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More Money, More Ethical Commitment? How Corporate Financial Performance Influences Environmental Social and Governance Practices

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Abstract

This article explores the relationship between corporate financial performance (CFP) and commitment to ESG (environmental, social and governance) practices, using a sample of companies listed on the S&P 500 and TSX 60 indices. By employing a linear regression model, the study examines how financial indicators such as Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA), return on assets (ROA), Assets and Debt influence ESG scores. The results show that financial indicators such as EBITDA, ROA and Assets are positively associated with increased ability to commit resources to ESG practices, except in some cases like when costs associated with ESG initiatives can reduce the competitiveness and profitability of companies in the short term, where ROA is negatively correlated with the adoption of ESG criteria. Also, with regard to the size of companies, thanks to their greater resources, larger companies are more inclined to adopt ESG criteria. These findings enhance the understanding of financial conditions that enable or constrain ESG adoption and provide managerial insights for strategic resource allocation in the pursuit of sustainability goals.

Keywords: financial performance; ESG criteria; socially responsible investing (SRI); corporate social responsibility (CSR); sustainability; stakeholders

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1. Introduction

Corporate social responsibility (CSR) can be defined as a holistic approach that integrates economic, social and environmental aspects into a company's business activities in a sustainable manner (Werasturi, 2017; Rahmat, 2017). It is usually an integral part of a company's strategy (Mahyuni & Dewi, 2020) to achieve sustainable economic development (Rosilawati & Mulawarman, 2019; Woldeamanuel & Devi, 2021), which translates into diverse initiatives that benefit both the business and society. CSR occupies an increasingly central place in corporate strategies, guided by environmental, social and governance (ESG) criteria that shape responsible investment. In recent years, ESG (environmental, social and governance) investments have experienced growing popularity, in particular due to the growing importance of ESG criteria (Sciarelli et al., 2021) but also the growing recognition of the benefits of responsible practices by companies (Eccles et al., 2014; Clark et al., 2015; Geczy et al., 2021), and ESG criteria provide a clear framework for assessing a company's responsibility towards its environment and its stakeholders (Stokking, 2023).

Many studies examine the relationship or correlation between ESG and financial performance (e.g., Friede et al., 2015; Velte, 2017; Chen et al., 2023) without establishing a clear causal link. Edmans (2011) highlights the possibility of reverse causation or the influence of a third variable that can explain ES performance. Conversely, whether financial performance affects ESG adoption remains insufficiently explored. Waddock and Graves (1997) laid the foundations for understanding the essence of the availability of resources (especially financial) on social performance. However, the study is limited to the social dimension of sustainable development, as the study is anchored in a period during which sustainability debates were burgeoning scholarly, managerially and institutionally, especially with the early version of the Global Reporting Initiative (GRI) (Sasikumar, 2023). A more comprehensive understanding of the influence of financial performance on the other dimensions of sustainability, including environmental and governance dimensions, is thus necessary to broaden our understanding of the influence of financial performance on ESG scores.

Several studies have highlighted the need to integrate financial performance as an explanatory variable of CSR (Chih et al., 2010; Mishra & Modi, 2013; Pirsch et al., 2007; Reverte, 2009; Uwuigbe et al., 2018). The relationship between financial performance and the adoption of ESG criteria has thus been the subject of a growing body of academic research in recent years, but the results are inconclusive, ambiguous or even contradictory (Aupperle et al., 1985; Griffin & Mahon, 1997; Hoepner & McMillan, 2009; Revelli & Viviani, 2015; Rowley & Berman, 2000; Van Beurden & Gössling, 2008). This uncertainty is reflected in both the extent and durability of the overall effect, thus leading to indecision among researchers and practitioners (Barnett, 2007; Borgers et al., 2013; Devinney, 2009; Orlitzky, 2011, 2013; Wood, 2010). Considering financial performance as an influence on ESG practices is important because companies with strong financial performance are better positioned to invest in ESG initiatives (e.g., improving labor conditions, adopting green technologies and enhancing governance structures).

Understanding the relation between financial performance and ESG scores is therefore essential to inform how companies allocate resources to balance short-term profitability with long-term sustainability. Different financial metrics may also generate different ESG outcomes because they do not measure the same facets of financial performance (Stone et al., 2015). Disentangling the financial indicators in relation to ESG performance may further reveal the intricacies of sustainability and profitability interlinkages.

Speaking of the intricacies of the interlinkages between sustainability and profitability, the level of CEO ownership is also often considered as a factor influencing a company's commitment to ESG criteria. Shahrour et al. (2024a) investigated the relationship between CEO ownership and carbon commitment, and the findings indicate that a higher ownership stake of the CEO is negatively associated with carbon commitment. However, a moderate level of ownership (ranging from 5% to 10% of total shares) corresponds to a higher degree of carbon commitment.

Moreover, the timing of CSR investment, based on ESG criteria, is also crucial for understanding the relationship between corporate financial performance and commitment to ESG criteria. In 2016, a study of Cassimon et al. (2016) proposed "the opportunity cost of delaying CSR investment" as an additional option to the real options framework for corporate decision-making proposed by Husted (2005). According to the authors, integrating the opportunity cost parameter into real option logic would enable firms to invest in CSR at the optimal moment.

This study explores the ambiguous relationship between corporate financial performance (CFP) and the adoption of environmental, social and governance (ESG) practices. It aims to analyze how financial performance indicators impact the implementation of

ESG practices, addressing an inconclusive gap in the existing literature on sustainable finance and CSR. In other words, this study seeks to explore the relationship between financial performance and the adoption of ESG practices, examining how various financial indicators differentially correlate with ESG adoption. It makes a significant contribution to the literature as it is one of the first studies to explore the impact of varying financial indicators—Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA), return on assets (ROA), Assets and Debt—on a firm's commitment to comprehensive ESG practices.

To achieve our objectives, we present, in Section 2, a review of the literature, exploring the links between financial performance and ESG practices, while highlighting the fundamental theories that underlie this relationship. Then, we detail in Section 3 the conceptual framework and the development of the research hypotheses before describing, in Section 4, the methodology adopted for the study, including the data used and methods of analysis. Subsequently, the empirical results are presented and discussed in Section 5, with a discussion of theoretical and practical implications, and, finally, in Section 6, we conclude the study by summarizing the main contributions, limitations and perspectives for future research.

