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COUNTRY AND CORPORATE CHARACTERISTICS IMPROVE ENVIRONMENTAL, SOCIAL, AND GOVERNANCE DISCLOSURE? EVIDENCE FROM BRAZIL AND GERMANY

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ABSTRACT

This research analyzed the country and corporate characteristics influencing companies' environmental, social, and governance (ESG) disclosure in Brazil and Germany. The methodology is descriptive, quantitative, and documentary, analyzing the period from 2010 to 2019 of Brazilian companies from Brasil, Bolsa e Balcão (B3) and German companies from the Frankfurt Stock Exchange. Regarding the analyzed country characteristics (carbon emissions and GDP), it was evidenced that carbon emissions positively influence the ESG disclosure of Brazilian companies and negatively in the scenario of German companies. GDP showed a negative relationship with the ESG disclosure of Brazilian companies. The corporate variables: market to book, liquidity, and financial leverage, were negatively related to the ESG disclosure of companies in Brazil and Germany. Business risk showed a positive relationship with the ESG disclosure of companies in Germany. These results reveal that different countries and corporate characteristics have implications for the ESG disclosure of Brazilian and German companies. This research helps companies by highlighting which country and corporate characteristics tend to improve ESG disclosure. It aims to promote greater discussions in the literature about factors little explored in studies that tend to improve environmental, social, and governance actions and benefit companies, the environment, and society. Furthermore, it adds knowledge to the literature on the impacts of country and corporate characteristics on the environmental, social, and governance disclosure of companies in developing (Brazil) and developed (Germany) countries.

Keywords: Disclosure. ESG. Brazil. Germany.

Edited in Portuguese and English. Original version in Portuguese.

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1 INTRODUCTION

The debate regarding the socially responsible behavior of companies and their role in creating value and competitive advantage has gained prominence in studies (Taliento et al., 2019; Sharma et al., 2020). The predominance of sustainability issues in the media increased society's awareness of the impacts caused by companies through their activities, which made executives responsible for making greater disclosures in the reports (Modugu, 2020). Hence, non-financial (environmental, social, and governance) disclosures have become part of the reports, and financial and non-financial information is used by investors to guide their decisions (Braam et al., 2016; Modugu, 2020).

As demands for transparency, environmental responsibility, and ESG issues have increased, companies have struggled to improve their sustainability disclosure level to remain competitive (Abdul Rahman & Alsayegh, 2021). Thus, the sustainability report is a means for companies to communicate to society that they are not directing their business solely with a focus on profit to the detriment of their social, environmental, and governance obligations (Abdul Rahman & Alsayegh, 2021).

Therefore, such issues need to be addressed, regardless of the need to preserve the country's economic growth and the long-term financial returns of companies (Tanjung, 2021). According to the Legitimacy Theory, corporate legitimacy is paramount to organizational survival. Thus, a company will achieve legitimacy when it is perceived by society as a company that operates within a system of standards, values, and limits that respect all the parts in which the company is inserted (Patten, 2002).

However, a challenge for companies to improve their level of ESG disclosure is the lack of standards to guide the set of ESG information to be disclosed in the reports (Maama, 2020). Also, country and corporate characteristics can influence ESG disclosure (Modugu, 2020), such as market value, business risk, liquidity, leverage, and industry sensitivity and factors related to the countries companies belong to CO_2 emissions and Gross Domestic Product (GDP). Ashraf et al. (2021) state that economic development and environmental indicators vary between global regions, which motivates this research.

Ashraf et al. (2021) sought to highlight the integration of ESG with the country's socioeconomic level, freedom, human development, and environmental issues in microfinance institutions located in Asia, Africa, Eastern Europe, Latin America, and the Caribbean. The study revealed that Asian microfinance institutions with the highest GDP growth, despite having the highest levels of CO_2 emissions, are more likely to engage in and develop ESG activities.

Previous studies (Saxena & Afreen, 2017; Melo et al., 2016) compared Brazil and Germany due to existing socioeconomic differences. Saxena and Afreen (2017) compared Brazil, Germany, India, and Canada relative to Corporate Social Responsibility (CSR). Although Brazil, India, Germany, and Canada are different in terms of culture, market structure, economy, and social development, they presented common aspects that influenced the evolution of CSR over time, such as companies in these countries, when engaged in CSR, assist in social development. The State and companies are committed to promoting CSR (Saxena & Afreen, 2017).

Melo et al. (2016) highlighted a comparison between Brazil and Germany regarding energy governance related to non-conventional renewable energy sources. The authors justified the analysis of these countries by the fact that Brazil is a world leader in using conventional renewable energy sources, such as hydroelectric power, and Germany has achieved remarkable results in promoting non-conventional energy sources. However, despite advances in sustainable development, Germany is among the 10 countries with the most CO_2 emissions in the atmosphere (China, USA, India, Russia, Japan, Iran, Germany, Indonesia, South Korea, and Saudi Arabia). In contrast, Brazil is among the 20 countries that have the most CO_2 emissions (*Global Carbon Atlas*, 2021). These findings motivate research in the context of Brazil and Germany in relation to the characteristics that determine the ESG disclosure of these companies.

Although comparative studies have already been conducted between Brazil and Germany on several sustainability aspects (Saxena & Afreen, 2017; Melo et al., 2016), research that analyzes the effects of company and country characteristics on ESG disclosure is still considered developing in the national context, a theoretical gap explored in this research. Regarding the country characteristics analyzed, the effects of carbon emissions on ESG disclosure were found in the studies by Karim et al. (2021) and Ashraf et al. (2021), and the impacts of GDP were identified in the following studies: Kühn et al. (2018), Ho et al. (2019), Maama (2020), Ashraf et al. (2021), and Tanjung (2021). Moreover, the corporate characteristics *market to book* (Taliento et al., 2019; Sharma et al., 2020) and liquidity (Modugu, 2020) have been little explored in the literature as determining factors of ESG disclosure. However, these studies analyzed international contexts, which reinforces the research gap identified in the literature. Therefore, this research aims to fill this gap when investigating Brazilian companies.

Another argument that reinforces the performance of this research is that, according to Modugu (2020), there is still no unanimity regarding the direction of the relationship between ESG disclosure and its determining factors. Also, despite the growing awareness of ESG disclosure of companies among scholars and organizations, it lacks a comprehensive structure to support the determinants of ESG disclosure globally among research (Modugu, 2020).

Given the gap identified in the literature, this research seeks to answer the following problem question: What are the characteristics of the country and corporations that influence the environmental, social, and governance (ESG) disclosure of companies in Brazil and Germany? By adopting the legitimacy theory, this research aims to analyze the country's characteristics (CO_2 emissions and GDP) and corporative (market to book, business risk, liquidity, leverage, and industry sensitivity) that influence the ESG disclosure of companies in Brazil and Germany. Based on the legitimacy theory, it was possible to identify the determining factors of ESG disclosure of companies to legitimize their businesses (Abdul Rahman & Alsayegh, 2021), which is the main theoretical implication of this study.

