“Is there a connection between ESG scores and a company’s profitability? Empirical evidence on selected Stoxx Europe 600 firms”

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IS THERE A CONNECTION BETWEEN ESG SCORES AND A COMPANY'S PROFITABILITY? EMPIRICAL EVIDENCE ON SELECTED STOXX EUROPE 600 FIRMS

Abstract

This study scrutinizes the potential correlation between Environmental, Social, and Governance (ESG) scores and the profitability of firms listed in the selected STOXX Europe 600 index. Utilizing panel regression analysis, the study examines data from 385 non-financial companies over the period 2017 to 2021, correlating CSRHub's ESG scores and selected financial variables with corporate profitability measured by ROA. The investigation reveals that, overall, ESG scores do not have a significant impact on profitability, except for the ESG-community sub-score, which shows a slight negative influence. Thus, this paper partially supports studies that show a negative correlation between ESG and profitability, even though such results are in the minority in the literature. The overall results suggest that while ESG scores may reflect a company's ethical stance, they are not a predominant factor influencing its profitability. However, this is not the case for leverage, as the importance of capital structure for profitability is confirmed.

Keywords ESG, profitability, STOXX Europe 600, company performance, CSRHub, stakeholder approach, sustainability reporting.

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INTRODUCTION

The escalating social and economic threats, coupled with the rise of environmental consciousness and sustainable development, have led to increased public demand for non-financial disclosures from companies. The KPMG global survey on Sustainability reporting (2022) reveals that 96% of the G250, the world's largest corporations, have reported on sustainability or ESG matters. Furthermore, 64% of these companies view climate change as a financial risk, and 71% of the top 100 companies across 58 countries (N100) have identified material ESG topics. Despite its widespread adoption, the precise impact of ESG on a company's profitability remains a contentious issue.

Freeman's (1984) stakeholder approach has led to the development of unified performance measurement systems, such as the Environmental, Social, and Governance (ESG) metrics. These systems aim to align a company's performance with the expectations of its stakeholders, which include customers, suppliers, employees, governments, investors/shareholders, and other interest groups. The ESG metrics, which encompass environmental concerns and data on community issues,

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employee satisfaction, health and safety, diversity, equality, and human capital questions (Olsen et al., 2021), are increasingly being adopted by publicly traded companies. With increasing expectations of stakeholders for ESG disclosures and new legal requirements leading to higher ESG adoption, a linkage between non-financial (ESG) and financial (e.g. profitability) performance may also increase.

1. LITERATURE REVIEW

The academic community has been engaged in a continuous discussion regarding the impact of Environmental, Social, and Governance disclosure scores on a company's financial performance. The results of these studies have been inconsistent, varying based on factors such as the time period, market or geographical location, type of panel data, or the ESG database used.

According to the most recent Sustainability Reporting by KPMG (2022), 96% of the top 250 revenue-generating companies in the Fortune 500 prioritize sustainability or ESG concerns. Furthermore, 64% of these companies acknowledge climate change as a business risk. Additionally, 71% of the top 100 revenue-generating companies across 58 countries, territories, and jurisdictions identify significant ESG topics. Interestingly, companies based in China from the G250 are the only ones not reported, but this is expected to change following the introduction of new regulations in 2022. Recent evidence suggests that ESG performance in China's A-share non-financial listed companies significantly improves corporate value, although the social dimension has a smaller impact, and there is no significant evidence of governance impact on corporate value (Zheng et al., 2022; Yin et al., 2023).

The use of environmental and ESG metrics has changed drastically over the last 30 years. In 1993, less than 20% of N100 companies used ESG disclosures, but by 2022, this figure had risen to 80%. Similarly, almost 40% of G250 companies used ESG disclosures in 1999, increasing to 97% in 2022, according to the KPMG survey of sustainability reporting (2022).

Multidimensional ESG usage have become a key request of all stakeholders, attracting a higher range of academic interest. Liu et al. (2022), Muchiri et al. (2022), and Michelson et al. (2004) argued that at its core, ESG refers to ethical and responsible investment, as well as the benefits associated with examining ethical investment as a process. Later, in 2006, the United Nations proposed the principles of responsible investment. Subsequently, in 2015, the United Nations proposed the Sustainable Development Goals, which replaced the Millennium Development Goals (UNDP, 2023). In response to this, countries began to implement sustainable and environmental policies and regulations at the macro level. Despite the concept being quite long in academia, it has gained popularity only in the last decade in the form of ESG metrics and others.

