

A Relação do Índice de Sustentabilidade Empresarial (ISE) com o Desempenho Financeiro das Empresas Listadas na B3


The Relationship of the Corporate Sustainability Index (ISE) with the Financial Performance of Companies Listed on B3

La relación del Índice de Sostenibilidad Corporativa (ISE) con el desempeño financiero de las empresas que cotizan en B3

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Abstract: *This study aims to investigate the relationship between the Corporate Sustainability Index (ISE) and the financial performance of publicly traded Brazilian companies from 2011 to 2021. Financial performance was measured using the following proxies: ROA, ROE, EBIT Margin, Net Margin, ROIC, and EV/EBITDA. The methodology employed panel data regression, based on 2,605 firm-year observations of companies listed on B3 over the analyzed period. The results indicate a positive and statistically significant relationship between the sustainability indicator and ROE. Additionally, robustness tests showed that, among companies included in the ISE, an increase in participation is associated with positive impacts on ROA, ROE, and EV/EBITDA. These findings contribute to the literature and provide useful insights for stakeholders interested in the topic, supporting investment decision-making in assets that compose the ISE, as well as guiding strategic directions for companies aiming to be included in the index portfolio.*

KEYWORDS: *Sustainability; ISE; Financial Performance.*

Resumo: Este estudo tem como objetivo investigar a relação entre o Índice de Sustentabilidade Empresarial (ISE) e o desempenho financeiro de empresas brasileiras de capital aberto no período de 2011 a 2021. Como proxies de desempenho financeiro, foram utilizados ROA, ROE, Margem EBIT, Margem Líquida, ROIC e EV/EBITDA. A metodologia empregada consistiu em regressão em painel, com base em 2.605 observações empresa-ano de companhias listadas na B3 ao longo do período analisado. Os resultados indicam uma relação positiva e estatisticamente significativa entre o indicador de sustentabilidade e a variável ROE. Adicionalmente, o teste de robustez evidenciou que, entre as empresas participantes do ISE, o aumento da participação está associado a impactos positivos sobre ROA, ROE e EV/EBITDA. Esses achados contribuem para a literatura e fornecem subsídios para stakeholders interessados no tema, auxiliando na tomada de decisão de investimento em ativos que compõem o ISE, bem como no direcionamento estratégico das empresas que buscam integrar a carteira do índice.

Palavras-chave: Desempenho Financeiro; ISE; Sustentabilidade.

Resumen: *Este estudio tiene como objetivo investigar la relación entre el Índice de Sostenibilidad Empresarial (ISE) y el desempeño financiero de las empresas brasileñas de capital abierto en el período de 2011 a 2021. El desempeño financiero se midió mediante las siguientes variables proxy: ROA, ROE, margen EBIT, margen neto, ROIC y EV/EBITDA. La*

metodología empleada consistió en regresión de datos de panel, con base en 2.605 observaciones empresa-año de compañías listadas en B3 durante el período analizado. Los resultados indican una relación positiva y estadísticamente significativa entre el indicador de sostenibilidad y la variable ROE. Además, la prueba de robustez evidenció que, entre las empresas participantes del ISE, el aumento de la participación se asocia con impactos positivos en ROA, ROE y EV/EBITDA. Estos hallazgos contribuyen a la literatura y proporcionan insumos relevantes para los stakeholders interesados en el tema, apoyando la toma de decisiones de inversión en activos que componen el ISE, así como orientando las decisiones estratégicas de las empresas que buscan integrarse a la cartera del índice.

Palabras clave: Desempeño Financiero; ISE; Sostenibilidad.

Introduction

Faced with challenges such as global warming, pandemics, international conflicts, environmental disasters, and corruption scandals, companies in the financial market are seeking to conduct their business in a more ethical manner by focusing on more sustainable practices and integrating ESG (Environmental, Social, and Governance) principles into their business strategies (Chen & Xie, 2022). Consequently, this trend in the financial market toward ESG-focused initiatives is gaining momentum, driven by stakeholders who are attentive not only to companies' financial performance but also to their non-financial performance (such as environmental impact, social relations, and corporate governance) (Escrig-Olmedo et al., 2019).

It is important to note that the acronym ESG first appeared in 2005, in the report "Who Cares Wins", through a United Nations (UN) initiative that presented recommendations on environmental, social, and governance issues within organizations. Previously, actions related to the topic were classified as Corporate Social Responsibility (CSR) (Irigaray & Stocker, 2022).

