores are related to lower return on assets for 48 companies across 14 European countries from 2010 to 2019. Sulistyawati and Ratmono (2023) reported a similar result for 186 Indonesian companies from 2015 to 2020. However, Dinarjito (2024) finds an insignificant impact of ESG scores on firm's profitability or value. This insignificant relationship suggests that companies should focus on aligning ESG initiatives with their strategic goals rather than merely aiming for regulatory compliance. Despite a substantial body of previous literature indicating a positive relationship between ESG and firm's financial performance, there is also a significant presence of contrary and inconsistent findings. Accordingly, this research aims to examine the impact of ESG initiatives on firm's value and profitability within the non-financial sector in the UK. The study seeks to determine whether higher ESG scores contribute to enhanced firm value and profitability. Drawing from the previous discussion, we propose the following testable hypotheses:

H₁: ESG scores positively and significantly affect firm's profitability.

H₂: ESG scores positively and significantly affect firm's value.

3. DATA AND METHODOLOGY

3.1. Sample Data

Our sample initially consists of all public companies listed on the London Stock Exchange, with a total number of 1,982 companies during the time period from 2015 to 2023. For the purposes of this study, firms within the financial sector were not included in the analysis due to their unique regulatory environments and different operational and financial conditions, resulting in a sample of 1,081 non-financial firms. Finally, firms with missing ESG scores or any financial data were also excluded, leaving us with 188 firms with 1,692 firm-year observations. Data for all variables were obtained from the London Stock Exchange Group (LSEG) database. This database assesses the ESG performance of firms across 10 categories and 3 pillars, utilizing over 600 parameters. LSEG primarily collects data from publicly accessible sources, such as annual reports, business websites, and other company-issued reports. Additionally, LSEG directly collects data from companies, subsequently analyzing and standardizing it to generate ESG scores. LSEG updates its database on a weekly basis and continuously monitors ESG news to provide annual ESG scores.

3.2. Study Variables

3.2.1. Dependent Variables

The dependent variable of this study, financial performance, is measured using two proxies for firm's value and profitability, which are Tobin's Q and return on assets (ROA), respectively. The first proxy is Tobin's Q, measured as the ratio of the market value of a company to the book value of its assets, or market value divided by the cost of assets. This measure is useful for determining whether the stock of a particular firm is traded at the correct price in

the market. Numerous studies have used Tobin's Q as a proxy of firm's value, such as Dalal and Thaker (2019); Sul and Lee (2020); Saygili, Arslan, and Birkan (2022); Aydoğmuş et al. (2022); Naeem et al. (2022), Rahat and Nguyen (2024); Bahadır and Akarsu (2024) and Veeravel, Murugesan, and Narayanamurthy (2024). The second proxy is ROA, measured as the ratio of net income to total assets. Market analysts and professionals employ ROA as a tool for evaluating the profitability of a firm. This measure shows the efficiency with which a firm uses its resources to generate revenues. This measure has been employed by many studies, such as Saygili et al. (2022); Aydoğmuş et al. (2022); Naeem et al. (2022); Shaikh (2022); Bahadır and Akarsu (2024) and Veeravel et al. (2024).

3.2.2. Independent Variables

The study includes four key independent variables: the total ESG score and the scores for each ESG component—environmental, social, and governance. The LSEG database, one of the largest ESG databases available, sources these ESG scores. The LSEG database evaluates corporate ESG performance across ten categories within three main dimensions: emissions, innovation, and resources; workforce, human rights, product responsibility and community engagement; and management, shareholders and corporate social responsibility strategy. High ESG scores reflect a strong commitment to ESG initiatives and transparent disclosure, while low ESG scores indicate weak commitment and limited transparency.

3.2.3. Control Variables

This study uses leverage and size as control variables. These variables have been used in several similar studies that consider ESG in the empirical issues they investigated, such as Quintiliani (2022); Aydoğmuş et al. (2022); Naeem et al. (2022); Rastogi, Singh, and Kanoujiya (2024) and Zhang, Zhang, Zhang, Yang, and Lan (2024). Table 1 provides a summary of all variables.

Table 1. Summary of the study variables.

