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# Impact of ESG on corporate performance: a comparative analysis between developed and emerging markets

# Impacto de ESG en el desempeño corporativo: un análisis comparativo entre mercados desarrollados y emergentes

# Impacto do ESG no desempenho corporativo: uma análise comparativa entre mercados desenvolvidos e emergentes

**Authors**

**Washington Romão dos Santos**
Bachelor's degree in production engineering from the Federal University of Espírito Santo. Address: Av. Fernando Ferrari, 514 - Goiabeiras, Vitória – ES. Identifiers (ID):
ORCID: https://orcid.org/0000-0002-6476-6318
Lattes: http://lattes.cnpq.br/9883700735440451
E-mail: washington.santos@ufes.br

**Michele Monteiro Lirio Maria**
PhD in Accounting from the Federal University of Espírito Santo. Substitute Professor in the Department of Accounting at the Federal University of Espírito Santo. Address: Av. Fernando Ferrari, 514 - Goiabeiras, Vitória – ES. Identifiers (ID):
ORCID: https://orcid.org/0000-0003-4522-5812
Lattes: http://lattes.cnpq.br/1112281163736734
E-mail: michelemlirio@yahoo.com.br

**Vinícius Costa da Silva Zonatto**
Postdoctoral degree in Accounting from the University of Vale do Rio dos Sinos (UNISINOS) Doctorate in Accounting and Administration from the Regional University of Blumenau (FURB). Professor in the Graduate Program in Accounting at the Federal University of Santa Maria (PPGCC/UFSM). Department of Accounting Sciences – UFSM. Address: Av. Roraima nº 1000, Prédio 74C, CCSH, Cidade Universitária, Bairro Camobi, Cidade de Santa Maria – RS. Identifiers (ID):
ORCID: https://orcid.org/0000-0003-0823-6774
Lattes: http://lattes.cnpq.br/1916486402947867
E-mail: viniciuszonatto@gmail.com

**Elizeu Maria Junior**
PhD in Administration from the Federal University of Espírito Santo. Professor in the Department of Production Engineering and the Professional Master's Program in Engineering and Sustainable Development at the Federal University of Espírito Santo. Address: Av. Fernando Ferrari, 514 - Goiabeiras, Vitória – ES. Identifiers (ID):
ORCID: https://orcid.org/0000-0002-8228-5980
Lattes: http://lattes.cnpq.br/7515117984616885
E-mail: elizeujunior@yahoo.com.br

**Donizete Reina**
PhD in Accounting from the Federal University of Uberlândia. Professor in the Department of Accounting and the Graduate Program in Accounting at the Federal University of Espírito Santo. Address: Av. Fernando Ferrari, 514 - Goiabeiras, Vitória – ES. Identifiers (ID):
ORCID: https://orcid.org/0000-0001-6217-2324
Lattes: http://lattes.cnpq.br/6775492728267435
E-mail: donizete.reina@ufes.br

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## Abstract

**Purpose**: Compare the impact of ESG (environmental, social and governance) factors on the operational, financial and market performance of companies in developed and emerging markets between 2018 and 2023.

**Methodology**: Using a quantitative approach, financial and ESG disclosure data from 2,546 companies from different sectors in developed and emerging markets were analyzed. Multiple linear regression techniques were applied to investigate the correlation between ESG practices and corporate performance (ROA, ROE and Tobin's Q), considering variables like company size, leverage and sales growth.

**Results**: The results indicate that emerging markets have a stronger association between ESG practices and financial performance compared with developed markets.

**Contributions of the Study**: This study contributes to the theoretical understanding of the ESG-performance relation and offers insights for public policies and corporate strategies, promoting responsible investments and sustainability. This enables comparative analysis between emerging and developed markets, highlighting the nuances in the implementation and results of ESG practices, with theoretical and practical implications for companies and policy makers.

**Keywords**: ESG; Performance; Corporate Sustainability; Economic Impact.

## Resumen

**Objetivo**: Comparar el impacto de los factores ESG (ambientales, sociales y de gobernanza) en el desempeño operativo, financiero y de mercado de las empresas en mercados desarrollados y emergentes entre 2018 y 2023.

**Metodología**: Utilizando un enfoque cuantitativo, se analizaron datos de divulgación financiera y ESG de 2.546 empresas de diferentes sectores en mercados desarrollados y emergentes. Se aplicaron técnicas de regresión lineal múltiple para investigar la relación entre las prácticas ESG y el desempeño corporativo (ROA, ROE y Q de Tobin), considerando variables como el tamaño de la empresa, el apalancamiento y el crecimiento de las ventas.

**Resultados**: Los resultados indican que los mercados emergentes muestran una asociación más fuerte entre las prácticas ESG y el desempeño financiero, en comparación con los mercados desarrollados.

**Contribuciones del Estudio**: Este estudio contribuye a la comprensión teórica de la relación entre ESG y desempeño y ofrece perspectivas para políticas públicas y estrategias corporativas, promoviendo inversiones responsables y sostenibilidad. Esto permite un análisis comparativo entre los mercados emergentes y desarrollados, destacando los matices en la implementación y los resultados de las prácticas ESG, con implicaciones teóricas y prácticas para las empresas y los responsables políticos.

**Palabras clave**: ESG; Actuación; Sostenibilidad corporativa; Impacto económico.

**Resumo**

**Objetivo**: Comparar o impacto dos fatores ESG (ambientais, sociais e de governança) no desempenho operacional, financeiro e de mercado de empresas em mercados desenvolvidos e emergentes entre 2018 e 2023.

