

## The impact of sustainability practices on companies' financial performance and value creation

*O impacto das práticas de sustentabilidade na performance financeira e na criação de valor das empresas*

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### Keywords

Sustainability practices.  
ESG.  
Financial performance.  
Value creation.  
Hierarchical linear modeling.

### Abstract

Companies, markets, governments, and society in general have shown a growing interest in sustainability topics. However, the economic viability of these practices by companies is still controversial. Some studies confirm its positive impact on companies' financial performance and value. Others highlight the high costs of its implementation, without a compensatory benefit. Furthermore, the level of countries' development has a moderating effect on the adoption of these practices by organizations. Therefore, this study aims to evaluate the impact of sustainable practices on the financial performance and value creation of companies, considering the moderating effect of the countries' level of development. We analyzed, 355,416 observations from 2,509 companies located in 4 developed countries and 5 key partners of the Organisation for Economic Cooperation and Development. The data was obtained from the Bloomberg, Capital IQ, and World Bank databases for the period from 2010 to 2022. The verification of these objectives was carried out via a hierarchical linear model or multilevel regression with panel data. As a result, there is confirmation of the positive impact of sustainable practices in adding value and improving the financial performance of organizations, especially for those located in emerging countries.

### Palavras-chave

Práticas de sustentabilidade.  
ESG.  
Performance financeira.  
Criação de valor.  
Modelo hierárquico linear.

### Resumo

Empresas, mercados, governos e a sociedade em geral têm apresentado um interesse crescente sobre temas de sustentabilidade. Entretanto, a viabilidade econômica dessas práticas pelas empresas ainda é controversa. Há estudos que confirmam seu impacto positivo na performance financeira e valor das empresas. Já outros destacam os altos custos em sua implementação, sem que haja um benefício compensatório. Além disso, o nível de desenvolvimento dos países apresenta um efeito moderador na adoção dessas práticas pelas organizações. Assim, este estudo tem como objetivo avaliar o impacto das práticas sustentáveis na performance financeira e criação de valor das empresas, considerando ainda o efeito moderador do nível de desenvolvimento dos países. Para tanto, são analisadas 355.416 observações de 2.509 empresas, localizadas em 4 países desenvolvidos e 5 parceiros-chaves da Organization for Economic Co-operation and Development. Os dados são obtidos a partir das bases da Bloomberg, Capital IQ e Banco Mundial para o período de 2010 a 2022. A verificação desses objetivos é feita via modelo hierárquico linear ou regressão multinível com dados em painel. Como resultado, há a confirmação do impacto positivo das práticas sustentáveis na adição de valor e melhoria da performance financeira das organizações, sobretudo para aquelas localizadas em países emergentes.

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### Practical implications

This study benefits companies, markets, and regulatory agents by confirming the importance of sustainable practices in enhancing financial performance and company valuation, particularly in emerging markets. This leads to a deeper understanding of these actions and signals to governments the effectiveness of policies that encourage their implementation.

## 1 INTRODUCTION

Society's perception of environmental and social issues has evolved, as have expectations for companies' roles in addressing these concerns (Agudelo et al., 2019). Consequently, investors and other stakeholders have shown increased interest in companies' environmental, social, and governance (ESG) scores (Aydoğmuş et al., 2022). To meet this demand, companies are increasingly demonstrating their commitment to sustainable practices. As they strive to balance financial and non-financial performance, they must investigate the impact of sustainability practices on financial performance and value creation (Fatemi et al., 2018).

Despite the growing interest in sustainable practices, an antagonistic perspective exists regarding their implementation. Some authors argue that adopting such practices can lead to inefficient resource use and wealth expropriation from shareholders (Friedman, 1970; Devinney, 2009). Research on this topic is inconclusive, with some studies indicating a positive relationship (Chouaibi et al., 2022; Naeem et al., 2022) and others finding a negative or statistically insignificant relationship (Atan et al., 2018). This divergence in results is partly due to the lack of standardized ESG metrics and varying disclosure requirements. Initiatives like IFRS Standards 1 and 2 (IFRS, 2023) and Directive 2014/95/EU (European Union, 2022) aim to address these issues.

Naeem et al. (2022) suggest that the impact of ESG performance on financial outcomes is stronger in developed countries compared to emerging ones. Dobers and Halme (2009) note that companies in developing countries, often characterized by weak institutional environments, tax fraud, anti-competitive practices, and corruption, are less likely to meet sustainability requirements than those in developed countries. However, these studies do not examine the moderating role of a country's development level in the relationship between sustainability practices, financial performance, and value creation.

