

ESG and financial performance in public and private companies: Evidence from Brazil

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Abstract

Using detailed, questionnaire-based ESG data embedded in a broader corporate ranking for 156 public and 317 private Brazilian companies from 2017 to 2023, we examine the relationship between ownership structure, financial performance, and ESG performance. Panel regressions and propensity score matching reveal that public companies have lower ESG scores than private companies due to weaker governance. The gap is most pronounced among large companies with low leverage, high liquidity, and low capital intensity. Transitions from public to private ownership are associated with improved ESG scores. Prior profitability is positively linked to ESG scores, particularly in brown industries and among companies with weaker financial constraints, consistent with financial slack theory. Family ownership is positively associated with profitability, especially in private companies. A difference-in-differences design around an ESG disclosure regulation shows that ESG scores of public companies significantly increased after implementation. Our findings highlight the pivotal roles of ownership structure, financial slack, and disclosure mandates in shaping ESG performance in emerging markets.

Keywords: ESG scores, Corporate ownership, Private companies, Financial performance, Disclosure regulation, Corporate governance

1. Introduction

Empirical environmental, social, governance (ESG) studies primarily focus on large, publicly traded companies because ratings and disclosures are more readily available for these companies (Drempetic et al., 2020). However, small and medium enterprises (SMEs), which are predominantly privately held and often family-owned, account for more than 95% of registered companies worldwide, over half of employment, and more than one-third of GDP in many emerging markets (Alibhai et al., 2017). Despite their economic importance, the ESG behavior of private companies remains underexplored, partly because disclosure is limited and because these companies are less embedded in the institutional infrastructures that produce

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and standardize ESG information (Kornberger et al., 2017). Consequently, comparisons between public and private companies may confound differences in actual ESG practices with differences in what can be measured within existing ESG rating systems (Cormier et al., 2005; van Weeren and Bluntz, 2025). Since most commercial ESG ratings primarily cover listed companies, direct ownership comparisons within a common measurement framework are rarely possible.

Recent evidence shows that public and private companies differ materially in their emissions (Shive and Forster, 2020). Such ownership differences likely depend on institutional and regulatory context, making emerging markets a particularly relevant setting. Brazil provides a compelling case for at least three reasons. First, Brazil is one of the world’s largest economies and the largest in Latin America, while also ranking among the top global greenhouse gas emitters (International Monetary Fund, 2025; International Energy Agency, 2023). As the region’s largest GHG emitter, Brazil’s corporate sustainability practices have important implications for climate policy, regulation, and financial markets. Second, Brazilian capital markets combine formal regulation for public companies with limited transparency requirements for private companies, enabling clear ownership-based comparisons (La Porta et al., 1999; Leal and Carvalhal-da-Silva, 2005). Third, the 2021 introduction of CVM Resolution No. 59 (CVM59), which mandates ESG disclosure for listed companies, creates a rare opportunity to examine how regulation shapes ESG behavior in an emerging market. As a disclosure-focused intervention, CVM59 may influence not only organizational practices but also how ESG information is formalized and reported to external audiences (O’Dwyer et al., 2011; Cooper and Owen, 2007).

To address these gaps, we compile a novel dataset of 473 Brazilian companies (317 private and 156 public) from 2017 to 2023. The companies are drawn from *Época Negócios* 360, a long-running business ranking that surveys large companies operating in Brazil and has become an established evaluative device in the corporate field. Unlike commercial ESG ratings, which largely cover publicly listed companies, this setting enables us to measure ESG performance for both public and private companies within a common evaluative framework.

The dataset is not intended to represent all Brazilian companies but rather captures a economically significant segment of large companies operating in Brazil, including both domestic and multinational companies. Approximately 3,500 companies in Brazil report annual sales of BRL 1 billion (about USD 200 million) or more. In our sample, roughly three-quarters exceed this threshold, with average sales of BRL 9.4 billion (about USD 1.9 billion) in 2022. Moreover, eight of the ten largest companies by sales are included in the data. These features indicate that the sample covers a central part of the corporate landscape, where ESG considerations and reputational accountability are particularly salient.

Época Negócios 360 operates alongside other market reference rankings such as *Valor*

1000. While Valor 1000 primarily evaluates financial performance, *Época Negócios* 360 combines financial indicators with governance, sustainability, innovation, HR practices, and forward-looking strategy. This broader scope makes the data particularly informative for comparing ESG performance across ownership forms, especially for large private companies for which ESG information is typically unavailable. Rather than functioning as a stand-alone ESG survey, ESG-related questions are embedded in a broader “360-degree” assessment. This setting helps mitigate concerns that participation is driven solely by ESG signaling incentives and allows us to study differences in constructed ESG scores across ownership forms.