In recent years, the dependencies between companies' financial performance, such as profitability and ESG scores, have been the focus of academic debates. Initially, the focus was on the performance of the stock price influenced by corporate governance. After the rise of environmental concerns and the circular economy, the focus of researchers shifted toward the environmental performance versus the financial. With the recent pandemic concerns of COVID-19, there has been a focus on social problems and their influence on financial performance. Among these social issues are inequality, diversity, inclusion, well-being, and others (Aydogmus et al., 2022; Sandber et al., 2022). Ielasi et al. (2018) demonstrated variations in performance when comparing passive and active investment strategies, as well as ethical strategies versus ESG integration strategies.

With reference to academic empirical studies, Atan et al. (2019) found no evidence of the effect of ESG on profitability and other financial results in listed firms in Malaysia. Giannopoulos et al. (2022) indicated a positive impact of ESG on a company's value and a negative impact on ROA in Norwegian listed businesses. However, there is also a large amount of evidence on the negative impact on a company's financial performance (Yoon et al., 2018; Duque-Grisales & Aguilera-Caracuel, 2021, Kao & Hieu Le, 2022, Kalia & Aggarwal, 2022).

In the European market context, De Lucia et al. (2020) and Aydoğmuş et al. (2022) examined 38 publicly traded companies across 22 European countries during the period of 2018 to 2019. Their research revealed a favorable correlation between ESG factors and financial performance metrics such as Return on Equity (ROE) and Return on Assets (ROA).

In the historical perspective mentioned above, this paper argues that ESG metrics demand more attention, especially in terms of ESG influence on financial performance. This paper aims to explore how the stakeholder engagement model through ESG scores can affect financial performance with respect to stakeholder theory, since this states that the satisfaction of the needs and requirements of stakeholders will increase the financial performance of the company in the long run (Matos, 2020). The studies are in favor of the stakeholder theory and support that adaptation of stakeholder management and a sustainable long-term approach benefit the company's performance. Among these studies, Nekhili et al. (2017) demonstrate that Tobin's Q correlates positively with CSR scores in family ventures but negatively in non-family ventures. Additionally, other research examines the interplay between a company's financial performance and the disclosure of ESG. Li et al. (2018) conducted research on FTSE 350 listed firms, where they found a positive association between the level of ESG disclosure and the value of the firm. Furthermore, they suggested that the impact of ESG disclosure on firm value is strengthened by higher CEO power, as stakeholders perceive firms with strong CEO influence as more committed to ESG practices. This finding highlights the role of CEO power in shaping the perceived value of ESG scores.

In a study conducted in South Africa, Bernardi and Stark (2016) investigated the relationship between integrated reporting and the level of environmental, social and governance (ESG) scores. They found that the extent of ESG serves as a mediator in determining the effectiveness of integrated reporting. Specifically, environmental scores had a significant impact on reporting, while governance scores had a relatively smaller effect.

Di Tommaso and Thornton (2020) explored the investment activities of European banks and their association with ESG scores. They discovered that banks with higher ESG scores exhibited a moderate reduction in risk-taking behavior, regardless of whether they were initially high- or low-risk takers. This suggests that higher ESG scores may contribute to a more risk-conscious approach in banks' investment practices.

The research conducted by Woon et al. (2020) in the automotive industry highlights the significant impact of positive corporate social responsibility on enhancing corporate financial performance, while negative corporate social responsibility practices are shown to detrimentally affect a firm's financial performance. In a related study, Nguyen et al. (2022) analyzed data from 57 non-financial companies listed in the S&P 500, revealing that stronger adherence to ESG practices could notably enhance the financial performance of firms, as measured by metrics such as ROA, ROE, and Tobin Q. Notably, the influence of ESG practices on Tobin Q was found to be significantly greater compared to its impact on the relationships between ESG and ROA and ESG and ROE. Furthermore, Ramrez-Orellana et al. (2023) have contributed to this body of research by presenting findings indicating a positive association between ESG practices and market value within the energy industry, particularly for oil and gas companies.