This research examines whether adopting sustainable practices, represented by ESG scores, positively influences companies' financial performance and value creation. Additionally, it investigates whether this relationship is stronger in developed countries than in emerging ones and explores the moderating effect of a country's development level. The study employs multilevel regression or hierarchical linear modeling (HLM) using data from 2010 to 2022, covering 2,509 companies from four developed countries and five emerging countries that are key partners of the Organization for Economic Co-operation and Development (OECD).

## 2 LITERATURE REVIEW

According to Freeman (1984), companies must map, monitor, and interact with all their stakeholders. To achieve lasting success and sustain their market presence, companies must consider the interests of both shareholders and other stakeholders who have direct or indirect relationships, connections, or interests in their operations. In this context, ESG scores can reflect a company's commitment to addressing the relevant interests and needs of these stakeholders, extending beyond mere profitability.

Nirino et al. (2021) link the positive effect of ESG investments on companies' financial performance to stakeholder theory. By implementing and disclosing sustainability actions, companies can gain a competitive advantage. The gradual increase in stakeholders' trust promotes continuous financial performance improvement. Specifically, sustainability practices enhance the company's reputation and generate customer and stakeholder loyalty.

Agency and information asymmetry theories further emphasize that disseminating reports on sustainable practices aligns the interests of different stakeholders and reduces information disparities among them. This increased transparency improves financial results and creates value due to enhanced shareholder trust in management's investment decisions (Fatemi et al., 2018). Consequently, companies that use ESG score disclosures to validate their actions increase their value among investors (Foster et al., 2022; Uyar et al., 2023). These arguments support the research hypotheses:

H<sub>1a</sub>: Higher ESG scores correlate with better financial performance; and

H<sub>1b</sub>: Higher ESG scores correlate with greater company value.

The level of a country's development also influences companies' financial performance and value. Developed countries typically offer better infrastructure, regulatory stability, and greater investment capacity,

creating a more conducive environment for entrepreneurship and business development (Shin et al., 2023; Velasquez et al., 2023). These aspects support the hypotheses:

H<sub>2a</sub>: Companies in developed countries perform better financially than those in developing countries; and

H<sub>2b</sub>: Companies in developed countries create more value than those in developing countries.

Additionally, a country's development level moderates the relationship between adopting sustainable practices and a company's financial performance and value. Developed countries generally have stricter environmental regulations and higher public awareness of social and environmental issues, making companies that adopt sustainable practices more valued by investors. Consumers in developed markets are also more likely to purchase sustainably produced products and services (Naeem et al., 2022; Shin et al., 2023). Thus, the research hypotheses include:

H<sub>3a</sub>: Sustainable practices impact financial performance differently in developed and developing countries; and

H<sub>3b</sub>: Sustainable practices impact value creation differently in developed and developing countries.

Empirical studies often identify positive relationships between companies' sustainable performance and their financial performance and value creation. Aydoğmuş et al. (2022) found such relationships using a regression analysis with panel data from over a thousand multinational companies with ESG scores from the Refinitiv database (2013-2021). The dependent variables analyzed were ROA and Tobin's Q. The study concluded that high ESG performance investments yield returns in terms of value and profitability. Similarly, Chouaib et al. (2022) analyzed around 200 English and German companies using panel data regression (2005-2019) and found that high ESG scores increase company value, while low scores decrease it.

Besides sustainable practices, other company and country characteristics impact financial performance and value. Notable factors include company size, leverage level, liquidity, systematic risk, GDP per capita growth rate, and global governance indicators (Shin et al., 2023).

### **3 METHODOLOGY**

The final sample comprises 355,416 observations from 2,509 non-financial public companies. Data were collected from Bloomberg, Capital IQ, and World Bank databases, spanning from 2010 to 2022. Bloomberg ESG scores (2023) were calculated using a general score for each dimension, ranging between 0 and 100 (Fatemi et al., 2018; Ahmad et al., 2021; Wong et al., 2021).

The hypotheses are tested using descriptive statistics, correlation analysis, and hierarchical linear modeling (HLM) with panel data. Robustness tests were conducted by analyzing subsamples of companies in developed and emerging countries. In this model, variables were analyzed at multiple aggregation levels, following the nested structure of the data. The model has three levels: time (level 1), company (level 2), and country (level 3). Its main advantage over traditional regression models is the ability to account for natural data nesting. Multilevel models allow the identification and analysis of heterogeneities among individuals and groups, enabling the specification of random components at each analysis level. The HLM variables are described in Table 1 (Fávero & Belfiore, 2019).