Our methodological approach has four components. First, we construct E, S, and G pillar scores from questionnaire subcomponents aligned with categories used by the London Stock Exchange Group (LSEG), a leading global ESG rating provider, and aggregate them into a composite ESG score. This step translates organizational practices into a comparable evaluative format across companies and time while recognizing that ESG scores are constructed through classification and weighting choices rather than directly observed (Kornberger et al., 2017; van Weeren and Bluntz, 2025). Second, we estimate panel regressions of ESG scores on ownership, profitability, and company characteristics, complemented by subsample analyses. To test whether differences between public and private companies persist after accounting for observable characteristics, we additionally apply propensity score matching to improve comparability on observables. Third, we analyze profitability (ROA) in relation to ESG scores to assess whether financially stronger companies exhibit higher subsequent ESG scores, consistent with slack-enabled investment in ESG practices. Fourth, we examine the introduction of CVM59 using a difference-in-differences design to evaluate how a disclosure mandate is associated with changes in reported ESG scores.

Our results yield four main findings. First, public companies exhibit significantly lower composite ESG scores, driven primarily by the governance pillar, i.e., disclosure- and accountability-related structures central to how ESG becomes measurable and comparable in practice (Cooper and Owen, 2007; O’Dwyer et al., 2011). The gap is most pronounced among large companies with low leverage, high liquidity, and low capital intensity. Propensity score matching confirms that public companies score lower on ESG even after accounting for observable company characteristics. Second, lagged ROA is positively associated with current ESG scores, consistent with financial slack theory. This relationship is strongest among companies in brown industries with low capital intensity, suggesting that financially constrained, high-impact sectors are particularly responsive to performance-driven ESG investments. Third, CVM59 increased ESG scores of listed companies by 0.05 points relative to private peers (about one-quarter of a standard deviation), with no evidence of diverging trends before 2021. Fourth, among private companies, family ownership is associated with higher financial returns, indicating that concentrated control may support alignment between

long-term profitability and stakeholder priorities. Together, these results highlight the role of ownership structure and regulatory enforcement in shaping company-level ESG performance and its financial implications.

This paper contributes to research on ESG measurement and corporate accountability in four ways. First, we examine ESG scores for a large sample of private companies using an institutionalized ranking questionnaire and show how calibration to an established ESG rating regime (LSEG) enables commensuration across ownership forms—an empirical setting rarely observed in ESG research (Kornberger et al., 2017; van Weeren and Bluntz, 2025). Second, we show that the public–private gap in composite ESG scores is concentrated in governance components closely linked to disclosure and accountability infrastructures (Cooper and Owen, 2007). Third, we document that the disclosure mandate CVM59 is associated with higher reported ESG scores, consistent with regulation shaping the organizational work of disclosure and the production of ESG information (O’Dwyer et al., 2011). Fourth, by linking profitability to subsequent ESG scores, we provide evidence consistent with the view that financial capacity enables the formalization and reporting of ESG practices recognized by evaluative infrastructures.

2. Theory, related literature, and hypotheses

The relationship between ESG scores and corporate financial performance (CFP) has been widely studied but remains contested (e.g., Dixon-Fowler et al., 2013; Eccles et al., 2014; Pedersen et al., 2021; Avramov et al., 2022; Pástor et al., 2022; Friede et al., 2015). A recent review highlights that companies’ ESG profiles are shaped by market environment, leadership, and ownership characteristics and are closely linked to company risk, performance, and value (Gillan et al., 2021). At the same time, competing hypotheses and conflicting empirical findings remain unresolved. Meta-analyses further show that the ESG–performance relationship varies across industry, region, and whether markets are developed or emerging (e.g., Friede et al., 2015). However, existing studies predominantly examine publicly listed companies in North America and Europe, leaving ownership structure (public versus private) largely unexplored. This gap motivates our analysis of how ownership structure shapes ESG performance in Brazil, a large emerging market.

Ownership structure shapes companies’ disclosure obligations, monitoring intensity, and the formalization of governance and reporting practices. These differences are particularly relevant for ESG measurement because ESG scores rely on calculative devices such as questionnaires, ratings, and rankings that favor codified and auditable practices (Kornberger et al., 2017; van Weeren and Bluntz, 2025). As a result, differences in ESG scores may reflect not only underlying sustainability activities but also how ESG-related practices are made visible and comparable across ownership forms (Mittelbach-Hörmanseder et al., 2021).