This research analyzed a national and international context to explore the determinants of ESG disclosure. According to Maama (2020), there is a shortage in the literature on country-specific factors that can influence ESG disclosure, especially in developing countries. According to Tanjung (2021), previous studies on the drivers of sustainable investments made by companies are lacking, and little research discusses the link between ESG and countries' economic growth.

Therefore, this research is justified, as the literature suggests the existence of differences between the institutional context and the profile of companies inserted in advanced economies compared to emerging economies (Garcia et al., 2017). Another justification for analyzing companies in Brazil and Germany is that emerging markets need a strategy rooted in ESG to boost the performance of their businesses and face considerable environmental, social, and corporate governance challenges compared to developed economies (Tanjung, 2021).

The results contribute to the literature focused on sustainability and ESG issues since when analyzing the country and corporate characteristics that influence the environmental, social, and governance disclosure of companies in Brazil and Germany, this research makes important comparisons by highlighting the differences and similarities between countries, considering that both groups of factors (country and corporate) are complementary and influential of ESG disclosure (Kühn et al., 2018). This theoretical contribution is supported by the arguments of Crace and Gehman (2022), who argue that ESG disclosure is likely to be influenced by several sources. Therefore, this article contributes to the ESG literature by understanding the importance of different drivers of ESG disclosure (Crace & Gehman, 2022).

As a practical contribution, the research can encourage companies from countries with characteristics similar to those studied in this research to invest in ESG actions and promote information relevant to political and business decisions to develop actions in society. This study brings essential contributions to scholars and professionals, as it shows in a way points of intervention that can be used in practice to improve the ESG disclosure of companies (Crace & Gehman, 2022). For example, the results revealed that financial leverage negatively influences the ESG disclosure of Brazilian and German companies, which suggests that the academic and professional focus can be aimed at developing strategies that aim to reduce the level of indebtedness of companies, which, consequently, tends to impact the allocation of resources for the development of environmental, social, and governance strategies, which aim to improve ESG disclosure.

Furthermore, the results can be helpful for investors and managers, as they increasingly use non-financial information to make decisions aimed at corporate investments. The social contribution of the study lies in the fact that ESG practices are essential to disseminate sustainability ideas, considering that the more companies invest in ESG actions and engage in such activities, the greater the benefits to society in general.

2 THEORETICAL CONSTRUCTION AND RESEARCH HYPOTHESES

2.1 Country and ESG characteristics

According to Maama (2020), the literature presents evidence that the institutional environment can influence the ESG disclosure of companies, and one of these factors is carbon emissions. In the ranking of the 20 countries (top 20) that emit the most pollutants annually into the atmosphere ($MtCO_2$), according to the *Global Carbon Atlas* (2021), Germany ranks seventh and Brazil 12th, which indicates that both countries are relevant to the proposed analysis. This pollutant is released through the combustion of fossil fuels, covering virtually all organizations, especially low-tech industries (Ashraf et al., 2021). To minimize global warming risks, companies must reduce carbon emissions (Lee et al., 2015). Thus, organizations should consider the effect of their operations on the environment, especially the effect of carbon emissions (Kalu et al., 2016; Bui et al., 2020).

In Europe, in addition to the good practices disclosed by companies in the Integrated Report, in 2014, a new corporate law (2014/95/EU) was created that required companies to provide new information in their reports, disclosure on sustainability issues, focusing on the business model, policies, sustainability risks, and *Key Performance Indicators* (KPIs). Also, the reports must present the companies' commitment to the environment, social issues, and corporate governance (Taliento et al., 2019). In Brazil, efforts are also being made for companies to disclose information aimed at sustainability through discussions based on IFRS S1 (general requirements for the disclosure of sustainability and financial information), IFRS S2 (disclosure of climate information), ABNT PR 2030 (presents concepts and guidelines for ESG assessment and guidance model for organizations), among other actions. However, in the Brazilian context, such disclosures are not mandatory.

Thus, although companies are legally obliged to comply with mandatory programs, on the other hand, they are free to decide whether and how they will participate in voluntary programs regarding environmental issues (Aragòn-Correa et al., 2019). Given this context, it is noted that countries' disclosure of carbon emissions can affect companies' ESG disclosure. Ashraf et al. (2021) found evidence that microfinance institutions from countries with higher levels of CO_2 emissions are more likely to have a higher level of ESG disclosure. From this result, they address that these countries or regions with high levels of CO_2 emissions can adopt environmental components in the design of the sustainable business model, given the effect of such emissions on the ESG disclosure of companies (Ashraf et al., 2021). Karim et al. (2021) also showed a positive relationship between the ESG variable and UK companies' disclosure of carbon emissions.

Lee et al. (2015) proved that the market punishes companies more for negative environmental disclosure than rewards them for positive performance (Tobin's Q and ROA).

Despite this, Matsumura et al. (2014) argue that companies disclose more information about their carbon emissions to reduce the negative impact of their activities. On the other hand, developed economies have an unequal share of interest in the disclosure of carbon emissions, and in developing economies, this disclosure is predominantly voluntary (Kalu et al., 2016). Given the above, the study's first hypothesis was formulated: H1. *Companies in countries with high levels of CO_2 emissions are more likely to have a higher level of ESG disclosure*.

The country's GDP is another factor related to the institutional environment that can affect ESG disclosure. According to Ho et al. (2019), the relationship between ESG disclosure and economic growth is controversial in the literature, but it is relevant to public policies in countries. The economic development of a country is measured by GDP, which is the most used indicator to verify the evolution of economic activities. This indicator analyzes the market value of goods and services produced in a country within a given period (Ruiz, 2018).

Studies have analyzed the relationship between ESG disclosure and economic growth (Kühn et al., 2018; Ho et al., 2019; Maama, 2020; Ashraf et al., 2021; Tanjung, 2021). Kühn et al. (2018) found that GDP positively affects ESG disclosure of companies in Sub-Saharan Africa. Ho et al. (2019) also showed positive effects of economic growth on environmental disclosure and corporate governance. On the other hand, GDP did not impact the social aspect of ESG. Maama (2020) and Tanjung (2021) found evidence that GDP has a positive relationship with ESG disclosure, indicating that the size of a country's economy is relevant to companies' ESG disclosure levels. These findings suggest that as a country's economic activities develop, that is, GDP increases, companies become more profitable and rewarding and thus have more resources to invest in ESG activities and report them through reports (Maama, 2020; Tanjung, 2021), which consequently gains greater disclosure of such activities. Notably, Tanjung (2021) analyzed nine countries in which more than two-thirds are considered emerging, including Brazil.

Based on these positive results evidenced in the literature, it is noted that countries with high GDP growth tend to provide resources for companies, maintain the quality of the environment, increase social progress and ensure better quality for society, factors linked to ESG issues (Ho et al., 2019). Given the above, the second hypothesis of the research was prepared: H2. *Companies operating in countries with higher levels of economic growth are more likely to have a higher level of ESG disclosure*.