The companies in the sample are from countries with the highest GDP values in 2021 (the United States, Germany, the United Kingdom, and France) and countries that are key partners of the OECD (China, Indonesia, India, South Africa, and Brazil). The OECD considers these five major economies as key partners due to their significant global influence, representing 42.69% of the population and 25.07% of the global GDP. These countries are projected to grow above the world average in the coming years and are expected to be among the largest economies in the near future. Therefore, the results for companies in these countries can be extended to other emerging economies, given their relevance and role as global leaders (OECD, 2021; Goldman Sachs, 2022).

Equations (1a) – (1c) present the development of the null model, which focuses on the random effects of the intercepts to provide information pertinent to the variance decomposition of the dependent variable. The null

model estimates the relative importance of each level in the variance of companies' financial performance and value (FPV).

$$FPV_{tjk} = \beta_{0jk} + e_{tjk} \quad (1a)$$

$$\beta_{0jk} = Y_{00k} + r_{0jk} \quad (1b)$$

$$Y_{00k} = \delta_{000} + u_{00k} \quad (1c)$$

$$FPV_{tjk} = \delta_{000} + u_{00k} + r_{0jk} + e_{tjk} \quad (1d)$$

Next, explanatory variables are included as determinants of the random intercepts, resulting in a mixed-effect model. The intercepts at the three levels are random. Equation (2d) consolidates equations (2a) – (2c), presenting the mixed-effect model, in which the intercepts of the three levels are random. The FPV – which represents the dependent variables ROA and Tobin's Q – is a function of the set of variables at the company and country level – and their respective random errors.

$$FPV_{tjk} = \beta_{0jk} + \beta_{1jk}YEAR_{tjk} + e_{tjk} \quad (2a)$$

$$\beta_{0jk} = Y_{00k} + Y_{1jk}ESG_{tjk} + Y_{2jk}X_{tjk} + r_{0jk} \quad (2b)$$

$$Y_{00k} = \delta_{000} + \delta_{001}DEV_{001} + \delta_{002}W_{002} + u_{00k} \quad (2c)$$

$$FPV_{tjk} = \delta_{000} + \delta_{001}DEV_{001} + \delta_{002}W_{002} + Y_{1jk}ESG_{tjk} + Y_{2jk}X_{tjk} + \beta_{1jk}YEAR_{tjk} + u_{00k} + r_{0jk} + e_{tjk} \quad (2d)$$

After including the random intercepts, the slopes of the company-level variables, which are random and impacted by country factors, are added. This allows for analyzing the indirect influences of country-level characteristics on FPV. The system of equations (3a) – (3d) presents the influence of variables and hierarchical relationships at levels 1, 2, and 3 on FPV. Finally, equation (3e) presents the final mixed-effect model, including interaction variables.

$$FPV_{tjk} = \beta_{0jk} + \beta_{1jk}YEAR_{tjk} + e_{tjk} \quad (3a)$$

$$\beta_{0jk} = Y_{00k} + Y_{1jk}ESG_{tjk} + Y_{2jk}X_{tjk} + r_{0jk} \quad (3b)$$

$$Y_{1jk} = \delta_{10k} + \delta_{11k}DEV_{001} + r_{1jk} \quad (3c)$$

$$Y_{00k} = \delta_{000} + \delta_{001}DEV_{001} + \delta_{002}W_{002} + u_{00k} \quad (3d)$$

$$FPV_{tjk} = \delta_{000} + \delta_{001}DEV_{001} + \delta_{002}W_{002} + Y_{1jk}ESG_{tjk} + Y_{2jk}X_{tjk} + \beta_{1jk}YEAR_{tjk} + \delta_{200}(DEV_{001} * ESG_{tjk}) + u_{00k} + r_{0jk} + e_{tjk} \quad (3e)$$

Where:  $t$  = time (level 1);  $j$  = company (level 2);  $k$  = country (level 3); FPV = dependent variables financial performance and value;  $DEV$  = developed country dummy independent variable;  $W$  = level 3 control variables;  $ESG$  = independent variable ESG score;  $X$  = level 2 control variables;  $YEAR$  = dummy independent variable — year;  $\beta_{0jk}$ ,  $Y_{00k}$ ,  $\delta_{000}$  = intercepts of levels 1, 2, and 3;  $e_{tjk}$ ,  $r_{0jk}$ ,  $u_{00k}$  = error terms at levels 1, 2, and 3 respectively; Other terms = slopes of explanatory variables.