**Metodologia**: Utilizando uma abordagem quantitativa, foram analisados dados financeiros e de divulgação ESG de 2.546 empresas de diferentes setores em mercados desenvolvidos e emergentes. Técnicas de regressão linear múltipla foram aplicadas para investigar a relação entre práticas ESG e desempenho corporativo (ROA, ROE e Q de Tobin), considerando variáveis como tamanho da empresa, alavancagem e crescimento de vendas.

**Resultados**: Os resultados indicam que mercados emergentes apresentam uma associação mais forte entre práticas ESG e desempenho financeiro, em comparação com mercados desenvolvidos.

**Contribuições do Estudo**: Este estudo contribui para a compreensão teórica da relação ESG e desempenho e oferece *insights* para políticas públicas e estratégias corporativas, promovendo investimentos responsáveis e sustentabilidade. Isso possibilita a análise comparativa entre mercados emergentes e desenvolvidos, destacando as nuances na implementação e nos resultados das práticas ESG, com implicações teóricas e práticas para empresas e formuladores de políticas.

**Palavras-chave**: ESG; Desempenho; Sustentabilidade Corporativa; Impacto Econômico.

## 1 Introduction

Interest in integrating environmental, social and governance (ESG) factors into corporate performance has increased, especially in response to recent crises like the COVID-19 pandemic. Studies such as those by Al-Awadhi et al. (2020), Baker et al. (2020) and Beloskar and Rao (2023) explore these themes. Companies and investors are increasingly recognizing the intrinsic value of integrating ESG indicators into their operations and investment strategies (Alareeni & Hamdan, 2020; Park & Jang, 2021; Gama Pinheiro et al., 2024).

Said interest is driven not only by the ethical imperative to promote sustainable and socially responsible business practices (Camilleri, 2021; Lins, Servaes & Tamayo, 2017), but also by the growing evidence that integrating ESG principles can generate competitive advantages by mitigating risks (Dorfleitner, Halbritter & Nguyen, 2015; Di Tommaso & Thornton, 2020; Lu, Boyer & Kleffner, 2024), especially in situations of financial crises (Lins et al., 2017), natural disasters or pandemics (Díaz, Esparcia & López, 2022; Beloskar & Rao, 2023).

Leading companies and investors are increasingly recognizing that long-term success is intrinsically linked to the adoption of business practices aligned with global sustainability goals (Aupperle, Carroll & Hatfield, 1985; Lins et al., 2017). As interest in sustainable and responsible business practices continues to grow globally, understanding how ESG determinants manifest themselves in different economic contexts becomes a necessity (Aras, Aybars, & Kutlu, 2010; Aouadi & Marsat, 2018; Beloskar & Rao, 2023; Narula et al., 2024).

ESG factors encompass a wide range of policies and practices which involve environmental, social, and corporate governance concerns (Dorfleitner et al., 2015; Duque-Grisales & Aguilera-Caracuel, 2021). Given the current context of economic volatility, global uncertainties, and challenges such as pandemics, economic recessions, and environmental disasters, understanding the role of ESG practices in organizations' resilience and recovery capacity is paramount (Flammer, 2013; Liang & Li, 2023). Thus, we propose the following research question: **Do ESG determinants have a significant positive impact on companies' corporate performance?**

For this study, we considered the following ESG factors: environmental (E), related to environmental policies and impacts; social (S), which encompasses aspects of social responsibility and labor relations; and governance (G), associated with organizations' control and management structure. This topic gains relevance when examining how ESG criteria both shape the operational sustainability of companies (Santis, Albuquerque, & Lizarelli, 2016) and influence their ability to adapt strategically and respond to adversity (Lins et al., 2017). Understanding these relations is critical to guide business practices that promote long-term sustainable development.

Thus, this study compares the impact of ESG factors on the operational, financial, and market performance of companies in developed and emerging markets. Such analysis is crucial to understand how sustainability can ensure business resilience during crises. Growing relevance of sustainable practices in the market highlights companies, attracting customers, suppliers, and investors, besides strengthening corporate reputation, providing competitive advantages, and promoting ethical practices. Our research therefore advances the theoretical

understanding on the relation between ESG and corporate performance while offering practical insights for companies that wish to strengthen their global position via sustainability.

## 2 Theoretical Framework

### 2.1 Motivations for ESG

ESG refers to three core criteria used to measure the sustainability and ethical impact of investments in a company. It is a framework that considers environmental, social and governance issues to assess the impact and sustainability of companies' operations (Elkington, 1998; Friede, Busch, & Bassen, 2015). The concept involves practices that go beyond simple compliance with laws and regulations, seeking to positively impact society and the environment, maintaining solid corporate governance (Eccles, Ioannou & Serafeim, 2014; Schramade, 2016, Matos, 2020).

Its relevance is growing in both developed and emerging markets, but motivations and practices can vary considerably between these regions. According to Schoenmaker and Schramade (2018), while investors in developed markets often see ESG as a means to manage long-term risks and opportunities, in emerging markets ESG practices are often driven by regulatory and social pressures.

Moreover, studies such as Liang and Renneboog (2017) show that in emerging markets, ESG initiatives may be influenced by specific local needs like improving critical social and environmental conditions, contrasting with developed markets where the emphasis may be more on transparency and corporate governance.

Research has shown that companies with consistent ESG practices tend to have better financial performance and lower operational risk (Surroca, Tribo & Waddock, 2010; Lins et al., 2017; Lu et al., 2024). In analyzing the ESG impact on the performance of companies listed on the S&P 500, Alareeni and Hamdan (2020) found a positive correlation between ESG practices and financial performance.