2.2 Corporate Characteristics and ESG

Another aspect of the literature indicates that specific factors of companies can influence ESG disclosure (Maama, 2020), such as market value, which was measured through the market to book, as it aims to evaluate the company's performance on its actions (Sharma et al., 2020). The existing literature reports that the market performance of companies influences ESG disclosure (Sharma et al., 2020), as a good level of ESG disclosure can increase the market value of companies (Taliento et al., 2019; Tseng et al., 2019; Sharma et al., 2020).

Several studies evaluated the relationship between market value and corporate social responsibility activities. Gao and Zhang (2015) found that companies that invest in CSR have higher stock returns and higher market performance (Tobin's Q). Cahan et al. (2016) analyzed 21 countries, including Brazil, and found a positive relationship between market value (Tobin's Q) and CSR. Kim et al. (2018) also found that CSR activities increase company performance, as measured by Tobin's Q. These positive results indicate that companies with high market performance tend to present greater ESG disclosure (Sharma et al., 2020). However, the research by Sharma et al. (2020) revealed that the market performance measured by the market to book presents negative effects, but without statistical significance in ESG disclosure.

A justification for the market value impacting the ESG disclosure of companies is based on the arguments of Taliento et al. (2019), as the authors address that sustainability indicators, whose disclosure tends to meet the conditions and opportunities for growth of larger companies since they have a greater investment capacity, can predict and even support improved market performance. Moreover, ESG culture improves business processes, and both financial and market results are formed from the valuation of the market and investors, which supports the results (Taliento et al., 2019). Thus, greater market performance can increase investments in environmental, social, and corporate governance actions (Taliento et al., 2019; Sharma et al., 2020). Nevertheless, it is noteworthy that the variable market to book has been little explored in the literature to explain ESG disclosure. Therefore, the third hypothesis is that: H3. *The market to book is positively related to companies' ESG disclosure level*.

Another characteristic that can impact ESG disclosure is the business risk (systematic risk), which concerns the proportion of long-term debt in relation to equity (Sharma et al., 2020). A company with a high level of leverage is riskier than companies with a lower level (Sharma et al., 2020). According to the findings of Sharma et al. (2020), systematic risk has a negative and insignificant impact on the level of ESG disclosure. Kansal et al. (2014) also revealed negative effects and no statistical significance of systematic risk in CSR practices.

From these results, it can be inferred that systematic risk can be managed, minimized, and even reduced. However, it is difficult for companies to eliminate it completely (Garcia et al., 2017). Thus, assuming that business risk is the probability that the company will not be able to achieve its objectives, companies that carry out fewer environmental, social, and corporate governance activities may present financial losses (Garcia et al., 2017). Therefore, in developed economies, organizations more engaged with ESG issues are associated with lower market risks due to the lower possibility of negative market reactions (Sassen et al., 2016). Given the above, the fourth research hypothesis was formulated: H4: *Business risk is negatively related to companies' ESG disclosure level*.

Liquidity refers to the company's ability to meet its obligations/debts in the short term and can also impact ESG disclosure. The liquidity indicator informs stakeholders how a company can maximize its current assets in relation to its current liabilities to pay off its debts (Jihadi et al., 2021). Companies with high liquidity are more willing to disclose ESG information to demonstrate their ability to meet their short-term obligations and have an optimal operational capacity. Therefore, liquidity tends to affect the ESG disclosure of companies (Modugu, 2020).

According to the results of Oliveira et al. (2021), from the analysis of banking institutions in Brazil, it cannot be said that liquidity is a factor that influences the level of ESG disclosure. However, the study by Jihadi et al. (2021) analyzed Indonesian companies and found that CSR can moderate the effect of liquidity on the company's value. Modugu (2020) found a positive relationship between liquidity and ESG disclosure, suggesting that companies with high liquidity tend to disclose more information than companies with low liquidity. Nevertheless, liquidity is another variable little explored in the studies, in relation to its effects on ESG disclosure (Modugu, 2020). Based on the context mentioned above, the fifth hypothesis was prepared: H5: *The company's liquidity is positively related to the level of ESG disclosure*.

Leverage (indebtedness) may also have effects on ESG disclosure. Kansal et al. (2014), Modugu (2020) and Sharma et al. (2020) found negative evidence, but without significance concerning the relationship between leverage and ESG disclosure. Maama (2020) showed a negative and significant relationship, which suggests that companies with higher leverage tend to present a higher level of ESG disclosure.

However, Abdul Rahman and Alsayegh (2021) found positive effects of financial leverage on ESG disclosure of companies from Japan, China, and India. Ashraf et al. (2021) also evidenced a positive and significant coefficient, which suggests that relatively highly leveraged companies are more likely to engage and integrate ESG activities into their business model. Boshnak (2022) revealed that leverage positively affects Saudi Arabian companies' social and environmental disclosure. These findings indicate that highly leveraged companies tend to be pressured to disclose more ESG information to provide evidence of their legitimacy and guarantee of business financial success (Abdul Rahman & Alsayegh, 2021). Also, companies with financial resources can better invest in socio-environmental issues (Garcia et al., 2017).

Thus, the following hypothesis is proposed: H6: The *company's leverage is positively related to the level of ESG disclosure*.

The effects of companies in the industrial sector were also analyzed, as certain sectors are disadvantaged in various dimensions of ESG. Some sectors are favored and thus tend to reach a higher level of ESG disclosure (Crace & Gehman, 2022). Legitimacy theory (Patten, 2002) assigns a reason for the socially responsible practices of companies. For Braam et al. (2016) and Modugu (2021), environmentally sensitive industries strengthen legitimacy by employing assurance services to issue a certificate of independence in their ESG report as a demonstration of credibility. Companies considered polluting obtain benefits from greater environmental disclosure (Braam et al., 2016), and companies with manufacturing processes that negatively influence the environment will present greater disclosure compared to companies in other sectors, less sensitive to environmental issues (Garcia et al., 2017), which will reflect on the level of ESG disclosure.

Barbosa et al. (2021) address that the fact that a company is an industry tends to affect its environmental disclosure and companies' sustainability reports. The findings of Kansal et al. (2014) revealed that the industry variable was related to the social disclosure of Indian companies. Kühn et al. (2018) and Boshnak (2022) found that companies belonging to "polluting sectors" had positive and significant effects on CSR (Kühn et al., 2018) and environmental and social disclosure (Boshnak, 2022). Crace and Gehman (2022) also revealed the positive effects of the industry variable on the environmental disclosure of US companies and the effects of the industry variable on the other dimensions of ESG (social and governance) disclosure were weak. This evidence reveals that environmentally sensitive companies aim to reduce their negative externalities related to the environment and may be less effective in relation to the other dimensions of ESG disclosure (Crace & Gehman, 2022). On the other hand, the results of Sharma et al. (2020) and Modugu (2021) revealed a negative impact of the industry type on ESG disclosure, indicating that the industry's nature affects companies' ESG disclosure level.

Nonetheless, whether companies belonging to sensitive sectors can become socially responsible remains largely unanswered (Garcia et al., 2017). This motivated the development of the last hypothesis of the study: H7: *The industry sensitivity is positively related to the level of ESG disclosure*.