Variable name	Calculation/Source
Dependent variables	
Profitability (ROA)	ROA = Net income/Total assets
Firm value (TOBINQ)	Tobin's Q = (Equity market value + Liabilities market value)/(Equity book value + Liabilities book value)
Independent variables	
ESG combined score (ESGCS)	LSEG database
Environmental score (ENV)	LSEG database
Social score (SOC)	LSEG database
Governance score (GOV)	LSEG database
Control variables	
Size (SIZE)	Natural logarithm of total assets
Leverage (LEV)	Total debt/Total assets

3.3. Empirical Model

This paper uses the following estimation models (1) and (2) to investigate the impact of ESG on firm's performance and the impact of each component of ESG separately on firm's performance, respectively.

$$FirmPer_{i,t} = \alpha + \gamma_i + \delta_t + \beta_1 ESGCS_{i,t} + \beta_2 LEV_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$FirmPer_{i,t} = \alpha + \gamma_i + \delta_t + \beta_1 ESGCOM_{i,t} + \beta_2 LEV_{i,t} + \beta_3 SIZE_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where $FirmPer_{i,t}$ is the firm performance, which is measured by Tobin's Q for firm i at time t and by ROA, for firm i at time t , respectively. $ESGCS_{i,t}$ represents the ESG combined score firm i at time t , while $ESGCOM_{i,t}$, represents $ENV_{i,t}$, $SOC_{i,t}$ and $GOV_{i,t}$ firm i at time t , which are the environmental scores, social scores and governance scores, respectively, that are used separately in regression model (2). $LEV_{i,t}$ and $SIZE_{i,t}$ are the control variables and refer to leverage and size of firm i at time t , respectively. The effects of unobserved firm- and time-dependent variables are

incorporated through including firm and year effects γ_i and δ_t , respectively, and ε_{it} is a random error term. Typically, it is presumed that the error term follows a normal distribution and is uncorrelated with the independent variables. Accordingly, the parameters estimated from the pooled regression model will be efficient and unbiased. However, according to [Tayeh, Mustafa, and Bino \(2023\)](#) this may not be the case, as it is impossible to rule out unobservable omitted variables in our data. Furthermore, the potential fluctuations in these unobservable variables overtime may necessitate the application of alternative estimation techniques that account for the dynamic nature of both unobservable and observable variables, thereby mitigating potential heteroscedasticity issues that could lead to endogeneity among variables. Consequently, rather than using pooled models, this paper relies on fixed- and random-effects models to estimate the parameters of regression models and account for unobserved omitted variables. However, these models, fixed- and random-effects, may suffer from endogeneity due to the possible time-varying nature of omitted variables, and thus, this study employs [Blundell and Bond \(2000\)](#) system GMM estimators to handle the dynamic panel data. This approach has several advantages; the system-GMM does not employ external exogenous variables to instrument the lagged values of the dependent variable, but instead it uses the change in lagged values of the dependent variable as instruments. Additionally, system-GMM relies on internal perpendicularity conditions to afford protection against heteroscedasticity of unknown form; it also improves the efficiency of the estimation. According to [Blundell and Bond \(2000\)](#) the GMM system is particularly popular for its ability to maximize efficiency gains and minimize sample selection bias in small samples.

4. EMPIRICAL RESULTS

4.1. Descriptive Statistics

[Table 2](#) shows the descriptive statistics results. The average Tobin's Q and ROA ratios were 1.878 and 0.052, respectively. When a stock Tobin's Q ratio exceeds 1, it often suggests that its price exceeds its book value, indicating overpricing. Moreover, a higher ROA reflects a company's better ability to generate profit from its own assets. Given that our dataset shows an average ROA of 0.052, this suggests that the majority of the firms in our dataset are proficient in producing earnings efficiently. The average ESG scores break down as follows: The ESGCS is 58.145, with the breakdown being an ENV of 52.177, a SOC of 58.841, and a GOV of 62.798. This indicates that SOC and GOV scores are generally higher compared to the ENV score. Regarding the control variables, the average SIZE is 9.396, while LEV has an average of 0.255. Additionally, it is observed that both the upper and lower limits, as well as the standard deviation of each variable, are consistent with the expected range.

Table 2. Descriptive statistics.

Variable	Observations	Mean	Std. dev.	Min.	Max.
TOBINQ	1692	1.878	1.501	0.138	10.387
ROA	1692	0.052	0.089	-0.436	0.380
ESGCS	1692	58.145	16.670	3.552	95.715
ENV	1692	52.177	23.246	0.000	96.364
SOC	1692	58.841	19.817	0.255	97.330
GOV	1692	62.798	18.991	5.412	98.010
SIZE	1692	9.396	0.661	7.424	11.497
LEV	1692	0.255	0.170	0.000	0.747

Note: TOBINQ is measured as the market value of a company divided by its assets' replacement cost. ROA is the return on assets. ESGCS is the environmental, social, and governance combined score. ENV is the Environmental score. SOC is the Social score. GOV is the governance score. SIZE is the firm size measured by the natural logarithm of the total assets. LEV is firm's leverage.