Aouadi and Marsat (2018) concluded that ESG-related controversies have a significant negative impact on company value, emphasizing the importance of ESG risk management for maintaining market valuation. Garcia, Mendes-da-Silva, and Orsato (2017) found evidence that sensitive industries, such as those linked to natural resources, tend to perform better on ESG metrics in emerging markets, possibly as a result of regulatory and social pressures.

Narula et al. (2024) explored the relation between ESG scores and company performance in emerging markets, concluding that robust ESG practices can lead to better financial performance even in less developed market environments. This suggests that companies which adopt these practices tend to be more valued by investors, reflecting better performance in the stock market.

Despite growing research on ESG, few studies comparatively address the effects of ESG determinants on corporate performance between developed and emerging countries. Hence the importance of further developing the discussion on differences between developed and developing countries in relation to ESG criteria and of identifying trends and factors that can explain these differences, offering relevant insights for investors, policymakers, and business managers. From this emerges our first research hypothesis:

**$H_1$: ESG determinants make a significant positive impact on company corporate performance from 2018 to 2023.**

This hypothesis explores the correlation between ESG practices and financial performance, suggesting that companies who adopt better governance, environmental, and social practices tend to achieve better results. It seeks to investigates the impact of ESG determinants on corporate performance in the surveyed sample over a six-year period (2018-2023). ESG determinants refer to policies and practices related to environment, social responsibility and corporate governance (McGuire, Sundgren & Schneeweis, 1988). We compare the adoption and impact of these practices in different contexts to understand how business priorities and results vary according to economic environment.

## 2.2 ESG impact on financial performance

Corporate performance is often measured by financial metrics like return on assets (ROA), return on equity (ROE), and market value (Tobin's Q). However, interest in investigating how non-financial factors such as ESG practices influence these indicators is growing (Duque-Grisales & Aguilera-Caracuel, 2021; Alareeni & Hamdan, 2020; Sun, Zhao & Cao, 2024, 2024; Işık et al. 2024).

Barnett and Salomon (2012) explored the relation between social and financial performance, finding that companies with more robust social practices tend to have better financial performance, but with a non-linear correlation which suggests that benefits may vary depending on the intensity of ESG practices.

Buallay (2019) investigated the effects of sustainability reporting on company performance and found a positive correlation between transparency in ESG practices and financial performance, highlighting the importance of effective communication with stakeholders.

Studies also highlight the resilience of companies with strong ESG practices during financial crises. Lins et al. (2017) found that companies with high levels of corporate social responsibility (CSR) performed better during the 2008-2009 financial crisis, attributing this to greater stakeholder trust and loyalty. Similarly, Albuquerque, Koskinen, and Zhang (2019) showed that companies with ESG practices exhibited lower volatility and better returns during the global financial crisis, suggesting that ESG practices protect against financial risks.

Friede et al. (2015) conducted a comprehensive meta-analysis of over 2,000 empirical studies and concluded that most found a positive relation between ESG practices and financial performance. Said body of evidence suggests that ESG practices are not just a matter of regulatory compliance or social responsibility, but are also a risk management strategy and a source of sustainable competitive advantage. Chen, Song, and Gao (2023) corroborate by showing that ESG performance is positively correlated with corporate financial performance, especially in large-scale companies and high-risk contexts.

During the COVID-19 pandemic, additional evidence emerged on the importance of ESG practices. Albuquerque et al. (2020) found that companies with strong ESG practices showed greater resilience in terms of stock market performance during the pandemic, reinforcing the assumption that adopting sustainable and responsible practices can help companies better survive in times of crisis.

Although many studies, such as those by Friede et al. (2015), indicate a positive correlation between ESG practices and financial performance, others, such as those by Barnett and Salomon (2012), suggest that benefits may vary depending on the intensity and quality of the practices. Elamer and Boulhaga (2024) add an important layer to this discussion by providing empirical evidence on the interaction between ESG controversies and corporate

performance. They highlight that effective corporate governance and robust ESG practices play a crucial role in mitigating the negative impacts of ESG controversies, and adoption and integration into corporate strategy are important.

Aboud and Diab (2018) noted that ESG disclosures can increase the value of companies in Egypt, indicating that the adoption of sustainable practices is not only beneficial in developed markets, but also in emerging economies. Duque-Grisales and Aguilera-Caracuel (2021) highlighted that multinational companies in Latin America who adopt ESG practices show improved financial performance, especially when they diversify geographically.

Given this context, a comprehensive and comparative analysis of the impacts of ESG determinants on corporate performance is needed, especially in developed and emerging countries. Hence the second research hypothesis:

**$H_2$: The impacts of ESG determinants on corporate performance vary between developed and emerging countries.**

This research hypothesis focuses on investigating how ESG determinants influence company performance in different economic contexts (developed countries and emerging countries) over a six-year period (2018-2023). It recognizes that economic, cultural, and regulatory differences between developed and emerging countries can influence the relevance and effectiveness of ESG practices. ESG determinants may include policies and practices related to environmental sustainability, social responsibility, diversity, and corporate transparency (Elkington, 1998; Friede et al., 2015).

## 3 Methodological Procedures

Statistical analyses used financial data and ESG disclosure information from companies located in developed and emerging countries from 2018 to 2023 (Figure 1). Segmentation of the countries analyzed considered their economic classification as broken down by the MSCI Market Classification in 2023, which evaluates equity markets around the world to determine whether they should be classified as developed, emerging, frontier or independent markets, considering those with the highest representation in ESG performance and corporate activity. The United States, Japan, United Kingdom, Canada, and Australia stand out among developed countries, whereas emerging countries include Brazil, China, India, etc. According to the Global Industry Classification Standard classification, the sectors investigated cover Information Technology, Finance, Non-Essential Goods, Industrial, and Health Services (Figure 2), due to their significant contribution to ESG indicators.