**Table 1.**  
Description of variables

Var.	Description	ES	Formula	Components	Sources
ROA	Return on assets	n/a	ROA = Ebitda/TA	Ebitda = Earnings before interest, taxes, depreciation and amortization TA = Total assets	CIQ

**Table 1.**  
Description of variables

Var.	Description	ES	Formula	Components	Sources
TQ	Tobin's Q	n/a	$TQ = (MVE + TL) / TA$	MVE = Market value of equity (stock price * total number of outstanding shares) TL = Total liabilities TA = Total assets	CIQ
ESG	Score geral ESG	+	ESG score	From 1 to 100	Bloomberg
ENV	Environmental score	+	Environmental score	From 1 to 100	Bloomberg
SOC	Social responsibility score	+	Social responsibility score	From 1 to 100	Bloomberg
GOV	Corporate governance score	+	Corporate governance score	From 1 to 100	Bloomberg
DEV	Developed country	+	DEV = Dummy of developed country	0 = OECD key partners countries 1 = OECD members countries	OECD
SIZ	Size	+	$SIZ = \ln(TA)$	ln = Neperian logarithm TA = Total assets	CIQ
LEV	Leverage	-	$LEV = TDBV / TA$	TDBV = Total debt book value = short + long term TA = Total assets	CIQ
LIQ	Liquidity	+	$LIQ = CA / CL$	CA = Current assets CL = Current liabilities	CIQ
BETA	Systematic risk	-	$BETA = COV_{Rj,Rm} / VAR_{Rm}$	$COV_{Rj,Rm}$ = Covariance between stock and market return for the last 60 months $VAR_{Rm}$ = Variance of the market return for the last 60 months	CIQ
GDP	Gross domestic product per capita growth rate	+	$GDP = (GDP_t / GDP_{t-1}) - 1$	GDPT = Gross domestic product per capita of current year $GDP_{t-1}$ = Gross domestic product of previous year	World Bank
WGI	Worldwide Governance Indicator	+	WGI = It varies between -2.5 and 2.5. The higher, the better.	Index derived from the average of six-dimensional estimates that collectively gauge the quality of governance across countries	World Bank

Notes: Var = Variables; ES = Expected signal; Ref = References; n/a = Not applicable; CIQ = Capital IQ da Standard & Poor's.

#### 4 RESULTS

Table 2 presents descriptive statistics for the total sample and subsamples from developed and developing countries. The average ESG scores (overall and for each dimension) leverage, liquidity, beta indices, and the global governance index are higher in developed countries than in emerging ones. This discrepancy in ESG scores may be attributed to stricter regulations and more effective supervision regarding sustainable practices in developed countries, coupled with a higher societal awareness of their importance.

Companies in emerging countries exhibit better financial performance and greater value compared to those in developed countries. This can be explained by the greater opportunities for growth and the higher risk associated with investment decisions in developing regions (Lourenço et al., 2020). Additionally, the slightly larger company sizes in developing countries may be part of a strategy to achieve scale, reflected in higher GDP per capita growth rates. The distinctions between the two types of countries were tested using a t-test for the difference in means, showing statistical significance at the 1% level for all variables.

**Table 2.**  
Descriptive statistics

Variables	Full sample			Developed countries			Emerging countries		
	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs
ROA	0.17	0.20	30,915	0.10	0.11	21,376	0.34	0.25	9,539
TQ	2.71	1.76	30,915	2.06	1.41	21,376	4.17	1.58	9,539
ESG	35.82	11.15	27,155	37.93	11.06	19,304	30.63	9.54	7,851
ENV	20.93	18.45	16,480	25.18	18.86	11,202	11.89	13.74	5,278
SOC	18.28	11.22	22,786	20.12	11.84	16,210	13.74	7.88	6,576

**Table 2.**  
Descriptive statistics

Variables	Full sample			Developed countries			Emerging countries		
	Mean	SD	Obs	Mean	SD	Obs	Mean	SD	Obs
GOV	78.62	11.57	25,437	82.33	8.99	18,764	68.19	11.64	6,673
DEV	n/a	n/a	30,915	n/a	n/a	21,376	n/a	n/a	9,539
SIZ	7.11	1.81	20,532	7.09	1.83	18,824	7.31	1.52	1,708
LEV	0.27	0.17	27,970	0.28	0.18	19,014	0.26	0.16	8,956
LIQ	1.99	1.26	30,057	2.13	1.32	20,672	1.68	1.06	9,385
BETA	0.94	0.42	30,424	1.08	0.39	20,964	0.64	0.31	9,460
GDP	0.03	0.03	30,915	0.02	0.02	21,376	0.06	0.03	9,539
WGI	0.71	0.74	30,915	1.19	0.13	21,376	-0.37	0.16	9,539

Notes: SD = Standard deviation; Obs = Number of observations; n/a = Not applicable.

