

## Article

# Corporate Sustainability and Wealth Distribution: Evidence from Brazil's Corporate Sustainability Index

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**Abstract:** The growing demand for sustainable business practices has led to the development of corporate sustainability assessment tools, with environmental, social, and governance (ESG) indicators becoming central to non-financial performance evaluation. These metrics increasingly influence investment decisions and corporate strategies. However, questions remain about whether sustainability practices have a measurable impact on economic value creation and distribution. This study investigates the causal relationship between corporate sustainability measured by the ISE-B3 index and stakeholder-oriented economic performance, specifically focusing on Distributed Added Value (DAV) and its main components. The analysis uses financial data from Brazilian companies listed in the ISE-B3 portfolios for the years 2022, 2023, and 2024. To address potential endogeneity, this study employs a panel data econometric approach using Instrumental Variables with Two-Stage Least Squares (IV-2SLS) as the primary estimation strategy, complemented by fixed and random effects models for robustness checks. The results indicate no statistically significant causal relationship between the ISE-B3 index and DAV or its components. The coefficient of ISE-B3 on DAV is  $-0.0006$  ( $p = 0.896$ ) in the IV-2SLS estimation, with similar non-significant results for all components. The models exhibit strong temporal dependence, with lagged dependent variable coefficients ranging from 0.8295 to 1.3578, reflecting the persistence of financial dynamics. These findings suggest that, within the Brazilian context, participation in the ISE-B3 index does not directly influence how companies create or distribute financial value to stakeholders. This study contributes to the literature by providing robust econometric evidence on the economic effects of corporate sustainability, offering a stakeholder-oriented perspective beyond the traditional shareholder-centric view.

**Keywords:** capital market; B3; corporate sustainability; socially responsible investment; distributed added value



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## 1. Introduction

The term sustainable development has gained increasing relevance as a subject of academic study, in addition to receiving notable recognition in society. Since the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992, Brazil, the concept has become hegemonic and has been incorporated into various international treaties, as well as into national constitutions and legislation. According to [Ruggerio \(2021\)](#), numerous authors have proposed definitions of sustainable development based on theoretical frameworks from different fields of knowledge. Perhaps the most widely accepted definition is that presented in the Brundtland Report, which states that

sustainable development is the ability to meet the needs of the present generation without compromising the ability of future generations to meet their own needs (Brundtland, 1987). Other definitions include that of Daly (1990), which argues that economic development must consider the biophysical limits imposed by natural resources, incorporating three fundamental dimensions to achieve sustainability: natural, social, and economic capital. Another influential perspective is Elkington's (1997) Triple Bottom Line framework, which conceptualizes sustainability based on three interdependent dimensions: environmental, social, and economic. In general, the terms sustainability and sustainable development are often used interchangeably, primarily due to the lack of clearer and more scientifically grounded definitions of their precise meanings (Waas et al., 2011).

In the corporate context, although the terms sustainability and ESG (Environmental, Social, and Governance) practices are often used synonymously, it is important to distinguish them. Corporate sustainability refers to the broad strategic integration of environmental, social, and economic dimensions to ensure long-term organizational viability, while ESG refers specifically to measurable and standardized criteria used mainly for investment and disclosure purposes. ESG practices, therefore, constitute part of the broader sustainability agenda.

With the aim of fostering the establishment of policies and actions to achieve sustainable development on a global scale, various organizations, including the United Nations (UN), have mobilized representatives from society to seek viable solutions. This movement eventually gave rise to other initiatives focused on the private sector to promote sustainable development in collaboration with businesses and financial markets. Among these initiatives are the UN Global Compact and the dissemination of the Principles for Responsible Investment (PRI, 2017; United Nations Global Compact, 2023), which constitute the origin of the field of socially responsible investments (SRI).

According to Daugaard (2020), socially responsible investing (SRI) refers to investment practices that generate a positive impact on society and the world. Similarly, Widyawati (2019) defines SRI as the integration of sustainability criteria—environmental, social and governance (ESG)—into the investment evaluation and selection process. SRI has gained considerable popularity in recent years, with investment portfolios selected based on ESG criteria experiencing significant value growth by 2020, according to the Global Sustainable Investment Alliance (GSIA), a network of organizations focused on socially responsible investments. This argument is further supported by the substantial increase in the number of financial institutions that have signed the Principles for Responsible Investment (PRI, 2021b). The total number of financial organizations that are PRI signatories rose from 63 in 2006 to 3404 in 2021, while the total assets under management by these organizations increased from USD 6.5 trillion to USD 121 trillion as of March 2021 (GSIA, 2021; PRI, 2021a).

A natural consequence of the growing strength of the SRI movement is the increasing pressure on publicly traded companies, which are the main object of investment of these financial institutions. This pressure arises mainly through the development of mechanisms for assessing corporate performance based on ESG criteria, alongside the traditional evaluation of financial statements. These assessment instruments are generally categorized into indexes, rankings, or independent sustainability evaluations, commonly referred to as ratings. Consequently, companies are expected to adopt sustainable practices in their operations and report these practices using various sustainability management and disclosure frameworks. Examples of such disclosures include the Global Reporting Initiative (GRI, 2025) and the Sustainability Accounting Standards Board (SASB, 2025).

Sustainability indexes promoted and managed by stock exchanges are designed to monitor the performance of ESG investment portfolios in comparison to financial market benchmark indexes. These portfolios comprise shares or other securities traded by com-

panies that present the most sustainable practices within the universe of companies listed on the respective stock exchange (Reale et al., 2018). To legitimize their efforts toward sustainable development, companies seek inclusion in such indexes (Siew, 2015); examples include the Dow Jones Sustainability Index (DJSI) and the FTSE4Good Index. In Brazil, companies listed on the IBOV index of the São Paulo stock exchange, B3, can apply for the assessment process of the B3 Corporate Sustainability Index (ISE) (ISE B3, 2022c). The primary objective of the ISE is to quantitatively evaluate and recognize the most sustainable companies, serving as a guide for investors. The ISE also encourages companies to adopt better ESG practices so that they attract greater interest from investors (Marcondes & Bacarji, 2010).

Studies in the literature examine the relationship between corporate sustainability and financial performance (Alshehhi et al., 2018; Badía et al., 2020; Prado et al., 2019), suggesting great researchers' interest in understanding the factors that justify companies' adherence to sustainability indexes or assessments. However, there is still no consensus regarding the direction and intensity of this relationship—Does corporate sustainability lead to higher financial performance? This type of question primarily serves the interests of shareholders, who are naturally the most concerned with financial performance. This aligns with Shareholder Theory (Friedman, 1962, 1970), which defends the generation of profit for shareholders as the primary function of companies. Conversely, Stakeholder Theory (Freeman, 1984) has had a great influence across several business-related disciplines and serves as a counterpoint to the first, arguing that corporate responsibility extends beyond shareholders, and companies must strive to balance the expectations of multiple stakeholders, including employees, governments, and society. There are still few studies that consider the perspective of Stakeholder Theory in financial accounting (Hörisch et al., 2020), in the sense of proposing accounting methods more aligned with the interests of stakeholders. Thus, space is opened for research that evaluates the impact of sustainability not only focused on the investor-focused financial perspective but also from the standpoint of other stakeholders.

