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Article

Does ESG initiatives yield greater firm value and performance? New evidence from European firms

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Does ESG initiatives yield greater firm value and performance? New evidence from European firms

Tahani Tahmid¹, Muhammad Nazmul Hoque^{2*}, Jamaliah Said³, Paolo Saona^{4,5,6} and Md. Abul Kalam Azad¹

Abstract: The environmental, social, and governance (ESG) factors are used to evaluate nonfinancial performance of a firm. While some researchers state that ESG initiatives taken by a firm increase its value and performance by lowering costs and unsystematic risks, others consider it as a wastage of firm resource. The purpose of this study is to put light to this ambiguity by examining the impacts of ESG initiatives on two aspects of a firm's success: its performance and its value. To test the study's hypothesis, a linear model with fixed effect GLS (generalized least squares) is used on a 12-year panel data set from 2008 to 2020 of 180 listed firms categorized in 10 economic sectors operating



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PUBLIC INTEREST STATEMENT

The purpose of this study is to understand the impacts of Environmental, Social and Governance initiatives (ESG) on two aspects of a firm's success: its performance and its value. The environmental, social, and governance (ESG) scores are used to evaluate non-financial performance of a firm. There's a debate regarding the impact of ESG initiatives on a firm's success. While some researchers state that ESG initiatives taken by a firm increase its value and performance by lowering costs and unsystematic risks, others consider it as a wastage of firm resource. This study uses a 12-year panel data set from 2008 to 2020 of 180 listed European firms categorized in 10 economic sectors. A positive impact of ESG initiatives on firm value and performance has been found in this study.

in 22 countries. Thomson Reuters ESG Score which measures a firm's ESG performance based on publicly available data, is used as an independent variable. As dependent variables the firm value and firm performance have been used. This study finds a positive impact of ESG initiatives on firm value and performance. It has been further observed that EU firms mostly focus on social responsibilities of the ESG initiative due to its positive impact on firm's performance. Then the focus is given to environmental and governance initiatives respectively. The findings have far-reaching significance for researchers and firm executives helping them to understand the significance of ESG initiatives and effectively allocate and utilize firm's resources based on their importance.

Subjects: Finance; Business, Management and Accounting; Industry & Industrial Studies

Keywords: Environmental Social and Governance score; ESG score; Firm performance; Firm value; ROA

1. Introduction

ESG factors, or environmental, social, and governance factors, are used to evaluate nonfinancial performance of a firm (Atan et al., 2018). These factors are important for investors and stakeholders as it helps them to know about firms' investments and business conduction. The environmental factors include natural environment conservation, climate change, and environmental consequences from firm's operations. The social factors include human rights, equality, board diversity and societal contribution. And the governance factors include ownership structure, board independence, equal treatment of shareholders, minority shareholder rights, transparency, and disclosure of corporate information (Atan et al., 2018). It is recommended for firms to disclose their ESG initiatives to their stakeholders in order to improve their responsibility and reputation (Dellaportas et al., 2012; Forcadell & Aracil, 2017).

ESG initiatives taken by a firm can have an influence on a firm's financial performance (Abdi et al., 2022). Though adopting ESG initiatives has considerable short-term expenses, a firm may profit from these investments by creating an enduring foundation for survival and may be successful in creating brand awareness (Branco & Rodrigues, 2006). However, the importance of sustainability performance growing worldwide, there is limited agreement on its impact on firm value and performance. According to McWilliams and Siegel (2001), ESG performance increases firm value by lowering costs and unsystematic risk. But Barnea and Rubin (2010) and Groening and Kanuri (2013) see ESG initiatives as a wastage of resources and consider it as a tool that managers use to extort benefits from shareholders. Thus, the literature on the effect of ESG initiatives on firm performance and value are unambiguous and it can either be positive, negative or insignificant (Miralles Quirós et al., 2019; Moore, 2001). Therefore, empirical research in terms of various methodologies and samples is required to investigate the impact of ESG initiatives on firm value and performance (Lee et al., 2013; Park et al., 2017).

This study comprises a 12-year panel data set from the year 2008 to 2020 of 180 listed firms categorized in 10 economic sectors operating in 22 countries. Thomson Reuters' ESG Asset4 score, a comprehensive and verified measure of CSR performance used by scholars both for financial and non-financial firms has been utilized in this study (Birindelli et al., 2018) but focus of this study has been set to the non-financial sectors. We ran multiple regression models on a sample of European firms to examine the relationship between ESG initiatives and firm performance along with the robustness of the model. This study will enable firms to allocate resources to those ESG initiatives which would yield higher values.