2. Literature Review

2.1. Relation Between ESG Practices and Firm Financial Performance

When the concept of ESG came to the fore, the interest in the influence of ESG on financial performance gained traction among scholars. Therefore, most studies on the links between ESG and financial performance have focused on how the integration of ESG criteria influences the profitability and competitiveness of companies. The academic literature has widely explored the association between these ESG practices and the financial performance of companies (Agarwal et al., 2023; Al Amosh et al., 2024; Bătae et al., 2021; Bilyay-Erdogan et al., 2023; Bodhanwala & Bodhanwala, 2023; Brammer & Millington, 2008; Clark et al., 2015; Dhaliwal et al., 2011; Edmans, 2011; Filbeck & Gorman, 2004; Flammer, 2015; Friede et al., 2015; García-Amate et al., 2023; Liu, 2022; Maji & Lohia, 2023; Nirino et al., 2020; Parikh et al., 2023; Sandberg et al., 2023; Shakil et al., 2019; Shanaev & Ghimire, 2022; Velte, 2017). A meta-analysis by Revelli and Viviani (2015), in 85 studies, found a positive association between ESG and financial performance in about half of the cases studied. Both authors nevertheless assert that their conclusions are contingent on the measures used to evaluate ESG and financial performance. The performance of ESG funds also varies widely by sector and market, with some sectors underperforming in relation to the overall market (Richey, 2017). Shahrour et al. (2024b) conducted an analysis of the impact of climate risk by sector and found that, generally, there is a negative relationship between companies' carbon emissions and credit risk, except in the industrial sector, where the relationship is positive.

Friede et al. (2015), after analyzing more than 2000 empirical studies, found that almost all of them indicated a positive association between ESG practices and corporate financial performance. Khan et al. (2016) further explored this analysis by showing that companies that invest in material ESG issues, i.e., specific aspects that are most relevant to their industry, show better future performance.

Aydoğmuş et al. (2022) suggest a positive and significant link between ESG scores and the value and profitability of companies, except for the environmental aspect.

Moreover, de Mariz et al. (2024) highlight that corporate managers and fund managers have some discretion to incorporate ESG considerations if their decisions are reasonable and do not excessively harm the company's financial performance. Through their study based on a global sample of 3920 sustainable investment funds from 2000 to 2018,

Soler-Domínguez et al. (2021) revealed that companies held in more sustainable mutual funds tend to demonstrate superior performance compared to those in the carbon and fossil fuel industries, supported by conventional investment funds. This shows that increased sustainability has a positive correlation with better mutual funds' performance (Soler-Domínguez et al., 2021). For Tampakoudis et al. (2021), these findings remain consistent across geographically specific subsamples (e.g., the United States, Europe, Canada). Sládková et al. (2022) have demonstrated with a sample of 957 socially responsible investing (SRI) funds in 31 European countries that SRI funds are more able to exhibit high performance compared to the conventional ones. According to a meta-analysis carried out by Fulton et al. (2012), out of 100 studies, half of them showed a positive correlation between ESG performance and financial performance, while a significant majority found no negative correlation (Fulton et al., 2012). Some studies contradict this observation. Gibson et al. (2020) indicate that companies with low ESG scores tend to have higher future returns. In sum, the effect of ESG on financial performance is generally positive, with a few exceptions mainly related to industry, sector and market types. Brammer and Millington (2008) found no linear link between the social performance of companies and their financial performance. Brammer et al. (2006) even concluded two years earlier that the correlation between corporate social responsibility and financial performance was negative for their sample of companies in the United Kingdom. This study revealed that companies with the highest corporate social responsibility (CSR) scores performed worse than the market, while those with the lowest CSR scores performed better than the market. According to Filbeck and Gorman (2004), there is a negative relationship between environmental performance and financial performance. Studies that argue against a positive and significant link between ESG performance and financial performance are comparatively less prevalent in the literature and are also much older, reflecting the lower level of prevalence of sustainability themes prior to the 2010s. However, this does not mean that the influence of ESG on financial performance is more positive than negative overall. Recent studies, such as that of Possebon et al. (2024), highlight the growing importance of analyzing ESG subcategories independently to better understand their specific contributions to financial performance. Looking at Brazilian public companies, Possebon et al. (2024) found that environmental performance had a more significant impact on financial indicators, such as cost of capital, compared to social and governance dimensions.

2.2. Influence of Financial Performance on the Adoption of ESG Practices

The implementation of ESG criteria requires the mobilization of resources in view of the slack resources argument of Waddock and Graves (1997), which states that "[. . .] better financial performance potentially results in the availability of slack (financial and other) resources that provide the opportunity for companies to invest in social performance domains, such as community relations, employee relations, or environment [. . .]. If slack resources are available, then better social performance would result from the allocation of these resources into the social domains, and thus better financial performance would be a predictor of [corporate social performance]" (Waddock & Graves, 1997, p. 306). Although Waddock and Graves's (1997) study is limited to the social dimension, companies with better financial positions have slack available that they can use in environment- or governance-related initiatives. Extant research hints at the relationship between financial capacity and overall CSR practices. It emphasizes that the scale of CSR initiatives depends on the performance of companies and their financial capacity (Mishra & Modi, 2013). This allows them to better engage or not in CSR practices such as nature protection (Syed & Butt, 2017; Setyawan & Kamilla, 2015). According to Wamba (2022), safeguarding the environment relies largely on a company's governance framework as well as access to sufficient financial resources.

A profitable company, therefore, has the necessary resources to invest, which can lead to the improvement of its environmental performance (Testa & D'Amato, 2017). With a more precise focus on the social dimension, Dupire and M'Zali (2018) estimate that companies with high profits tend to allocate their profits in priority to the actors having the most impact on their operations, such as employees and customers, rather than investing them in community well-being or ecological initiatives.

According to Paridhi et al. (2024), the adoption of ESG reporting is hindered by strategic barriers (lack of resources, unclear stakeholder demand and structural constraints), functional challenges (governance issues and cultural resistance) and efficiency-related factors. In the same context, Parameswar et al. (2024) identified as barriers to the adoption of ESG practices the lack of clarity in regulatory and reporting standards, resource insufficiency, the absence of standardization, non-compliance, and a limited understanding of the benefits of ESG reporting. Additional challenges, such as insufficient executive support, skill gaps, inadequate stakeholder pressure and a lack of transparency, further complicate the integration of ESG practices. The study underscores the importance of clarifying regulatory frameworks and mandating ESG disclosure to overcome these barriers (Parameswar et al., 2024).