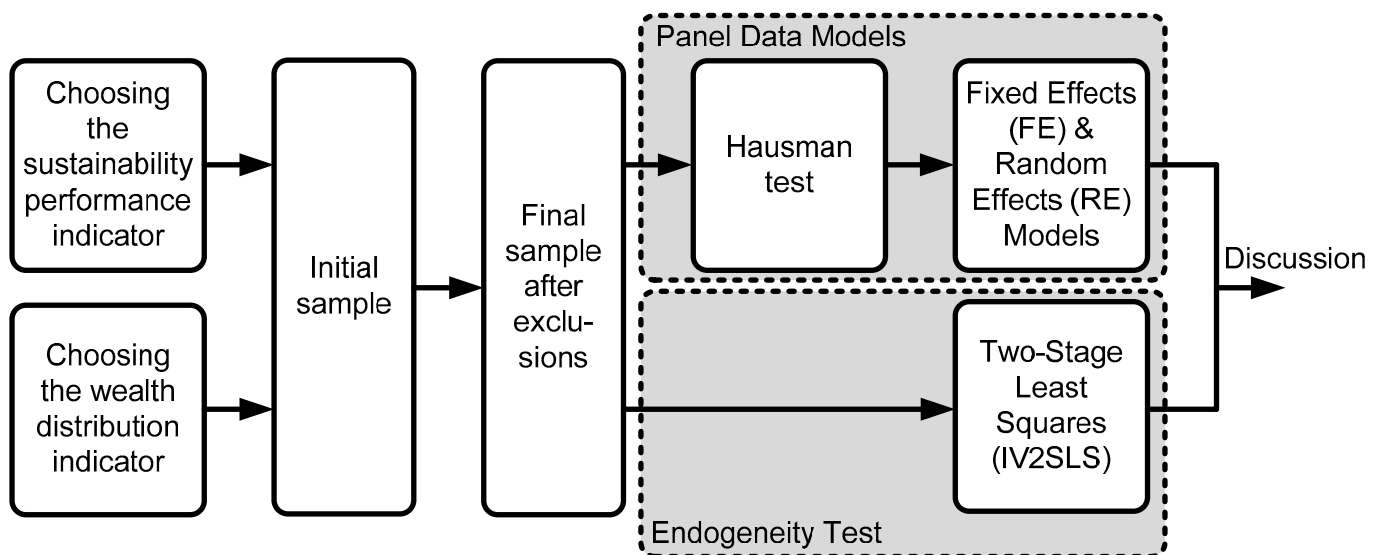
In order to reduce this information gap, from the 1970s onward, the concept of Added Value began to be used in corporate performance reports, with the disclosure of the Statement of Added Value (SAV) alongside traditional financial reports such as the Balance Sheet and the Income Statement. The main objective of the SAV is to show the value created by the company's activities and its distribution among various stakeholders, including shareholders, creditors, government, and employees (Hossain, 2017). In Brazil, the SAV is part of the so-called standardized financial statements (SFSs) and its disclosure is mandatory for publicly traded companies. Focusing on stakeholders, a component of the SAV is the Distributed Added Value (DAV), which shows how the wealth generated by the company is allocated. Few studies have evaluated the relationship between corporate sustainability and added value for stakeholders in Brazil. Among these studies, Sousa and Faria (2018) analyzed indicators derived from the SAV for two groups: one consisting of ISE-B3 companies and the other of non-ISE-B3 companies. Data from the period between 2014 and 2018 were analyzed, and no significant differences were found in the distribution of value between the two groups. In a similar study, Oliveira et al. (2024) evaluated the wealth distribution of the 36 Brazilian companies with the highest revenue in 2019. The classification of companies as ISE or non-ISE was used as a moderating factor, along with their economic sector. The results showed that there was no significant difference between ISE and non-ISE companies regarding the total wealth variable.

Given the limited number of studies on this topic, there remains ample opportunity for further research on the impact of sustainability on the generation and distribution of wealth in companies in the ISE-B3 index, using other methods and considering more recent

data. Thus, this study aims to quantitatively assess the relationship between corporate sustainability as measured by the ISE-B3, and DAV which represents the portion of the SAV effectively allocated among stakeholders. The objective is to address the following research question: Does corporate sustainability, as measured by the ISE-B3 index, have a causal impact on economic performance (measured by DAV) of companies? This work contributes to deepening discussions on the relationship between the ISE-B3 index and economic-financial performance, specifically those related to the generation of wealth by companies and its distribution among stakeholders.

## 2. Methods

To provide a better understanding of the methodological steps applied, Figure 1 presents the macro activities developed to answer the guiding research question of this study. The first step involves selecting the indicators used to represent the economic-financial performance and sustainability performance of the companies under study. Next, the initial sample of companies to be analyzed is defined in order to obtain the previously defined indicators. A refinement of the sample is necessary due to exclusions resulting from missing data, apparently inconsistent data, and the identification of outliers. Finally, the data from the final sample are used in the econometrics tools, including panel data models and endogeneity test. All these steps are presented in detail in the following subsections.



**Figure 1.** Representative scheme of the methodological steps applied in this study.

### 2.1. Choosing the Sustainability Performance Indicator

The sustainability performance indicator used refers to the overall score received by a company in the selection process for participation in the ISE-B3, known as the ISE-B3 score. The values of this indicator, by company, can be obtained on B3's ESG Workspace platform (ESG WORKSPACE, 2023). Until 2021, B3 only made available the list of companies classified for the ISE-B3 portfolio, and it was not possible to verify the individual score by company. As of 2022, the individual score by ISE-B3 company became available, along with individual performance in the following dimensions: "human capital", "corporate governance and senior management", "business model and innovation", "social capital", "environment" and "climate change". This represents an important change in the level of disclosure and transparency by B3, allowing the study of possible correlations between the variables made available.

## 2.2. Choosing the Distribution of Wealth Created Indicator

According to [Drempetic et al. \(2020\)](#), one of the main reasons for the large number of inconclusive studies on the relationship between sustainability and financial performance is the lack of attention given to moderating factors, which can influence this relationship. Similarly, [Lassala et al. \(2017\)](#) argue that one of the factors contributing to the lack of consensus in the literature on the influence of sustainability on financial performance is the failure to include control variables such as firm size, risk, and sector to which the company belongs.