Our sample included 2,546 companies distributed across different countries (Figure 1), in different industry sectors (Figure 2), selected based on market capitalization criteria and availability of complete ESG data, totaling 15,276 observations. Using multiple linear regressions according to methodologies proposed by Fávero and Belfiore (2024), the analysis examines how ESG practices influence performance indicators such as return on assets (ROA), return on equity (ROE), and Tobin's Q, variables already used in similar studies (Ahmad et al., 2024; Kalia & Aggarwal, 2023; Kumar & Firoz, 2022; Naeem et al., 2022). Variables like company size (CS), leverage (LEV) and sales growth (SG) were also considered.

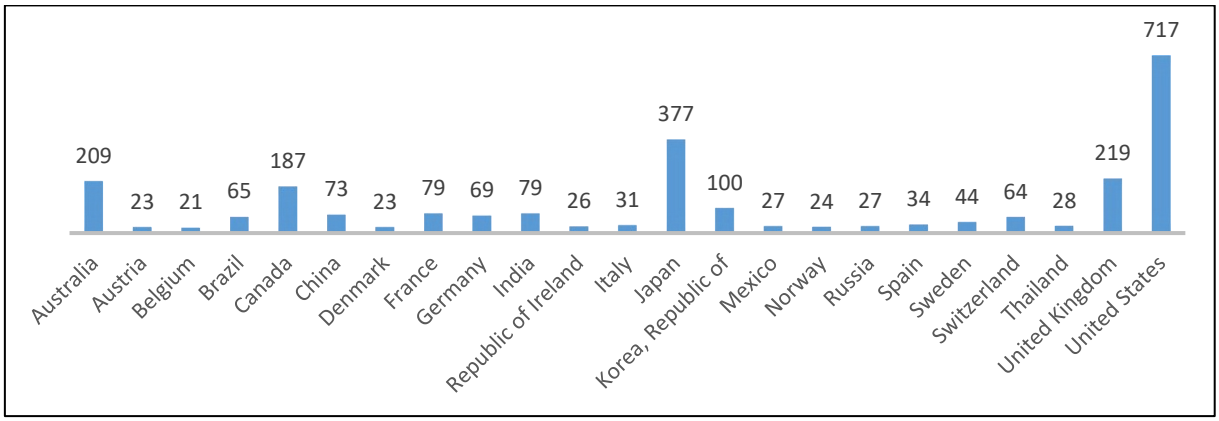


**Figure 1** *Sample distribution by country.*
**Source:** research data.

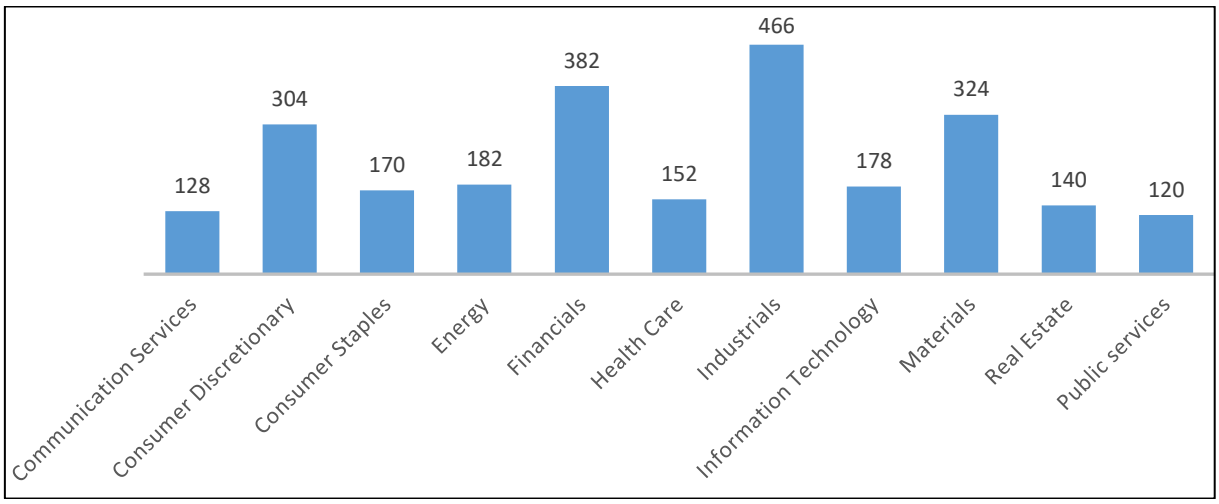


**Figure 2** *Sample distribution by industry sector.*
**Source:** research data.

Data collection was conducted on the Refinitiv Eikon platform, filtering information from 2018 to 2023 as this period recorded the highest number of valid observations per country regarding the research variables. Refinitiv Eikon is one of the main global platforms for financial and corporate information, being widely used in academic research and by market professionals, offering historical, standardized and comparable data between companies, sectors and countries. Despite the limitation of depending on a single data source, the diversity of economic sectors in the sample enables considering the heterogeneity of the markets analyzed.

Data analysis used multiple linear regression, conducted in two stages. We first evaluated the general sample, composed of all companies, to examine the relation between ESG practices and corporate performance. Two regression equations were used: one considering the combined ESG score and another with the separate ESG factors. Subsequently, we divided the companies into two groups according to the economic context of their country of origin (developed and emerging). Regression analyses were repeated for each group, allowing meaningful comparisons between the two contexts.