4.2. Correlation Analysis

The pair-wise correlation matrix shown in [Table 3](#) examines the interrelationship between the study variables. Notably, there is no significant correlation between ESGCS and Tobin's Q, nor between ESGCS and ROA. The results show that a strong correlation only exists between ESGCS and its components, namely ENV and SOC. The

correlation coefficient among ESGCS and both ENV and SOC is positive and above 80%. However, this does not present any concern as ESGCS, ENV, and SOC are used separately in regression models. Aside from that, multicollinearity between variables is not apparent, as the results of correlation coefficients among other variables are relatively low.

Table 3. Pair-wise correlations.

Variable	TOBINQ	ROA	ESGCS	ENV	SOC	GOV	SIZE	LEV
TOBINQ	1.000							
ROA	0.516*	1.000						
ESGCS	-0.142*	-0.059*	1.000					
ENV	-0.144*	-0.036	0.842*	1.000				
SOC	-0.131*	-0.066*	0.878*	0.655*	1.000			
GOV	-0.112*	-0.073*	0.625*	0.307*	0.342*	1.000		
SIZE	-0.305*	-0.194*	0.611*	0.567*	0.565*	0.307*	1.000	
LEV	-0.033	-0.224*	0.218*	0.195*	0.227*	0.059*	0.255*	1.000

Note: TOBINQ is measured as the market value of a company divided by its assets' replacement cost. ROA is the return on assets. ESGCS is the environmental, social, and governance combined score. ENV is the environmental score. SOC is the social score. GOV is the governance score. SIZE is the firm size measured by the log of the total assets. LEV is firm's leverage. *, denote significance at the 10%, levels respectively.

4.3. Panel Regression Results

This section presents the empirical results from panel regression models examining ESG's impact on firm's value and profitability. Tables 4 and 5 display the estimated results for regression Equations 1 and 2 for each measure of firm's performance, ROA and Tobin's Q, respectively. Models 1–4 show the estimated coefficients for the overall ESG scores and its components. The Breusch–Pagan Lagrangian multiplier test for random effects was employed to assess the presence of unobserved firm-specific factors. The outcome of this test indicated the necessity to control for firm-specific effects. Subsequently, the Hausman test was applied to determine if these unobservable factors exhibited any correlation with the explanatory variables. The results confirm the rejection of the null hypothesis that suggests no correlation¹. The discussion primarily focuses on the results of fixed effect regressions, but also presents random-effects GLS estimators for robustness. The estimated results account for both firm and time effects, with time effects controlling for time-varying exogenous factors such as inflation and various macroeconomic variables.

Table 4's regression analysis reveals no significant relationship between a firm's profitability and its overall ESG score, or the scores for ESG components ENV, SOC, and GOV. These results do not support H₁, which suggests that while firms are implementing ESG practices, these actions positively affect firms' profitability. This may imply that the benefits of ESG practices, such as improved reputation or risk reduction, may not immediately translate into financial gains measured by ROA. Alternatively, the costs associated with ESG initiatives—like investments in sustainable technologies or compliance with regulatory standards—might temporarily offset any direct financial benefits (Halid et al., 2023). This could also reflect a temporal mismatch, where the market has not yet caught up with understanding and integrating the long-term value of ESG activities (Dinarjito, 2024). This result is consistent with the findings of Atan, Alam, Said, and Zamri (2018); Fain (2020) and Dinarjito (2024). However, these findings diverge from the results of Naeem et al. (2022); Aydoğmuş et al. (2022) and D'Amato et al. (2024) among others. With regard to control variables, the results in this model show that the coefficients of both firm size and leverage are negative and statistically significant at the 1% level. These findings are consistent with those of Hirdinis (2019); Ibrahim and Isiaka (2020); Yuwono and Aurelia (2021); Naeem et al. (2022) and Aydoğmuş et al. (2022).

¹ The authors do not include the results of the Lagrangian multiplier and the Hausman test, but they are available upon request.

Table 4. Panel regression results for ROA and ESG scores.