The remaining of the paper is organized as follows: section 2 provides theoretical framework and literature review; section 3 focuses on research methodology; section 4 on findings and analysis; section 5 on conclusions and implications.

2. Literature review and hypotheses

2.1. Theoretical framework

The Environmental, Social and Governance score (ESG score) is the most widely used index for holding firms accountable to sustainability standards nowadays (Howard-Grenville, 2021). A firm's goal is to ensure better performance and so the question of how ESG initiatives influence firm performance and value arise. Several theoretical frameworks explain various aspects of ESG and help empirical studies in comprehending the influence of ESG initiatives on firm's value and performance (De Grosbois, 2012).

One such approach is Stakeholder theory which focuses on the relationship between a firm and all bodies associated with it. When ESG initiatives are integrated to a firm's financing plan, stakeholders become a driving factor of corporate social responsibility, and ESG score becomes a key measure (Diez-Cañamero et al., 2020). According to stakeholder theory, the ESG initiatives creates value for firm in two ways (S. Gillan et al., 2010b; S. L. Gillan et al., 2021). These are: a rise in shareholder value because of higher cash flow levels for the firm and optimizing shareholder utility for holding shares in a sustainable firm (Gillan et al., 2010a, S. Gillan et al., 2010b). Another approach is the Slack resources theory approach for relating ESG initiatives with firm performance and value (Abdi et al., 2022). Resources are any assets that a firm uses to help it achieve its objectives or get the best results in its key areas (Barrutia & Echebarria, 2015). This theory investigates how "slack" resources affect a firm's performance over time. It analyzes firm's resources in four dimensions: a firm's goal is to earn sustainable rents (above the industry average); resources are not equally allocated across firms, better management of resources assures higher returns; better performance can be maintained with consumer satisfaction; and innovation is the foundation of improved performance (Taylor & Oinas, 2006). Lastly, the resource-based theory emphasizes that firms should focus on creating competitive heterogeneity where their sustainability performance (ESG scores) could result in greater firm performance and value (Xie et al., 2019). However, there are some theories highlighting the negative effects of ESG initiatives on firm performance. Contrary to stakeholder theory, it has been stated that any non-financial activities will make the firm inefficient as the sole purpose of firm is increasing wealth of stakeholders (Friedman, 1962). Several researchers support this argument debating that sustainable policy should be implemented by nonprofit organizations and the only expectation of investors from firms is increment of wealth (Mackey et al., 2007; Zivin & Small, 2005).

Thus, both FP and FV have recently attracted academic interest in determining the influence of ESG initiatives on firm's performance. But empirical findings in the literature have generated conflicting results (S. L. S. L. Gillan et al., 2021).

2.2. Empirical review and hypotheses development

2.2.1. The environmental, social and governance score and firm value

Implementing ESG initiatives have the potential to improve firm value (Aouadi & Marsat, 2018; Fatemi et al., 2015; Malik, 2015). There are two main views regarding ESG initiatives taken by a firm and firm value (Abdi et al., 2022). The first view is about the cost of ESG initiatives and its impact on the value of a firm. When costs are minimal, a firm can achieve favorable outcomes by increasing employee productivity and minimizing pollution fines (Barnea & Rubin, 2010). But as empirically demonstrated by decreasing shareholder benefits, higher utility drives insiders to invest more than value-maximizer levels (Videras & Owen, 2006). Under the resource-based view of the firm,

a negative correlation is predicted since executing such activities across all areas is costly (Abdi et al., 2022).

The other viewpoint emphasizes the value-adding aspects of a firm's ESG initiatives. Implementing ESG initiatives has been shown to improve firm's operating efficiency (Brammer & Millington, 2005), capital market benefits (Dhaliwal et al., 2011; Godfrey, 2005) and management of risk (Dhaliwal et al., 2012). Furthermore, such initiatives can improve a firm's image and can create stronger relationships with its stakeholders (Branco & Rodrigues, 2006). ESG initiatives can also increase the competency of team and helps firm attract qualified employees (Fatemi et al., 2018).