Similarly, over the years, the concept of CSR has evolved, and with it, the challenge of assessing the classification of companies' CSR-related actions (Carroll, 2015; Crisóstomo & Oliveira, 2016). To address this classification challenge, stock exchanges began creating sustainability indices linked to financial markets (López et al., 2007). In line with this trend, in 2005, the Brazilian financial market, through Bovespa, launched the Corporate Sustainability Index (ISE), which is a composite index of stocks issued by companies that demonstrate a high degree of commitment to sustainability and corporate social responsibility (Bovespa, 2022).

Thus, based on these sustainability indices issued by the financial market, some of the literature suggests that corporate actions focused on environmental, social, and governance (ESG) issues require investment and that these expenses will erode the company's profitability and, consequently, reduce its competitive advantage in the market (Galant & Cadez, 2017; Chen & Xie, 2022). An opposing view, grounded in stakeholder theory, argues that these ESG-focused initiatives are necessary to improve stakeholder satisfaction and, consequently, enhance the company's financial performance (Shakil, 2021; De Gooyert et al., 2017). In this sense, there is a divergence in the literature regarding the effects of ESG practices in the companies' financial performance.

To explore this perspective, grounded in stakeholder theory, it is recommended to understand the relationship between ESG-focused corporate actions—which in the financial market are reflected by sustainability indices—and the companies' financial performance. This relationship has spurred a vast body of literature, and the results are diverse (dos Reis Cardillo & Basso, 2025; Darsono et al., 2025; Flammer, 2015; Galant & Cadez, 2017; Chen & Xie, 2022; Cho et al., 2019; Charlo et al., 2015). And this debate has been, for decades, a topic discussed in both academic and corporate circles (Freguete et al., 2015). Given this context, there remains a dichotomy on the subject;

furthermore, an analysis using more recent data exploring an emerging market, such as the Brazilian market, is important (de Castro Sobrosa Neto et al., 2020; Monteiro et al., 2020; Andrade et al., 2013). And a study on the relationship between the financial performance of all companies comprising the ISE, which was a gap left by Fraga et al. (2021), also indicating the difference in performance among the companies comprising the index.

Thus, is there a positive relationship between the ISE and the financial performance of companies listed on the Brazilian stock exchange? Accordingly, the main objective of this study is to investigate whether there is a relationship between the Corporate Sustainability Index (ISE) and the financial performance of publicly traded Brazilian companies from 2011 to 2021.

The rationale for this study's objective lies in the need to provide investors information for decision-making regarding resource allocation (Monteiro et al., 2020). Additionally, Freguete et al. (2015) note that this result also serves as a source of information for managers to direct their strategic decisions toward CSR-related actions, as a lever for competitive advantage. Furthermore, this study aims to complement the research by Castro Sobrosa Neto et al. (2020) and Monteiro et al. (2020) by updating the data with the most recent financial and market indicators and considering a broader time frame. It also complements the study by Fraga et al. (2021) through a regression analysis that considers all companies in the ISE portfolio, regardless of sector.

Thus, this research makes contributions from both theoretical and practical perspectives. From a theoretical standpoint, this study provides an analysis of more recent data, incorporating financial indicators in addition to market indicators, thereby filling a gap left in the work of Castro Sobrosa Neto et al. (2020) and Monteiro et al. (2020). Another important contribution relates to research conducted in the Brazilian market, where there is little evidence of studies on this topic, such as those by Andrade et al. (2013) and de Castro Sobrosa Neto et al. (2020).

From a practical standpoint, the results of this study allow stakeholders interested in the topic to consider it in their decision-making—both investors with a financial interest in an asset when assessing whether that asset's securities are attractive using the ISE as a decision-making benchmark, and managers themselves in strategic decisions regarding the company's inclusion in the ISE portfolio.

Theoretical aspects of the research

Corporate Social Responsibility (CSR)

The current notion that companies have a responsibility toward society is not new, and it is evident that this corporate concern for society has been gaining momentum in recent years. Consequently, the concept of CSR has been evolving and improving, primarily because companies are taking a clearer and more objective approach to defining their responsibilities regarding social, environmental, and governance issues (Carroll, 2015; Latapí Agudelo et al., 2019).