3. Conceptual Framework and Hypothesis Development

The study of the relationship between corporate financial performance (CFP) and ESG (environment, social and governance) scores has sparked wide academic debate. While some research indicates a clear positive relationship between financial performance and the adoption of ESG practices (Waddock & Graves, 1997; Margolis & Walsh, 2003), other studies highlight more nuanced or contradictory results (Moore, 2001). Based on resource availability theory (Waddock & Graves, 1997), strong financial performance provides companies with additional resources that they can invest in ESG practices. This increased financial capacity allows them not only to meet the expectations of their stakeholders, as suggested by stakeholder theory (Freeman, 1984), but also to strengthen their image and reputation in the market, which, in turn, can improve their financial performance. Additionally, resource scarcity can pose a significant barrier to the adoption and implementation of corporate ESG reporting (Paridhi et al., 2024), and insufficient resources can significantly harm a company's ability to align with ESG standards (Parameswar et al., 2024). As part of this study, we thus put forward the following hypothesis:

H1: *Corporate financial performance is positively correlated with ESG score.*

Furthermore, various financial indicators could impact ESG dimensions differently. Profitability measures (e.g., EBITDA) could influence environmental scores. For instance, Margolis and Walsh (2003) argue that firms with robust financial performance often allocate resources to initiatives such as energy efficiency and waste reduction, which are critical for environmental improvement. On the other hand, high leverage may restrict environmental investments as firms prioritize debt repayment over discretionary spending (Clarkson et al., 2011). Conversely, firms with lower debt levels have greater financial flexibility and may thus adopt more sustainable environmental practices. Likewise, liquidity influences a firm's ability to manage short-term costs associated with environmental compliance. Bansal and Roth (2000) highlight that firms with strong liquidity can better respond to regulatory pressures and invest in environmentally friendly technologies. To close on the environmental front, firms with higher market valuations are under greater scrutiny from investors and stakeholders, leading to enhanced environmental disclosures and performance. Al-Tuwaijri et al. (2004) find a positive association between financial performance and environmental reporting.

Following Waddock and Graves's (1997) assertion that financial success improves firm social performance, Orlitzky et al. (2003) revealed that financially successful firms are better positioned to promote equitable social practices, thus benefiting employees and communities. The cost structure may have a more ambivalent effect on social responsibility, as firms facing cost pressures may curb spending on social responsibility (McWilliams & Siegel, 2001).

Profitability is also a vector of qualified board members' attraction, which enhances decision-making. While leverage was found to be negatively related to environmental investments, high leverage increases pressure from creditors, leading to improved government practices (Jensen, 1986). Market valuation has the same effect, since highly market-valued firms seek to maintain investor confidence (Gillan & Starks, 2003). Free cash flow, on the other hand, may have a differentiated relation with governance mechanisms, since firms with higher free cash flow may face governance challenges because potential managerial inefficiencies may arise (Jensen, 1986). For all these reasons, different financial indicators may imply contradictory effects on ESG scores, which may also explain the lack of conclusive findings on the financial performance–ESG performance link in the literature so far. Therefore, we formulate the following hypothesis:

H2: *Diverse financial indicators have differentiated results on ESG performance.*

4. Methodology

4.1. Research Design

This study adopts a quantitative approach based on a hypothetico-deductive framework. The main objective is to analyze the relationship between corporate financial performance and corporate commitment to ESG practices using a linear regression method, an approach widely recognized in the literature, particularly in studies focusing on relationships between financial performance and ESG criteria (Broadstock et al., 2021; De Lucia et al., 2020; Hedqvist & Larsson, 2020).

The study analyzes quantitative data from 522 North American companies listed on the S&P 500 and TSX 60 indices over the 2015–2018 period. Despite this period being relatively short for drawing general conclusions, an econometric analysis based on linear regression was chosen to accurately quantify the relationships and effects.

4.2. Data

4.2.1. Kinder–Lydenberg–Domini (KLD) Scores

The KLD (Kinder, Lydenberg and Domini) criteria were developed by KLD Research & Analytics Inc., an early Stanford Research Institute International company that pioneered the supply of investment products, such as performance benchmarking and advice and compliance assessments, to financial actors (Mattingly, 2017; Ertz et al., 2025). At the end of the 2010s, despite KLD's acquisition by Morgan Stanley Capital International's (MSCI) RiskMetrics group, its companies' ESG performance methods of evaluation continued to influence investment decisions. After being evaluated, the best-performing companies were added to global indices like "the MSCI Global Climate Indices", "the Low Carbon Indices", "the Global Sustainability Index Series" and "the MSCI KLD 400 Social Index". The latter index is one of the multiple indices in MSCI's global portfolio and the most notable.

4.2.2. The MSCI KLD 400 Social Index

The MSCI KLD 400 Social Index was established in 1990 and was a pioneer in comparing and evaluating companies in terms of ESG criteria (Sharfman, 1996). Consequently, the KLD400 achieved widespread adoption among sustainability-driven investors, as

well as garnering significant interest from researchers in the academic community (e.g., Perrault & Quinn, 2018; Ertz et al., 2025). Eccles et al. (2020) also highlighted that no less than 140 scientific articles used KLD data to estimate the CSR scores of organizations.

4.2.3. The MSCI KLD 400 Social Index Organizations

The MSCI KLD 400 Social Index comprises 400 holdings, with ninety (90) percent allocated to large-cap companies, nine (09) percent to mid-sized companies selected for sector diversification and one (01) percent to small-cap companies chosen for their exceptional social commitment and exemplary environmental management. Inclusion in this index can prove advantageous as stakeholders can demonstrate an increasing propensity for responsible investment. However, companies operating in weapons manufacturing, alcohol and other psychoactive substances, gambling, and genetically modified organisms (GMOs), as well as those failing to meet specific financial thresholds, are automatically excluded from the index.

4.2.4. MSCI ESG Ratings for CSR Measurement

In this study, MSCI ESG ratings were used to assess environmental and social performance, which we consider CSR scores. Scores are awarded to companies that have demonstrated commitment to environmental and social issues and are useful to stakeholders practicing socially responsible investing (SRI). The list, therefore, excludes companies whose business activities include negative or unethical practices. Access to the database called "MSCI ESG STATS" was acquired on 29 January 2021 from MSCI ESG Research Ltd. (New York, NY, USA), and the data extracted for the purposes of the study covers the period from 2015 to 2018.

5. Analysis and Results

5.1. Descriptive Analysis

We carried out a descriptive analysis of the main variables to better understand the characteristics of our sample. However, to guarantee the reliability of our results and facilitate comparison between companies of different sizes (St-Cyr et al., 1997), we transformed certain financial variables into ratios. For example, a large company automatically has a higher amount of capital than a medium-sized or a small company, but this does not indicate that it is more efficient.

The results show average profitability (ROA $\simeq 0.05$) for all years. On the other hand, the EBITDA ratio index is always positive but remains low, meaning that operating efficiency is modest. As for the debt level, we note that it is around 30% for all four years (Table 1). Finally, the ESG score increases progressively from one year to the next but remains low. On the other hand, the high standard deviation of ESG reflects the strong heterogeneity between the companies in our sample.