The empirical literature dealing with ESG initiatives on firm value does not produce unequivocal result. Eccles et al. (2014) comparing the returns of a high-sustainability and a low-sustainability investment over an 18-year period discovered that the high-sustainability investment outperformed the low-sustainability one. According to Godfrey et al. (2009) a high-sustainability investment helped to mitigate any downward impact on share price when a negative environmental incident was reported. Orlitzky et al. (2003) and Cormier and Magnan (2003) also reported that firms with greater pollution indicators have lower market value. In a similar context, (Hamilton, 1995) suggested that a firm's toxic release warnings would result in significant negative responses in its value.

Although these aspects contribute to a better understanding of the benefits and drawbacks of sustainability in respect to firm value, the existing literature has yet to reach a definitive conclusion (Jo & Harjoto, 2011). However, in accord with the positive side, Malik (2015) summarizes contributions from both streams and highlights the value-enhancing prospects of sustainable involvement. Therefore, the first null hypothesis is proposed as:

3. H 01: ESG initiatives have a negative relationship with firm value

3.0.2. The environmental, social and governance score and firm performance

Several studies have discovered that ESG and FP have a positive relationship (Brogi (Brogi & Lagasio, 2019; Long et al., 2020). The higher the level of ESG, the higher the FP (Tarmuji et al., 2016). According to Albuquerque et al. (2012) ESG is a strategic product offered to clients by a firm which generates more positive revenues. Sharfman and Fernando (2008) agree to this stating that a firm's ratings on indicators like ESG offer a clear image of how it manages the risks it confronts. Participation in sustainability initiatives strengthens a firm's ethnic identity, resulting in increased stakeholder satisfaction and improved financial performance (Okafor et al., 2021a, 2021b). Thus, it is generally assumed that fair implementation of ESG standards does not always imply lower returns and performance (Hill, 2020). Another stream of research has discovered a negative relationship between ESG and FP (Buallay, 2019; Duque-Grisales & Aguilera-Caracuel, 2021). High ESG practices may have a negative impact on FP. As a firm's sole objective is to create shareholder wealth, any other goal that diverts the firm's attention from that goal will reduce its effectiveness (Freedman & Wasley, 1990). Literature has yet to produce a definitive, completely consistent conclusion regarding the ESG-FP relationship but the vast majority of the research performed so far has found a favorable relation between the two (Friede et al., 2015). Our study defends this view and formulate the following null hypothesis:

H 02: ESG initiatives have a negative relationship with Firm Performance.

4. Methodology

4.1. Sample selection and data sources

The purpose of this study is to analyze the influence of ESG initiatives on firm value and firm performance. Our study comprises a 12-year panel data set from 2008 to 2020 of 180 listed firms categorized in 10 economic sectors operating in 22 countries. Thomson Reuters database of 2020 has been used as the primary source of information. Other sources of information include Global Gender

Gap index of the year 2020 and World Governance Indicator 2020 from World Economic Forum and World Bank respectively. The World Economic Forum's Global Gender Gap Index is a methodology for measuring the severity of gender differences and evaluating their improvement over time. And the Worldwide Governance Indicators (WGI) publishes aggregate and individual governance indicators for over 200 nations and territories from 1996 to present, including six dimensions of governance such as voice and accountability, political stability, governance effectiveness, and so on.

In our empirical analysis, to minimize the biasness of results, some irrelevant information such as observations of non-European countries are removed if the country headquarter is in Bermuda, Mexico, Singapore, United States, Russia, Faroe Island and if the GICS Sector Code is 40.

4.2. Variables measurement

5. Dependent variables

5.0.1. Firm value

The market-to-book ratio is used to determine if ESG has an impact on a firm's value. We used $(\text{CompanyMarketCap} + \text{TotalDebt}) / \text{TotalAssetsReported}$ to compute firm value (fv). For firms that are predicted to earn higher profits over time, the book value no longer represents the true value, since there will be a significant gap between book and market value. The market-to-book effect was proposed by the well-known Fama—French theory as an atypical behavior in which firms with a high market-to-book ratio (high stock price compared to book value) are more likely to be in continual difficulties. Low market-to-book ratio (low stock price relative to book value) is, on the other hand, linked to long-term profitability (Fama & French, 1995). Table 1 presents the list of variables we used in this study.

5.0.2. Firm performance

Tobin's q is widely regarded as a representation of Firm Performance in the literature. There are several formulations of the measure, but the yields tend to be similar, as pointed out by (Chung & Pruitt, 1994). We computed Tobin's q as $(\text{Company Market Capital} + \text{Long-Term Liabilities}) / (\text{Book Value Equity} + \text{Long-Term Liabilities})$.