It should be mentioned that the attitude from business owners and managers towards financial management varies, which could influence an attitude towards companies ESGs. Findings from Slovakia and the Czech Republic about how business owners and managers perceive financial management aspects of a company, reveals that business owners believe they can manage financial risks better than managers, although these differences are not statistically significant (Belas & Rahman, 2023). The problem of ESG metrics usage could be significant for SME. It is possible thought to use simplified versions in a form of balanced scorecards for such companies. Gallo et. al (2023) explore the Balanced Scorecard BSC and EFQM models as tools for enhancing performance SMEs. Findings suggest that implementing these models in the SME sector is justified, with the BSC model positively impacting performance measurement systems. Another

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research focused on SMEs in the V4 nations explores enterprises attitudes toward sustainable growth and their social and environmental impact. The empirical research reveals that SMEs not only understand the concept of sustainability but also believe it is crucial for their firms' well-being. Interestingly, there were no statistically significant differences in positive responses between owners and managers within the sample (Khan et al., 2023). Another study on Slovak SMEs reveals significant disparities between innovative and non-innovative SMEs, with the majority implementing both technological and non-technological innovations, and various factors such as R&D expenditure and collaboration with market players impacting their innovation activities (Machova et al., 2023). There is evidence that legislative changes and business owners' perception (Dvorsky et al., 2023) significantly impact how businesses in different sectors of Central Europe, particularly in the Visegrad Group countries, adapt to and assess their regulatory environment. The article examines how business owners in Central Europe perceive national support and legislative changes in relation to their respective industries, with a focus on sectors such as production, trade, services, and construction. Through questionnaire-based data collection, it was found that the business sector and country of operation significantly influence perceptions, with service sector enterprises expressing more concern about over-regulation and Czech entrepreneurs particularly noting the negative impact of frequent legislative changes. Betakova et al. (2023) explore the influence of demographic characteristics, such as country of business, company size, and sector, on the implementation of corporate social responsibility.

In their article, Betakova et al. (2023) delve into the impact of demographic factors such as the country of operation, company size, and industry on the implementation of Corporate Social Responsibility. Their research, which spanned three European nations, revealed that both the country and the size of the company significantly influence CSR perceptions. Entrepreneurs in the Czech Republic and micro-enterprises were found to be less likely to prioritize CSR. Interestingly, no significant differences were observed based on the gender or age of entrepreneurs. The study also underscored the role of educational attainment level and the business sector in shaping attitudes towards CSR implementation.

The size of a company can affect CSR, and the distribution of firm size can also be considered a crucial factor. Furthermore, this distribution can indicate the level of competition (Musa et al., 2024), thereby establishing a connection with CSR disclosure scores. Such disclosure scores can provide a competitive edge for a firm.

There are also results that demonstrate either positive or negative influences on various indicators. Kalia and Aggarwal (2022) investigated the impact of ESG scores on the performance of healthcare companies. They found that the relationship between ESG scores and the financial performance of healthcare companies cannot be generalized. In developed economies, they observed a positive impact of ESG on company performance, while in developing economies, the impact was either negative or insignificant.

Supporting the negative influence of ESG scores on financial performance, there is evidence from Duque-Grisales and Aguilera-Caracuel (2021), Buallay et al. (2020). In their study of panel data from 104 multinational corporations in Latin America, they found that the relationship between ESG scores and financial performance is significantly negative. This result held true for each separate factor of the ESG score. Garcia and Orsato (2020) and Naeem et al. (2022) conducted studies on panel data from 2,165 companies from developed and emerging countries. They found that the ESG performance concerning the financial performance of companies in developed countries differs from that in emerging economies. The correlation between ESG factors and financial performance was found to be statistically significant, yet negative, irrespective of whether market-based indicators such as discounted cash flow (DCF) or accounting-based indicators like return on assets (ROA) were used.

In a recent comprehensive meta-analysis conducted by Whelan et al. (2021) from Rockefeller Asset Management and the NYU Stern Center for Sustainable Business, over 1,000 studies published between 2015 and 2020 were thoroughly examined. The aim was to explore and clarify the complex relationship between ESG factors and corporate financial performance. The researchers drew several key conclusions from their analysis.