Table 3 presents the results of the null model, which verifies the variability in financial performance (ROA) and value (TQ) of companies within the same country and across different countries. This analysis helps determine the most appropriate modeling approach – whether hierarchical linear modeling (HLM) or traditional ordinary least squares regression (OLS). The null hypothesis ( $H_0$ ) is that the random intercepts are equal to zero. Since the value of Prob>chi<sup>2</sup> is 0.000,  $H_0$  is rejected. Additionally, the fact that all estimators exceed their respective standard errors indicates significant variation in ROA and TQ between companies and countries. These findings support the use of HLM for data analysis.

In terms of intraclass correlation (ICC), the correlation between annual ROAs (TQs) for the same company within a given country is 76.12% (78.89%). For the model without explanatory variables, annual ROA and TQ are moderately correlated between countries (43.9% and 45.12%, respectively). However, these metrics become strongly correlated when considering the same company within a specific country.

**Table 3.**  
Null model results

Dependent variables	ROA			TQ		
	Estimate	Standard Error	ICC	Estimate	Standard Error	ICC
Country ( $u_{00k}$ ) – level 3	0.0217	0.0111	0.4390	1.5966	0.8190	0.4512
Firm ( $r_{0jk}$ ) – level 2	0.0159	0.0004	0.7612	1.1947	0.0355	0.7889
Residual ( $\sigma^2$ )	0.0118	0.0000	n/a	0.7468	0.0062	n/a
LR test (Prob>chi <sup>2</sup> )	0.0000		n/a	0.0000		n/a
Number of obs	30,915		n/a	30,915		n/a

Notes: ICC = Intraclass correlation; n/a. = Not applicable; LR test = likelihood-ratio test.

Table 4 presents the results of the hierarchical linear modeling (HLM), focusing on the random effect of intercepts. Models 1-4 (5-8) use ROA (TQ) as the dependent variable and progressively add variables from equation (2d), including year dummies with fixed effects. Models 1-2 (5-6) incorporate level 2 variables, which include ESG scores and control variables. Model 1 (5) considers the overall ESG score, while Model 2 (6) examines the three individual dimensions of ESG. In Model 1 (2), an additional point in the ESG score (social dimension) is associated with a 0.07% (0.02%) increase in the companies' ROA. However, for the dependent variable TQ, neither the general nor the individual ESG scores show statistical significance in Models 5-6. These findings align with Aydoğmuş et al. (2022) and theoretically support stakeholder theory.

Models 3-4 (7-8) include level 3 (country-level) variables. Model 3 (7) uses the general ESG score, while Model 4 (8) considers the individual ESG dimensions. The country's development status and its GDP per capita growth do not significantly impact the company's financial performance and value creation, contrary to Kalia and Aggarwal (2023), who found that a country's level of development negatively affects companies' ROA. Additionally, the level of global governance in countries negatively correlates with companies' ROA and TQ, which is unexpected.

Regarding the random effects components, the variances of the error terms are statistically significant, suggesting that traditional linear regression with only fixed effects is inappropriate. Notably, the intraclass correlations (ICC) of Models 1-8 are higher than those in the null model (see Table 3), highlighting the importance of including level 2 and 3 variables in the analysis.