6. Independent variables

We used Thomson Reuters ESG Score which measures a firm's ESG performance based on publicly available data. The EnvironmentPillarScore is a score that evaluates a firm's resource use, emissions, and innovation. It refers to the extent to which a firm may take managerial initiatives to prevent environmental risk while also maximizing shareholder value. The SocialPillarScore is a score that considers the firm's workforce, human rights, community, etc. and it suggests that the firm uses all available resources to establish trust and loyalty in order to secure long-term stakeholder benefits. Finally, GovernancePillarScore is used as a measure to assess the quality of a firm's administrative systems and procedures, which includes management, shareholders, and CSR strategies.

6.0.3. Control variables

To avoid model misinterpretation, we have used several control variables such as return on assets (ROA), leverage and size. A number of regression models are constructed where these control variables are used separately to understand their effects on firm value and performance.

ROA is a measure of a firm's capacity to operate profitably. It is calculated by dividing the company's operating profit by total assets. Firms with more profitability are expected to have more opportunities to engage in ESG initiatives (Kim & Lee, 2020; Waddock & Graves, 1997). Leverage (Lev) is another widely used control variable in the literature to control for a firm's capital structure, which we computed by dividing total debt by total asset. We also used the size of the firm as a ln of total assets.

6.0.4. Country-level variable

As country-level variable, we have used the World Governance Indicator. Worldwide Governance Indicators (WGI) publishes aggregate and individual governance indicators for over 200 nations and territories from 1996 to 2021, including six dimensions of governance such as voice and accountability, political stability, governance effectiveness, and so on.

6.1. Measurement model

This study is based on panel data estimation with fixed effect GLS (generalized least squares) model. In our econometric model, there are several limitations of unobserved heterogeneity problem which measures the time-invariant variables of each firm (Gormley & Matsa, 2014). Also, endogeneity problem arises because of causality relationship between some independent variables (Baltagi et al., 2013; Roberts & Whited, 2013; Wintoki et al., 2012).

The generalized least square approach is used to estimate our model. The panel needs a random effects approach after executing the Hausman test. We rejected the absence of firm specific impact as a preliminary estimate, which suggests that ordinary least squared (OLS) calculations are inconsistent, and FE and RE estimations are more appropriate. The STATA command xtglsls fits panel-data linear models using feasible generalized least squares for the random effects model. Within panels, this xtglsls command determines the existence of autocorrelation and cross-sectional correlation.

$$\log_e Y_{itc}^i = \log_e \beta_0 + \log_e \beta_1 TRESGScore^i + \log_e \beta_2 EnvironmentalPillarScore^i + \log_e \beta_3 SocialPillarScore^i + \log_e \beta_4 GovernancePillarScore^i + \sum_{j=1}^J \log_e \gamma_j FLV_{itc} + \sum_{k=1}^K \log_e \delta_k CLV_{itc} + \log_e \varepsilon_{it}^i$$

Here Y represents our alternative measures of discretionary accruals as proxies for FV (firm value) and FP (firm performance), FLV is the vector of J = 3 control, firm-level variables corresponding to firm size (Size), leverage (lev), profitability (ROA). CLV is a vector which includes country-level covariates like the Worldwide Governance Index (wgi) and ε_{it}^i is the stochastic error term. As the variables are in different units of measurement, the log linear model has been used.

7. Analysis

7.1. Univariate analysis

Table 2 displays all variable's basic descriptive statistical analysis used in the study. The minimum, maximum, mean, and standard deviation are all included in the descriptive statistics table. The firm value ratio ranges from -2.802 to 2.256, with a mean of 0.081 indicating that the stock is undervalued. On the other hand, Tobins q that is firm performance is distributed between 8.544 to a maximum of 8.695, and the mean is 8.547. The high values indicate that the firms are not undervalued. With a mean value of -3.11, return on assets (ROA) is low, suggesting that the sampled firms are inefficient at turning the capital invested capital into operational profit. As for the ESG score, the overall mean is -0.497 which is quite low. However, when individual scores are used (environmental, social and governance), a satisfactory degree of performance can be observed. The social pillar score is the highest with a mean of 4.132 whereas the governance pillar score is the lowest with a mean of 3.981. This portrays that firms mostly consider the initiatives related to workforce, human rights and community among all sustainability measures. The mean environment pillar score is 4.058 which show a strong effort to incorporate policies and process of the firms for environmental management. The country-level variable used is World Governance Index which is 77%, with higher values showing better governance levels.