Some studies, such as those by Van Marrewijk (2003) and Caldelli and Pamigiani (2004), use the concept of Corporate Social Responsibility (CSR), also known as Corporate Social Performance (CSP), interchangeably with the concept of Corporate Social Performance (CSP), where the former is more focused on long-term actions while the latter relates to specific, short-term actions by companies (Barnett, 2007).

Specifically, regarding CSR, there is no uniformity in the literature regarding its concept. According to Carroll (2015), CSR must consider the financial, legal, ethical, and discretionary expectations that society has of organizations. Lins et al. (2017) suggest that CSR is a set of corporate

actions committed to contributing to economic, social, environmental, and governance development, aiming to improve the quality of life of the society in which they operate. Faced with a landscape of broad, diverse, and imprecise concepts, there are some common aspects among this complexity of definitions, focused primarily on the argument that companies must refine their management model to achieve both financial and non-financial objectives (Orellano & Quiota, 2011).

Therefore, there are many reasons that have led companies to consider CSR as a strategic factor (Galant & Cadez, 2017; Luetkenhorst, 2004; López et al., 2007; Echeverría-Rios et al., 2018). For example, in their study, Galant and Cadez (2017) point out that the main reasons why companies engage in CSR-related actions are related to philanthropy, responding to institutional requests, and the expectation of financial returns. Luetkenhorst (2004) and Echeverría-Rios et al. (2018) summarize that concerns about image, reputation, and financial impact (both avoiding financial loss and securing better financing terms) are some of the motivators that have led companies to adopt CSR practices.

Therefore, given the importance of this topic and its status as a strategic factor for competitiveness, there arises a need to assess companies' performance in CSR-related actions; however, this need is accompanied by the difficulty of conducting such measurements, given the non-standardized nature of measurement (due to its discretionary character) and the complexity of the CSR concept (Oliveira & Crisóstomo, 2021). With the aim of overcoming this measurement challenge, the financial market began to create sustainability indices to broadly measure companies' actions related to sustainability (López et al., 2007). Then, in 2005, inspired by this global movement, the Brazilian stock exchange launched the ISE (Corporate Sustainability Index) (Bovespa, 2022).

Corporate Sustainability Index (ISE)

The use of the ISE as a reference for this article is based on the study by Souza et al. (2019), which examined the relationship and influence of B3 indices such as: ICO2 (Carbon Efficiency Index), IGC (Corporate Governance Index), and IGCT (Corporate Governance Trade Index) on the ISE and concluded that this relationship is strong, positive, and statistically significant, thereby reinforcing the influence of this index on stakeholder decision-making.

Andrade et al. (2013) point out that the ISE aims to differentiate companies according to sustainability criteria, creating an environment that reflects society's expectations regarding the issue in the capital market. Crisóstomo and Oliveira (2016) corroborate this understanding by noting that the ISE has been an important tool for the comparative analysis of CSR-oriented actions by companies listed on the Brazilian stock exchange.

Additionally, the ISE has also been used as a reference for other studies, such as Eidt et al. (2018), who studied the profile of 34 companies belonging to the ISE in 2017 through the analysis of variables such as company size and shareholding concentration. Meanwhile, Cristófaló et al. (2016) evaluated the performance of companies in the same economic sector that are and are not part of the ISE, concluding that it is not possible to determine a specific relationship between the ISE and stock valuation or volatility. Félix et al. (2019) analyzed the influence of social responsibility expenditures on the financial performance of industrial companies listed on the ISE, using a sample of 52 publicly traded industrial companies on the Brazilian stock exchange; the results demonstrate that social responsibility expenditures are inversely related to financial performance. Finally, Lucas et al. (2022) studied the causal relationship between the ISE B3 and the Ibovespa, with results indicating a bidirectional causal relationship between the ISE B3 and the Ibovespa, providing investors information to aid decision-making.

Financial Performance

The literature examines market movements through technical analysis and fundamental analysis, the latter comprising sector analysis, micro and macroeconomic conditions, and the evaluation of financial statements, which in turn is carried out by collecting data used to assess market multiples (de Castro Sabrosa Neto et al., 2020). Through these market multiples, it is possible to calculate financial indicators, which in turn determine a company's financial performance (Galant & Cadez, 2017; Kyere & Ausloos, 2021; Cho et al., 2019). Thus, the analysis of these financial indicators is of fundamental importance for decision-making by stakeholders, who have diverse motivations and seek satisfactory premises to guide their decisions (Pereira et al., 2016).