3 RESEARCH METHODS AND PROCEDURES

This research aims to analyze the characteristics of the country and corporations that influence the ESG disclosure of companies in Brazil and Germany from 2010 to 2019 through descriptive, documentary, and quantitative approach research.

3.1 Population and Sample

The study population comprised all Brazilian companies on Brasil, Bolsa e Balcão (B3) and German companies on the *Frankfurt* Stock Exchange. The use of these companies is justified to provide a general understanding of the scenario in Brazil and Germany and to provide comparisons of a sample of companies from an emerging (Brazil) and developed (Germany) country.

For the sample composition, we selected all companies from these countries with the information necessary to conduct the study. Companies with incomplete data, financial institutions, and insurance companies were excluded because they have particularities that could bias the results, especially concerning corporate variables. Studies that analyzed the determinants of ESG disclosure also adopted such procedures for sample composition (Boshnak, 2022). Table 1 shows the unbalanced sample of each country surveyed.

Table 1
Research Sample

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Brazil	40	67	72	77	80	83	83	85	95	114
Germany	66	69	73	76	82	86	88	105	155	183

Source: Research data.

3.2 Data collection procedures

Data collection regarding the study's dependent variable, ESG disclosure, was performed in the *Refinitiv Eikon*® database through the parameter/term "ESG score". This variable presents values from 0 to 100, and to standardize the dependent variable with the independent ones, these values were transformed into percentages. Thus, the percentage of each company, ranging from 0 to 100%, was used to measure the level of ESG disclosure. The closer to 100%, the higher the level of ESG disclosure of companies. According to Refinitiv (2022), more than 400 measures comprise the ESG report made available by Refinitiv. These measures measure disclosure, commitment, and companies' commitment to 10 main categories. Also, the combination of these 10 categories is used to formulate the general dimensions of the ESG report, which constitute the environmental, social, and corporate governance dimensions. Therefore, when combined, these dimensions reflect the level of ESG disclosure of the companies (Crace & Gehman, 2022), which was analyzed in this research.

The independent variables related to the characteristics of the countries were collected from different sources. CO_2 emissions were collected in the *Global Carbon Atlas* database, and the GDP and interest rate control variable data were collected on the World Bank website. The other independent and control variables (company size), which refer to the characteristics of the companies: market value, business risk, liquidity, leverage, and industry sensitivity, were collected in the *Refinitiv Eikon*® database. Table 2 shows the variables used in the study.

Table 2
Variables used in the study

Variable	Operational Definition	Base authors
Dependent variable		
ESG Disclosure (ESG)	Measurement ranging from 0 to 100%. Refers to the company's general disclosure level considering environmental, social, and governance issues. Reveals a balanced view of the level of disclosure of companies in these three areas.	Garcia et al. (2017)
Independent Variables (Country Characteristics)		
CO_2 Emissions ($MtCO_2$)	Refers to the value of the country's annual emissions for $MtCO_2$.	Karim et al. (2021); Ashraf et al. (2021).
Gross Domestic Product (GDP)	Value of the country's GDP.	Kühn et al. (2018); Ho et al. (2019); Maama (2020); Ashraf et al. (2021); Tanjung (2021).
Independent Variables (Characteristics of Companies)		
Market to Book (MTB)	Refers to the growth opportunities of a company. Calculated by multiplying the value of the stock by the number of stocks and divided by shareholders' equity ((VA x QA)/PL).	Taliento et al. (2019); Sharma et al. (2020).
Business risk (BR)	Refers to the beta index of companies. Companies with lower systematic risk have lower volatility in the market.	Kansal et al. (2014); Garcia et al. (2017); Sharma et al. (2020).

Liquidity (LIQ)	Refers to current liquidity: calculated by dividing current assets by current liabilities (CA/CL). Companies with a high liquidity ratio are more likely to disclose ESG information.	Modugu (2020).
Leverage (LEV)	The general indebtedness ratio is calculated by dividing total liabilities by total assets (CL+NCL/TA). Less indebted companies are more likely to invest in ESG.	Kansal et al. (2014); Garcia et al.; (2017); Modugu (2020); Sharma et al. (2020); Maama (2020); Abdul Rahman and Alsayegh (2021); Ashraf et al. (2021); Boshnak (2022).
Industry Sensitivity (IND)	Dummy variable: Consider 1 for industries and 0 otherwise. Companies belonging to the industry sector tend to disclose more ESG information.	Kansal et al. (2014); Garcia et al. (2017); Kühn et al. (2018); Sharma et al. (2020); Modugu (2020); Sharma et al. (2020); Barbosa et al. (2021); Boshnak (2022); Crace and Gehman (2022).
Control Variables		
Interest Rate (IR)	Annual interest rate of the country.	Ashraf et al. (2021).
Company Size (SIZ)	Natural logarithm of total assets.	Garcia et al. (2017); Sharma et al. (2020); Modugu (2020); Maama (2020); Abdul Rahman and Alsayegh (2021).

Source: Research data.

ESG disclosure comprises three aspects: environmental (E), social (S), and governance (G). Environmental information includes information on emission reduction, resource, and product innovation related to water, waste, energy, and operational policies related to environmental impact. Social data refers to the quality of employment, safety and health, training and development, human rights, and product responsibility that impacts communities. Information focused on governance includes board structure, compensation policy, shareholder rights, vision and strategy, company political involvement, and board function (Abdul Rahman & Alsayegh, 2021).

Regarding the industry sensitivity variable, the "GICs *Sector Name*", made available in *Refinitiv Eikon*, was considered to classify the sample companies into industries.

3.3 Data Analysis Procedures

According to the variables presented in Table 2, the statistical method of multiple linear regression (MLA), with robust standard errors, was used through the Stata® software to verify the proposed relationships and answer the research hypotheses. The Equation considered for the study is presented below:

$$ESG = \beta_0 + \beta_1 MtCO_2 + \beta_2 GDP + \beta_3 MTB + \beta_4 BR + \beta_5 LIQ + \beta_6 LEV + \beta_7 IND + \beta_8 IR + \beta_9 SIZ + \textit{Industry Fixed Effects} + \textit{Year Fixed Effects} + \varepsilon$$

It is denoted according to the equation that the years and sectors were used as a fixed effect to control the differences between periods and sectors. Notably, this equation was operationalized individually for each country analyzed in the study.

Before proceeding with the analysis of the results, the *Winsorizing* of the data was conducted, considering the 1 and 99 percentiles, to mitigate the effects of *outliers* in the samples. It is noteworthy that additional tests were performed considering the *Winsorizing* of the data in the 5th and 95th percentiles, and the data were verified without any *Winsorizing* process. However, the estimates were sensitive to these additional tests and did not show consistent results for the parameters and tests performed. This fact can be explained by the dispersion of the main variables analyzed and the presence of *outliers*. Therefore, such problems were minimized when considering the 1st and 99th percentiles in the *Winsorizing* process.

Following data analysis, the assumptions of the regression model were tested. The problem of heteroscedasticity was solved through the use of robust standard errors. The data normality test was relaxed according to the number of observations. The VIF test verified multicollinearity, and the residual autocorrelation problems were analyzed by the *Durbin-Watson* test. The results of the VIF and *Durbin-Watson* tests are in Table 3.