Due to the fact that Distributed Added Value (DAV) is the only type of standardized financial statement focused on stakeholders, and the fact that its publication has been mandatory for publicly traded Brazilian companies since 2007 (according to Brazilian Law 11.638/07), it is considered as a reference for the selection of indicators capable of informing the wealth distributed to the following: (i) workers; (ii) government and society, (iii) creditors; and (iv) shareholders/owners. To this end, this study considers the four DAV indicators, as per [Table 1](#), for the analyses.

**Table 1.** DAV indicators by group of stakeholders.

Stakeholders	DAV Indicators
Workers	Personnel and Expenses
Government and society	Taxes, Fees and Contributions
Creditors	Remuneration of Third-party Capital
Shareholders/Owners	Remuneration of Equity Capital

As a proxy to represent the size of companies, the Revenue indicator was chosen as provided by the Statement of Added Value (SAV). This is important for the purposes of standardizing data and making companies with different economic capacities comparable. The use of indicators obtained from the DAV also offers the following advantages: (i) all data are quantitative; (ii) the standardization of the DAV enables high comparability; and (iii) ease and speed in obtaining data. It is important to mention that the criterion used to select the indicators is also based on their previous use in the studies by [Hirigoyen and Poulain-Rehm \(2015\)](#) and [Fernández-Guadaño and Sarria-Pedroza \(2018\)](#), indicating their importance in representing the distribution of wealth within the company.

## 2.3. Initial Sample

The initial sample used in this study consists of all companies belonging to the ISE-B3 portfolios in effect in 2022, 2023 and 2024. Regarding the study period, the choice was limited to these three portfolios because they are the only ones for which B3 had made available quantitative data regarding the ISE-B3 score by the time this work was completed. The portfolio in effect in each year refers to company performance data for the previous year, at the time of the selection process for the index. The ISE-B3 2022 portfolio included a total of 48 companies when it came into effect, representing 27 sectors; the 2023 portfolio had 68 companies at the beginning of 2023, covering 27 sectors; and the 2024 portfolio had 78 companies at the beginning of 2024, covering 36 sectors.

For this initial sample, the ISE-B3 score values were obtained from the B3 ESG workspace platform ([ISE B3, 2022a](#)). [Table 2](#) presents the procedures on how these data were obtained. The values referring to the Revenue, Distributed Added Value variables, as well as the values of each of their components were obtained from the standardized financial statements (SFS), available on the companies' websites, consulting the SAVs of each company in the sample for the years 2021, 2022, and 2023.

**Table 2.** Procedure on how primary data were obtained.

Indicator	Source	How Data Was Obtained
Net revenue	Income Statement (IS)	Access the company's website in the Investor Relations section. Then, navigate to the Results Center section and download the standardized financial statements file (TFC/SFS) for the period under study. In this document, refer to the Income Statement (IS).
Distributed added value (DAV), including Personnel and Expenses, Taxes, Fees and Contributions, Remuneration of Third-Party Capital, Remuneration of Equity Capital	Statement of Added Value (SAV)	Access the company's website in the Investor Relations section. Then, navigate to the Results Center section and download the standardized financial statements file (TFC/SFS) for the period under study. In this document, refer to the Statement of Added Value (SAV).

#### 2.4. Final Sample

After obtaining the sustainability performance values and those corresponding to the indicators presented in Tables 1 and 2 for all companies in the ISE-B3 2022, 2023, and 2024 portfolios, the following exclusion criteria were applied:

- Excluding all companies in the financial and insurance sectors. According to Pérez-Calderón et al. (2012) and Fernández-Guadaño and Sarria-Pedroza (2018), comparing their information with that of other sectors is complex (when possible) due to the peculiarities of their financial reporting standards. Another justification is that the SAV for companies in these sectors has a different structure from that used for all other sectors (Melo, 2021).
- All companies in a portfolio that, during the period of its validity, received the classification called 'in a special situation', according to the ISE-B3 Guidelines (ISE B3, 2022b) were excluded. This includes companies that entered into judicial recovery proceedings.
- Companies that presented incomprehensible and/or non-standard data in the SAV were excluded, according to the authors' experience. For example, data that was apparently incorrect and/or without explanations or comments to justify it were excluded.
- Companies that had problems obtaining SAV on their websites; difficult access to information.
- Outliers were excluded based on the authors' experience through visual inspection of box-plot diagrams of total sample, considering each variable per revenue category. The variables included DAV, Personal and Expenses, Taxes, Fees and Contribution, Remuneration of Third-party Capital, and Remuneration of Equity Capital.

The purpose of exclusions is to ensure the highest quality of primary data to support robust conclusions. After the exclusions, the initial sample of the 2022 ISE-B3 portfolio was reduced from 48 to a final sample of 35 companies, as shown in Table 3. For the 2023 ISE-B3 portfolio, the initial sample of 66 companies had 15 exclusions based on the same criteria applied to the 2022 portfolio, resulting in a final sample of 51 companies. For the 2024 ISE-B3 portfolio, the initial sample of 78 companies was reduced to a final sample of 63 companies.

Appendix A contain all primary data from the final sample considered in this study, including data on the ISE-B3 score, Distributed Added Value (DAV)/Revenue, Personnel and Expenses/Revenue, Taxes, Fees, and Contributions/Revenue, Remuneration of Third-Party Capital/Revenue, and Remuneration of Equity Capital/Revenue.

**Table 3.** Details about the samples considered in the study.

Samples and Exclusions	Number of Companies in ISE-B3		
	Portfolio 2022 (2021 Base Year)	Portfolio 2023 (2022 Base Year)	Portfolio 2024 (2023 Base Year)
Initial sample	48	66	78
Exclusions:	13	15	15
Insurance financial sector	8	9	9
Special situation (judicial recovery)	1	-	-
No information from the SAV	1	4	3
Outliers	2	2	-
Questionable data	1	-	3
Final sample	35	51	63

### 2.5. Assessing the Relationship Between Sustainability and Economic Indicators: Econometric Tools

To address the research question derived from this study (Does corporate sustainability, as measured by the ISE-B3 index, have a causal impact on the economic performance of companies?), various econometric approaches can be applied depending on the challenges presented by the available data. For instance, panel data models such as Fixed Effects (FE) and Random Effects (RE) (Wooldridge, 2010) are commonly used, as well as techniques that control for potential endogeneity, including Instrumental Variables with Two-Stage Least Squares (IV-2SLS) (Angrist & Pischke, 2008) and dynamic panel models with the Generalized Method of Moments (GMM) (Arellano & Bond, 1991). Additional methods such as quantile regression and machine learning models could also be considered, alongside robustness and specification tests like the Hausman test, the Durbin-Wu-Hausman test for endogeneity, and the Breusch-Pagan test for heteroskedasticity.

To enhance the robustness of the methodological choices adopted in this study, the following subsections are organized as follows. The first subsection provides a theoretical discussion on the econometric methods, with a particular focus on endogeneity issues and the rationale behind the selected approaches. The second subsection presents, in a more objective and operational manner, the specific econometric procedures applied to address the research question and achieve the objectives of this study.