Firstly, they found that companies that prioritize ESG considerations tend to exhibit better financial performance over the long term. Secondly, investments in ESG strategies provide a level of downside protection, particularly during times of crisis. Thirdly, sustainability initiatives contribute to enhanced risk management practices and foster innovation, both of which have positive impacts on financial performance. Finally, the study emphasized that a focus on environmental objectives, such as reducing carbon emissions, can also lead to improved financial performance. These findings collectively highlight the potential benefits of integrating ESG factors into corporate strategies and decision-making processes. However, in general, disclosure scores on their own do not improve the financial situation of a company. The overall results for investing in sustainability show that 58% of all research indicates a positive impact on financial performance, 13% neutral, 21% mixed, and 8% negative.

The escalating adoption of ESG practices and their variable impact on financial performance has sparked considerable academic debate. This study, referencing Ramírez-Orellana et al. (2023), aims to contribute to this discourse by examining the association between ESG scores and the financial performance of European listed nonfinancial companies.

Despite the ongoing discussions and the inconclusive findings from various studies, the primary objective of this paper remains clear: to scrutinize the potential correlation between Environmental, Social, and Governance scores and the profitability of selected firms listed on the STOXX Europe 600 index. It acknowledges the influence of factors such as temporal variations, market/geographic distinctions, panel data methodologies, and ESG database disparities on the outcomes of previous studies.

2. METHODOLOGY

The paper examined the relationship between Environmental, Social, and Governance (ESG) scores and the financial performance of 385 nonfinancial firms listed on the selected STOXX Europe 600 index. This index is a broad representation of European public companies, encompassing 90% of market capitalization and including a diverse range of company sizes from 19 different countries. The period analyzed, from 2017 to 2021, was selected for its volatility, marked by the COVID-19 pandemic, which was expected to test the resilience of businesses through ESG metrics, premised on the notion that strong stakeholder engagement can help companies weather turbulent times.

Financial data for the study were sourced from Investing.com (2023) and were evaluated alongside ESG performance scores obtained from the CSRhub (2023) database. This allowed the paper to utilize both aggregate ESG scores and individual scores for Community, Employees, Environment, and Governance. These scores, which are on a 100-point scale, reflect a consensus from a variety of ESG scoring sources, thereby providing a foundation for precise empirical analysis.

CSRHub aims to provide uniform Corporate Social Responsibility ratings across a wide spectrum of companies. This involves overcoming methodological hurdles such as varying data sources and measurement techniques, diverse company coverage, and the dynamic nature of company performance. CSRHub's methodology includes mapping data to a central schema of twelve subcategories within four main categories, converting data to a 0-100 numeric scale, normalizing to mitigate source biases, aggregating weighted data for base ratings, and trimming ratings for companies with insufficient data. Additionally, CSRHub researches each company to establish industry and country averages, using a system similar to NAICS codes. The CSRHub rating rules guide the evaluation process, ensuring consistency in rating any aspect of a company's CSR performance. The Community category reflects a company's commitment to the communities it operates in, including civic activities, philanthropy, and human rights practices. It also considers the environmental and social impact of the company's products and sustainability efforts. The Employees category reveals the company's approach to diversity, labor rights, compensation, benefits, education, and health and safety, focusing on the quality of these initiatives and compliance with local regulations. The Environment category examines a company's

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ecological footprint, compliance with environmental laws, efforts to mitigate climate change, energy efficiency, and development of eco-friendly technologies. It also looks at the company's handling of environmental risks and its commitment to sustainability. The Governance category assesses the transparency of a company's policies, board diversity, executive pay, stakeholder engagement, and ethical leadership. It evaluates the integration of sustainability into corporate governance and management's commitment to sustainability and accountability (CSRhub, 2023).

Return on Assets is a critical financial metric, often utilized by market analysts and financial experts as a barometer for assessing a company's profitability.

The essence of ROA lies in its reflection of a company's proficiency in leveraging its assets to generate profits. A lofty ROA is indicative of a company's skill in optimizing asset management to bolster financial gains. The computation of ROA is encapsulated in the formula: Profit / Total Assets = ROA (profit is most commonly defined as EAT or EBT for ROA calculation). This formula crystallizes ROA as the proportion of a profit accrued over a specific timeframe relative to the total assets possessed by the company. In essence, ROA quantifies the efficiency with which a company translates its asset investments into profits. The quest for a higher ROA is driven by the desire for greater efficiency in converting investments into relevant earnings. This study has chosen to refine the traditional ROA calculation by excluding the impact of taxation, thereby presenting a modified ROA formula: EBIT/Total Assets. This adjustment aims to provide a more accurate representation of a company's operational profitability by focusing solely on earnings before interest and taxes (EBIT), offering a clearer picture of the company's asset utilization efficiency.