4 RESULTS ANALYSIS AND DISCUSSION

The results of the country and corporate characteristics that influence the level of ESG disclosure of companies in Brazil and Germany are highlighted in Table 3.

Table 3

Results of characteristics that influence ESG disclosure of companies in Brazil and Germany

Variables	Brazil		Germany	
	Coefficient	Significance	Coefficient	Significance
Constant (ESG)	0.8910892	0.005*	4.727417	0.001*
Carbon Emissions (CO_2)	0.8053432	0.002*	-3.596347	0.000*
Gross Domestic Product (GDP)	-0.2464017	0.043**	0.444352	0.107
Market to Book	-0.0263707	0.017**	-0.0314567	0.000*
Business Risk	-0.0000347	0.992	0.0173115	0.000*
Current Liquidity	-0.0581327	0.000*	-0.0438018	0.000*
Leverage	-0.2116655	0.000*	-0.4888756	0.000*
Industry Sensitivity	-0.0273726	0.168	-0.0188326	0.155
Interest Rate	-0.010804	0.000*	0.0741277	0.000*
Company Size	0.1878161	0.000*	0.2180352	0.000*
R^2	0.3561		0.4899	
ANOVA	0.0000*		0.0000*	
Average VIF	1.52		2.04	
Durbin Watson	1.6096		1.9099	
Industry and year fixed effects	Yes		Yes	
No. observations	980		1.650	

* Significance at 1% level; ** Significance at 5% level.
Source: Research data.

The regression results revealed that the country's carbon emissions in Brazilian companies were positively related to ESG disclosure in the analyzed period. Thus, it is inferred that high levels of carbon emissions in the atmosphere by Brazil tend to increase the ESG disclosure of Brazilian companies. This result corroborates the findings of Karim et al. (2021) and Ashraf et al. (2021), which also showed positive relationships between CO_2 emissions and ESG disclosure. Also, this evidence is in line with what is foreseen in the literature, that high levels of carbon destined for the environment through the country's activities are capable of making companies aware of developing strategies aimed at environmental, social, and governance issues (Ashraf et al., 2021). Therefore, H1 can be confirmed in this research for the Brazilian context (*Companies in countries with high CO2 emissions are more likely to have a higher level of ESG disclosure*).

Contrary to the evidence obtained in the Brazilian scenario, in companies in Germany, the country's carbon emissions showed a negative relationship with the companies' ESG disclosure. These results allow us to indicate that the total carbon emissions of Germany tend to reflect in lower ESG disclosure levels of this country's companies. An explanation for this result comes from the vision of Ashraf et al. (2021), which addresses that companies from countries with high environmental degradation may not engage or integrate with ESG activities. Besides, this result reveals that the country's carbon emissions tend not to contribute to the ESG disclosure of German companies, more specifically, the disclosure of the environmental pillar, which concerns a company's impact on air, land, and water and complete ecosystems. Thus, environmental ESG disclosure reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities, to generate long-term value for shareholders (Refinitiv, 2022). Therefore, this result indicates that other factors are determinants of the ESG disclosure of German companies, such as business risk, according to the results obtained.

Brazil's GDP was negatively related to the ESG disclosure of Brazilian companies. This evidence suggests that the higher Brazil's GDP, the lower the environmental, social, and governance disclosure of Brazilian companies tends to be. In German companies, the GDP variable was not significantly related to the level of ESG disclosure, which shows that this characteristic of the country tends not to explain the ESG disclosure of German companies and that other characteristics can better explain this relevant level of disclosure in contemporary times to maintain the competitive advantage of companies. The results for the context of companies in Brazil and Germany differ from those found by Kühn et al. (2018), Ho et al. (2019), Maama (2020), and Tanjung (2021), as they evidenced positive effects of economic growth on companies' ESG activities. Given these results, the study's second hypothesis can be rejected: *H2. Companies operating in countries with higher levels of economic growth are more likely to have a higher level of ESG disclosure.*

The market performance (*market to book*) was negatively related to the ESG disclosure of companies in Brazil and Germany, results that allow rejecting H3 (*The market to book is positively related to the level of ESG disclosure of companies*). These findings indicate that the greater the growth opportunities of companies, the lower their level of ESG disclosure and adherence to environmental, social, and governance issues by companies tends to be. Sharma et al. (2020) also found negative effects of the variable market to book in ESG disclosures. Still, this relationship did not present statistical significance, a result that differs from those found in this research.

The business risk was positively and statistically related to ESG disclosure only in German companies. These results do not allow accepting the proposed H4 in the study that: *Business risk is negatively related to companies' ESG disclosure level*. This finding suggests that the higher the company's risk in the capital market, the higher its environmental, social, and governance disclosure level tends to be, as investments in issues that aim to minimize such practices tend to create competitive advantages and opportunities for new company investors. However, the evidence found for the business risk variable differs from those obtained by Kansal et al. (2014) and Sharma et al. (2020). On the other hand, they reveal that the proportion of long-term debt relative to shareholders' equity (Sharma et al., 2020) of German companies contributes to the increased use of best management practices to avoid environmental risks and seek environmental opportunities to generate value to shareholders in the long term (environmental), generates trust and loyalty of employees, customers, and (social) society, as well as ensures that directors and executives act in the best interest of all stakeholders (corporate governance) (Refinitiv, 2022).

For companies in Brazil and Germany, liquidity and financial leverage were negatively related to ESG disclosure. From this evidence, the hypotheses cannot be confirmed: *H5. The company's liquidity is positively related to the level of ESG disclosure* and H6. *The company's leverage is positively related to the level of ESG disclosure.* Therefore, the higher the levels of liquidity and indebtedness of companies in Brazil and Germany, the lower the level of ESG disclosure tends to be. The result of this research is in contrast to the findings of Oliveira et al. (2021), Jihadi et al. (2021) and Modugu (2020) for the liquidity variable and Abdul Rahman and Alsayegh (2021), Ashraf et al. (2021), and Boshnak (2022) for the financial leverage variable. Kansal et al. (2014), Modugu (2020), and Sharma et al. (2020) also found a negative relationship between leverage and ESG, but without statistical significance. On the other hand, the findings of Maama (2020) corroborate the negative evidence found for the variable financial leverage and

ESG disclosure. A possible justification for this result comes from the arguments of Crace and Gehman (2022), as they address that if it had no cost, surely more companies would present a high level of ESG disclosure since such disclosure requires a considerable investment of resources. Hence, company conditions can be a source of variation in the level of ESG disclosure, as they often reallocate ESG investment resources to survive in the face of challenging circumstances (Crace & Gehman, 2022).