#### 2.5.1. About the Endogeneity Sources and Instrument Validity

A critical methodological challenge in estimating the relationship between corporate sustainability (ISE-B3) and stakeholder-oriented economic performance (DAV) is the potential for endogeneity. This concern arises primarily from two sources: reverse causality and omitted variable bias. Reverse causality may occur because companies that achieve higher levels of wealth distribution to stakeholders as measured through DAV might consequently have more financial slack or reputational incentives to invest in sustainability-related initiatives, thereby improving their ISE-B3 scores in subsequent periods. This feedback loop could bias conventional estimators if not properly addressed.

Furthermore, omitted variable bias is another plausible source of endogeneity. Unobserved firm-specific factors such as managerial quality, corporate culture, long-term strategic orientation, or sector-specific dynamics could simultaneously influence both a company's sustainability performance and its stakeholder-related economic outcomes. Without accounting for these factors, estimation models might erroneously attribute their influence to the sustainability indicator.

Given these risks, this study adopts the Instrumental Variables Two-Stage Least Squares (IV-2SLS) model as the primary estimation strategy, as it is capable of provid-

ing consistent estimators in the presence of endogeneity. The chosen instrument is the lagged value of the ISE-B3 score, based on the assumption that a firm's past sustainability performance strongly predicts its current ISE-B3 score due to the persistent and strategic nature of ESG-related practices. Simultaneously, it is reasonable to assume that the lagged ISE-B3 does not directly influence the current level of DAV except through its effect on present sustainability practices; this satisfies the exclusion restriction necessary for a valid instrument. The validity of this instrument relies on two standard econometric conditions. First, the relevance condition, meaning that the lagged ISE-B3 must be strongly correlated with the current ISE-B3 score. This assumption holds, given the observed persistence in ESG scores in corporate practice, where sustainability-related policies tend to be stable over time. Second, the exogeneity condition, meaning that the lagged ISE-B3 should be uncorrelated with the error term in the DAV regression. This is justified on theoretical grounds because, while past sustainability practices affect current ESG performance, they are unlikely to be directly influenced by contemporaneous shocks to DAV, particularly after controlling for firm revenue as a size proxy.

Although its use is justified, it is important to recognize that IV-2SLS comes with a known trade-off. While it mitigates the bias arising from endogeneity, it typically results in lower estimation efficiency compared to FE or RE models, especially when instruments are only moderately correlated with the endogenous variable. Nonetheless, this trade-off is justified in this context, as ignoring endogeneity could lead to incorrect inferences about the relationship between sustainability and wealth distribution.

Anyhow, this modeling strategy aligns with best practices recommended in the econometrics literature ([Angrist & Pischke, 2008](#); [Wooldridge, 2010](#)) and mirrors approaches adopted in prior empirical studies on corporate sustainability ([Hirigoyen & Poulain-Rehm, 2015](#)). Nonetheless, we acknowledge a limitation in the use of a single lagged value as an instrument. Ideally, additional instruments such as external shocks, regulatory changes, or sector-specific ESG events could improve instrument strength. This limitation is explicitly noted in the discussion section as a direction for future research.

### 2.5.2. Model Selection and Estimation Procedure

Based on the conceptual foundation discussed above, the IV-2SLS model is adopted as the primary estimation strategy in this study, as it directly addresses potential endogeneity concerns, particularly those arising from reverse causality and time-varying omitted variables, which cannot be fully mitigated by panel data models alone. The lagged ISE-B3 score is used as an instrumental variable for the current ISE-B3, as previously explained.

To verify the robustness of the IV-2SLS results, the panel data models Fixed Effects (FE) and Random Effects (RE) are estimated. These models serve as robustness checks rather than primary estimation strategies. While the FE model controls for time-invariant unobserved heterogeneity, and the RE model assumes no correlation between unobserved effects and the explanatory variables, neither addresses endogeneity resulting from contemporaneous feedback effects or time-varying omitted variables. The Hausman test is applied solely to determine whether FE or RE should be used for the robustness checks. If the test suggests that the individual effects are correlated with the explanatory variables, the FE model is preferred; otherwise, the RE model is more efficient and consistent under the assumption of no correlation. Regardless of the Hausman test outcome, the IV-2SLS results are prioritized as the main evidence for evaluating the research hypotheses, given their ability to account for endogeneity.

For all econometric analyses considered in this study (including Hausman test, FE, RE, and IV2SLS), the ChatGPT (GPT-4o version) artificial intelligence tool ([OpenAI, 2025](#)) was used to assist in writing the Python programming scripts required for the tests (Sup-

plementary Materials). No statistical software was used. Finally, the programming scripts were executed using the IDLE environment in Python version 3.13, utilizing data from Appendix A.

### 3. Results and Discussions

The results presented in this section are primarily based on the Instrumental Variables Two-Stage Least Squares (IV-2SLS) model, which was adopted as the main estimation strategy due to the potential presence of endogeneity, particularly reverse causality and time-varying omitted variables. To assess the robustness of these results, panel data models (Fixed Effects (FE) and Random Effects (RE)) are also estimated. These models serve exclusively as robustness checks to verify whether the main results hold under alternative assumptions regarding unobserved heterogeneity.

#### 3.1. Main Results: IV-2SLS Model

According to the results in Table 4, the IV-2SLS estimations indicate that all dependent variables exhibit strong temporal dependence, as the lagged variable coefficients (L1) are high and statistically significant ( $p < 0.001$ ). This outcome suggests that the financial revenue variables analyzed are largely driven by their own past values, confirming the presence of persistent financial dynamics within the sample. The models show good fits, with  $R^2$  values ranging from 0.433 to 0.898. The variables Personal and Expenses, Third-Party Capital, and Taxes, Fees and Contribution exhibit the highest  $R^2$ , indicating that the model effectively captures the variance in these components. In contrast, Equity Capital presents the lowest explanatory power ( $R^2 = 0.433$ ), suggesting that additional factors beyond those included in the model may influence this variable.

**Table 4.** IV2SLS test results.

Dependent Variable/Revenue	Coefficient ISE-B3	<i>p</i> -Value (ISE-B3)	Lagged Coefficient (L1)	<i>p</i> -Value (L1)	$R^2$
DAV	−0.0006	0.896	0.9628	0.000	0.765
Personal and Expenses	−0.0004	0.644	0.9986	0.000	0.898
Taxes, Fees and Contributions	0.0003	0.873	0.8295	0.000	0.855
Third-party capital	−0.0027	0.126	1.3578	0.000	0.845
Equity Capital	0.0027	0.422	1.0226	0.004	0.433

Data from Appendix A. Complete results and the Python script are available in the Supplementary Materials S.M.1 and S.M.2.