The econometric models analyzed by means of regression are presented by the following equations:

Combined ESG score:

$$ROA_{i,t} = \alpha + \beta_1.ESG\_score_{i,t} + \beta_2.TAM_{i,t} + \beta_3.ALAV_{i,t} + \beta_4.CRE_{i,t} + \varepsilon \quad (1)$$

$$ROE_{i,t} = \alpha + \beta_1.ESG\_score_{i,t} + \beta_2.TAM_{i,t} + \beta_3.ALAV_{i,t} + \beta_4.CRE_{i,t} + \varepsilon \quad (2)$$

$$TOBIN\_Q_{i,t} = \alpha + \beta_1.ESG\_score_{i,t} + \beta_2.TAM_{i,t} + \beta_3.ALAV_{i,t} + \beta_4.CRE_{i,t} + \varepsilon \quad (3)$$

Separate ESG factors:

$$ROA_{i,t} = \alpha + \beta_1.E\_score_{i,t} + \beta_2.S\_score_{i,t} + \beta_3.G\_score_{i,t} + \beta_4.TAM_{i,t} + \beta_5.ALAV_{i,t} + \beta_6.CRE_{i,t} + \varepsilon \quad (4)$$

$$ROE_{i,t} = \alpha + \beta_1.E\_score_{i,t} + \beta_2.S\_score_{i,t} + \beta_3.G\_score_{i,t} + \beta_4.TAM_{i,t} + \beta_5.ALAV_{i,t} + \beta_6.CRE_{i,t} + \varepsilon \quad (5)$$

$$TOBIN\_Q_{i,t} = \alpha + \beta_1.E\_score_{i,t} + \beta_2.S\_score_{i,t} + \beta_3.G\_score_{i,t} + \beta_4.TAM_{i,t} + \beta_5.ALAV_{i,t} + \beta_6.CRE_{i,t} + \varepsilon \quad (6)$$

Table 1 below presents all the defined variables.

**Table 1**
*Defined variables*

| Variables | Metric | Operationalization |
|---|---|---|
| ROA | Return on Assets | Net income divided by total assets. |
| ROE | Return on Equity | Net income divided by shareholders' equity. |
| TOBIN_Q | Tobin's Q | Ratio between the company's market value and the replacement value of their assets. |
| ESG_*score* | Environmental, social and governance | Combined ESG score. |
| E_*score* | Environmental | Sample environmental score. |
| S_*score* | Social | Sample social score. |
| G_*score* | Corporate governance | Sample governance score. |
| CS | Company size | Natural logarithm of total assets. |
| LEV | Leverage | Sum of current liabilities and non-current liabilities. |
| SG | Sales growth | Percentage change in sales revenue. |

**Source:** *research data.*

In which: **ROA*it***: return on assets in year t for company i, defined as profit before extraordinary items divided by total assets; **ROE*it***: return on equity in year t for company i, defined as net income divided by equity; **Tobin's Q*it***: Tobin's Q in year t for company i, defined as the ratio between the company's market value and the replacement value of its assets; **E_*score it***: environmental in year t for company i, defined as the sample environmental score; **S_*score*$_{it}$**: social in year t for company i, defined as the sample social score; **G_*score*$_{it}$**: corporate governance in year t for company i, defined as the sample governance score; **ESG-*score*$_{it}$**: Environmental, social and governance factors in year t for company I, defined as the combined score of the individual factors (environmental, social and governance).

**CZ*it***: company size in year t for company i, defined as the natural logarithm of total assets; **LEV *it***: leverage in year t for company i, defined as the ratio between current liabilities and total liabilities; **SG*it***: sales growth in year t for company i, defined as percentage change in sales revenue; and **Ɛ** *it*: error term.

## 4 Results and Analysis

### 4.1 Descriptive statistics and correlation

Data behavior was evaluated by descriptive analysis. Table 2 presents the results, highlighting the characteristics of the sample variables. Return on Assets (ROA) has an average of 0.061 and a standard deviation of 0.082, indicating mostly positive returns and a moderate variation between companies. Return on equity (ROE) shows an average of 0.119 and a high standard deviation of 0.147, suggesting considerable heterogeneity between companies. Tobin's Q ratio exhibits an average of 1.529 and a standard deviation of 1.467, reflecting wide dispersion, whereas the ESG score has an average of 59.996 and a standard deviation of 18.009.

Company size (CS) shows homogeneity, with a mean of 24.66 and a standard deviation of 1.508. Leverage (LEV) averages 1.010 with a high standard deviation of 1.943, reflecting great variability between companies Sales Growth (SG) has a mean of 0.136 and a standard deviation of 0.253, indicating high data variability. These results highlight the importance of variables in corporate performance analysis, revealing patterns and dispersions that can inform strategic and investment decisions.

**Table 2**
*Descriptive statistics*

| Continuous variables | Mean | Median | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| ROA | 0.061 | 0.050 | 0.082 | -1.139 | 2.437 |
| ROE | 0.119 | 0.107 | 0.147 | -0.203 | 0.459 |
| TOBIN_Q | 1.529 | 1.018 | 1.467 | 0.107 | 8.770 |
| ESG_*score* | 59.996 | 62.438 | 18.009 | 11.410 | 90.575 |
| E_*score* | 56.728 | 61.322 | 25.115 | 0.000 | 95.803 |
| S_*score* | 61.394 | 64.348 | 21.452 | 6.468 | 95.779 |
| G_*score* | 59.887 | 62.900 | 20.882 | 10.013 | 94.779 |
| CS | 24.660 | 24.618 | 1.508 | 20.829 | 28.478 |
| LEV | 1.010 | 0.607 | 1.943 | -6.200 | 11.309 |
| SG | 0.136 | 0.110 | 0.253 | -0.509 | 1.174 |

**Source:** *research data.*

We performed several statistical tests to validate the assumptions of the regression models applied, namely: the F-test for individual effects, the Breusch-Pagan test for detecting random effects, and the Hausman test for comparing fixed and random effects models.