**Table 4.**  
Model results with random intercepts

Dep. Var.	ROA				TQ			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
<b>Fixed effects</b>								
Intercept	0.236***	0.208***	0.315***	0.283***	2.646***	2.634***	3.025***	3.017***
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Independent variables</b>								
ESG	0.0007***		0.0007***		-0.0001		0.0001	
ENV		0.0000		0.0000		-0.0014*		-0.0016**
SOC		0.0002***		0.0002***		0.0015		0.0013
GOV		0.0000		0.0000		-0.0003		0.0003
<b>Firm-control variables</b>								
SIZ	-0.0046***	-0.0005	-0.0041***	0.0000	-0.0487***	-0.0251*	-0.0438***	-0.0211
LEV	-0.0778***	-0.1231***	-0.0788***	-0.0003	-0.5386***	-0.7018***	-0.5494***	-0.7071***
LIQ	-0.0006	-0.0016*	-0.0006	-0.1235***	0.0412**	0.0024	0.0417***	0.0036
BETA	-0.0039	0.0036	-0.0036	-0.0015	-0.0499	-0.2011**	-0.0465	-0.1993**
<b>Country-control variables</b>								
DEV			-0.0927	-0.1084			0.0537	0.0609
GDP			-0.0662	0.0512			-0.1461	-0.1873
WGI			-0.0709***	-0.0386***			-0.7630***	-0.6908***
<b>LR test</b>								
(Prob > chi <sup>2</sup> )	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>ICC</b>								
Country ( $u_{00k}$ ) – level 3	0.6072	0.7083	0.5256	0.6845	0.3991	0.4276	0.4074	0.4647
ICC Firm ( $r_{0jk}$ ) – level 2	0.8977	0.9301	0.8768	0.9247	0.8413	0.9028	0.8436	0.9092
Number of obs	15,864	9,336	15,864	9,336	15,864	9,336	15,864	9,336

Notes: \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. LR test = likelihood-ratio test.

Table 5 presents the results of the complete hierarchical linear modeling (HLM) analysis. This analysis includes interaction variables between ESG scores and the development level of countries. Models 1-2 (with ROA as the dependent variable) and Models 3-4 (with TQ as the dependent variable) incorporate general ESG scores and individual dimension scores, respectively. The models also progressively add the variables from equation (3e) and include year dummies with fixed effects.

Model 1 demonstrates that a 1-point increase in the general ESG score boosts a company’s ROA by 0.37%, confirming H<sub>1a</sub> (higher ESG scores correlate with better financial performance). This finding is consistent with studies by Aydoğmuş et al. (2022) and Shin et al. (2023), and it supports stakeholder, agency, information asymmetry, and legitimacy theories. Companies with higher ESG scores, particularly in the social dimension (Model 2), tend to be more profitable.

However, being located in a developed country does not significantly impact ROA, as the development variable is statistically insignificant. This finding does not support H<sub>2a</sub> (companies in developed countries perform better financially than those in developing countries). The high level of competitiveness in developed markets may affect profit margins. In contrast, companies in emerging markets benefit from cheaper access to raw materials and labor, and less stringent labor and environmental regulations.

Conversely, the interaction variable “ESG\*DEV” in Model 1 indicates a negative relationship. Specifically, for each point increase in the general ESG score of companies in developed countries, ROA decreases by 0.34%. This supports H<sub>3a</sub> (sustainable practices impact financial performance differently in developed and developing countries). In developed markets, these practices may incur operational costs without immediate compensating benefits. In emerging markets, particularly in the Global South, sustainable investments can differentiate products and services.

Model 3 shows a positive relationship between the general ESG score and TQ, confirming H<sub>1b</sub> (higher ESG scores correlate with greater company value). This impact is more pronounced than on financial performance;

a 1-point increase in the overall ESG score raises TQ by 2.83%. This aligns with findings by Aydođmuş et al. (2022), Naeem et al. (2022), and Tahmid et al. (2022), suggesting that sustainable practices enhance long-term company reputation and investor confidence.

Additionally, Model 3 indicates an increase in company value if it is located in a developed country, confirming H<sub>2b</sub> (companies in developed countries create more value than those in developing countries). Unlike ROA, which reflects past results, TQ projects long-term value creation. In developed markets, despite lower immediate margins, sustainability investments are perceived as beneficial for future continuity and stability.

In Model 3, similar to Model 1, the interaction variable “ESG\*DEV” reveals a negative relationship, indicating that for every point increase in the overall ESG score of companies located in developed countries, their TQ decreases by 3.16%. This finding implies that the market attributes greater value to companies in emerging countries that successfully implement sustainable practices. This result confirms H<sub>3b</sub> (sustainable practices impact value creation differently in developed and developing countries).

Model 4 highlights that the social dimension is the only statistically significant ESG dimension. A 1-point increase in the social dimension score correlates with a 1.66% increase in the company’s value. However, when considering the interaction term (SOC\*DEV), the relationship is negative for companies in developed countries. These firms have historically adopted socially responsible practices, which are often more costly to implement. This context helps explain the observed negative relationship.