The primary focus of this paper was on profitability as the outcome variable, with ESG scores and selected financial ratios serving as the proposed determinants, both financial and non-financial. Following the methodology of Aydogmus et al. (2022), each ESG score – whether a composite or a sub-score for Community, Employees, Environment, and Governance – was applied in a distinct model. The financial variables remained consistent across all models to mitigate multicollinearity, given that ESG sub-scores tend to be interrelated.

The chosen financial variables address key aspects of a firm's financial analysis: one pertains to liquidity, and the other to capital structure, thus focusing both on a company's short-term financial health and an overall one. A comprehensive explanation of these variables can be found in Table 1.

Table 1. Description of variables

Variable	Definition	Source
ROA	EBIT / Total assets	Investing.com (2023)
Leverage	Total liabilities / Total assets	
Liquidity	Current assets / Current liabilities	
$ESG_{combined}$	ESG combined score	CSRHub (2023)
$ESG_{community}$	ESG community score	
$ESG_{employees}$	ESG employees score	
$ESG_{environment}$	ESG environment score	
$ESG_{governance}$	ESG governance score	

The mathematical notation of the models is as follows (standard legend for linear regression model is applied).

$$ROA = \beta_0 + \beta_1 ESG_{combined} + \beta_2 Leverage + \beta_3 Log(Liquidity) + \varepsilon. \quad (1)$$

$$ROA = \beta_0 + \beta_1 ESG_{community} + \beta_2 Leverage + \beta_3 Log(Liquidity) + \varepsilon. \quad (2)$$

$$ROA = \beta_0 + \beta_1 ESG_{employees} + \beta_2 Leverage + \beta_3 Log(Liquidity) + \varepsilon. \quad (3)$$

$$ROA = \beta_0 + \beta_1 ESG_{environment} + \beta_2 Leverage + \beta_3 Log(Liquidity) + \varepsilon. \quad (4)$$

$$ROA = \beta_0 + \beta_1 ESG_{governance} + \beta_2 Leverage + \beta_3 Log(Liquidity) + \varepsilon. \quad (5)$$

where β_0 is intercept, $\beta_{n\neq 0}$ is a regression coefficient, ε is an error term.

To sum up the regression models presented in the equations 1-5, the dependent variable is ROA (profitability), while the independent variables include

Table 2. Descriptive statistics

Variable	Mean	Median	Stand. dev.	Minimum	Maximum
ROA	0.0808	0.0732	0.0754	-0.2866	0.5591
ESG composite	59.15	60	5.81	32	78
Community	55.75	57	7.74	22	82
Employees	61.99	63	7.19	26	90
Environment	61.70	63	7.65	27	80
Governance	56.70	56	6.68	28	78
Leverage	0.5997	0.6056	0.1682	0.0079	1.1796
Liquidity	1.5557	1.2672	1.2933	0.0843	18.5236

leverage, liquidity, and ESG score (which vary among the models). The formulas of the variables are presented in Table 1, section Definition. In the case of profitability, the modified ROA as ratio of EBIT to total assets is applied to avoid taxation impacts and to aim to operating activities of a firm. Leverage is defined as total leverage and liquidity as total liquidity, to aim at an overall view.

To meet the statistical conditions of linear regression model, among other procedures, the following ones are applied. The natural logarithm for liquidity is applied in every calculation due to the significantly skewed distribution of this variable. As an alternative to the models above and as a robustness check, lin-log models are applied for all variables (i.e., ESG, leverage, and liquidity) as well. An outlier (a company with an extreme ROA value) was excluded. The descriptive statistics can be found in Table 2. The correlation of independent variables from Eq. (1) can be seen in Table 3.

Table 3. Correlation matrix of independent variables in Eq 1.

	ESG combined	Leverage	Liquidity
ESG combined	1.000000	0.196560	–0.201687
Leverage	0.196560	1.000000	–0.513720
Liquidity	–0.201687	–0.513720	1.000000

To avoid heteroscedasticity, White's standard errors were applied. Random effects were used instead of fixed affects, according to the Hausman test (see Table 4).

Table 4. Hausman test

Equation	1	2	3	4	5
P-value	0.2662	0.0646	0.0638	0.0690	0.1207

The stationarity of the variables is presented in Table 5.