Dependent variable: ROA								
Variable	Model 1		Model 2		Model 3		Model 4	
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	0.4441*** (-3.71)	0.3066 (5.17)***	0.4380*** (-3.65)	0.3009*** (-5.03)	0.4564*** (-3.8)	0.3227*** (-5.42)	0.4523*** (-3.77)	0.2850*** (-4.92)
ESGCS	0 (-0.37)	0.0002 (-1.41)						
ENV			-0.0002 (-1.16)	0.0001 (-0.92)				
SOC					0.0002 (-1.47)	0.0004** (-2.47)		
GOV							-0.0001 (-1.04)	-0.0001 (-0.85)
SIZE	-0.0348*** (-2.68)	-0.0230*** (-3.41)	-0.0336*** (-2.59)	-0.0215*** (-3.22)	-0.0382*** (-2.93)	-0.0254*** (-3.80)	-0.0354*** (-2.75)	-0.0185*** (-2.95)
LEV	-0.2110*** (-12.48)	-0.1743*** (-11.54)	-0.2114*** (-12.50)	-0.1741*** (-11.52)	-0.2103*** (-12.44)	-0.1750*** (-11.58)	-0.2105*** (-12.45)	-0.1752*** (-11.57)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R squared overall	0.08	0.09	0.07	0.08	0.08	0.09	0.08	0.08
# of observation	1,692	1,692	1,692	1,692	1,692	1,692	1,692	1,692

Note: TOBINC is measured as the market value of a company divided by its assets' replacement cost. ROA is the return on assets. ESGCS is the environmental, social, and governance combined score. ENV is the environmental score. SOC is the Social score. GOV is the governance score. SIZE is the firm size measured by the log of the total assets. LEV is firm's leverage. FE and RE refers to fixed effect and random effect respectively. Robust t-statistic (z-statistic) is in parentheses for FE (RE) regressions. ** and *** denote significance at the 10% and 1% levels respectively.

The regression results reported in Table 5 show that there is a negative relationship between the ESGCS and firm's value, measured by Tobin's Q, and it is significant at the 1% level. This result does not support H₂, which states that there is a positive impact of ESG scores on firm's value. This implies that an increase in ESGCS corresponds to a decrease in the value of the firm, as measured by Tobin's Q. This result is noteworthy, as previous studies assumed that a higher ESG rating would generally improve the firm valuation by providing evidence of better risk management and long-term strategic positioning (De Lucia et al., 2020; Qin, 2023). Such a result could mean that investors may perceive high ESG scores as signs of wastage by companies on non-profit-generating activities that actually reduce their bottom line by increasing costs (Duque-Grisales & Aguilera-Caracuel, 2021). Furthermore, the market might perceive ESG score as a shift of management focus away from core business activities, which may create skepticism about their benefits for the firm's value (Halid et al., 2023). Furthermore, the results indicate that the impact of GOV on firm value does not align with H₂. That is, the estimated coefficient of GOV is negative and statistically significant at the 1% level. This suggests that investors may not consider the practice of effective governance measures as enhancing firm's value or improving asset utilization (Prabawati & Rahmawati, 2022). Friede, Busch, and Bassen (2015) suggest that the firm should reevaluate the aspects of governance that require assessment and explore ways to align them with the creation of shareholder value. These results are consistent with those of Balasubramanian (2019) but contrast with the findings of Naem et al. (2022); Duan et al. (2023) and Cheng et al. (2024). Additionally, the estimated coefficients of the control variables are consistent with those reported in Table 4. The impact of these control variables is negative and statistically significant at the 1% level.

Table 5. Panel regression results for TOBINQ and ESG scores.

Dependent variable: TOBINQ								
Variable	Model 1		Model 2		Model 3		Model 4	
	FE	RE	FE	RE	FE	RE	FE	RE
Constant	18.93*** (-16.01)	14.00*** (-15.29)	18.92*** (-15.94)	14.15*** (-15.36)	18.91*** (-15.91)	14.16*** (-15.4)	19.23*** (-16.24)	14.30*** (-15.72)
ESGCS	-0.0078*** (-3.20)	-0.0043* (-1.85)						
ENV			-0.0026 (-1.49)	-0.0007 (-0.43)				
SOC					-0.0023 (-1.21)	-0.0006 (-0.32)		
GOV							-0.0041*** (-3.28)	-0.0035*** (-2.80)
SIZE	-1.7373*** -13.55	-1.2289*** (-12.24)	-1.7647*** (-13.74)	-1.2651*** (-12.62)	-1.7645*** (-13.68)	-1.2665*** (-12.61)	-1.7883*** (-14.06)	-1.2647*** (-12.97)
LEV	-0.8349*** (-5.00)	-0.7674*** (-4.66)	-0.8375*** (-5.00)	-0.7677*** (-4.66)	-0.8384*** (-5.01)	-0.7674*** (-4.66)	-0.8185*** (-4.90)	-0.7586*** (-4.62)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R squared overall	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
# of observation	1,692	1,692	1,692	1,692	1,692	1,692	1,692	1,692