5.2. Pearson Correlation

To analyze the various linear relationships between the ESG scores and the financial variables (ROA, EBITDA, Debt and Assets), we calculated Pearson correlation indices. This approach enabled us to identify direct links between variables before estimating the regression model. Consequently, we measured the correlation for only 2016, 2017 and 2018. The exclusion of 2015 was justified by the lack of data for 2014, as the correlation is based on variables from year $t-1$.

In addition to the ROA, EBITDA and Debt variables, we included the "Assets" variable as it is considered a key element in ESG performance. For this, we calculated the logarithm of this variable to avoid biasing the results. In fact, this transformation reduces the effects

of very large values and consequently improves the linearity of statistical relationships. In other words, the logarithm of assets neutralizes the effect of extreme size.

Table 1. Descriptive analysis.

Year	Variables	Min	Max	Average	Standard Deviation
2015	ROA	−0.745	0.350	0.0507	0.0864
	EBITDA	−0.96	0.53	0.1223	0.11404
	Debt	0.00	1.14	0.296	0.1816
	ESG	0	20	4.63	3.991
2016	ROA	−0.374	0.332	0.0524	0.0756
	EBITDA	−0.30	0.49	0.1250	0.09314
	Debt	0.00	1.67	0.3057	0.18925
	ESG	0	19	4.33	3.638
2017	ROA	−0.260	0.252	0.0530	0.0623
	EBITDA	−0.18	0.40	0.1237	0.08244
	Debt	0.00	1.85	0.3107	0.19463
	ESG	0	17	4.04	3.508
2018	ROA	−0.165	0.373	0.065	0.06584
	EBITDA	−0.12	0.47	0.1326	0.08499
	Debt	0.00	2.44	0.3151	0.21176
	ESG	0	19	5.17	3.710

According to the results obtained, no financial performance variable (ROA, EBITDA or Debt) is significantly related to the ESG score. Only company size, measured by the logarithm of total assets, is significantly and positively correlated with ESG score (Table 2). By deduction, it seems that the ESG scores of large companies are much better than those of small/medium-sized companies because they possess the resources required for the adoption of ESG criteria.

Table 2. Correlation measurement.

Year	Variables	Correlation with ESG	Sig.
2016	ROA 2015	0.015	0.745
	EBITDA_ratio 2015	−0.013	0.777
	Debt_ratio 2015	−0.059	0.194
	LogAssets 2015	0.593 **	<0.001
2017	ROA 2016	0.048	0.289
	EBITDA_ratio 2016	0.014	0.763
	Debt_ratio 2016	−0.030	0.522
	LogAssets 2016	0.582 **	<0.001
2018	ROA 2017	−0.001	0.984
	EBITDA_ratio 2017	0.011	0.802
	Debt_ratio 2017	−0.018	0.689
	LogAssets 2017	0.629 **	<0.001

** Significant correlation at 0.01 level (bilateral).

5.3. Multicollinearity

Before estimating the regression model, we checked for multicollinearity between the explanatory variables, using the VIF index, to ensure that they were not highly correlated with each other. Indeed, high collinearity could bias the results and amplify errors.

In Table 3, we can see that the VIF values of all the variables respect the empirical threshold, i.e., they are below 10. This confirms the absence of multicollinearity between

the independent variables. By deduction, the joint use of these variables in the regression is justified.

Table 3. Multicollinearity evaluation.

Year	Variables	VIF	Interpretation
2016	ROA 2015	6.282	Acceptable
	EBITDA_Ratio 2015	6.357	Acceptable
	DEBT_Ratio 2015	1.056	Weak
	LogAssets 2015	1.065	
2017	ROA 2016	2.414	Weak–moderate
	EBITDA_Ratio 2016	2.591	
	DEBT_Ratio 2016	1.046	Weak
	LogAssets 2016	1.094	
2018	ROA 2017	2.795	Weak–moderate
	EBITDA_Ratio 2017	3.017	
	DEBT_Ratio 2017	1.060	Weak
	LogAssets 2017	1.076	

5.4. Linear Regression

To obtain consistent results in the study of the relationship between financial performance (FP) and corporate social responsibility (CSR), it is essential to rely on a theoretical reference, as suggested by Bouslah et al. (2010). However, many studies encounter theoretical and methodological limitations, particularly when seeking to understand the link between environmental performance (EP) and FP (Tebini, 2013). To assess CSR-related performance, some researchers use financial measures based on market data (Surroca et al., 2010), while others prefer accounting measures, such as return on assets (ROA) (Waddock & Graves, 1997; Tebini, 2013).

In this article, we will use ROA, EBITDA, Debt Ratio and logAssets as financial performance variables to capture the relation between financial performance and ESG criteria. ROA is a key profitability indicator that, when integrated into a company's strategic planning, assesses the efficiency with which the firm converts its assets into profits, thereby contributing to a sustainable competitive advantage (Hull & Rothenberg, 2008). As such, ROA provides insights into the firm's economic performance in relation to its strategic decisions aimed at achieving competitive superiority (Padgett & Galan, 2010). Lafourcade et al. (2006) and Tchakoute-Tchuigoua (2010) believe that the best ratios for evaluating financial performance are summarized in indicators such as return on assets (ROA), the self-sufficiency ratio, the self-sufficiency or operational autonomy ratio and Staff Productivity (PP). ROA therefore seems appropriate, because it can assess financial performance, whatever the legal form or financing structure (Athanasoglou et al., 2008).

To summarize, we performed a multiple linear regression for each year (2016, 2017 and 2018) while controlling for sector and country effects. This method makes it possible to analyze the isolated impact of each independent variable on the "ESG" dependent variable.

Thus, the independent variables, ROA, EBITDA, Debt and LogAssets, constituted the data for year $t-1$ to limit endogeneity, and the control variables, country and sector, were included as dummies. The linear regression model used is formulated as follows:

$$\begin{aligned} ESG_{i,t} = \beta_0 \quad & + \beta_1 \cdot ROA_{i,t-1} + \beta_2 \cdot EBITDA_Ratio_{i,t-1} + \beta_3 \cdot DEBT_Ratio_{i,t-1} \\ & + \beta_4 \cdot LogAssets_{i,t-1} + \sum \gamma_c \cdot CountryDummies_c \\ & + \sum \delta_s \cdot SectorDummies_s + \varepsilon_i \end{aligned}$$

where

$$ESG_{i,t}: \text{ the ESG score of company } i \text{ in year } t$$

$$\beta_0 : \text{the constant of the regression model}$$

$$ROA_{i,t-1} : \text{return on assets in year } t-1$$

$$EBITDA_Ratio_{i,t-1} : \text{operating income divided by total assets for year } t-1$$

$$DEBT_Ratio_{i,t-1} : \text{debt to equity ratio in year } t-1$$

$$LogAssets_{i,t-1} : \text{logarithm of total assets to measure company size in year } t-1$$

$$\sum \gamma_c \cdot CountryDummies_c : \text{country indicator variables for company } i$$

$$\sum \delta_s \cdot SectorDummies_s : \text{sector indicator variables for company } i$$

$$\varepsilon_i : \text{error}$$

According to the results obtained, the model for each year is significant (F_{2016} = 19,999; F_{2017} = 21,091; F_{2018} = 18,100; $p < 0.001$), with a high explanatory capacity ranging from 47% to 52% of the variance explained (adjusted R-squared$_{2016}$ = 0.500; adjusted R-squared$_{2017}$ = 0.518; adjusted R-squared$_{2018}$ = 0.470) (Table 4).