Regarding control variables, a negative relationship is observed with size (Models 1 and 3), leverage (Models 1-4), beta (Model 4), and global governance indicators (Models 1-4). The negative coefficient for size contrasts with expectations, possibly indicating that smaller companies seek higher returns due to scale limitations. The confirmation of leverage’s negative impact across all models underscores how increased debt can strain cash flow and heighten bankruptcy risks.

Conversely, the positive coefficient for liquidity in Model 3 reflects the market’s favorability toward companies with robust cash reserves, enhancing resilience against market uncertainties. In Model 4, the negative beta coefficient aligns with expectations that higher systematic risk diminishes a company’s overall value. Unexpectedly, the negative relationship between global governance indicators and financial performance/value (Models 1-4) suggests that companies benefit from regulatory leniency in countries with weaker governance, affording greater operational flexibility.

Lastly, across Models 1-4, the GDP per capita growth rate does not significantly impact companies’ ROA and TQ. This finding may be attributed to a time lag effect, where improvements in economic development take time to translate into measurable impacts on company performance and value. Thus, shareholders, investors, creditors, governments, and other stakeholders increasingly prioritize ESG initiatives. Companies that not only meet but exceed these expectations tend to be rewarded by the market. The positive correlation between ESG practices, profitability, and value creation may be evidence of this conclusion.

**Table 5.**  
Results of the complete model

Dependent variables	ROA		TQ	
	Model 1	Model 2	Model 3	Model 4
<b>Fixed effects</b>				
Intercept	0.1614**	0.3803***	1.6510***	3.0385***
Year fixed effects	Yes	Yes	Yes	Yes
<b>Independent variables</b>				
ESG	0.0037***		0.0283***	
ENV		-0.0010***		-0.0008
SOC		0.0028***		0.0166***
GOV		-0.0016***		-0.0054
<b>Firm variables</b>				
SIZ	-0.0044***	-0.0003	-0.0464***	-0.0219
LEV	-0.0775***	-0.1235***	-0.5353***	-0.7030***
LIQ	-0.0007	-0.0013	0.0400***	0.0035
BETA	-0.0029	0.0038	-0.0388	-0.1967**
<b>Country variables</b>				
DEV	0.1732	-0.2141	2.3816**	0.3149
GDP	-0.0328	0.0468	0.1653	-0.2260



**Table 5.**  
Results of the complete model

Country variables				
WGI	-0.11046***	-0.0358**	-1.1220***	-0.8372***
Interaction variable				
ESG*DEV	-0.0034***		-0.0316***	
ENV*DEV		0.0011***		-0.0008
SOC*DEV		-0.0027***		-0.0160***
GOV*DEV		0.0018***		0.0058
LR test (Prob > chi <sup>2</sup> )	0.0000	0.0000	0.0000	0.0000
Number of obs	15,864	9,336	15,864	9,336

Notes: \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. LR test = likelihood-ratio test.

Finally, Table 6 presents the results of the robustness test, employing the complete model. Models 1-4 (5-8) examine subsamples from developed and emerging countries. Models 1-2-5-6 (3-4-7-8) use ROA (TQ) as the dependent variable, with Models 1-3-5-7 (2-4-6-8) focusing on general ESG scores (and individual dimensions).

When dividing the sample, the general ESG score remains positively significant for ROA in both developed and emerging countries (Models 1 and 5), confirming H<sub>1a</sub> (higher ESG scores correlate with better financial performance). For individual dimensions, only the social score retains significance across both groups (Models 2 and 6). Companies' social initiatives are often cost-effective and gain significant societal visibility.

Regarding TQ, the environmental dimension shows a negative relationship with value creation (governance shows a positive relationship) in Model 4. This may stem from the high upfront costs of environmental investments, which delay long-term benefits for companies. Governance practices that are more established in developed markets yield more perceptible outcomes.