Furthermore, to ensure the validity of the IV-2SLS estimation, we tested the strength of the instrumental variable (Supplementary Material S.M.3). The first-stage regression yields an F-statistic of 174.2, which is substantially higher than the conventional threshold of 10 recommended by [Staiger and Stock \(1997\)](#) to rule out concerns regarding weak instruments. This result confirms that the lagged ISE-B3 is a strong and relevant instrument, providing robust predictive power for the endogenous regressor (current ISE-B3). Consequently, weak instrument bias is not a concern in this estimation.

The analysis of the ISE-B3 coefficient reveals that it is not statistically significant in any of the five regressions, with *p*-values ranging from 0.126 to 0.896. This indicates that the ISE-B3 sustainability index does not exert a meaningful direct impact on the financial revenue variables analyzed within the proposed model. Thus, there is no robust empirical evidence that participation in the ISE-B3 index is associated with how companies generate or distribute financial revenues across the categories considered.

The high and significant lagged coefficients further reinforce the persistence of financial variables over time. Notably, Third-Party Capital exhibits the highest lagged coefficient (1.3578), suggesting that this variable is particularly sensitive to past financial patterns compared to the others.

The dynamic structure of the IV-2SLS model, evidenced by the high coefficients on the lagged dependent variables, raises potential concerns regarding non-stationarity. Although the short time span of the panel ( $T = 3$ ) limits the statistical power of formal unit root tests, we re-estimated the main regression using first differences of both DAV and ISE-B3 as a robustness check. This transformation helps control for underlying trends while mitigating potential bias from non-stationary behavior, albeit at the cost of some estimation efficiency. The results (Supplementary Material S.M.4) confirm that the core findings remain unchanged: changes in ISE-B3 do not significantly explain changes in DAV (coefficient = 0.0051;  $p = 0.334$ ). This supports the robustness of the main conclusion that corporate sustainability performance, as measured by ISE-B3, does not exert a direct short-term causal influence on stakeholder value distribution.

Overall, the results indicate that the financial dynamics of the companies are predominantly explained by historical trends rather than by current sustainability index performance. While the IV-2SLS model demonstrates a solid fit for most financial revenue variables, the ISE-B3 index does not emerge as a statistically significant determinant within this estimation framework.

### 3.2. Robustness Checks: Panel Data Models (Hausman Test and RE Model)

To verify the robustness of the IV-2SLS results, the panel data models Fixed Effects (FE) and Random Effects (RE) are employed. These models do not address endogeneity related to reverse causality or time-varying omitted variables but are useful for testing whether the direction and magnitude of coefficients are consistent under alternative assumptions regarding error structure.

#### 3.2.1. Hausman Test

The Hausman test was applied to determine whether the FE or RE model would be more appropriate for the robustness checks. The test yielded a Chi-square statistic of 5.600978 with a  $p$ -value of 0.347 (Table 5). Since this  $p$ -value is well above the conventional significance level of 0.05, the null hypothesis (i.e., that the RE estimator is consistent) cannot be rejected. Consequently, the RE model is preferred for robustness purposes, offering more efficient estimates when the assumption of no correlation between individual effects and regressors holds.

**Table 5.** Hausman test results.

Variable per Revenue	Coefficient FE	Coefficient RE	FE-RE	Chi-Square	$p$ -Value
DAV	92.765459	69.875592	22.889868	-	-
Personal and Expenses	-151.631736	-93.213232	-58.418504	-	-
Taxes, Fees and Contributions	-112.165633	-57.251380	-54.914253	-	-
Third-Party Capital	-96.152642	-73.775773	-22.376869	-	-
Equity Capital	-102.175593	-68.024906	-34.150687	-	-
Hausman test	-	-	-	5.600978	0.347

Data from Appendix A. The Python script is available in the Supplementary Material S.M.5.

#### 3.2.2. Results from the Random Effects (RE) Model

According to results of Table 6, the RE model indicate that the ISE-B3 index does not exhibit a statistically significant relationship with any of the analyzed revenue variables. For DAV, the coefficient is  $-0.0007$  ( $p = 0.7115$ ), while for Taxes, Fees and Contributions, the coefficient is  $0.0003$  ( $p = 0.7256$ ), and for Third-Party Capital,  $-0.0016$  ( $p = 0.2571$ ). None of these are statistically significant. The only variable showing marginal significance is Personal and Expenses, with a coefficient of  $-0.0009$  ( $p = 0.0898$ ), suggesting a weak

negative relationship. However, even in this case, the  $R^2$  is very low (0.0306), limiting the explanatory power.

The  $R^2$  values across the RE model range from  $-0.0024$  to  $0.0306$ , confirming that the model explains very little of the variance in the dependent variables. This reinforces that the RE model, while methodologically adequate for robustness, lacks explanatory strength in this context.

**Table 6.** Random effects (RE) test results.

Variable per Revenue	Coefficient ISE-B3	<i>p</i> -Value	$R^2$ (Overall)	Significance?
DAV	$-0.0007$	0.7115	$-0.0024$	No
Personal and Expenses	$-0.0009$	0.0898	0.0306	Marginal
Taxes, Fees and Contributions	0.0003	0.7256	0.0107	No
Third-party Capital	$-0.0016$	0.2571	0.0190	No
Equity Capital	0.0016	0.4276	0.0104	No

Data from Appendix A. Complete results and the Python script are available in the Supplementary Materials S.M.6 and S.M.7.

### 3.3. Discussion of Findings

The results from the IV-2SLS model adopted as the main estimation strategy clearly indicate that the ISE-B3 sustainability index does not have a statistically significant impact on the financial revenue variables analyzed. This conclusion holds even after correcting for potential endogeneity, including reverse causality and omitted variable bias.

A methodological consideration arises from the high lagged coefficients observed in the IV-2SLS estimations. While this result confirms the strong temporal persistence of financial variables, it may also indicate potential non-stationarity issues. Given the short time span of the panel, formal testing for unit roots is not feasible with sufficient statistical power. This limitation is common in short panels and should be addressed in future studies with extended datasets, which would enable more robust analysis of the long-term dynamic properties of the data.

The robustness checks using the RE model further support this finding, as none of the regressions yield significant coefficients, with the sole exception of a marginal relationship with Personal and Expenses, which is not confirmed in the IV-2SLS estimation.

Furthermore, the strong lagged dependence observed in all financial variables (with coefficients ranging from  $0.8295$  to  $1.3578$   $p < 0.001$ ) highlights that historical financial patterns are the primary drivers of current financial outcomes. This persistence is consistent with the literature (Wooldridge, 2010) and indicates that firm financial dynamics are structurally embedded over time.

These results align with previous studies suggesting that the direct financial impact of corporate sustainability is often ambiguous, context-dependent, and typically materializes over the long term. For example, the meta-analyses developed by Margolis and Walsh (2003) and Friede et al. (2015) suggest that, while ESG practices can contribute to risk management and reputation, their immediate effects on financial metrics are often limited. Similar conclusions were reached by Freguete et al. (2015) and Ates (2020), both of whom found no significant financial advantage associated with participation in sustainability indices in the Brazilian and Turkish markets, respectively. Likewise, Cerciello et al. (2022) highlight that ESG adoption may even reduce short-term profitability due to strategic behaviors such as greenwashing or social washing.