In accordance with the objective of this study, which is to examine the relationship between ISE and the corporate financial performance, Du Toit and Lekoloane (2018) synthesized the main studies on the topic linking CSR to financial performance, revealing diverse results, primarily due to the different research methods and the complexity of the concepts applied to both CSR and corporate financial performance (dos Reis Cardillo & Basso, 2025; Darsono et al., 2025; Revelli & Viviani, 2015; Brooks & Oikonomou, 2018; Shabbir & Wisdom, 2020; Gupta & Das, 2022).

Thus, the context is characterized by: controversial findings regarding the relationship between CSR and the financial performance (dos Reis Cardillo & Basso, 2025; Darsono, et al., 2025; Flammer, 2015; Galant & Cadez, 2017; Chen & Xie, 2022; Cho et al., 2019; Charlo et al., 2015) and the existence of two lines of research in the literature that diverge on the impacts of corporate actions in the context of sustainability (Chen & Xie, 2022). Therefore, the hypothesis of this article is:

H1: There is a positive relationship between the ISE and the performance of Brazilian companies listed on B3.

Since six proxies for financial performance were used, we can rewrite the main hypothesis as:

H1a: There is a positive relationship between the ISE and the ROA of Brazilian companies listed on B3.

H1b: There is a positive relationship between the ISE and the ROE of Brazilian companies listed on B3.

H1c: There is a positive relationship between the ISE and the Net Margin of Brazilian companies listed on B3.

H1d: There is a positive relationship between the ISE and the EBIT Margin of Brazilian companies listed on B3.

H1e: There is a positive relationship between the ISE and the ROIC of Brazilian companies listed on B3.

H1f: There is a positive relationship between the ISE and the EV/EBITDA of Brazilian companies listed on B3.

Methodological aspects of the research

The study is based on an empirical, quantitative, descriptive analysis of secondary data using a longitudinal cross-sectional design. To examine the issue described, financial data were collected using the Economática software, and statistical analysis was performed in Stata, based on the following unbalanced panel regression model:

$$FINANCIAL_INDICATOR = \beta_0 + \beta_1 ISE + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB + \varepsilon$$

Here, the financial indicators are the dependent variables (ROA, ROE, ML, MEBIT, ROIC, and EV/EBITDA) in the equation that represent the companies' financial performance. The independent variable is the ISE, which represents the return on the portfolio of assets that make up this index and reflects the degree of sustainability of those assets.

ISE is a dummy variable that takes the value 1 if the company is included in B3's ISE sustainability index and 0 otherwise. ISEP is the variable representing the portfolio of all companies comprising the ISE.

A set of six (6) financial and market indicators was selected to serve as the dependent variables for measuring the performance of the listed companies included in this study. Additionally, three (3) control variables (SIZE, LEV, and MTB) were included. Table 1 provides a summary of what each indicator represents and its mathematical model.

Table 1 - Summary of Concepts and Formulas for Performance Indicators

Indicator	Meaning	Concept	Formula	Source of the Concept
ROA	Return on Assets	Return generated by a company's investment in its assets	Operating Profit / Average Total Assets	Pereira et al. (2016)
ROE	Return on Equity	Return on capital invested in the company by its owners (on the income statement)	Net Income / Equity	Pereira et al. (2016)
MEBIT	EBIT margin	A metric representing the percentage of revenue that was effectively converted into cash flow	EBIT / Net Revenue	Pereira et al. (2016)
ML	Net margin	A metric representing the percentage of revenue that was effectively converted into net income	Net Income / Net Revenue	Pereira et al. (2016)
ROIC	Return On Invested Capital	A metric that measures the company's financial return on total investments (shareholders and creditors)	EBIT / Invested Capital	Seo e Soh (2019)
EV/EBITDA		It is a metric that relates the company's value to its EBITDA.	EV / EBITDA	Vidal-Garcia e Ribal (2019)
SIZE	Company Size	Measures the size of the company	Return on Total Assets	Crisóstomo & Oliveira (2016)
LEV	Leverage	Measures how much of the assets are being financed by third-party capital	Equity / Total Assets	Lins et al. (2017); Charlo et al. (2015)
MTB	Market to Book	Assesses a company's current market value relative to its book value	Market Value / Equity	Abdo & Fisher (2007); Nkomani (2013)

Source: Created by the authors

It is important to note that a t-test was performed using the mean values of ISE and non-ISE assets. Regarding the company sample selection stage, two criteria were used, namely: a dataset comprising the asset prices that made up the ISE portfolio as of December 31 between 2011 and 2021, and the results of the economic and financial indicators for the assets traded during the same period, both based on Brazilian companies listed on B3.