Table 4. Overall model quality.

Year	Adjusted *R*-Squared	*F*	*p*-Value
2016	0.500	19,999	<0.001
2017	0.518	21,091	<0.001
2018	0.470	18,100	<0.001

The regression table (Table 5) shows that in 2016, larger companies have higher ESG scores ($\beta_{logassets_2016}$ = 0.656; $p < 0.001$). Similarly, for 2017 and 2018, the results clearly indicate that company size is a key determinant of ESG score ($\beta_{logassets_2017}$ = 0.706; $\beta_{logassets_2018}$ = 0.735; $p < 0.001$). By deduction, these companies have the resources needed to better implement ESG policies. On the other hand, high indebtedness is generally linked to lower-ESG-performing companies ($\beta_{debtratio_2016} = -0.078$; $p_{debtratio_2016}$ = 0.034; $\beta_{debtratio_2017} = -0.070$; $p_{debtratio_2017}$ = 0.047). In other words, corporate debt in the previous years (2015 and 2016) affected ESG performance in the following years (2016 and 2017). This could be justified by low financial flexibility. Conversely, the level of corporate debt in 2017 did not influence ESG performance in 2018 ($\beta_{debtratio_} = -0.057$; p = 0.120). Finally, we observe that there is no relationship between ROA, EBITDA and ESG for the years 2016 and 2017 ($\beta_{ROA_year2016}$ = 0.010; $p_{ROA_year2016}$ = 0.914; $\beta_{EBITDAratio\text{-}year2016}$ = 0.038; $p_{EBITDAratio_year2016}$ = 0.675; $\beta_{ROA_year2017}$ = 0.054; $p_{ROA_year2017}$ = 0.328; $\beta_{EBITDAratio\text{-}year2017}$ = 0.054; $p_{EBITDAratio_year2017}$ = 0.343). However, in 2018, profitability (ROA) became significant and negative ($\beta_{ROA} = -0.145$; p_{ROA} = 0.014). This shows that probably when companies focus on profits, their ESG efforts decrease. Another change in 2018 is that companies with better operational performance have a higher ESG score (β_{EBITDA} = 0.247; $p_{EBITDA} < 0.001$). This finding confirms that strong financial capacity enables companies to invest in sustainable practices.

Furthermore, the results revealed that companies in the Netherlands have a significantly higher score than those in the reference category (US) for the years 2016, 2017 and 2018 ($p_{anné2016}$ = 0.006; $p_{année2017}$ = < 0.001; $p_{année2018}$ = 0.045). In other words, these companies are characterized by a societal and regulatory culture committed to sustainability. Finally, we note that in 2016, certain sectors are significant with a p-value below 0.05, namely, consumer durables, consumer staples, healthcare, technologies, telecommunication

and utilities. This indicates that these sectors have a higher ESG performance than the benchmark sector (communications). For 2017, the consumer cyclical and materials sectors were added. For 2018, the sectors structuring an ESG strategy were consumer cyclical, consumer durables, healthcare, materials and technologies.

In conclusion, company size is considered a key factor in ESG performance, and the national context, as well as certain sectors, can influence companies' ESG scores.

Table 5. Regression table for the overall model.

	2016			2017			2018		
Variables	**B**	**Standardized β**	***p*-Value**	**B**	**Standardized β**	***p*-Value**	**B**	**Standardized β**	***p*-Value**
Constante	−35.868	-	<0.001	−37.579	-	<0.001	−41.280	-	<0.001
ROA_{t-1}	0.423	0.010	0.914	2.610	0.054	0.328	−8.816	−0.145	0.014
$EBITDA_Ratio_{t-1}$	1.265	0.038	0.675	2.184	0.054	0.343	11.545	0.247	<0.001
$Debt_Ratio_{t-1}$	−1.582	−0.078	0.034	−1.335	−0.070	0.047	−1.083	−0.057	0.120
$LogAssets_{t-1}$	1.677	0.656	<0.001	1.731	0.706	<0.001	1.896	0.735	<0.001
Country_BM	−1.916	−0.042	0.210	−1.192	−0.022	0.504	−1.684	−0.037	0.283
Country_CH	−0.609	−0.011	0.743	−0.104	−0.002	0.953	0.299	0.005	0.875
Country_GB	−0.702	−0.022	0.536	−1.267	−0.041	0.230	−0.984	−0.030	0.386
Country_IE	0.935	0.027	0.432	1.080	0.035	0.312	0.234	0.007	0.835
Country_NL	7.602	0.097	0.006	10.241	0.136	<0.001	5.534	0.070	0.045
Country_SE	0.179	0.002	0.945	−0.216	−0.003	0.931	−0.322	−0.004	0.905
Sector_consumercyclical	1.352	0.127	0.060	1.584	0.148	0.021	1.893	0.177	0.009
Sector_consumerdurables	5.308	0.310	<0.001	4.690	0.279	<0.001	3.664	0.218	<0.001
Sector_consumerdiscretionary	0.911	0.035	0.399	1.219	0.048	0.236	1.459	0.052	0.202
Sector_consumerservies	3.580	0.064	0.072	2.986	0.056	0.110	3.181	0.057	0.113
Sector_consumerstaples	3.566	0.135	<0.001	2.957	0.117	0.004	1.784	0.067	0.106
Sector_energy	−0.073	−0.005	0.931	0.217	0.015	0.779	0.445	0.029	0.586
Sector_financial	−0.754	−0.066	0.317	−1.772	−0.163	0.012	−0.383	−0.034	0.612
Sector_healthcare	2.331	0.202	0.002	2.362	0.216	<0.001	2.316	0.202	0.002
Sector_industrials	0.665	0.070	0.342	1.017	0.109	0.119	1.347	0.141	0.056
Sector_materials	1.467	0.091	0.075	1.898	0.120	0.015	1.644	0.102	0.049
Sector_realestate	1.517	0.066	0.128	0.797	0.036	0.393	1.525	0.066	0.131
Sector_technologies	3.211	0.276	<0.001	2.401	0.213	<0.001	2.253	0.193	0.002
Sector_telecommunication	3.476	0.077	0.040	3.152	0.072	0.049	0.135	0.003	0.938
Sector_utilities	1.889	0.124	0.019	1.557	0.106	0.039	1.477	0.096	0.071

5.5. Hypothesis Validation

The link between corporate financial performance and ESG score is partially validated. Indeed, the EBITDA effect is only significant for the year 2018 ($t = 3.998$; $p < 0.001$) (Table 6). For the years 2016 and 2017, the results indicate no significant relationship ($t_{\text{E-BITDA_year2016}} = 0.420$; $p_{\text{EBITDA_year2016}} = 0.675$; $t_{\text{EBITDA_year2017}} = 0.949$; $p_{\text{EBITDA_year2017}} = 0.343$) (Table 6). By deduction, hypothesis H1 is partially validated.