On the other hand, some studies as that of Eccles et al. (2014), Bodhanwala and Bodhanwala (2018), and Chang and Kuo (2008) reported positive relationships between sustainability performance and long-term financial outcomes, particularly when ESG practices are deeply integrated into business strategy rather than pursued superficially.

In the Brazilian context, the findings of this study suggest that participation in the ISE-B3 index is likely driven more by regulatory compliance, reputational signaling, or risk management than by a strategy focused on improving short-term economic performance. This aligns with the broader understanding that ESG benefits tend to accrue over longer horizons and may not be immediately reflected in financial revenue distribution.

Methodologically, the IV-2SLS model was essential to address endogeneity, particularly concerning reverse causality and omitted variable bias. However, the analysis faces limitations related to the restricted time span of the ISE-B3 dataset (2022, 2023, 2024) and the lack of key firm-level control variables, such as profitability, firm size, capital structure, and sectoral fixed effects. These omissions may limit the explanatory power of the models, especially regarding sector-specific dynamics in a heterogeneous market like Brazil. Nevertheless, the strong temporal dependence captured in the models partially mitigates the absence of time-invariant firm characteristics, and the econometric strategy adopted adequately controls for major endogeneity concerns.

Future research should address these limitations by expanding the time horizon as more ISE-B3 data becomes available, incorporating firm-level controls and sectoral disaggregation, and applying alternative econometric techniques such as dynamic panel models (e.g., GMM) to better capture intertemporal relationships. Disaggregating the analysis by industry is particularly relevant, as ESG implementation and its financial impacts can vary significantly across sectors due to differences in regulatory pressures, stakeholder expectations, and operational characteristics. However, the current study's limited sample size and short time span constrain the feasibility of such an approach at this stage. Additionally, leveraging identification strategies based on natural experiments or external shocks could further strengthen causal inferences about the relationship between corporate sustainability and stakeholder-oriented financial outcomes.

#### 4. Conclusions

This study investigated whether corporate sustainability, as measured by the ISE-B3 index, has a causal influence on the economic performance of Brazilian listed companies, specifically regarding the distribution of value to stakeholders (DAV). Using the IV-2SLS model as the primary estimation strategy to address potential endogeneity issues, the results show no statistically significant causal relationship between corporate sustainability and DAV over the analyzed period. Specifically, the estimated coefficient of ISE-B3 on DAV was  $-0.0006$  ( $p = 0.896$ ), indicating no measurable impact. Similar non-significant results were found for the four components of DAV, with  $p$ -values ranging from 0.126 to 0.896.

These results are further supported by robustness checks using panel data model, which yield directionally consistent but statistically weak results, with all  $p$ -values exceeding 0.1. The models demonstrate good explanatory power regarding the temporal dynamics of the financial variables, with  $R^2$  values ranging from 0.433 for Equity Capital to 0.898 for Personal and Expenses, largely driven by the strong persistence observed in the lagged dependent variables.

Overall, the results suggest that, within the Brazilian context, participation in the ISE-B3 index does not directly influence how companies distribute value to stakeholders. Instead, financial dynamics are primarily explained by the historical patterns of the companies rather than their sustainability index performance. This result indicates that ESG practices may be driven more by reputational, regulatory, or risk management motives than by direct financial returns related to stakeholder wealth distribution.

Further research is encouraged to refine this analysis by expanding the time horizon, incorporating firm-level control variables (e.g., profitability, firm age, industry effects, and

capital structure), and applying alternative econometric strategies capable of capturing dynamic and sector-specific effects.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/admsci15060234/s1>, S.M.1. Python programming scripts for the IV2SLS test; S.M.2. IV2SLS Regression Results; S.M.3. First-stage F statistics; S.M.4. Robustness check using first-differenced regression; S.M.5. Python programming scripts for the Hausman test; S.M.6. Python programming scripts for the random effects (RE) tests; S.M.7. Random Effects Estimation Summary.

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## Appendix A

**Table A1.** Final sample data for the 2022 ISE-B3 Portfolio (2021 data, 35 companies, units: dimensionless).

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
WEG S.A.	62.78	0.46	0.20	0.10	0.03	0.14
AZUL S.A.	58.89	0.24	0.14	0.06	0.45	−0.41
RUMO S.A.	71.12	0.39	0.13	0.01	0.24	0.02
IOCHPE MAXION S.A.	58.24	0.28	0.17	0.07	0.03	0.01
MAGAZINE LUIZA S.A.	61.47	0.38	0.06	0.09	0.03	0.20
VIA VAREJO S.A.	61.97	0.16	0.14	−0.02	0.04	−0.01
LOJAS RENNER S.A.	85.13	0.41	0.12	0.18	0.05	0.06
MRV ENGENHARIA E PARTICIPACOES S.A.	62.97	0.43	0.15	0.11	0.06	0.12
AREZZO INDÚSTRIA E COMÉRCIO S.A.	64.39	0.29	0.09	0.00	0.03	0.17
M.DIAS BRANCO S.A. IND COM DE ALIMENTOS	69.87	0.27	0.12	0.06	0.04	0.06
BRF S.A.	72.79	0.20	0.11	0.09	0.07	−0.06

Table A1. Cont.

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
MARFRIG GLOBAL FOODS S.A.	69.23	0.29	0.09	0.04	0.09	0.08
MINERVA S.A.	63.46	0.13	0.02	0.00	0.05	0.05
CIA BRASILEIRA DE DISTRIBUICAO	74.05	0.21	0.13	−0.03	0.06	0.05
SimPAR S.A.	63.53	0.48	0.15	0.12	0.13	0.09
DURATEX S.A.	74.55	0.40	0.09	0.07	0.03	0.22
KLABIN S.A.	80.81	0.43	0.09	0.09	0.08	0.16
SUZANO S.A.	78.79	0.62	0.06	0.02	0.36	0.19
BRASKEM S.A.	76.69	0.32	0.02	0.10	0.09	0.11
COSAN S.A.	74.58	0.43	0.05	0.05	0.13	0.21
PETROBRAS DISTRIBUIDORA S/A	72.66	0.63	0.05	0.30	0.12	0.16
RAIA DROGASIL S.A.	67.29	0.29	0.10	0.13	0.03	0.03
FLEURY S.A.	74.27	0.50	0.22	0.14	0.06	0.08
TELEFÔNICA BRASIL S.A	81.71	0.46	0.08	0.21	0.06	0.10
TIM S.A.	77.18	0.53	0.04	0.24	0.13	0.12
AMBIPAR PARTICIPACOES E EMPREENDIMENTOS S/A	79.04	0.62	0.30	0.18	0.06	0.08
CIA ENERGETICA DE MINAS GERAIS—CEMIG	73.42	0.44	0.03	0.27	0.07	0.08
CIA PARANAENSE DE ENERGIA—COPEL	77.54	0.52	0.05	0.33	0.03	0.10
CPFL ENERGIA S.A.	81.99	0.44	0.03	0.29	0.04	0.09
EDP—ENERGIAS DO BRASIL S.A.	90.25	0.33	0.02	0.23	0.06	0.03
LIGHT S.A.	64.11	0.46	0.02	0.35	0.08	0.02
NEOENERGIA S.A.	77.00	0.42	0.03	0.26	0.11	0.02
AES BRASIL ENERGIA S.A.	74.74	0.19	0.03	−0.11	0.13	0.13
CENTRAIS ELET BRAS S.A.—ELETROBRAS	65.04	0.53	0.11	0.20	0.11	0.11
ENGIE BRASIL ENERGIA S.A.	78.22	0.48	0.03	0.17	0.17	0.11