It should be noted that the total number of original observations was 6,259. Observations (2,350

observations) with missing values for the variables ISE, ROA, ROE, SIZE, LEV, and MTB were excluded, as were some duplicates (1,304 observations). The adjusted dataset consisted of 2,605 observations. The data were extracted from the Economática database, and Figure 1 presents a summary of the stratified observations for the sector.

Figure 1 - Sectors and subsectors of the sample margin

Sectors	Obs	%
Other	14	0.54%
Communications	43	1.65%
Information Technology	57	2.19%
Oil, Gas, and Biofuels	76	2.92%
Healthcare	142	5.45%
Non-Cyclical Consumer Goods	174	6.68%
Basic Materials	234	8.98%
Industrial Goods	372	14.28%
Utilities	391	15.01%
Financial Services	510	19.58%
Cyclical Consumer Goods	592	22.73%
Total	2605	100.00%

Source: Created by the authors

Results and Discussion

Table 2 presents the descriptive analysis of the model's variables. For a total of 2,605 observations, the results for the dependent variables and the ISE Dummy variable show a low standard deviation, indicating homogeneity of the results relative to the mean for the period analyzed. This is not the case for the independent variable ISE, where the data were winsorized (1%) to handle outliers.

Table 2 - Descriptive Statistics of the Sample Variables

Variable	Obs	Average	SD	Min	Max
ISEP	2.605	0.2513	1.1387	0.0000	15.6580
ISE Dummy	2.605	0.1055	0.3073	0.0000	1.0000
ROA	2.605	0.0334	0.0803	-0.2672	0.3126
ROE	2.605	0.0052	0.6343	-4.9762	1.0768
ML	2.605	0.0923	0.5531	-2.1000	3.6709
MEBIT	2.605	0.1574	0.5613	-2.0969	3.6113
ROIC	2.293	0.0674	0.1465	-0.601	0.6386
EV/EBITDA	2.207	0.0804	0.1614	-0.7405	0.7515
SIZE	2.605	15.2423	1.8934	10.6763	20.7420
LEV	2.605	0.5959	0.2204	0.0622	0.9763
MTB	2.605	2.2889	2.7703	0.1583	18.5846

Source: Created by the authors

Notes: ISEP: the average return of the portfolio of assets included in the ISE. ISE Dummy is the average return of the portfolio, where 1 indicates that the company is in the ISE and 0 indicates that it is not. ROA, ROE, ML, MEBIT, ROIC, and EV/EBITDA refer to the average values of these indicators for the sample of companies listed on B3. SIZE represents company size, calculated as the natural logarithm of total assets. LEV refers to the average leverage ratio of the companies. MTB refers to the average market-to-book ratio of the companies.

Table 3 presents a comparison of the average financial multiples for the ISE portfolio and the non-ISE portfolio. As can be seen, the average values of the variables for the assets in the ISE portfolio are higher than those for the non-ISE assets. Additionally, the p-values from these tests suggest

statistical significance for the following variables: ROA, ROE, SIZE, LEV, MTB, and ROIC.

Table 3 - Average Indicators for ISE and Non-ISE Assets

INDICATORS	ISE	NOT ISE	T Test
ROA	0.0430	0.0323	3.71%*
ROE	0.1278	-0.0092	0.07%*
ML	0.1036	0.0910	73.59%
MEBIT	0.1666	0.1563	78.67%
SIZE	17.3270	14.9960	0.00%*
LEV	0.6833	0.5855	0.00%*
MTB	2.9850	2.2060	0.00%*
EV/EBITDA	0.0962	0.0784	10.52%
ROIC	0.0830	0.0655	7.83%*

Source: Created by the authors

Notes: ROA, ROE, ML, MEBIT, ROIC, and EV/EBITDA refer to the average values of these indicators for the sample of companies listed on B3. SIZE represents company size and is calculated as the natural logarithm of total assets. LEV refers to the average leverage ratio of the companies. MTB refers to the average market-to-book ratio of the companies.

*Significant at the 10% level.