**Table 6.**  
Robustness test results

Subsample	Developed countries				Emerging countries			
	ROA		TQ		ROA		TQ	
Description	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Fixed effects								
Intercept	0.1035***	0.1528***	3.1484***	1.3650	0.5048***	0.5837***	3.2600***	3.2822**
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Independent variables								
ESG	0.0006***		0.0014		0.0015**		-0.0014	
ENV		0.0001		-0.0020**		-0.0010		-0.0066
SOC		0.0002*		0.0000		0.0033***		0.0073
GOV		0.0001		0.0029*		-0.0015		-0.0069
Firm variables								
SIZ	-0.0008	0.0004	-0.0182	-0.0220	-0.0187***	-0.0097	-0.1388***	-0.0738
LEV	-0.0809***	-0.1254***	-0.5963***	-0.8297***	0.0051	-0.1159*	0.7628***	0.3923
LIQ	-0.0009	-0.0028***	0.0445***	0.0119	0.0005	0.0124*	-0.0498	-0.0065
BETA	0.0107*	0.0089	-0.0087	-0.1594*	-0.1680***	-0.0760	-0.7132***	-1.0242**
Country variables								
GDP	0.0600	0.0242	0.4584	0.4319	0.6602**	-0.4517	11.5450***	4.2113
WGI	-0.0103	-0.0300*	-0.9774***	0.4604*	-0.2751***	-0.1005	-2.7709***	-2.1799***
LR test (Prob > chi <sup>2</sup> )	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Number of obs	14,569	8,795	14,569	8,795	1,295	541	1,295	541

Notes: \*\*\*p < 0.01, \*\*p < 0.05, \*p < 0.1. LR test = likelihood-ratio test.

In broad terms, the findings reinforce the stakeholder theory, demonstrating that investments in sustainable practices align with the interests of shareholders, creditors, customers, suppliers, and society at large. These initiatives show a positive association with companies' financial performance and value creation, particularly within the social dimension. The evidence presented supports managerial decisions to allocate more resources toward sustainable practices and encourages policymakers to develop supportive ESG policies.

Moreover, the distinction between companies based in developed and emerging countries sheds light on conflicting findings from prior studies (Aydoğmuş et al., 2022; Kalia & Aggarwal, 2023). Environmental initiatives tend to incur higher costs and require longer timelines to yield results. In contrast, the implementation of social and governance policies demands lesser investment and garners more immediate recognition in developed markets.

## 5 CONCLUSION

The theme of sustainability encompasses environmental, social, and governance (ESG) dimensions. Adopting these practices has garnered significant interest from companies, markets, and countries, with the expectation that long-term sustainable conduct will enhance companies' value, improve financial performance, provide greater returns to shareholders, and attract more foreign direct investment.

However, empirical studies have yielded mixed results. Some researchers argue that ESG practices may lead to inefficient resource use, suggesting that organizations should focus on value creation rather than transforming the world into a better place (Friedman, 1970; Devinney, 2009). Additionally, the level of a country's development appears to moderate the impact of sustainable practices on companies' value and performance. This study aims to analyze the relationship between the adoption of sustainable practices and companies' financial performance and value, examining differences between emerging and developed countries.

This analysis employs multilevel regression with panel data (HLM), using a sample of 355,416 observations from 2,509 companies across nine countries – four developed (United States, Germany, United Kingdom, and France) and five emerging (China, Indonesia, India, South Africa, and Brazil). The data, covering the period from 2010 to 2022, were obtained from Bloomberg, Capital IQ, and World Bank databases. A robustness test was conducted by segregating the sample into companies located in developed and emerging countries.

The results in Table 5 confirm hypotheses H<sub>1a</sub> (Model 1) and H<sub>1b</sub> (Model 3). Additionally, the social dimension showed a positive and statistically significant relationship with ROA (Model 2) and TQ (Model 4). Table 5 also confirms hypotheses H<sub>2b</sub> (Model 3), H<sub>3a</sub> (Models 1 and 2), and H<sub>3b</sub> (Models 3 and 4). Table 6 corroborates these findings, indicating that ESG scores have a greater impact on the value and financial performance of companies in emerging countries, with higher value scores.

These results support the theories of agency, information asymmetry, and legitimacy. In summary, the resources allocated to sustainable practices add value and improve financial performance. For emerging countries, where global governance levels are lower, these actions are crucial in mitigating risks and attracting new investments.

This study contributes to companies, markets, and regulatory agents by confirming the importance of sustainable practices in enhancing company valuation and financial performance over both long and short-term horizons. This, in turn, leads to better investor returns and signals to governments the effectiveness of policies encouraging the adoption of such practices.

One limitation of the study is the exclusion of other financial performance proxies – such as ROI and ROC – and value creation measures – such as ROE and TSR. Future research should consider analyzing the impact of specific ESG components on value creation and company performance, including environmental (e.g., air quality, climate change, biodiversity), social (e.g., diversity, ethics and compliance, human capital), and governance (e.g., board composition, remuneration policy, risk audit) aspects.

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