Table A2. Final sample data for the 2023 ISE-B3 Portfolio (2022 data, 51 companies, units: dimensionless).

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
AES BRASIL ENERGIA S.A.	80.16	0.28	0.03	0.09	0.11	0.05
AREZZO INDÚSTRIA E COMÉRCIO S.A.	75.93	0.25	0.11	−0.01	0.03	0.12
AZUL S.A.	73.60	0.27	0.10	0.05	0.16	−0.04
BRASKEM S.A.	76.97	0.14	0.02	0.06	0.06	−0.01
BRF S.A.	76.19	0.28	0.10	0.10	0.07	0.01
CENTRAIS ELET BRAS S.A.—ELETROBRAS	78.82	0.57	0.15	0.13	0.21	0.08
CIA BRASILEIRA DE DISTRIBUICAO	77.93	0.21	0.12	0.00	0.09	−0.01

Table A2. Cont.

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
CIA PARANAENSE DE ENERGIA—COPEL	81.17	0.47	0.04	0.31	0.09	0.04
COSAN S.A.	75.78	0.40	0.04	0.08	0.22	0.06
CPFL ENERGIA S.A.	84.87	0.51	0.04	0.28	0.09	0.09
DURATEX	77.62	0.33	0.10	0.04	0.09	0.10
EDP—ENERGIAS DO BRASIL S.A.	89.99	0.41	0.02	0.26	0.09	0.04
ENGIE BRASIL ENERGIA S.A.	82.71	0.60	0.03	0.19	0.18	0.20
FLEURY S.A.	75.90	0.52	0.23	0.12	0.10	0.06
IOCHPE MAXION S.A.	70.91	0.25	0.14	0.07	0.04	0.01
CIA ENERGETICA DE MINAS GERAIS—CEMIG	78.89	0.43	0.04	0.24	0.07	0.09
KLABIN S.A.	86.04	0.41	0.09	0.11	0.03	0.19
LOJAS RENNER S.A.	86.65	0.45	0.10	0.19	0.06	0.10
M.DIAS BRANCO S.A. IND COM DE ALIMENTOS	77.41	0.24	0.10	0.05	0.05	0.04
MAGAZINE LUIZA S.A.	76.48	0.44	0.07	0.09	0.06	0.21
MARFRIG GLOBAL FOODS S.A.	77.89	0.28	0.08	0.04	0.14	0.02
MINERVA S.A.	68.22	0.07	0.02	−0.02	0.03	0.04
MOVIDA PARTICIPACOES SA	70.36	1.23	0.01	−0.12	0.77	0.56
MRV ENGENHARIA E PARTICIPACOES S.A.	74.33	0.36	0.18	0.12	0.08	−0.02
RAIA DROGASIL S.A.	76.01	0.25	0.10	0.08	0.04	0.03
RUMO S.A.	74.80	0.53	0.09	0.08	0.31	0.04
SIMPAR S.A.	63.76	0.41	0.12	0.05	0.20	0.03
SUZANO S.A.	81.80	0.61	0.05	0.01	0.18	0.37
GRENDENE S.A.	69.02	0.54	0.22	0.08	0.04	0.20
TELEFÔNICA BRASIL S.A	87.67	0.45	0.09	0.21	0.09	0.07
TIM S.A.	82.16	0.50	0.04	0.23	0.16	0.07
USINAS SID DE MINAS GERAIS S.A.-USIMINAS	66.02	0.24	0.03	0.15	0.02	0.05
VIA S.A	64.44	0.18	0.09	0.01	0.08	−0.01
AMBEV S.A.	63.23	0.50	0.06	0.25	0.07	0.13
IRANI PAPEL E EMBALAGEM S.A.	75.54	0.52	0.11	0.16	0.08	0.18
CTEEP—CIA TRANSMISSÃO ENERGIA ELÉTRICA PAULISTA	80.28	0.78	0.06	0.20	0.16	0.37
GUARARAPES CONFECÇOES S.A.	68.71	0.45	0.19	0.08	0.16	0.03
VAMOS LOCAÇÃO DE CAMINHÕES, MÁQUINAS E EQUIP. S.A.	63.64	0.98	0.06	0.06	0.53	0.32
ALIANSCOE SONAE SHOPPING CENTERS S.A.	68.17	0.71	0.09	0.09	0.34	0.19
GAFISA S.A.	59.10	1.05	0.30	0.25	1.03	−0.52
HYPERA S.A.	66.21	0.46	0.10	0.00	0.14	0.21

Table A2. Cont.

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
AERIS IND. E COM. DE EQUIP. GERACAO DE ENERGIA S/A	70.56	0.32	0.13	0.03	0.20	−0.03
CIA SANEAMENTO DO PARANA—SANEPAR	60.97	0.66	0.20	0.18	0.09	0.20
COMPANHIA BRASILEIRA DE ALUMÍNIO	86.02	0.47	0.09	0.18	0.11	0.09
ENEVA S.A.	75.62	0.47	0.07	0.16	0.18	0.05
RAÍZEN S.A.	75.76	0.15	0.04	0.05	0.04	0.02
Rede DOr São Luiz S.A.	70.93	0.75	0.29	0.06	0.36	0.03
SANTOS BRASIL PARTICIPACOES S.A.	66.26	0.80	0.23	0.19	0.09	0.29
SENDAS DISTRIBUIDORA S.A.	70.14	0.11	0.05	0.00	0.03	0.02
SLC AGRICOLA S.A.	69.58	0.50	0.06	0.08	0.19	0.17
VIBRA ENERGIA S.A.	71.33	0.15	0.00	0.13	0.02	0.01

Table A3. Final sample data for the 2024 ISE-B3 Portfolio (2023 data, 63 companies, units: dimensionless).