Table 6. Hypothesis test.

Variables	**Year**	**B**	**t**	***p*-Value**	**Interpretation**
ROA	2016	0.423	0.108	0.914	No significant effect on ESG score.
EBITDA		1.265	0.420	0.675	
ROA	2017	2.610	0.979	0.328	
EBITDA		2.184	0.949	0.343	
ROA	2018	−8.816	−2.460	0.014	Significant negative effect on ESG score.
EBITDA		11.545	3.998	<0.001	Positive and significant effect on ESG score.

The results also validate Hypothesis 2 for 2018, as the two financial indicators do not exert the same effect on the ESG score. ROA has a significant and negative effect ($t = -2.460$; $p < 0.014$) on the ESG score, while the EBITDA effect is positive and significant. This contrast reflects the difference between operating and accounting performance. In other words, the relationship between ESG and financial performance depends on the nature of the indicator. For example, the results highlight the positive relationship between ESG score and EBITDA (operating performance). The latter corresponds to the earnings generated by the activities carried out, which means that high operational performance

facilitates investment in ESG practices, whereas the negative effect between ESG score and ROA (accounting performance) is explained by the effect of heavy investment in ESG projects on ROA.

5.6. Robustness Analysis

To assess the robustness of the results obtained in the previous sections, we analyzed separately the impact of each performance variable (ROA and EBITDA) on companies' ESG scores.

5.6.1. Regression Including Performance Variable ROA

We first deduce that the model explains around 50% of the variance in the ESG score for the year 2016 (adjusted *R*-two = 0.504) and 52% for 2017 (adjusted *R*-two = 0.522). So, this model is robust and significant (F_{2016} = 22,153; F_{2017} = 23,400; $p < 0.001$) (Table 7). Nevertheless, the model representing 2018 is somewhat weaker (adjusted *R*-two = 0.465) but always significant (F_{2018} = 19,330; $p < 0.001$) (Table 7).

Table 7. Regression table for the piecemeal model involving ROA.

	2016			2017			2018		
Variables	**B**	**Standardized β**	***p*-Value**	**B**	**Standardized β**	***p*-Value**	**B**	**Standardized β**	***p*-Value**
Constante	−35.909	-	<0.001	−37.372	-	<0.001	−39.400	-	<0.001
ROA_{t-1}	2.168	0.050	0.178	4.689	0.096	0.010	2.687	0.043	0.223
$Debt_Ratio_{t-1}$	−1.462	−0.072	0.045	−1.202	−0.064	0.067	−0.557	−0.029	0.419
$LogAssets_{t-1}$	1.681	0.682	<0.001	1.728	0.731	<0.001	1.853	0.741	<0.001
Country_BM	−1.418	−0.035	0.284	−1.223	−0.027	0.400	−1.617	−0.040	0.240
Country_CH	−0.594	−0.010	0.748	−0.143	−0.003	0.935	0.243	0.004	0.899
Country_GB	−0.569	−0.017	0.607	−1.251	−0.039	0.233	−0.855	−0.026	0.455
Country_IE	0.963	0.027	0.416	1.347	0.043	0.195	0.242	0.007	0.831
Country_NL	7.509	0.093	0.006	10.265	0.133	<0.001	5.513	0.068	0.048
Country_SE	0.237	0.003	0.928	−0.158	−0.002	0.949	−0.106	−0.001	0.969
Sector_consumercyclical	1.320	0.121	0.065	1.572	0.144	0.021	1.784	0.163	0.015
Sector_consumerdurables	5.290	0.302	<0.001	4.680	0.272	<0.001	3.446	0.199	<0.001
Sector_consumerdiscretionary	0.912	0.034	0.397	1.089	0.042	0.283	0.979	0.034	0.394
Sector_consumerservies	3.532	0.062	0.075	3.044	0.056	0.100	3.425	0.060	0.091
Sector_consumerstaples	3.541	0.131	0.001	2.908	0.112	0.004	1.496	0.055	0.178
Sector_energy	−0.039	−0.002	0.963	0.185	0.012	0.810	0.314	0.020	0.703
Sector_financial	−0.908	−0.089	0.207	−1.809	−0.186	0.007	−1.072	−0.106	0.144
Sector_healthcare	2.258	0.193	0.002	2.269	0.205	<0.001	2.045	0.175	0.006
Sector_industrials	0.609	0.063	0.381	0.972	0.103	0.133	1.081	0.111	0.126
Sector_materials	1.463	0.089	0.074	1.886	0.117	0.015	1.272	0.076	0.129
Sector_realestate	1.456	0.062	0.140	0.707	0.031	0.444	0.969	0.041	0.337
Sector_technologies	3.110	0.263	<0.001	2.315	0.203	<0.001	2.044	0.172	0.006
Sector_telecommunication	3.442	0.074	0.041	3.180	0.071	0.046	0.214	0.005	0.903
Sector_utilities	1.858	0.119	0.020	1.488	0.099	0.047	1.088	0.069	0.184
Adjusted *R*-squared		0.504			0.522			0.465	
F		22.153			23.400			19.330	
p-value		<0.001			<0.001			<0.001	

Next, Table 7 shows that ROA does not influence ESG score for the year 2016 (β_{ROA} = 0.050; p = 0.178), whereas, in 2017, the effect between these two variables is significant and positive (β_{ROA} = 0.096; p = 0.010), implying that companies profitable in 2016 have the best ESG scores in 2017. On the other hand, despite the positive effect obtained in 2017, we observe that in 2018 the impact of ROA on ESG score is no longer significant (β_{ROA} = 0.043; p = 0.223).