Ownership influences managerial appointments and strategic investment decisions (Trostel and Nichols, 1982; Capron and Shen, 2007; Asker et al., 2013; Gilje and Taillard, 2016; Hiller and Raffin, 2020). In public companies, institutional investors and activist shareholders can shape innovation and competitive strategy (David et al., 2001; Hoskisson et al., 2002; Connelly et al., 2009; Gerum et al., 2018). At the same time, governance of public companies has increasingly shifted toward concentrated institutional ownership and common ownership (Gillan and Starks, 2000; Goranova and Ryan, 2014; Kahan and Rock, 2007; Azar et al., 2018; Backus et al., 2021; Dennis et al., 2022). Meanwhile, the number of publicly listed companies has declined, and companies remain private longer (Kahle and Stulz, 2017; Doidge et al., 2017).

2.1. ESG and ownership incentives

From a theoretical perspective, Friedman (1970b) argued that managers should prioritize shareholder profits and avoid unprofitable social activities. However, subsequent work shows that companies may improve social outcomes, such as workplace safety, even without immediate financial gains (e.g., Cohn et al., 2021). One line of theory suggests that public companies may be more prone to short-termism due to diffuse ownership and earnings pressure, which can discourage long-term ESG investments (Hart and Zingales, 2017). In contrast, private (and especially family-owned) companies may more easily incorporate non-financial objectives when owners directly value employee, community, or environmental welfare (Hart and Zingales, 2017).

Another strand of research emphasizes that private equity owners often pursue strict profit maximization due to tightly aligned incentives and exit valuations (Davis et al., 2014). At the same time, lower disclosure requirements for private companies may reduce pressure to adopt costly ESG initiatives. These arguments yield competing predictions: private companies may either underinvest in ESG due to stronger profit incentives and weaker reporting obligations or invest more in ESG to pursue long-term stakeholder-oriented objectives. Any resulting differences are most likely to appear in governance and disclosure components of ESG scores, where ownership structure directly affects oversight, reporting routines, and accountability mechanisms (Cooper and Owen, 2007; O'Dwyer et al., 2011).

2.2. Theoretical ESG-CFP mechanisms

The relationship between ESG and financial performance can be explained by several conceptual mechanisms reflecting different causal directions (Preston and O'Bannon, 1997; Wirl et al., 2013). Beyond economic performance, financial resources may also influence a company's ability to formalize and report ESG practices in ways recognized by external evaluators (Bebbington and Larrinaga, 2014; Gray, 2010).

1. **Financial slack hypothesis ($\text{ROA} \xrightarrow{+} \text{ESG}$).** Drawing on the resource-based view and the corporate slack literature (Cyert and March, 1963; Bourgeois, 1981), the financial slack hypothesis posits that more profitable companies accumulate excess resources that can be allocated beyond core operations. Such slack enables investments in activities with longer payback horizons, including ESG initiatives, without threatening short-term viability. Empirical studies support this view: lagged profitability and cash flow predict subsequent ESG engagement (Waddock and Graves, 1997; Seifert et al., 2004). More recent evidence shows that companies expecting strong future performance invest more in CSR and that financial slack supports broader CSR diversification (Lys et al., 2015; Bouslah et al., 2023).
2. **Managerial opportunism hypothesis ($\text{ROA} \rightarrow \text{ESG}$).** From an agency theory perspective, managers may adjust ESG activities to serve private interests rather than shareholder value (Jensen and Meckling, 1976; Preston and O'Bannon, 1997; Posner and Schmidt, 1992). When profitability is weak, managers may emphasize ESG engagement or disclosure to divert attention from poor financial results, using sustainability initiatives as impression management (Wartick and Cochran, 1985; Patten, 1991). Conversely, when financial performance is strong, managers may reduce ESG expenditures to increase short-term profitability and personal compensation. Empirical studies suggest that ESG engagement can sometimes be used opportunistically to mask weak performance or earnings manipulation (Prior et al., 2008; Kao et al., 2018). However, such evidence is limited and context-dependent, implying that a negative profitability–ESG relationship may arise in some settings.
3. **Trade-off hypothesis ($\text{ESG} \rightarrow \text{ROA}$).** Early work in the economics of CSR argues that social and environmental initiatives may divert resources from profit-maximizing activities (Friedman, 1970a; Vance, 1975). ESG investments, such as upgrading production processes, sourcing sustainable inputs, or expanding compliance systems, can impose costs that do not immediately translate into financial returns. As a result, ESG engagement may reduce short-term profitability, particularly when efficiency or reputational gains are uncertain or delayed. This view forms the trade-off hypothesis, which suggests that ESG investments impose opportunity costs and may limit resources available for operational efficiency (McWilliams and Siegel, 2001). Empirical studies provide some support, showing that ESG can reduce financial performance under certain conditions (Brammer et al., 2006; Makni et al., 2009; Li et al., 2020).
4. **Good management hypothesis ($\text{ESG} \xrightarrow{+} \text{ROA}$).** The good management perspective argues that companies attentive to stakeholder demands and social legitimacy develop stronger management practices and long-term competitive advantages (Car-