3. RESULTS

The results for Eq. (1) to (5) – when lin-lin models are applied – are presented in Table 6. The table represents panel regression models with random effects and White's standard errors.

The influence of ESG scores on profitability appears to lack significance (p-values 0.1981, 0.1990, 0.4336, 0.5917) except in the ESG community, which achieved the regression coefficient $\beta = -0.000842$ and p-value 0.0888 i.e., 10% significance level. Surprisingly, its effect on profitability is negative, even though weak. Positive value for any ESG score would be more coincide with the results of majority of the previous studies. Thus, this study becomes a part of the minor empirical results showing a neutral impact of ESG scores on profitability (like e.g., Atan et al., 2019) and the partial negative impact, respectively. In all the models examined, leverage emerges as the most

Table 5. Unit root tests

Variables	ROA	Leverage	Liquidity	ESG compos.	ESG community	ESG employees	ESG environment	ESG governanace
PP – Fisher Chi-square	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PP – Choi Z–stat	<0.001	0.4662	<0.001	NA	NA	NA	NA	NA

Note: P-values of selected test are presented in the table.

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Table 6. Regression results (beta-coefficients and their significance)

	Dependent variable: ROA				
Equation / Variable	**1**	**2**	**3**	**4**	**5**
ESG combined	0.000380				
ESG community		–0.000842*			
ESG employees			0.000909		
ESG environment				–0.000274	
ESG governance					0.001107
Leverage	–0.148199**	–0.137058**	–0.144813**	–0.144944**	–0.142505**
Log(Liquidity)	–0.001131	0.000388	–0.000022	–0.001183	0.000879
Intercept	0.147495**	0.209827***	0.111285**	0.184954***	0.103233**

Note: * indicates significance level at 0.10, ** indicates significance level at 0.05, and *** indicates significance level at 0.01.

salient determinant of profitability, evidenced by regression coefficients ranging approximately from –0.13 to –0.15, and possessing a *p*-value below 0.05.

If lin-log models would be applied (see Table 7), the results were similar. In fact, p-value of ESG community achieved the value slightly above 10% level (0.1094), but still being clearly the lowest (most significant) among p-values for other ESG scores. The role of leverage, as ROA significant determinant with a negative impact, remains unchanged. Consequently, it could be posited that the nexus between capital structure and profitability exhibits a notably greater magnitude among European listed companies when juxtaposed with the influence exerted by Environmental, Social, and Governance factors on their profitability.

With reference to the research questions (see Table 8), only the ESG community score has a weak negative effect on profitability, i.e., the research question 2 is confirmed only partially. The overall impact of ESG on profitability is not confirmed for the data set, i.e., research question 1 is not confirmed. Applying detailed sub scores seems to be more meaningful than ESG combined score, as its p-value represents the strongest insignificance. It

Table 7. Regression results of lin-log models (beta-coefficients and their significance)

	Dependent variable: ROA				
Equation / Variable	**1**	**2**	**3**	**4**	**5**
Log(ESG combined)	0.017993				
Log(ESG community)		–0.046631			
Log(ESG employees)			0.054559		
Log(ESG environment)				–0.019909	
Log(ESG governance)					0.068753
Log(Leverage)	–0.042725**	–0.037515**	–0.042159**	–0.041028**	–0.041648**
Log(Liquidity)	0.003939	0.005778*	0.004899	0.003969	0.005758
Intercept	–0.017878	0.244900**	–0.169262	0.138296	–0.221557

Note: * indicates significance level at 0.10, ** indicates significance level at 0.05, and *** indicates significance level at 0.01.

Table 8. Tests of research questions – statistical significance of the selected variables from the regression analysis

Research questions	**P-value**	
	lin-lin	**lin-log**
1. Does the ESG composite score have a significant effect on the profitability of a company?	0.5917	**0.6341**
2. Do the ESG sub-scores have a significant effect on profitability of a company?		
Community	**0.0888***	0.1094
Employees	0.1981	**0.2101**
Environment	0.4336	**0.3071**
Governance	0.1990	**0.1931**

Note: * indicates significance level at the 0.10. P-value is obtained from the results of Eq. (1) to (5).

can be concluded that the practical impact of ESG scores on profitability on the selected dataset does not meet theoretical assumptions.