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
LOJAS RENNER S.A.	90.20	0.41	0.10	0.19	0.05	0.07
CPFL ENERGIA S.A.	89.51	0.52	0.04	0.30	0.08	0.10
TELEFÔNICA BRASIL S.A.	89.16	0.44	0.10	0.17	0.09	0.08
TIM S.A.	88.84	0.40	0.03	0.16	0.12	0.08
AMBIPAR PARTICIPACOES E EMPREENDIMENTOS S/A	87.87	0.67	0.30	0.16	0.20	0.01
COMPANHIA BRASILEIRA DE ALUMÍNIO	87.31	0.27	0.11	0.16	0.09	−0.09
SUZANO S.A.	85.32	0.56	0.07	0.02	0.21	0.27
KLABIN S.A.	85.32	0.37	0.10	0.10	0.05	0.13
NEOENERGIA S.A.	84.97	0.52	0.03	0.27	0.16	0.07
CIA PARANAENSE DE ENERGIA—COPEL	84.80	0.53	0.07	0.29	0.07	0.07
AES BRASIL ENERGIA S.A.	83.88	0.33	0.03	0.10	0.16	0.05
CCR S.A.	83.83	0.58	0.10	0.12	0.28	0.09
SLC AGRICOLA S.A.	82.54	0.39	0.07	0.01	0.18	0.12
RAIA DROGASIL S.A.	82.53	0.31	0.10	0.13	0.04	0.03
NATURA &CO HOLDING S.A.	82.40	0.78	0.15	0.13	0.42	0.09
FLEURY S.A.	82.13	0.56	0.24	0.10	0.11	0.09
CIA BRASILEIRA DE DISTRIBUICAO	81.78	0.11	0.12	0.01	0.08	−0.11
CENTRAIS ELET BRAS S.A.—ELETROBRAS	81.60	0.65	0.11	0.04	0.35	0.10

Table A3. Cont.

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
RAIZEN S.A.	81.30	0.10	0.02	0.05	0.03	0.01
ECORODOVIAS INFRAESTRUTURA E LOGÍSTICA S.A.	81.08	0.46	0.06	0.13	0.20	0.06
DEXCO S.A.	80.96	0.42	0.12	0.05	0.14	0.12
Rede DOr São Luiz S.A.	80.50	0.53	0.17	0.05	0.27	0.02
COSAN S.A.	80.23	0.46	0.05	0.09	0.22	0.10
RUMO S.A.	79.88	0.58	0.10	0.09	0.33	0.06
CIA ENERGETICA DE MINAS GERAIS—CEMIG	79.55	0.44	0.04	0.25	0.03	0.12
AREZZO INDÚSTRIA E COMÉRCIO S.A.	78.93	0.22	0.08	0.01	0.04	0.09
M.DIAS BRANCO S.A. IND COM DE ALIMENTOS	78.91	0.31	0.11	0.09	0.05	0.07
MRV ENGENHARIA E PARTICIPACOES S.A.	78.17	0.32	0.17	0.06	0.09	0.00
AZUL S.A.	78.12	0.25	0.11	0.02	0.24	−0.13
CTEEP—CIA TRANSMISSÃO ENERGIA ELÉTRICA PAULISTA	78.08	0.76	0.05	0.16	0.15	0.41
ATACADÃO S.A.	78.04	0.15	0.05	0.06	0.04	−0.01
BRF S.A.	77.00	0.24	0.11	0.09	0.07	−0.03
WEG S.A.	76.41	0.48	0.18	0.10	0.04	0.16
IOCHPE MAXION S.A.	76.16	0.29	0.17	0.06	0.05	0.00
MAGAZINE LUIZA S.A.	76.03	0.22	0.07	0.11	0.07	−0.02
ENEVA S.A	75.96	0.51	0.05	0.12	0.31	0.03
VIBRA ENERGIA S.A.	74.56	0.09	0.01	0.05	0.01	0.03
IRANI PAPEL E EMBALAGEM S.A.	74.33	0.58	0.12	0.17	0.11	0.18
ENAUTA PARTICIPAÇÕES S.A.	72.33	0.39	0.08	0.10	0.24	−0.03
GUARARAPES CONFECÇÕES S.A.	72.22	0.33	0.16	0.11	0.06	0.00
MOVIDA PARTICIPACOES SA	72.22	0.22	0.05	0.02	0.21	−0.06
SENDAS DISTRIBUIDORA S.A.	72.21	0.11	0.05	0.00	0.04	0.01
MINERVA S.A.	71.69	0.14	0.04	0.01	0.07	0.01
AMBEV S.A.	71.15	0.51	0.06	0.27	0.05	0.12
CIA SANEAMENTO DO PARANA—SANEPAR	70.95	0.68	0.19	0.18	0.09	0.22
COGNA EDUCAÇÃO S.A.	70.90	0.66	0.35	−0.01	0.43	−0.12
HYPERA S.A.	69.87	0.45	0.11	−0.01	0.16	0.20
SANTOS BRASIL PARTICIPACOES S.A.	69.36	0.80	0.22	0.19	0.09	0.22
CEA MODAS S.A.	68.38	0.46	0.11	0.25	0.10	0.00
AUREN ENERGIA S.A.	67.70	0.44	0.03	0.27	0.17	−0.05
USINAS SID DE MINAS GERAIS S.A.-USIMINAS	66.64	0.21	0.03	0.11	0.02	0.05
YDUQS PARTICIPACOES S.A.	66.47	0.64	0.29	0.09	0.22	0.03

Table A3. Cont.

Company Name	ISE-B3	Variable/Revenue				
		DAV	Personnel and Expenses	Taxes, Fees and Contributions	Remuneration of Third-Party Capital	Remuneration of Equity Capital
CIA SANEAMENTO DE MINAS GERAIS-COPASA MG	66.15	0.59	0.20	0.16	0.06	0.18
VAMOS LOCAÇÃO DE CAMINHÕES, MÁQUINAS E EQUIP. S.A.	66.01	0.48	0.07	0.05	0.27	0.09
CYRELA BRAZIL REALTY S.A.EMPREENDE E PART	65.86	0.37	0.06	0.05	0.09	0.17
IGUATEMI S.A.	65.77	0.83	0.12	0.14	0.35	0.23
SIMPAR S.A.	65.46	0.42	0.12	0.05	0.21	0.04
CAMIL ALIMENTOS S.A.	64.41	0.23	0.06	0.07	0.06	0.03
JSL S.A.	64.22	0.52	0.25	0.11	0.12	0.04
OMEGA ENERGIA S.A.	63.93	0.38	0.03	0.04	0.29	0.02
ULTRAPAR PARTICIPACOES S.A.	63.41	0.07	0.02	0.02	0.02	0.02
DIAGNOSTICOS DA AMERICA S.A.	63.12	0.36	0.26	0.07	0.11	−0.07
GAFISA S.A.	62.08	0.30	0.06	0.08	0.32	0.00

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