In the literature, it is recommended that industries, as they present activities that tend to generate environmental impacts, aim through their activities to minimize such impacts by developing actions aimed at ESG (Kansal et al., 2014; Braam et al., 2016; Garcia et al., 2017; Kühn et al., 2018; Sharma et al., 2020; Modugu, 2021; Barbosa et al., 2021; Boshnak, 2022; Crace & Gehman, 2022). Nevertheless, for the companies analyzed in Brazil and Germany, the results of the industry sensitivity variable were not significantly related to ESG disclosure and, therefore, H7 cannot be confirmed. *Industry sensitivity is positively related to the level of ESG disclosure.* However, Garcia et al. (2017) analyzed the BRICS group (Brazil, Russia, India, China, and South Africa). They found that companies belonging to sensitive sectors tend to have a better level of ESG disclosure than companies not belonging to sectors considered to have a higher socio-environmental impact. Crace and Gehman (2022) also evidenced that the US industrial environment is a critical intervention point in reducing environmental degradation.

Regarding the control variables, the interest rate of Brazil was negatively related to the level of ESG disclosure, and in the context of Germany, a positive result was obtained. These results show that lower interest rates, as practiced by Germany, reflect positively on the development of ESG actions by companies. According to Ashraf et al. (2021), the interest rate can be detrimental to business expansion since when it presents high values, it discourages the granting of financing, and this difficulty, in the operational environment, discourages companies from investing in ESG issues.

The control variable company sizes was positively related to the level of ESG disclosure of companies in Brazil and Germany. These results can be explained according to the findings of Garcia et al. (2017), Abdul Rahman and Alsayegh (2021), Ashraf et al. (2021), and Boshnak (2022), as they also evidenced that size has an expressive effect on ESG disclosure. Thus, the size of companies can be crucial for promoting a better level of ESG disclosure, as larger companies suffer greater pressure from stakeholders to engage with environmental, social, and governance issues (Ashraf et al., 2021; Abdul Rahman & Alsayegh, 2021). Another explanation for this result is that larger companies may receive greater attention from the media, society, and government and, as a result, may seek to increase their level of ESG disclosure (Maama, 2021). This result is under the Legitimacy Theory, which states that larger companies tend to lose more financial resources because they have less legitimacy in their activities than smaller companies (Modugu, 2020).

The results revealed that different countries and corporate characteristics could explain companies' ESG disclosure levels in Brazil and Germany. However, only one proposed hypothesis can be confirmed (H1) since most of the results obtained for the analyzed samples contradict the expected signal according to previous studies revisited in the literature. Hypothesis (H1) highlights companies' disclosure of CO2 emissions in the atmosphere in their production process. Matsumura et al. (2014) warn about the disclosure of CO_2 emissions in the atmosphere, as it has become a relevant topic in recent years when associating this gas with environmental problems related to the greenhouse effect and environmental disasters.

The results generally contradict the international literature, which mostly analyzed companies from developed countries. Garcia et al. (2017) emphasize the importance of developing new research on the subject, especially in emerging economies. Overall, the results found in this research can be explained by Garcia et al. (2017, p. 137), as the authors address that "different economies are at different stages of development, with varying sophistication in civil society and, therefore, companies are also at different stages of corporate responsibility maturity". Therefore, based on the evidence found in this research, caution is needed when analyzing different countries and corporate characteristics in different contexts since the effectiveness of each factor in maximizing companies' ESG disclosure may be different in each country.

4.1 Results discussion

Social, environmental, and governance responsibility has become important for all stakeholders and a competitive factor for contemporary companies (Taliento et al., 2019). In this sense, investors prefer companies to improve their level of ESG disclosure (Tseng et al., 2019). In addition, the perceived importance in relation to the ESG issue has increased, as executives, investors, and regulators have become aware that ESG actions can mitigate corporate crises and build reputations (Gao & Zhang, 2015). Therefore, ESG initiatives provide information that enables investors to influence a company's actions (Maama, 2021).

The results of this research yielded interesting results. Consistent with expectations, the findings showed a positive relationship between the country's CO_2 emissions and the ESG disclosure of Brazilian companies and a negative relationship for the German context. These results demonstrate that global warming and carbon emissions have become priorities in organizations, with the development of environmental actions, and are essential challenges for business (Lee et al., 2015). Also, for the context of Germany, the findings contradict the literature because, according to the meta-analysis conducted by Aragòn-Correa et al. (2019). However, mandatory regulation generally has a strong and positive influence on the environmental disclosure of companies (German case), studies that analyzed companies with voluntary pressures revealed that they are unlikely to bring significant improvements in environmental results. Therefore, despite the literature revealing that voluntary pressures positively influence environmental disclosure, the evidence is not optimistic about substantial changes in environmental strategies and in the disclosure of companies that adopt environmental strategies on a voluntary basis (Aragòn-Correa et al., 2019).

The evidence showed that Brazil's economic growth is negatively related to the level of ESG disclosure of Brazilian companies and does not significantly impact German companies. According to Ho et al. (2019), the relationship between GDP and the level of ESG disclosure has important political implications. Given this result, it is noted that Brazil and Germany should focus on their economic development to develop strategies that will trigger greater ESG initiatives by companies, employing additional resources for these activities (Ho et al., 2019). Also, ESG disclosure can minimize the economy's vulnerability to negative economic shocks (Ho et al., 2019). Thus, the results of the CO_2 emissions and GDP variables demonstrate that factors peculiar to the countries can influence the level of ESG disclosure (Maama, 2021).

Other significant results are that growth opportunities (*market to book*), liquidity, and financial leverage are negatively related to the level of ESG disclosure of companies in Brazil and Germany. These results suggest that companies with growth opportunities, current assets greater than current liabilities (liquidity), and with a considerable level of indebtedness have the propensity to have a lower level of disclosure of environmental issues (reduction of emissions, resources, and innovation of products related to water, waste, energy, and operational policies related to environmental impact), social (quality of employment, safety and health, training and development, human rights, and responsibility for the product that has an impact on communities), and corporate governance (board structure, remuneration policy, shareholder rights, vision and strategy, political involvement of the company, and function of the board of directors) (Abdul Rahman & Alsayegh, 2021).

On the other hand, the literature addresses that companies with high liquidity are more likely to disclose their level of disclosure in sustainability to prove their ability to meet their short-term obligations, especially those related to ESG issues, and continue with optimal operational capacity. High-liquidity companies are more likely to disclose sustainability issues to prove their ability to meet short-term maturity obligations, especially those related to ESG, and continue with optimal operational existence (Modugu, 2020).

This result also implies that companies having more debt makes them less motivated to seek a higher level of ESG disclosure (Maama, 2021). According to Maama (2021), the negative relationship between leverage and ESG is not surprising, given that creditors can influence the extent to which companies engage in ESG activities and consequently carry out their disclosure (Maama, 2021). Another explanation for these results is that the companies analyzed may not be willing to exchange their profitability and obtain external resources to increase their level of ESG disclosure, as this fact may have an implication on their value in the long term (Maama, 2021). Moreover, this evidence reveals that the theoretical foundations of the legitimacy theory (Patten, 2002) are not supported by the results found (Modugu, 2020).

The findings for the business risk revealed positive effects on the level of ESG disclosure of companies from Germany. They did not have impacts in the context of companies from Brazil. Based on this result, the timely role of investors and regulatory agents in systematic risks (Garcia et al., 2017) is denoted, given the beneficial effects of companies' incorporation of ESG strategies in Germany. Therefore, if investors ignore systemic risks, such as those related to the environment, inequalities, and working conditions, they indicate that such risks are irrelevant to decision-making (Garcia et al., 2017).