Table 4 presents the correlation coefficients for the model under study, and as can be seen, there is a trend toward a positive and statistically significant correlation—albeit not strong—at a 10% significance level between the independent variable ISE and the dependent variables ROA, ROE, and EV/EBITDA, which reinforces the study’s conclusion that there is statistically calculated evidence of a positive and significant relationship between ISE and these three variables.

Table 4 - Correlation Matrix of Model Variables

	ISE	ROA	ROE	ML	MEBIT	SIZE	LEV	MTB	EV/EBITDA
ISE	1.0000								
ROA	0.0639*	1,0000							
ROE	0.0594*	0.6118*	1.0000						
ML	0.0089	0.5128*	0.3450*	1.0000					
MEBIT	0.0109	0.4523*	0.2725*	0.8253*	1.0000				
SIZE	0.2353*	0.0284	0.1525*	0.0471*	0.0936*	1.0000			
LEV	0.0567*	-0.2921*	-0.1791*	-0.2490*	-0.2091*	0.3557*	1.0000		
MTB	0.1504*	0.1528*	-0.2320*	-0.0338	-0.0064	-0.0799*	0.1731*	1.0000	
EV/EBITDA	0.0663*	0.1714*	0.1277*	0.1256*	0.1291*	0.0630*	-0.0684*	0.1215*	1.0000
ROIC	0.0061	0.5820*	0.3766*	0.3584*	0.3869*	0.0889*	-0.0409*	-0.0215	0.0851*

Source: Created by the authors

Notes: ISE: represents the average return on the portfolio of assets included in this index on B3. ROA, ROE, ML, MEBIT, ROIC, and EV/EBITDA refer to the average values of these indicators across the companies listed on B3. SIZE represents company size and is calculated as the natural logarithm of total assets. LEV refers to the average leverage ratio of the companies. MTB refers to the average market-to-book ratio of the companies.

*Significant at the 10% level.

Table 5 summarizes the regression results that explain the behavior of the dependent variables using the ISE dummy variable (1 if the firm is in the ISE and 0 if it is not). The only p-value below 10% is for the ROE variable (7%); thus, the null hypothesis (the model is statistically significant) is rejected. Considering a significance level of 10%, the regression model demonstrates the behavior of the dependent variable such that for every 1% increase in ISE, ROE increases by 7.6% in the same

direction. As a robustness test, a firm-level fixed effect was used, and the results remain significant and in the same direction. Furthermore, the ML variable showed significance and a positive relationship.

Table 5 - Summary of Linear Regressions - (ISE with Dummy)

	ROA b/p	ROE b/p	ML b/p	MEBIT b/p	ROIC b/p	EV/Ebitda b/p
ISE	0.000 (0.97)	0.076* (0.07)	-0.019 (0.63)	-0.063 (0.12)	0.003 (0.78)	-0.000 (0.97)
SIZE	0.007*** (0.00)	0.063*** (0.00)	0.049*** (0.00)	0.066*** (0.00)	0.007*** (0.00)	0.013*** (0.00)
LEV	- 0.158*** (0.00)	- 0.706*** (0.00)	- 0.778*** (0.00)	- 0.742*** (0.00)	- 0.058*** (0.00)	- 0.109*** (0.01)
MTB	0.007*** (0.00)	- 0.049*** (0.00)	0.008* (0.08)	0.015*** (0.00)	0.000 (0.89)	0.007*** (0.00)
Constant	0.002 (0.93)	- 0.534*** (0.00)	- 0.255* (0.08)	- 0.498*** (0.00)	0.015 (0.72)	- 0.014*** (0.02)
Obs	2605	2605	2308	2308	2293	2293
R-sqr	0.212	0.149	0.119	0.123	0.059	0.06
VIF	3.49	3.49	3.22	3.22	3.33	3.34

Source: Created by the authors

Notes: ISE: represents the average return on the portfolio of assets included in this index on B3. ROA, ROE, ML, MEBIT, ROIC, and EV/EBITDA refer to the average values of these indicators across the companies listed on B3. SIZE represents company size and is calculated as the natural logarithm of total assets. LEV refers to the average leverage ratio of the companies. MTB refers to the average market-to-book ratio of the companies.

*, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Table 6 summarizes the regression analyses that explain the behavior of the dependent variables using the independent variable ISE, including all companies (both ISE and non-ISE). The only p-value below 10% is for the ROE variable (1%); thus, the null hypothesis (the model is statistically significant) is rejected, and considering a significance level of 5%, the regression model demonstrates the behavior of the dependent variable such that for every 1% increase in ISE, ROE increases by 2.7% in the same direction.