The F-Test for individual effects revealed significant effects between observational units, suggesting that intrinsic differences between companies should be incorporated into the models. Breusch-Pagan testing indicated relevant random effects, showing the importance of adequately modelling the variability between sample units.

To decide between fixed and random effects models we performed the Hausman test, the results of which indicated a preference for fixed effects models. This finding suggests that random effects models may be inconsistent in capturing the underlying relations between variables, compromising the validity of inferences. According to Wooldridge (2010), although this test is widely used in the literature for this purpose, it may have limitations such as bias under certain conditions, including heteroscedasticity or specification errors. Given this, the choice of fixed effects models is supported by previous studies that highlight their robustness in the presence of correlation between unobservable effects and explanatory variables, especially in contexts where one seeks to control for time-invariant characteristics (BALTAGI, 2008).

Autocorrelation tests of the residuals were conducted using the Breusch-Godfrey test, which revealed the significant presence of autocorrelation, particularly in random effects models. Detecting autocorrelation in the residuals implies a potential violation of the independence of errors, which can negatively impact statistical inferences.

Finally, multicollinearity between predictors was examined by variance inflation factor (VIF). VIF values for ESG (1.25), E (2.01), S (1.94), G (1.19), CS (1.28), LEV (1.02) and SG (1.00) were all below 3, suggesting no significant multicollinearity between the independent variables. This ensures that the coefficient estimates are not skewed due to collinearity between predictors.

Analysis was conducted with a robust sample of 9,846 observations, which increases the accuracy of the estimates and the power of the statistical tests (Fávero & Belfiore, 2024). A large sample size also helps mitigate the adverse effects of any violations of the regression model assumptions, providing more reliable results.

**Table 3**
*Data Correlation Matrix.*

| | ROA | ROE | TOBIN_Q | ESG | CS | LEV | SG |
|---|---|---|---|---|---|---|---|
| **ROA** | 1 | | | | | | |
| **ROE** | 0.487 | 1 | | | | | |
| **TOBIN_Q** | 0.512 | 0.318 | 1 | | | | |
| **ESG** | 0.043** | 0.096* | 0.014*** | 1 | | | |
| **CS** | -0.112* | 0.05** | -0.217** | 0.445 | 1 | | |
| **LEV** | -0.128* | 0.144* | -0.099** | 0.039** | 0.165* | 1 | |
| **SG** | 0.134* | 0.135* | 0.083* | -0.085** | -0.020** | 0.004*** | 1 |

**Note:** *, **, *** Indicates statistical significance at 0.10, 0.05, and 0.01, respectively.
**Source:** *research data.*

CS and LEV were correlated (0.165), indicating that larger companies tend to be more leveraged. However, both CS and LEV showed negligible correlation with SG (-0.020 and 0.004, respectively), suggesting that company size and leverage level do not directly influence sales growth.

To evaluate the combined ESG score and separate factors, this study used six linear regression models to investigate the impact of ESG (Environmental, Social, and Governance) practices, company size (CS), leverage (LEV), and sales growth (SG) on three financial indicators: Return on Assets (ROA), Return on Equity (ROE), and Tobin's Q. Table 4 shows the results.

The first model showed that the combined ESG score has a positive and significant impact on ROA, suggesting that more robust ESG practices are associated with an increase in corporate operational performance. Conversely, CS had a significant negative effect, indicating that larger companies tend to have a lower return on assets. LEV showed a positive albeit weak correlation, whereas SG also had a positive effect, with a coefficient of 0.002. The model recorded an adjusted $R^2$ of 0.037, revealing that these variables explain only a small proportion of the ROA variation.

In the second model, which analyzed ROE, some independent variables showed statistical significance. ESG score had a positive and significant coefficient, indicating that ESG practices are associated with an increase in ROE. LEV and SG also showed positive statistical significance, suggesting that more leveraged companies with higher sales growth tend to have a higher return on equity. On the other hand, CS was not significant.

**Table 4**
*Synthesis of Regression models.*

| | **Model 1 ROA** | **Model 2 ROE** | **Model 3 TOBIN_Q** | **Model 4 ROA** | **Model 5 ROE** | **Model 6 TOBIN_Q** |
|---|---|---|---|---|---|---|
| **Type** | Combined | Combined | Combined | Separated | Separated | Separated |
| **Intercept** | 0.224*** | 0.091* | 7.274 | 0.210 | 0.070* | 6.878*** |
| **ESG** | 0.001*** | 0.001*** | 0.011*** | - | - | - |
| **CS** | -0.008*** | 0.045* | -0.263*** | -0.007*** | -0.001 | -0.245*** |
| **LEV** | -0.005*** | 0.011*** | -0.045*** | -0.005*** | 0.011*** | -0,047*** |
| **SG** | 0.046** | 0.083*** | 0.000*** | 0.035*** | 0.082*** | 0.488*** |
| **E** | - | - | - | -0.000 | -0.000* | -0.005*** |
| **S** | - | - | - | 0.000*** | 0.000*** | 0.017*** |
| **G** | - | - | - | 0.001** | 0.104 | -0.0007 |
| **Adjusted $R^2$** | 0.055 | 0.049 | 0.074 | 0.057 | 0,053 | 0.093 |
| **F-*Statistics*** | 172.3*** | 155.0*** | 237.5*** | 119.3*** | 111,5*** | 203,1*** |

**Note:** *, **, *** Indicates statistical significance at 0.10, 0.05, and 0.01, respectively.
**Source:** *research data.*

Analyzing Tobin's Q, the third model revealed that ESG, CS, LEV and SG are significantly associated with Tobin's Q. ESG score showed a positive and highly significant effect (0.011), suggesting that more robust ESG practices are associated with a higher market value in relation to a company's assets. CS had a negative and significant effect, indicating that larger companies tend to have a lower Tobin's Q. LEV exhibited a significant effect, but with a smaller and negative impact (-0.045). The adjusted $R^2$ indicates a modest but relevant contribution to the variation in Tobin's Q.