Table 3 shows that the independent variables have low correlations, except for those that measure the same concept, such as the proxies for the discretionary ESG score (Environmental pillar score, social pillar score and governance pillar score). The correlation matrix displays important correlations between the study's main variables. Surprisingly, except for ROA, both firm value

Table 1. List of dependent and independent variables

Variables (Acronym)	Name of Variables	Measurement	Expected impact (positive:+ or negative: -)	Reference
FV (Model 1)	Firm Value	Measured by (CompanyMarketCap + TotalDebt)/TotalAssetsReported		
FP (Model 2)	Firm Performance	Measure by Tobins q = (Company Market Capital + Long-Term Liabilities)/ (Book Value Equity + Long-Term Liabilities)		
TRESGScore	Thomson Reuters Environmental, Social and Governance Score	Measure a company's ESG performance based on reported data in the public domain.	Positive	Aouadi and Marsat (2018); Fatemi et al. (2018); Brogi and Lagasio (2019); Long et al. (2020)
EnvironmentPillarScore	Environmental Pillar Score	Firm's resource use, emissions, and innovation score	Positive	Saleh et al. (2011); San Ong et al. (2014)
SocialPillarScore	Social Pillar Score	Firm's workforce, human rights, community score	Positive	Surroca et al. (2010); Dhaliwal et al. (2011)
GovernancePillarScore	Governance Pillar Score	Firm's management, shareholders, and CSR strategies.	Positive	Bauer et al. (2010)
Size	Firm Size	Ln(Total Asset Reported)	Positive	Drempetic et al. (2020); Chauhan (2014)
Lev	Leverage	Total debt divided by total asset	Positive	Gordon (1959)

(Continued)

Table 1. (Continued)

Variables (Acronym)	Name of Variables	Measurement	Expected impact (positive:+ or negative: -)	Reference
ROA	Return on Asset	NetIncomeAfterTaxes/ TotalAssetsReported	Positive	Buallay (2019); Velte (2017)
WGI	World Governance Indicator	Computed using an aggregate of governance indicators including voice and accountability, political stability, government effectiveness etc.		

Table 2. Descriptive statistics

Variable	Observation	Mean	Std. Deviation	Min	Max
FV	4643	0.081	0.630	-2.802	2.256
FP	4691	8.547	0.003	8.544	8.695
ESG score	3289	-0.497	0.365	-3.560	-0.057
Environment pillar score	3270	4.058	0.585	-1.256	4.590
Social pillar score	3289	4.132	0.430	0.494	4.591
Governance pillar score	3289	3.981	0.492	0.879	4.588
ROA	4107	-3.110	0.918	-9.576	-1.251
Leverage	4672	-1.653	1.219	-12.897	-0.058
Size	4815	22.199	2.081	13.979	26.932
World Governance Index (0-1)	5161	0.769	0.082	0.527	0.875

and Tobins q have significant negative correlation with almost all of the independent variables. However, between ESG score and ROA, a negative significant relation has been found. Among the other independent variables, the social and environmental pillar scores have high correlation. Other than these two, the absolute values are under 0.5 for all variables.

7.2. Multivariate analysis

As we can see, in Table 4 in case of firm value, the Governance pillar score is statistically insignificant. The Social and Environmental pillar scores, on the other hand, are seen to be positively significant. This means a firm's efforts to improve its public image by implementing ESG initiatives such as reusing resources, innovating, and reducing emissions improve the firm's value. So a firm can have higher firm value if it's way of allocating resources to ESG initiatives generates human and social capital and produces intangible assets through increased environmental efficiency (Serafeim, 2020). Therefore, these two dimensions rejects the null Hypothesis 1 and support that Environment and Social initiatives have positive impact on firm value. These findings are in line with Qureshi et al. (2020), who found that environmental and social scores have greater impact on firm value than the governance score. However, a positive significant relationship is found between firm value and ESG score when TRESGscore is used as independent variable (model 3). Among the control variables, ROA is positively significant, whereas size is negatively significant. Thus, hypothesis 1 that is implementing ESG initiatives improve firm value, is verified. There are several arguments in favor of this hypothesis. (Abdi et al., 2022; Fatemi et al., 2018; Malik, 2015).