Table 6 - Summary of Linear Regressions for Model Variables (ISE Including All Companies)

	ROA b/p	ROE b/p	ML b/p	MEBIT b/p	ROIC b/p	EV/Ebitda b/p
ISE	0,001 (0,42)	0,027** (0,01)	0,000 (0,97)	-0,005 (0,63)	-0,001 (0,71)	0,002 (0,40)
SIZE	0,007*** (0,00)	0,064*** (0,00)	0,047*** (0,00)	0,063*** (0,00)	0,008*** (0,00)	0,013*** (0,00)
LEV	- 0,158*** (0,00)	- 0,699*** (0,00)	- 0,778*** (0,00)	- 0,742*** (0,00)	- 0,059*** (0,00)	- 0,108** (0,00)
MTB	0,007*** (0,00)	- 0,050*** (0,00)	0,007* (0,09)	0,015*** (0,00)	0,000 (0,82)	0,007*** (0,00)
constant	0,004 (0,82)	- 0,541*** (0,00)	- 0,237* (0,10)	- 0,453*** (0,00)	0,009 (0,82)	- 0,097*** (0,31)
Obs	2.605	2.605	2.308	2.308	2.293	2.293
R-sqr	0,212	0,15	0,119	0,122	0,059	0,06
VIF	3,48	3,48	3,22	3,22	3,33	3,33

Source: Created by the authors

Notes: ISE: represents the average return on the portfolio of assets included in this index on B3. ROA, ROE, ML, MEBIT, ROIC, and EV/EBITDA refer to the average values of these indicators across the companies listed on B3.

SIZE represents company size and is calculated as the natural logarithm of total assets. LEV refers to the average leverage ratio of the companies. MTB refers to the average market-to-book ratio of the companies.
 *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Table 7 presents a summary of the regressions that explain the behavior of the dependent variables using the independent variable ISE, considering only observations with ISE assets. This model is statistically significant in explaining the behavior of the variables ROA, ROE, and EV/EBITDA in relation to ISE, with p-values of 0%, 1%, and 1%, respectively. Thus, for every 1% change in ISE, ROA increases by 0.5%, ROE by 3.6%, and EV/EBITDA by 0.6, all in the same direction. As a robustness test, a firm-level fixed effect was used, and the results for ROE remain significant and in the same direction. Furthermore, the ML variable showed significance and a positive relationship, while the ROA and EV/EBITDA variables did not show significance. Additionally, a VIF test was performed, and no evidence of multicollinearity was found among the variables.

Table 7 - Summary of Linear Regressions (ISE Assets Only)

	ROA b/p	ROE b/p	ML b/p	MEBIT b/p	ROIC b/p	EV/Ebitda b/p
ISE	0,005*** (0,00)	0,036*** (0,01)	0,006 (0,18)	0,011 (0,15)	0,000 (0,96)	0,006*** (0,01)
SIZE	- 0,011*** (0,00)	- 0,062*** (0,08)	0,036*** (0,00)	- 0,133*** (0,00)	- 0,010* (0,06)	- 0,021*** (0,00)
LEV	- 0,104*** (0,00)	- 0,148 (0,52)	- 0,182** (0,03)	- 0,517*** (0,00)	0,091*** (0,01)	- 0,004 (0,92)
MTB	0,006*** (0,00)	- 0,022*** (0,05)	0,012* (0,09)	0,008 (0,23)	- 0,001 (0,50)	- 0,000 (0,86)
constant	0,248*** (0,00)	0,988* (0,09)	- 0,497** (0,02)	2,476*** (0,00)	0,197** (0,02)	0,422*** (0,00)
Obs	275	275	244	244	244	244
R-sqr	0,522	0,139	0,252	0,385	0,215	0,416
VIF	2,93	2,93	2,57	2,57	2,57	2,57