Model 4, which considered ESG factors separately, revealed that factors E (Environmental) and S (Social) have positive and significant effects on ROA, whereas factor G (Governance) showed no statistical significance. These results suggest that stronger environmental and social practices may be associated with better corporate operational performance. Company size (CS) continued to show a negative effect, corroborating the hypothesis that larger companies tend to have a lower ROA. Sales growth (SG) maintained its

positive significance, indicating that companies with higher sales growth tend to have better operational performances.

In model 5, which analyzed ROE with separate ESG factors, factors E, S, and G showed different levels of significance. Factor E (Environmental) had a slight negative significance, whereas factor S (Social) exhibited a robust positive significance. On the other hand, factor G (Governance) was not significant. This result suggests that although some aspects of ESG practices like the social component may influence ROE, the model as a whole, with an adjusted $R^2$ of only 0.053, presents a limited ability to predict ROE based on the variables considered. This reflects the complexity and, possibly, the inadequacy of using ROE to measure the direct impact of ESG practices.

Finally, model 6 looked at Tobin's Q with separate ESG factors and showed that the E (Environmental) and S (Social) factors have significant effects on Tobin's Q, with E having a negative impact and S, a positive impact. Factor G (Governance) was not statistically significant. Company size (CS) and leverage (LEV) were again significant, with CS showing a negative effect.

Our results indicate that ESG practices have a variable impact on financial performance indicators. The impact is positive for ROA and Tobin's Q, especially through environmental and social factors, but it is less evident for ROE. Including variables such as company size and leverage also proved important, albeit with variations in impact.

## 4.2 Regression model analysis

Data revealed a significant variation in the impact of ESG practices on financial performance depending on the intensity and quality of these practices, corroborating the study by Barnett and Salomon (2012). Companies with more robust ESG practices, especially those focused on environmental and social issues, showed a positive correlation with metrics such as ROA and Tobin's Q. Such finding is consistent with the results of Chen et al. (2023), which suggest that the positive impact of ESG practices is greater in large companies and in high-risk contexts. This variation underlines the importance of quality in implementing ESG practices to maximize financial benefits.

Compared with the study by Narula et al. (2024), which found a greater impact of ESG practices in emerging markets, our study, conducted in a broader context, showed a smaller effect. This highlights the importance of considering the specific context of companies when assessing ESG practices. Based on the results presented here, we observed no significant difference between the two models. Thus, the choice between using combined models or separate models (which analyze the E, S and G factors individually) can be considered discretionary, depending on the specific analysis objectives.

**Table 5**

*Model comparing developed and emerging countries.*

| **Developed** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **Intercept** | **ESG** | **CS** | **LEV** | **SG** | **$R^2$** |
| ROA - ESG Combined | 0.221 | 0.000*** | -0.007*** | -0.004*** | 0.047*** | 0.052 |
| ROE - ESG Combined | 0.08 | 0.000*** | -0.001 | 0.012*** | 0.083*** | 0,053 |
| TOBIN_Q - ESG Combined | 6.506 | 0.010*** | -0.228*** | -0.040*** | 0.568*** | 0.060 |

| **Emerging** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **Intercept** | **ESG** | **CS** | **LEV** | **SG** | **R²** |
| ROA - ESG Combined | 0.218 | 0.000*** | -0.008*** | -0.004*** | 0.030*** | 0.068 |
| ROE - ESG Combined | 0.234 | 0.001*** | -0.006* | 0.003* | 0.082*** | 0.040 |
| TOBIN_Q - ESG Combined | 13.77 | 0.019*** | -0.534*** | -0.086*** | 0.222 | 0.231 |

**Note:** *, **, *** Indicates statistical significance at 0.10, 0.05, and 0.01, respectively.
**Source:** *research data.*

To complexify the analysis and assess how ESG determinants differ between companies in developed and emerging countries, we divided the sample into two subsamples: one composed of companies from developed countries and the other, from emerging countries. We decided to use the combined ESG model in the three regressions applied to both subsamples. Table 5 shows the coefficients and metrics of the linear regression models for companies in developed and emerging countries, analyzing the differences in ESG determinants. Notably, the impact of ESG practices varies substantially between developed and emerging countries, reflecting the differences in the economic and regulatory contexts of these markets.

In developed markets like the United States and Europe, the impact of ESG practices on financial performance is relatively moderate. The model for ROA, for example, shows a significant ESG coefficient and an $R^2$ of 0.052, suggesting a limited contribution of these practices to operational performance. Similarly, the model for ROE indicates low explanatory power. Reflecting market valuation, Tobin's Q as a significant ESG coefficient and $R^2$ of 0.060, pointing to market valuation that is present but limited.

In emerging countries like Brazil and India, however, the impact of ESG practices is significantly stronger. The model for ROA shows a significant ESG coefficient and an $R^2$ of 0.068, indicating a more marked influence of these practices on companies' operating performance. The model for ROE, although also showing a moderate impact, has a significant ESG coefficient and an $R^2$ of 0.040, suggesting a relatively greater impact in emerging markets.