Here, FV and FP represent firm value and firm performance respectively. And FV_ESG and FP_ESG represents model where TRESGscore has been used as independent variable instead of the separate environment, social and governance score.

When Tobin's q has been used as dependent variable it is seen that only social pillar score is positively and significantly (for the social dimension) linked with FP. This is in line with previous findings that training programs have a positive relationship on productivity of employees (De Grip & Sauermann, 2013; Konings & Vanormelingen, 2015; Qiu et al., 2016; Xie et al., 2019). Environment pillar score has been found to have a negatively insignificant and Governance pillar score to have a negatively significant relation with FP. The negatively significant Governance pillar score implies that a firm's initiatives of creating a board and developing CSR strategy will not yield

Table 3. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Ln(fv1_w2)	1.00									
(2) ln_TobinsQ	0.80*	1.00								
(3) ESG score	-0.15*	-0.07*	1.00							
(4) Environment pi~e	-0.23*	-0.09*	0.84*	1.00						
(5) Social pillar ~e	-0.07*	-0.10*	0.88*	0.69*	1.00					
(6) Governance pit~e	-0.08*	-0.01	0.67*	0.34*	0.37*	1.00				
(7) ln_ROA	0.52*	0.40*	-0.10*	-0.13*	-0.07*	-0.05	1.00			
(8) ln_lev	-0.18*	-0.16*	0.12*	0.12*	0.07*	0.11*	-0.26*	1.00		
(9) Ln(TA)	-0.19*	-0.11*	0.63*	0.60*	0.55*	0.37*	-0.10*	0.18*	1.00	
(10) World Governat~1	0.24*	0.04	-0.11*	-0.09*	-0.13*	-0.03	0.13*	0.06*	0.15*	1.00

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ indicate significance

Table 4. Regression analysis

	(1)	(2)	(3)	(4)
VARIABLES	FV	FP	FV_ESG	FP_ESG
Environment pillar score	0.0387*** (0.0150)	-0.0000 (0.0000)		
Social pillar score	0.1485*** (0.0216)	0.0001*** (0.0000)		
Government pillar score	-0.0042 (0.0130)	-0.0000* (0.0000)		
ROA	0.0981*** (0.0061)	0.0000*** (0.0000)	0.0994*** (0.0061)	0.0000*** (0.0000)
Leverage	0.0121 (0.0075)	-0.0000*** (0.0000)	0.0069 (0.0072)	-0.0000*** (0.0000)
Size	-0.1747*** (0.0074)	-0.0001*** (0.0000)	-0.1687*** (0.0074)	-0.0001*** (0.0000)
World Governance Index (0-1)	-0.9770** (0.3991)	-0.0000 (0.0001)	-1.2841*** (0.3987)	-0.0001 (0.0001)
ESG Score			0.1467*** (0.0200)	0.0000*** (0.0000)
Constant	4.1661*** (0.3623)	8.5474*** (0.0001)	5.0928*** (0.3623)	8.5477*** (0.0001)
Observations	2,824	2,830	2,830	2,836
Number of Iden	303	303	304	304
Ind. FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Note: Standard errors in parentheses and *** p < 0.01, ** p < 0.05, * p < 0.1 indicate significance

a better FP. The negatively insignificant relation between Environmental pillar score and FP suggests that the investors in Europe may be more concerned with the firm's financial performance and economic prospects than with environmental disclosures (Smith et al., 2007). Therefore, null H2 is supported from these two dimensions. However, when TRESGScore is used as independent variable, a positive significant relationship is found. In terms of the control variables, both size and leverage are negatively significant, whereas ROA is positively significant.

7.3. Robustness test

This study also does a sensitivity analysis to evaluate the results' robustness. To do so, we have used Market to Book ratio as the dependent variable for firm value and ROA for firm performance. The results comparing the regressions models are presented in Table 5. It can be seen from the table that in general the results for both models yielded similar estimations proofing the robustness of the study.