The fact that the company belongs to an environmentally sensitive sector did not significantly affect the ESG disclosure of Brazilian and German companies, which suggests that industries with complex operations in these countries are less predisposed to increase their level of disclosure in sustainability (Modugu, 2020). Thus, from the results found, it is impossible to verify that the environmentally sensitive industries are seeking legitimacy in the face of their actions. On the other hand, according to the Legitimacy Theory, they seek to ensure that they operate within environmental limits and standards (Modugu, 2020). Still, this fact does not affect environmental, social, and governance disclosure. Therefore, sensitive industries need a greater incentive to disclose their ESG activities (Garcia et al., 2017). Kühn et al. (2018) address that smaller companies operating in environmentally sensitive sectors tend to disclose less CSR information, which may justify the results.

Despite the results of this research, capital providers and all stakeholders in companies are encouraging them to become more responsible for the impacts caused by their activities on the environment and pressuring them to develop greater responsibility for sustainable development (Braam et al., 2016). Thus, companies with better ESG scores (higher ESG disclosure) are expected to achieve better productivity and, consequently, better market valuation (Garcia et al., 2017). Finally, it should be noted that business goals are inseparable from environmental, social, and governance issues, and the failure of companies to conduct long-term ESG disclosure makes a business somewhat unsustainable (Jihadi et al., 2021).

5 FINAL CONSIDERATIONS AND RESULT IMPLICATIONS

In the last decade, the theme of social values included environmental, social, and governance (ESG) activities as a measure of companies' disclosure level in such activities (Ashraf et al., 2021). Therefore, this research aimed to analyze the country's and corporations' characteristics influencing the ESG disclosure of companies in Brazil and Germany. The results revealed that CO_2 emissions positively relate to the level of ESG disclosure in Brazilian companies, while the relationship is negative in Germany. This finding in Brazilian companies goes against the existing literature, which suggests that as long as companies increase their CO_2 emissions into the atmosphere, the need for more significant investments in ESG actions increases. The other country characteristic (GDP) presented a negative relationship with the ESG disclosure of Brazilian companies. In these companies, if there was an increase in the GDP of Brazil, ESG disclosure could be negatively impacted.

The variables related to business characteristics, market to book, liquidity, and leverage were negatively related to ESG disclosure in companies in Germany and Brazil. This result reveals that for companies in the sample if there were an improvement in market value, this would reduce ESG disclosure. The improvement in the company's ability to pay off its debts in the short term would also result in lower ESG disclosure. And the growth associated with higher risk, translated into financial leverage, does not motivate the increase in ESG disclosure, although ESG actions potentially reduce investment costs for the companies in the sample. It was also observed that business risk and ESG disclosure showed a positive relationship in German companies. Thus, to the extent that these companies increased their debts in the long term, they also increased their ESG disclosure.

The results for the country and corporate characteristics broaden the understanding of why companies develop ESG activities and disclose them in the reports (Maama, 2021). Contrary to the literature, the results reveal that specific factors particular to companies and countries influence the level of ESG disclosure. At the same time, other factors do not have significant impacts (Maama, 2021). In this sense, the results demonstrate the importance of studying the complex dimensions of ESG to explain the level of ESG disclosure of publicly-traded companies (Crace & Gehman, 2022).

This study contributes to the literature by highlighting the business characteristics and countries that determine or hinder the ESG disclosure of a developing (Brazil) and a developed country (Germany). This research is an effort to understand the level of ESG disclosure in the context of companies in Brazil and Germany, as it revealed how financial and non-financial factors impact such disclosure (Sharma et al., 2020). Besides, the results contribute to the accounting literature in the contexts analyzed, showing that accounting issues tend to affect sustainability practices. This study advanced the existing literature by not carrying out a traditional analysis of the effects of economic-financial and market performance on ESG disclosures but by incorporating little-explored factors, such as carbon emissions, GDP, market to book, and liquidity.

Given the base theory used in this research, it is noteworthy that the Legitimacy Theory explains the choices made by companies relative to environmental, social, and governance disclosures. Therefore, the results corroborate the view that legitimacy plays a relevant role in economic-financial choices and, according to the institutional environment, in developing ESG initiatives and their dissemination (Braam et al., 2016). According to Abdul Rahman and Alsayegh (2021), companies disclose their sustainability practices to reveal that their products and services benefit the various stakeholders, the environment, and society, thus achieving a legitimate status in society and a higher level of disclosure. Therefore, the determining factor of ESG disclosure of Brazilian companies to legitimize their business is carbon emissions, and in German companies, business risk, since these were the variables that showed a positive and significant signal in ESG disclosure.

The practical contribution of the study is to reveal organizations' response to socio-environmental issues by analyzing, in different situations, how the ESG disclosure of the companies in the sample is impacted. Thus, the results of this research can support decisions about the company's policy regarding ESG actions for shareholders, investors, managers, and regulators who may rethink their practices aiming at improvements through strategic actions aimed at ESG. Therefore, country and corporate characteristics can guide companies seeking to incorporate their ESG strategies into reporting (Maama, 2021). The results also contribute to managers who aim to incorporate strategies to legitimize ESG activities before stakeholders and society.

The findings evidenced in this research present guidelines for companies, government regulators, and scholars (Tanjung, 2021; Maama, 2021), considering that they help develop guidelines and even regulations that aim to improve the level of ESG disclosure of companies, as such disclosures are still considered voluntary in various contexts and countries. Also, the governments of Brazil and Germany can establish a political and economic basis that provides improved business sustainability practices, as it is a critical factor for companies to attract new investments (Maama, 2021). Reinforcing the contribution of this research to government agencies, the meta-analysis developed by Aragòn-Correa et al. (2019) revealed that almost all the revisited literature confirms that the mandatory powers of government are the most effective lever that society has to change the strategies and environmental disclosure of companies.

Given the result for the variable financial leverage (indebtedness), financial institutions can also be contributed so that they incorporate sustainability conditions to allocate resources to companies, as this fact may be considered by companies, changing their posture and incorporating sustainability in business to seek external financing (Modugu, 2020).

By analyzing variables related to countries (Brazil and Germany), the study presents contributions to society. For example, GDP is one of the indicators of a country's wealth, and this, when presenting a negative relationship with ESG disclosure in Brazilian companies, reveals that economic results may not be aligned with sustainable development. Furthermore, the positive relationship presented by Brazilian companies between the level of ESG disclosure and CO_2 emissions suggests that they have a sense of responsibility towards society for their greenhouse gas emissions to nature. Thus, based on the results found in this research, it contributes to society by highlighting the importance of ESG disclosure of companies so that there is a more significant minimization of environmental impacts, social responsibility, and greater transparency with stakeholders to companies. Therefore, companies indirectly contribute to society when they seek to legitimize their actions.

The study limitations relate to the impossibility of generalizing the results to other countries. Another limitation is the variables used, as other variables could present other results. Hence, there are opportunities for future research by incorporating other variables into the model to explain the level of ESG disclosure, such as the level of industrialization of countries, the Human Development Index (HDI), the technology used in the production line, and annual net income.