One of our most notable findings is that, in emerging countries, Tobin's Q exhibits a significant ESG coefficient and an $R^2$ of 0.231, indicating that 23.1% of the variation in companies' market valuation can be explained by ESG practices. This shows that the market highly values ESG practices in these contexts, highlighting the importance of sustainable practices as an essential factor in company valuation. In developed markets, however, Tobin's Q has a significant ESG coefficient but with an $R^2$ of only 0.060, suggesting that only 6% of the variation in market valuation is related to ESG practices, indicating a less significant valuation in these environments.

These findings corroborate existing literature, which argues that ESG practices are adopted for different reasons, depending on economic and regulatory contexts. In developed markets, as highlighted by Schoenmaker and Schramade (2018), ESG practices are often motivated by risk management and the search for long-term opportunities, which may explain the more moderate impact observed in these countries. In emerging markets, as discussed by Narula et al. (2024), ESG practices are often driven by regulatory and social pressures, resulting in greater market appreciation of these practices.

Differences in market structure and access to capital also play a crucial role in varying the impact of ESG practices. In developed markets, where access to capital is broader and less dependent on ESG practices, the impact of these factors on financial performance tends to be more moderate. In emerging markets, where access to capital can be more restricted, the adoption of ESG practices can significantly improve investor perception and facilitate access

to financial resources, as suggested by Aras, Aybars, and Kutlu (2010). This is reflected in higher market valuations and more positive impacts on financial performance.

Our results challenge the notion that the impact of ESG practices is uniformly positive, as suggested by Friede, Busch, and Bassen (2015), by showing that economic and regulatory contexts play a crucial role in the effectiveness of ESG practices. In emerging markets, where ESG practices can be seen as a significant competitive advantage, their implementation can result in substantial gains in both corporate performance and market valuation. Thus, when planning investment and management strategies, it is essential to consider the specific environment in which the company operates to maximize the positive impact of ESG practices.

Said difference in impact observed between developed and emerging countries highlights the importance of adapting investment and management strategies to the economic and regional context. Recognizing that ESG practices play varied roles, depending on the regulatory environment and local social expectations, reinforces the need for contextualized approaches when planning business strategies.

## 5 Final Considerations

Our study sought to compare the impact of ESG (environmental, social, and governance) factors on the operational, financial, and market performance of companies in developed and emerging markets between 2018 and 2023. For this purpose, we performed statistical analyses on data from companies in several countries, both developed and emerging, to identify significant patterns and differences in the valuation and impact of ESG practices between these markets.

Results suggest that the importance attributed to ESG factors varies substantially between companies from developed and emerging countries. Particularly, the coefficients associated with ESG factors per Tobin's Q are higher in emerging countries. This indicates that ESG practices are more valued in these markets, possibly reflecting a perceived offer of greater potential benefits from adopting such practices or response to more intense social and regulatory pressures.

Statistical analysis revealed that ESG determinants have different impacts on companies' performance, depending on the economic context. In emerging markets, the coefficients of ESG variables are generally higher, especially in relation to Tobin's Q, suggesting that they recognize and value these practices more strongly. Conversely, the influence of ESG practices on metrics like ROE is less pronounced in developed countries, with some models showing little or no consistent relation. This contrast suggests that while ESG practices are recognized as valuable, their impact may vary by economic context and market.

ESG practices are associated with greater resilience and recovery capacity of organizations during economic crises. Our findings indicate that companies with robust ESG practices tend to respond better in periods of crisis, benefiting from greater confidence from investors and other stakeholders, and more efficient risk management. This is most evident in emerging markets, where the appreciation of ESG factors is correlated with greater business stability and continuity in times of economic uncertainty.

In summary, ESG criteria are crucial and should be integrated into investment analysis, but equally essential is to complement them with a comprehensive financial analysis for a complete assessment of risks and returns. Investors focused on sustainability and social responsibility should be aware that while ESG practices can offer substantial non-financial

benefits, their impact on financial returns can vary considerably depending on the economic context.

Despite providing important insights on the relation between ESG factors and financial performance, the models can be improved as indicated by heteroscedasticity and autocorrelation of residuals. Including additional and qualitative variables can increase their robustness. Although the study uses control variables like company size, leverage and sales growth, we recognize the limitation of not including other variables such as liquidity ratios, cost of capital, risk and earnings per share. These variables can influence financial performance and will be considered in future research. Future research may also consider the impact of regulatory policies and economic crises to provide valuable practical guidance for companies.

Finally, the contributions of this study focus on advancing literature by expanding the analysis scope to multiple countries, with comparisons between developed and emerging markets. Individual analysis of ESG factors and the use of robust econometric techniques provide relevant evidence for academics, managers, and policymakers. Our findings reveal that ESG practices exert a more pronounced influence on corporate performance in emerging markets, suggesting that these economies can achieve competitive gains by adopting such practices more strategically.

This result challenges the conventional assumption that ESG effects would be stronger in developed markets, indicating that the institutional context plays a key role in mediating ESG impacts. Thus, ESG benefits are contingent on the institutional reality and market maturity, which requires approaches adapted to each scenario. Even though ESG has the potential to generate economic and reputational value, its effectiveness depends directly on the quality of implementation and alignment with companies' strategic objectives. Hence, this work offers a theoretical and practical contribution by highlighting the importance of regionally contextualizing ESG metrics and reinforces the need for future research to consider institutional and cultural variables in investigating corporate sustainability.

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