8. Conclusions and implications

The purpose of this study is to determine the impact of ESG initiatives on firm value and performance using a 12-year panel data set of 180 listed firms from 10 economic sectors operating in 22 countries from 2008 to 2020. Thomson Reuters ESG Score, which is a measure of a firm's ESG performance based on publicly available data, is used as an independent variable. The firm value

Table 5. Robustness test

	(1)	(2)	(3)	(4)
VARIABLES	FV	FP	MB	ROA
Environment Pillar Score	0.0387***	-0.0000	0.0660***	0.0000
	(0.0150)	(0.0000)	(0.0251)	(0.0000)
Social Pillar Score	0.1485***	0.0001***	0.2269***	0.0000
	(0.0216)	(0.0000)	(0.0356)	(0.0000)
Governance Pillar Score	-0.0042	-0.0000*	-0.0564***	0.0000
	(0.0130)	(0.0000)	(0.0205)	(0.0000)
ROA	0.0981***	0.0000***	0.0495***	0.0000
	(0.0061)	(0.0000)	(0.0092)	(0.0000)
Leverage	0.0121	-0.0000***	0.0226**	0.0000
	(0.0075)	(0.0000)	(0.0100)	(0.0000)
Size	-0.1747***	-0.0001***	-0.2355***	0.0000
	(0.0074)	(0.0000)	(0.0170)	(0.0000)
World Governance Index (0-1)	-0.9770**	-0.0000	-0.9812	0.0000
	(0.3991)	(0.0001)	(0.6119)	(0.0000)
Constant	4.1661***	8.5474***	5.8497***	0.0000
	(0.3623)	(0.0001)	(0.6183)	(0.0000)
Observations	2,824	2,830	2,828	2,851
Number of Iden	303	303	303	303
Ind. FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES

Note: Standard errors in parentheses and *** p < 0.01, ** p < 0.05, * p < 0.1 indicate significance

and firm performance are the dependent variables. Control variables used in the study are firm size, leverage, and ROA.

It has been revealed by the findings that among the ESG initiatives considered by the firms, initiatives related to the workforce, human rights, and community are given more importance. Then the focus is given to environmental and governance initiatives respectively. According to the results from regression models, ESG score has a significant positive impact on the value and performance of the firms. However, when subcomponents of ESG are taken into account (for example, environmental pillar score, social pillar score, and governance pillar score) some variations have been observed. In case of firm value, the Governance pillar score is statistically insignificant. The Social and Environmental pillar scores, on the other hand, are seen to be positively significant. This means that a firm's ESG initiatives such as reusing resources, innovating, and reducing emissions to improve its public image improves the firm's value. And in case of firm performance, social pillar score has a positive and significant effect. Governance pillar score is found to be negatively significant implying that a firm's ESG initiatives for establishing a board and developing CSR strategy would not yield better firm performance. Also, the negative insignificant relation between Environmental pillar score and firm performance suggests that the investors in Europe might be more concerned with the firm's financial performance and economic prospects than with environmental initiatives. Thus, EU firms positively practice social responsibilities of the ESG initiative due to its impact on firms in many aspects.

The study contributes to the existing ESG literature in a number of ways. First, the research focused on two aspects of a firm's success: its performance and its value. Second, we examined

the impact of the ESG score and its three sub-components (Environmental, Social, and Governance pillar scores) on overall performance to see which factor was most important. Most studies simply consider a single subcomponent of ESG, not all of them. Third, we adopted a wide range of dataset from 2008 to 2020. Fourth, the findings are likely to be extended to other developed countries. Finally, our research might assist executives in better allocating the firm's existing resources to sustainability initiatives by using more efficient and robust methods. And the findings could aid academics, corporate shareholders, decision-makers, regulators, and policymakers in better understanding ESG disclosure scores and the importance of implementing them into all aspects of business.

ESG initiatives are used by firms as part of their strategic planning to provide additional information to shareholders regarding investment and business conduction. Effective ESG initiatives can attract investors, resulting in increased willingness to buy and invest. So, the result of this study has important implications for researchers and firm executives helping them effectively allocate and utilize firm's resources. As it has been found from the study that European firms have found much more positive impact on firm performance by focusing more on the social initiatives, such initiatives should be further emphasized and planning should be done accordingly. ESG satisfies shareholders' interests in long-term planning, thus proper allocation of resources should be ensured in this direction.

8.1. Recommendations

There are several limitations in this study. The literature using Tobin's Q as a measure of firm performance and its relationship with ESG score is scarce and might be strengthened. So, it is recommended that further research be conducted to investigate the effects of ESG initiatives for various measures of performance, in various types of firms of both developed and developing countries in order to give constructive and effective comparisons. It would also be interesting to look at the function of various moderating factors on the relationship of ESG with firm value and performance.

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Correction

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