Source: Created by the authors

Notes: ISE: represents the average return on the portfolio of assets included in this index on B3. ROA, ROE, ML, MEBIT, ROIC, and EV/EBITDA refer to the average values of these indicators for the sample of companies listed on B3. SIZE represents company size and is calculated as the natural logarithm of total assets. LEV refers to the average leverage ratio of the companies. MTB refers to the average market-to-book ratio of the companies.
 *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Considering the three regression scenarios above, there is statistically significant evidence of a positive and significant relationship between ISE and ROE. Specifically, in the scenario shown in Table 7, which considers a limited number of observations for ISE companies, this positive and significant relationship extends to ROA and EV/EBITDA. Additionally, SIZE and LEV have negative coefficients for the three dependent variables (ROA, ROE, and EV/EBITDA), thus moving in the opposite direction to them. MTB, on the other hand, has a positive coefficient (0.006) for ROA; thus, the behavior of the two variables moves in the same direction, and a 1% increase in MTB statistically represents a 0.6% increase in ROA, holding all other variables constant. Regarding ROE and EV/EBITDA, however, MTB has negative coefficients, indicating opposite trends.

The findings of this study indicate statistically significant evidence of a positive relationship between participation in the ISE and the financial indicators ROE and ROA, as well as the market indicator EV/EBITDA. These results suggest that companies with a greater commitment to sustainable practices tend to exhibit better economic and financial performance and higher market valuation.

One possible explanation for this result is linked to the stakeholder theory perspective, according to which companies that adopt sustainable practices strengthen their relationships with stakeholders, such as investors, customers, and regulators, thereby reducing risks and improving their reputation. This scenario may contribute to greater operational efficiency, reduced capital costs, and, consequently, better profitability indicators and market value.

The findings partially align with evidence from the international literature, such as Cho et al. (2019), who identified a positive relationship between corporate social responsibility and profitability, as well as firm value in the Korean market. Similarly, Chen and Xie (2022) note that the disclosure of ESG practices has a favorable effect on corporate financial performance. These findings reinforce the idea that sustainable practices can generate economic value, contradicting the traditional view that such initiatives represent only additional costs.

On the other hand, the results of this study diverge from research such as that of Elouidani and Zoubir (2015), who identified a negative relationship between corporate social responsibility and financial performance, and from national studies such as Castro Sobrosa Neto et al. (2020) and Santis (2016), which found this relationship to be neutral. These discrepancies can be explained by methodological differences, such as the analysis period, proxies used, and the institutional context of the markets analyzed. In the Brazilian case, for example, the recent maturation of ESG practices and growing pressure from investors may have intensified the positive effects observed in this study.

From a practical standpoint, the results suggest that inclusion in the ISE can be interpreted as a positive signal for the market, influencing investment decisions and indicating higher quality in corporate governance. For managers, the findings reinforce the relevance of adopting sustainable practices not only as a reputational strategy but also as a potential driver of economic value creation.

Conclusions

With the primary objective of investigating the relationship between the Corporate Sustainability Index (ISE) and the financial performance of publicly traded Brazilian companies from 2011 to 2021, the study achieved its objective by analyzing the data collected using the specified methodology and statistical models. The findings of this study indicate that there is statistically significant evidence of a positive and significant relationship between the ISE and the financial indicators ROE and ROA, as well as the market indicator EV/EBITDA.

Given this context and from a theoretical perspective, this study provides an investigation of more recent data not yet widely covered by previous research, considering a longer-term period (11 years) of analyzed data and taking into account financial indicators in addition to market indicators, thereby filling a gap left in the work of Castro Sobrosa Neto et al. (2020) and Monteiro et al. (2020). Another important contribution relates to the research conducted in the Brazilian market, where there is little evidence of studies on this topic, Andrade et al. (2013).

From a practical standpoint, the results of this article can be applied in at least two areas. The first area relates to managerial actions focused on the strategy of entering and remaining in the ISE portfolio, as the results indicate that for every 1% increase in ISE, ROA increases by 0.5% and ROE by 3.6%, meaning there is an increase in these profitability indicators. The second aspect relates to the investor market, specifically regarding the decision to invest in ISE assets, as the research results indicate that for every 1% increase in ISE, EV/EBITDA increases by 0.6%, meaning there is an increase in the market value of the asset. Overall, these results, even if only partially, will strengthen the argument in the literature, grounded in stakeholder theory, that these ESG-focused actions improve corporate performance (Galant & Cadez, 2017; Jha & Cox, 2015).

The results of this study are limited to the dependent variables tested, as it would be interesting

to test the model with other variables such as debt level (are companies listed on the ISE more or less indebted?) and cost of debt (do companies listed on the ISE secure lower interest rates in the market?). Another limitation of this study is that it did not conduct an analysis by market sector to identify sectors where the ISE is more or less significant.

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