Note: TOBINQ is measured as the market value of a company divided by its assets' replacement cost. ROA is the return on assets. ESGCS is the environmental, social, and governance combined score. ENV is the environmental score. SOC is the social score. GOV is the governance score. SIZE is the firm size measured by the log of the total assets. LEV is firm's leverage. FE and RE refers to fixed effect and random effect respectively. Robust t-statistic (z-statistic) is in parentheses for FE (RE) regressions. * and *** denote significance at the 10% and 1% levels respectively.

The results of this study provide a nuanced perspective on the significance of ESG performance in shaping the financial outcomes of UK non-financial firms. On one hand, the finding that ESG scores negatively affect firm value questions the premise that stronger ESG performance always leads to enhanced market value. This suggests that investors may be skeptical about the immediate financial benefits of ESG activities, possibly due to cost concerns or uncertainties about the actual returns from such practices. On the other hand, the lack of a significant relationship between ESG scores and profitability implies that ESG initiatives may not have a direct influence on firm's profitability, whether positively or negatively. This finding contributes to the ongoing discussion in the literature about the financial benefits of ESG practices, indicating that, while these activities are useful in terms of sustainability, their direct impact on financial performance remains questionable.

Overall, the financial benefits of ESG practices appear to be complex and influenced by factors such as market conditions, investor perceptions, and the nature of the ESG activities undertaken. This emphasizes the importance of taking a careful and strategic approach to ESG adoption to ensure that these practices are consistent with a company's market expectations and financial goals.

4.4. GMM Estimation Results

The results in Tables 4 and 5 may be driven by the potential presence of a dynamic relationship between ESG scores and financial performance, which raises the possibility that current ESG scores could be affected by past financial performance. To address this issue, the analysis is repeated in panels A and B in Table 6 by estimating a dynamic setting that includes lagged values of the independent variables. This approach utilizes the system GMM estimators by Blundell and Bond (2000) which use changes in the lagged value of financial performance measures as instruments for their lagged values. Compared to the results in Table 4 and 5, the results in Panel A of Table 6 show not much of a difference except for a significant negative relationship between ENV and ROA at the 10% significance level. This could imply that investments in environmental practices might involve substantial costs or take time to manifest into tangible benefits. It may also indicate that the market and investors currently do not fully value such environmental initiatives in terms of a firm's short-term profitability, potentially due to a focus on short-term financial metrics over long-term sustainability benefits. Such results are consistent with the previous work of Aybars, Ataunal, and Gürbüz (2019); Mohamad, Saad, Abdullah, and Ishak (2021) and Gupta, Sharma, and Prashar (2022). In panel B of Table 6, when Tobin's Q is lagged, the results suggest that the estimated coefficients of ESG measures are statistically significant at the 5% or 1% level, except for the SOC, which appears to have an insignificant relationship with Tobin's Q. More specifically, the results in panel B of Table 6 show that the estimated coefficients of ESGCS and GOV are consistent with those reported in Table 5. In addition, the results also show a negative relationship between the ENV and Tobin's Q at the 1% significance level. These results imply that a firm's market valuation may not always positively reflect its efforts to improve its environmental practices. This could arise from the substantial upfront costs required for environmental initiatives that may not affect firm's profitability in the short term and, consequently, firm's value. Strict environmental policies may also pose a risk to firm operations, potentially resulting in decreased flexibility and increased costs (Gupta et al., 2022). In conclusion, the findings of the current study align with the trade-off theory, which explains that firms need to make a trade-off between investing in ESG factors and the likelihood of attaining lower short-term returns or lower initial firm valuation. However, in the long run, these costs could lead to cost savings, brand building, compliance with laws, and a competitive edge. This perspective frequently underscores the importance of properly planning ESG initiatives and justifying the incurred expenses with anticipated future gains.

Table 6. Results of GMM estimation for the effect of ESG scores on ROA and TOBINQ.