Concerning debt, the results highlight a significant and negative effect of Debt (β_{Debt} = −0.072; p = 0.045). In other words, high debt implies a low ESG score for 2016. This indicator has no significant effect for 2017 and 2018 ($\beta_{Debt\text{-}year2017}$ = −0.064; $p_{year2017}$ = 0.067; $\beta_{Debt\text{-}year2018}$ = −0.029; p = 0.419). Finally, the logAssets index shows that company size is related to ESG scores for all three years, i.e., 2016, 2017 and 2018.

We also observe that, for all three years, Dutch companies have the best ESG scores compared to US companies. Most of these companies operate in various sectors, including technology, healthcare, consumer staples, consumer durables, telecommunication and

utilities, in 2016. In 2017, we see a similar effect to 2016, but with the addition of the materials and consumer cyclical sectors. As for the financial sector, it tends to be associated with lower ESG scores. Finally, for 2018, the companies with the highest ESG scores are in the technology, healthcare, consumer durables and consumer cyclical sectors.

5.6.2. Regression Including Performance Variable EBITDA

We use the IBM SPSS Statistics (version 31) software to conduct the statistical analyses (Dancey & Reidy, 2008). The SPSS output indicates that the model is globally robust and significant for all three years (Adjusted R-squared$_{2016}$ = 0.501; F_{2016} = 20.915; Adjusted R-squared$_{2017}$ = 0.518; F_{2017} = 21,968; Adjusted R-squared$_{2018}$ = 0.464; F_{2018} = 18,412; $p < 0.001$) (Table 8). On the other hand, compared to the years 2017 and 2018 ($\beta_{\text{EBITDA-year2017}} = 0.095$; $p_{\text{year2017}} = 0.016$; $\beta_{\text{EBITDA-year2018}} = 0.127$; $p < 0.001$), the EBITDA performance index has no significant effect on the ESG score for the year 2016 ($\beta_{\text{EBITDA}} = 0.047$; $p = 0.210$), whereas the results for the Debt index show that the most indebted companies are more likely to have a low ESG score for the years 2016 and 2017 ($\beta_{\text{Debt-year2016}} = -0.078$; $p_{\text{year2016}} = 0.030$; $\beta_{\text{Debt-year2017}} = -0.074$; $p = 0.036$), as the relationship between Debt and ESG is significant and negative, which is consistent with the financial constraint. In 2018, however, this negative effect was attenuated ($\beta_{\text{Debt}} = -0.049$; $p_{\text{year2016}} = 0.182$). Finally, as with the ROA performance variable, the logAssets index indicates that large companies have the best ESG scores for all three years (2016, 2017 and 2018).

Table 8. Regression table for the piecemeal model involving EBITDA.

	2016			2017			2018		
Variables	**B**	**Standardized β**	***p*-Value**	**B**	**Standardized β**	***p*-Value**	**B**	**Standardized β**	***p*-Value**
Constante	−35.910	-	<0.001	−37.867	-	<0.001	−40.266	-	<0.001
EBITDA$_{t-1}$	1.561	0.047	0.210	3.823	0.095	0.016	5.927	0.127	<0.001
Debt_Ratio$_{t-1}$	−1.595	−0.078	0.030	−1.403	−0.074	0.036	−0.931	−0.049	0.182
LogAssets$_{t-1}$	1.678	0.656	<0.001	1.739	0.710	<0.001	1.867	0.723	<0.001
Country_BM	−1.911	−0.042	0.211	−1.154	−0.022	0.518	−1.812	−0.040	0.251
Country_CH	−0.596	−0.011	0.747	0.001	0.000	1.000	0.158	0.003	0.934
Country_GB	−0.728	−0.023	0.510	−1.283	−0.041	0.224	−0.933	−0.029	0.414
Country_IE	0.938	0.027	0.430	0.854	0.028	0.412	0.303	0.009	0.788
Country_NL	7.630	0.097	0.005	10.426	0.138	<0.001	5.108	0.065	0.065
Country_SE	0.176	0.002	0.946	−0.223	−0.003	0.929	−0.187	−0.002	0.945
Sector_consumercyclical	1.358	0.156	0.058	1.662	0.156	0.015	1.741	0.163	0.016
Sector_consumerdurables	5.310	0.128	<0.001	4.749	0.282	<0.001	3.441	0.204	<0.001
Sector_consumerdiscretionary	0.915	0.310	0.396	1.391	0.055	0.170	1.195	0.043	0.297
Sector_consumerservies	3.590	0.035	0.070	3.024	0.057	0.105	3.075	0.055	0.128
Sector_consumerstaples	3.571	0.065	<0.001	3.077	0.121	0.003	1.429	0.054	0.194
Sector_energy	−0.085	0.135	0.918	0.142	0.010	0.854	0.441	0.029	0.591
Sector_financial	−0.741	−0.006	0.319	−1.695	−0.156	0.015	−0.651	−0.058	0.387
Sector_healthcare	2.339	−0.065	0.001	2.431	0.223	<0.001	2.147	0.187	0.004
Sector_industrials	0.671	0.203	0.336	1.061	0.114	0.103	1.126	0.118	0.109
Sector_materials	1.468	0.091	0.074	1.921	0.122	0.013	1.402	0.087	0.093
Sector_realestate	1.530	0.067	0.122	0.884	0.040	0.341	1.252	0.054	0.215
Sector_technologies	3.217	0.276	<0.001	2.449	0.217	<0.001	2.112	0.181	0.004
Sector_telecommunication	3.474	0.077	0.040	3.096	0.071	0.053	0.329	0.007	0.850
Sector_utilities	1.894	0.124	0.019	1.589	0.108	0.035	1.336	0.087	0.103
Adjusted *R*-squared		0.501			0.518			0.464	
F		20.915			21.968			18.412	
p-value		<0.001			<0.001			<0.001	

For our first "country" control variable, we deduce that companies in the Netherlands have the highest ESG scores for the years 2016 and 2017 ($p_{\text{year2016}} = 0.005$; $p_{\text{year2017}} < 0.001$). For 2018, the coefficient is positive ($\beta = 5.108$) and marginally significant ($p = 0.065 < 0.10$). So, even for this year, companies from the Netherlands are characterized by a high ESG score compared to US companies. However, we note that this effect remains uncertain compared to the years 2016 and 2017, where the *p*-value is less than 0.001.

Moreover, the analyses show that some sectors have positive and significant coefficients for 2016, 2017 and 2018 (Table 8), for example, the technology sector ($\beta_{\text{year2016}} = 3.217$; $\beta_{\text{year2017}} = 2.449$; p_{year2016} and 2017 < 0.001; $\beta_{\text{year2018}} = 2.112$; $p_{\text{year2018}} = 0.004$) and

healthcare ($\beta_{year2016}$ = 2.339; $p_{year2016}$ = 0.001; $\beta_{year2017}$ = 2.431; $p_{year2017}$ < 0.001; $\beta_{year2018}$ = 5.310; $p_{year2018}$ = 0.004) (Table 8).