4. DISCUSSION

This study contributes to the ongoing conversation regarding the tangible benefits of ESG scores in investment management and financial innovation, positing that while ESG scores may mirror a firm's commitment to ethical principles, they do not significantly sway its financial performance.

However, some recent studies have presented findings that contradict the results of this study. For instance, contrary to the first research question, Aydogmus et al. (2022) found a highly significant positive relationship between cumulative ESG score and Return on Assets (ROA) in their analysis of 5,000 publicly listed companies from the Bloomberg database from 2013 to 2021, using ESG data from the Refinitiv database. Similarly, in contrast to the second research question, Aydogmus et al. (2022) found that Social, Governance, and Environment scores all have a positive and highly significant relationship with ROA.

Research on the European market by Agoraki et al. (2022) and Gianpaolo Iazzolino et al. (2023) showed that firms with lower ESG reputation risk report better financial performance. A recent study by Nguyen et al. (2022) also confirmed a positive influence of ESG practices on ROA, ROE, and Tobin's Q for a sample of 57 non-financial S&P 500 companies from 2018 to 2020. It is possible that other factors, such as cultural, legal system origins, investors protection rights (DasGupta & Roy, 2023), may also influence these results.

The findings of this study do not contradict Freeman's (1984) ideas, which distinguish between social responsibility in a broader context and short-term profit maximization. The lack of a significant relationship between yearly ESG scores and yearly profitability for the dataset during the studied period does not negate long-term business aims, both financial and non-financial ones (Kalia & Aggarwal, 2022). These points represent important limitations of this study.

As this study focuses on the European market, the results could be used for comparison with other markets in future research. This could reveal strengths and weaknesses in ESG as a system and in its deployment by different markets or industries, providing long-term benefits for companies. The open-source CRShub with accessible data is used, which also has a ranking on a 100-point scale. This 100-point scale provides a more precise statistical outcome. Another limitation of this study is that only one ESG provider is used. This opens up the possibility for future research to compare the results of this study with other ESG metrics providers and other markets. Finally, the timeframe is not long enough to see a long-term impact of ESG metrics on a company's financial performance.

There are many opportunities for academia to apply the results of this study, especially in terms of the development, enhancement, transformation, and possible unification of ESG metrics for specific markets, industries, and business sizes. Another possible application is to create "road maps" for businesses that want to participate in ESG voluntarily. The implications of the results for practitioners, such as managers and investors, would only remain at the level of lower focus on ESG, especially ESG community. However, this cannot be fully accepted (and indeed will not be by many practitioners), especially because of contradictions with some other studies, although this research is in accordance with, e.g., Atan et al. (2019) and Sandberg et al. (2022) (neutral impact of ESG on financial performance), and partially with, e.g., Giannopoulos et al. (2022) (negative impact of ESG on ROA). An additional desirable implication of this study would assist policymakers in developing unified and obligatory ESG metrics, which companies should or should not implement in their day-to-day business practice.

CONCLUSION

This study scrutinizes the potential correlation between Environmental, Social, and Governance scores and the profitability of selected firms listed on the STOXX Europe 600 index. Utilizing the CSRHub ESG scores, the study focused on the cumulative ESG score and its four sub-scores – Community, Employees,

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Environment, and Governance. The empirical results revealed an insignificant impact of the cumulative ESG score and the sub-scores on profitability, except for the ESG Community sub-score, which showed a weak negative effect.

Such results are inconsistent with most previous studies, which have mostly confirmed the positive correlation between ESG and profitability. The mixed results in the literature – together with the fact that the only one ESG score provider for data acquirement is used in this study – support the importance of the issue of non-harmonized methodology of ESG score providers. This limitation of any ESG research was only partially mitigated in this study by selecting a provider, whose methodology is based on a consensus from a variety of ESG scoring sources.

Regarding the financial variables, the correlation between leverage and profitability was confirmed. As a result, the role of capital structure prevails over ESG effects during the studied period and within the studied sample when profitability of European listed firms is considered.

In light of the current economic shock due to the Russian invasion of Ukraine and a significant rise in companies' expenses during the COVID-19 pandemic, it is suggested to observe a longer time scale, such as a decade. This would account for the assumption that the financial feedback would be evident in the long run, as stated in stakeholder theory.

AUTHOR CONTRIBUTIONS

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