Variables	Panel A: Dependent variable: ROA				Panel B: Dependent variable: TOBINQ			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Constant	-0.4875** (-1.98)	-0.5068** (-2.06)	-0.4864** (-1.97)	-0.4654* (-1.88)	32.3852*** (-18.28)	31.9135*** (-17.78)	32.6586*** (-18.16)	32.9323*** (-18.35)
LagROA	0.2217*** (-5.25)	0.2183*** (-5.17)	0.2242*** (-5.28)	0.2223*** (-5.25)				
LagTOBINQ					0.3122*** (-9.58)	0.3132*** (-9.63)	0.3210*** (-9.84)	0.3162*** (-9.69)
ESGCS	-0.0002 (-0.61)				-0.0084*** (-2.60)			
ENV		-0.0005* (-1.72)				-0.0069*** (-2.76)		
SOC			-0.0002 (-0.72)				-0.0026 (-0.99)	
GOV				0 (-0.28)				-0.0030** (-2.00)
SIZE	0.0651** (-2.47)	0.0700*** (-2.65)	0.0653** (-2.47)	0.0631** (-2.41)	-3.2820*** (-17.23)	-3.2473*** (-16.88)	-3.3217*** (-17.35)	-3.3450*** (-17.67)
LEV	-0.2990*** (-9.37)	-0.3027*** (-9.49)	-0.2990*** (-9.36)	-0.2990*** (-9.36)	-0.1131 (-0.47)	-0.1707 (-0.71)	-0.1049 (-0.43)	-0.0919 (-0.38)
Time effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
#of observation	1,316	1,316	1,316	1,316	1,316	1,316	1,316	1,316

Note: Results of system GMM estimation for the impact of ESG scores on corporate financial performance proxied by ROA in panel A and by TOBINQ in panel B. LagTOBINQ and LagROA are the lagged values of the dependent variable. ESGCS is the environmental, social, and governance combined score. ENV is the environmental score. SOC is the social score. GOV is the governance score. SIZE is the firm size measured by the log of the total assets. LEV is firm's leverage. Robust z-statistic is in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% levels respectively.

5. CONCLUSIONS

This study investigates the impact of ESG scores on the financial performance of a sample of publicly listed non-financial firms in the UK during the period from 2015 to 2023. Two proxies of financial performance were used: Tobin's Q and ROA as measures of firm's value and profitability, respectively. The results of panel regression show no significant impact of firm's ESGCS or its components, ENV, SOC, and GOV on ROA. However, a significant negative relationship was found between both the ESGCS and the GOV, and Tobin's Q. These results are robust, in addition to the reported significant negative impact of ENV on Tobin's Q, when system-GMM is used to account for the endogeneity. These findings provide insights into the impact of ESG scores within this specific market context, offering a novel perspective on how ESG factors interact with firm value and profitability.

From a theoretical standpoint, these findings are consistent with the trade-off theory, implying that the market may perceive ESG investments as potentially contradicting the goal of maximizing shareholder value, at least in the short term. One explanation for this finding is that investors may perceive firms that invest heavily in ESG as incurring higher initial costs, which could temporarily reduce profitability and negatively impact market valuation. Furthermore, the market may not have fully recognized the long-term benefits of ESG investments, such as improved company image, stronger stakeholder relationships, and effective risk management. This delay in recognizing the value of ESG initiatives could explain the observed negative relationship with short-term firm valuation. These findings underscore the complexity of the relationship between ESG activities and financial performance. Although ESG investments offer potential long-term benefits, their immediate impact on firm value and profitability may not be noticeable. Therefore, a strategic approach to implementing ESG programs is essential.

Given the observed negative relationship between the ESGCS and firm value, managers should align ESG initiatives with their firm's financial objectives and market expectations, avoiding the presumption of immediate financial returns. They also need to clearly communicate the long-term advantages of ESG efforts to stakeholders and investors. To support both financial and non-financial goals, the firm should integrate ESG activities into its overall strategy. Additionally, managers should set realistic expectations by demonstrating a commitment to ESG principles and providing transparency about the anticipated timeline for realizing tangible benefits.

This study highlights the need for scholars to further expand on these findings to investigate the nuanced impacts of ESG practices within different contexts. For instance, future research could explore various geographic settings and/or sector-specific dynamics to gain a deeper understanding of how ESG practices contribute to or diminish financial success.

Funding: This study received no specific financial support.

Institutional Review Board Statement: Not applicable.

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Data Availability Statement: The corresponding author can provide the supporting data of this study upon a reasonable request.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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