6. Discussion of the Results

The results of this study highlight the complexity of the relationship between the financial performance of companies and their engagement in ESG practices, in line with the slack resources argument (Waddock & Graves, 1997), which suggests that companies with surplus financial resources are more likely to invest in CSR initiatives because they can absorb the costs associated with these investments without compromising their financial stability.

Our results show that certain financial dimensions, such as logAssets, have a significant and positive relationship with companies' ESG scores. This clearly indicates that company size is a key determinant of ESG performance, suggesting that larger firms possess the resources necessary to implement ESG policies more effectively.

High EBITDA, an indicator of operational profitability, appears to be a determining factor in a company's ability to finance sustainable initiatives. However, EBITDA performance had no significant effect on the ESG scores for the year 2016, which could be explained by the initial conditions. But a positive and significant influence started in 2017. Operationally, efficient companies tend to invest more in ESG initiatives. This result is consistent with the work of Cheng et al. (2015) and Uwuigbe et al. (2018), who suggest that financially successful companies have additional resources to implement CSR activities. Moreover, total debt also presents a significantly negative relation with ESG scores. Furthermore, total debt shows that highly indebted companies are more likely to have lower ESG scores (2016 and 2017), although, with increased effort, this trend may shift over time, as observed in 2018. This result may indicate that companies with high debt levels are motivated to improve their ESG practices, probably to reassure their creditors and investors about their risk management. This is consistent with the findings of Purushothaman et al. (2000), who point out that highly leveraged companies disclose more information, including that relating to CSR, to build stakeholder trust.

The relationship between ROA and the adoption of ESG criteria is not stable depending on the company's policy decisions. This suggests that when a company focuses on ESG scores, it may invest in sustainable initiatives. However, when financially successful, the company tends to prioritize immediate asset returns over long-term sustainable investments. This result is in line with the work of Otero-González et al. (2021), which shows that the profitability obtained by a company can be inversely correlated with its level of commitment to CSR, which could be explained by the compromise hypothesis put forward by Friedman (1970), according to which managers prefer to maximize short-term profits at the expense of investing in sustainable initiatives that could reduce short-term competitiveness and profitability. The relationship between ROA and the adoption of ESG criteria also suggests that strong pressure for immediate financial results could limit the adoption of ESG criteria, as highlighted by Hoarau and Teller (2005), according to whom analysts appear increasingly more subject to purely financial logic, which, in fact, relegates the consideration of ESG criteria to second place.

This result can also be explained by the theory of managerial opportunism. This theory argues that when managers earn a lot from their company, they try to maximize their private profit by spending little on CSR, which goes against the interests of other stakeholders (Williamson, 1985). Under this approach, companies with high economic performance could reduce their involvement in CSR activities to maximize their personal income (Martínez-Campillo et al., 2013).

Our results also show that company size affects the adoption of ESG criteria, which is in line with the conclusions of Hedfi and Guedrib (2022), for whom large companies,

particularly multinationals, are more inclined to adopt ESG criteria given their available resources and greater pressure to adopt CSR practices due to stakeholder expectations, higher public scrutiny and stricter regulations.

7. Conclusions

This article explores the complex relationship between corporate financial performance and the adoption of environmental, social and governance (ESG) criteria. Thus, it has several implications for theory and practice.

Theoretically, the study reveals that the availability of financial resources plays a key role in companies' engagement with ESG practices while highlighting potential trade-offs between short-term profitability and long-term sustainable investments. The analyses support Waddock and Graves's (1997) slack resources and resource availability argument, suggesting that firms with excess resources are more likely to invest in corporate social responsibility (CSR) initiatives. Positive financial indicators like EBITDA, ROA and totallogAsset are associated with increased ability to commit resources to ESG practices, supporting the work of Cheng et al. (2015) and Uwuigbe et al. (2018). On the other hand, a negative relationship can be observed between ROA and the adoption of ESG criteria. This negative relationship, in some cases, can be explained by Friedman's (1970) trade-off hypothesis, according to which costs associated with ESG initiatives can reduce the competitiveness and profitability of companies in the short term (Boyle et al., 1997; Nirino et al., 2021). The importance of company size is also highlighted. Thanks to their greater resources, larger companies are more inclined to adopt ESG criteria, as shown by Hedfi and Guedrib (2022).

For managers, these theoretical results could suggest a potential need for strategic resource allocation, long-term planning and stakeholder alignment. While financial health may influence ESG engagement, managers might need to balance the trade-offs between short-term profitability and long-term sustainable growth, potentially leveraging the strategic advantages ESG practices can offer. These insights could indicate the importance of proactive planning, effective communication and adaptive strategies to maximize the possible dual benefits of financial performance and ESG success, though the extent of their applicability may vary depending on organizational and industry-specific contexts.

Despite the care taken to conduct the study, this research has several limitations that open the way for future research initiatives on the topic. First, we only considered a subset of financial indicators, while others exist. Tobin's q, for example, measures the ratio of a firm's market value to the replacement cost of its assets, measuring efficiency of asset utilization. Considering the negative influence of ROA, an efficiency indicator, on ESG scores, it would be very interesting to consider Tobin's q as another predictor of ESG initiatives. Other metrics could include the various profit margin measures (e.g., gross profit margin and net profit margin), earnings per share (EPS) or liquidity metrics (e.g., cash ratio). Considering multiple indicators in a single study could yield more meaningful results due to the comparative aspect. Delving deeper into efficiency metrics (e.g., asset turnover ratio and inventory turnover ratio) could also further determine whether the effective use of assets and liabilities deter ESG initiatives. Furthermore, we used data from North American financial markets, but results may differ across other financial places with different laws and regulations. From a methodological perspective, although the model incorporates explanatory and control variables (such as firm size or debt), certain relevant variables, such as sector-specific indicators or macroeconomic factors, may have been omitted. This omission could introduce bias into the estimates. Moreover, the use of ordinary linear regression on cross-sectional data might itself generate biases, particularly due to uncontrolled heterogeneity between observations. To strengthen the robustness of

the results, future studies could include sensitivity analyses or even employ fixed-effects models on panel data to assess the absence of bias related to unobserved factors. Also, it would be interesting to explore ESG components separately to identify those most influenced by financial indicators.

Additionally, the sample was limited to companies in the S&P 500 and TSX 60 indices, which limits the generalizability of the results to other geographic contexts or smaller companies. Furthermore, the methodology used identifies associative relationships but cannot be used to establish causal links between the variables, highlighting the need for future research using advanced econometric approaches, such as dynamic models or instrumental variables. It would also be appropriate to use instrumental variable estimators with richer data for more advanced econometric analysis.

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