REFERENCES

Abdul Rahman, R., & Alsayegh, M. F. (2021). Determinants of Corporate Environment, Social and Governance (ESG) Reporting among Asian Firms. *Journal of Risk and Financial Management*, *14*(4), 167-169.

Aragòn-Correa, J. A., Marcus, A. A., & Vogel, D. (2019). The effects of mandatory and voluntary regulatory pressures on firms' environmental strategies: A review and recommendations for future research. *Academy of Management Annals*, *14*(1), 339-365.

Ashraf, D., Rizwan, M. S., & L'Huillier, B. (2021). Environmental, social, and governance integration: the case of microfinance institutions. *Accounting & Finance*, 1-15.

Atlas, G. C. (2021). CO2 emissions. *Global Carbon Project*, http://www.globalcarbonatlas.org/en/CO2-emissions

Barbosa, F., Monteiro, A. P., & Pereira, C. (2021). Determinants of Environmental Responsibility Disclosure on Mandatory and Voluntary Reporting of Portuguese Listed Firms. *Journal of Environmental Accounting and Management*, *9*(3), 219-233.

Boshnak, H. A. (2022). Determinants of corporate social and environmental voluntary disclosure in Saudi listed firms. *Financial Reporting and Accounting*, *20*(3/4), 667-692.

Braam, G. J., Weerd, L. U., Hauck, M., & Huijbregts, M. A. (2016). Determinants of corporate environmental reporting: The importance of environmental performance and assurance. *Journal of Cleaner Production*, *129*, 724-734.

Bui, B., Moses, O., & Houqe, M. N. (2020). Carbon disclosure, emission intensity and cost of equity capital: multi-country evidence. *Accounting & Finance*, *60*(1), 47-71.

Cahan, S. F., De Villiers, C., Jeter, D. C., Naiker, V., & Van Staden, C. J. (2016). Are CSR disclosures value relevant? *European Accounting Review*, *25*(3), 579-611.

Crace, L., & Gehman, J. (2022). What Really Explains ESG Performance? Disentangling the Asymmetrical Drivers of the Triple Bottom Line. *Organization & Environment*, 1-29.

Garcia, A., Mendes-Da-Silva, W., & Orsato, R. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal Cleaner Production*, *150*, 135-147.

Gao, L., & Zhang, J. H. (2015). Firms' earnings smoothing, corporate social responsibility, and valuation. *Journal of Corporate Finance*, *32*, 108-127.

Global Carbon Atlas (2021). *Country emissions*. http://www.globalcarbonatlas.org/en/content/welcome-carbon-atlas

Ho, S. H., Oueghlissi, R., & El Ferktaji, R. (2019). The dynamic causality between ESG and economic growth: Evidence from panel causality analysis. *Personal Archive*, 1-15.

Jihadi, M., Vilantika, E., Hashemi, S. M., Arifin, Z., Bachtiar, Y., & Sholichah, F. (2021). The effect of liquidity, leverage, and profitability on firm value: Empirical evidence from Indonesia. *The Journal of Asian Finance, Economics and Business*, *8*(3), 423-431.

Kalu, J. U., Buang, A., & Aliagha, G. U. (2016). Determinants of voluntary carbon disclosure in the corporate real estate sector of Malaysia. *Environmental Management*, *182*, 519-524.

Kansal, M., Joshi, M., & Batra, G. S. (2014). Determinants of corporate social responsibility disclosures: Evidence from India. *Advances in Accounting*, *30*(1), 217-229.

Karim, A. E., Albitar, K., & Elmarzouky, M. (2021). A novel measure of corporate carbon emission disclosure, the effect of capital expenditures and corporate governance. *Journal of Environmental Management*, *290*, 112581.

Kim, K. H., Kim, M., & Qian, C. (2018). Effects of corporate social responsibility on corporate financial performance. *Journal of Management*, *44*(3), 1097-1118.

Kühn, A. L., Stiglbauer, M., & Fifka, M. S. (2018). Contents and determinants of corporate social responsibility website reporting in Sub-Saharan Africa: A seven-country study. *Business & Society*, *57*(3), 437-480.

Lee, K. H., Min, B., & Yook, K. H. (2015). The impacts of carbon (CO2) emissions and environmental research and development (R&D) investment on firm performance. *International Journal of Production Economics*, *167*, 1-11.

Maama, H. (2020). Institutional environment and environmental, social and governance accounting among banks in West Africa. *Meditari Accountancy Research*.

Matsumura, E. M., Prakash, R., & Vera-Munoz, S. C. (2014). Firm-value effects of carbon emissions and carbon disclosures. *The Accounting Review*, *89*(2), 695-724.

Melo, C. A., Martino Jannuzzi, G., & Bajay, S. V. (2016). Nonconventional renewable energy governance in Brazil: Lessons to learn from the German experience. *Renewable and Sustainable Energy Reviews*, *61*, 222-234.

Modugu, K. P. (2020). Do corporate characteristics improve sustainability disclosure? Evidence from the UAE. *Journal of Business Performance Management*, *21*(1-2), 39-54.

Oliveira, K. V., Lustosa, P. R. B., Freire, F. de S., & de Carvalho, F. A. (2021). Antecedents of CSR disclosure in an emerging economy: evidence from the banking industry. *Journal of Accounting in Emerging Economies*.

Patten, D. M. (2002). The relation between environmental performance and environmental disclosure: a research note. *Accounting, Organizations and Society*, *27*(8), 763-773.

Refinitiv. (2022). *Environmental, Social and Governance (ESG) scores from Refinitiv*. https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf

Ruiz, J. L. (2018). Financial development, institutional investors, and economic growth. *International Review of Economics & Finance*, *54*, 218-224.

Sassen, R., Hinze, A. K., & Hardeck, I. (2016). Impact of ESG factors on firm risk in Europe. *Journal of Business Economics*, *86*(8), 867-904.

Saxena, N., & Afreen, S. (2017). Stakeholder initiatives for promoting corporate social responsibility: a four-country study. *International Journal of Indian Culture and Business Management*, *15*(3), 299-325.

Sharma, P., Panday, P., & Dangwal, R. C. (2020). Determinants of environmental, social and corporate governance (ESG) disclosure: a study of Indian companies. *International Journal of Disclosure and Governance*, *17*(4), 208-217.

Taliento, M., Favino, C., & Netti, A. (2019). Impact of environmental, social, and governance information on economic performance: Evidence of a corporate' sustainability advantage' from Europe. *Sustainability*, *11*(6), 1738.

Tanjung, M. (2021). Can we expect contribution from environmental, social, governance performance to sustainable development? *Business Strategy & Development*, *4*(4), 386-398.

Tseng, M. L., Tan, P. A., Jeng, S. Y., Lin, C. W. R., Negash, Y. T., & Darsono, S.N. A. C. (2019). Sustainable investment: Interrelated among corporate governance, economic performance and market risks using investor preference approach. *Sustainability*, *11*(7), 2108.

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