roll, 1979; Wartick and Cochran, 1985). By integrating ESG into corporate strategy, companies can strengthen governance, improve risk management, and build stronger relationships with employees, customers, and regulators, which may enhance customer satisfaction and company value (Luo and Bhattacharya, 2006). In this view, ESG performance reflects managerial quality and organizational effectiveness rather than a cost center. Proactive ESG engagement can therefore improve competitiveness and efficiency (Porter and van der Linde, 1995). Empirical studies document a positive association between ESG engagement and profitability, suggesting that responsible management and financial performance can reinforce each other (Orlitzky et al., 2003; Kang et al., 2016; Lins et al., 2017; Li et al., 2018).

These mechanisms are not mutually exclusive. In practice, companies may simultaneously exhibit profitability-driven ESG engagement and ESG-related financial outcomes. However, the hypotheses within each causal direction cannot hold at the same time: either (1) financial slack or (2) managerial opportunism may explain the profitability-to-ESG relationship, while either (3) trade-off or (4) good management may explain the ESG-to-profitability relationship. The distinction lies in the temporal dimension: (1) and (2) describe how financial performance precedes ESG engagement, whereas (3) and (4) describe how ESG activities affect subsequent financial outcomes. Thus, one mechanism from each pair may coexist, but not both within the same pair.

2.3. Empirical evidence on the ESG–CFP relationship

Empirical findings on the ESG–CFP relationship remain mixed. A meta-analysis reports that most studies find a non-negative association, often positive (Friede et al., 2015). At the same time, the relationship depends on company resources and contextual factors, which helps explain variation across settings (Surroca et al., 2010; Anwer et al., 2023). Evidence also suggests that companies with strong sustainability practices tend to outperform over longer horizons (Eccles et al., 2014). Moreover, financially stronger companies are better able to invest in ESG activities, consistent with the view that sufficient earnings are required to finance environmental or social initiatives (Waddock and Graves, 1997). The financial impact of ESG may also differ across environmental, social, and governance dimensions (Dorfleitner et al., 2018), with governance components often more closely related to disclosure and reporting practices than to operational sustainability outcomes (Cooper and Owen, 2007). Meta-analyses focusing on emerging markets further show that institutional and regional factors shape the ESG–CFP relationship (Duque-Grisales and Aguilera-Caracuel, 2021). Overall, the strength and direction of this relationship vary across industries, ownership structures, and regulatory environments, highlighting the importance of contextual analysis.

2.4. Empirical evidence of ESG by ownership type

Comparative evidence on ownership differences in ESG remains limited, particularly outside high-income countries. Shive and Forster (2020) show that publicly listed companies in the U.S. often exhibit weaker emissions performance than private companies, partly due to market pressures and disclosure incentives. More broadly, evidence on how ownership identity relates to ESG outcomes is mixed and context-dependent (Bergmann, 2024). For example, some studies find that family-owned companies place greater emphasis on stakeholder- or community-oriented CSR activities (Berrone et al., 2010; Campopiano and De Massis, 2015; Block and Wagner, 2015), while cross-country evidence suggests that founding families and individual blockholders often underperform on ESG unless family members hold top management roles (Villalonga et al., 2025). These mixed findings point to substantial heterogeneity in how ownership structures translate into ESG practices. The issue is further complicated when ESG scores rely on disclosure-based indicators, as differences in reporting infrastructures may affect measured ESG performance independent of underlying practices (Gray, 2010; van Weeren and Bluntz, 2025).

Related research shows that ownership identity matters beyond family ownership. For example, Boubakri et al. (2019) document a nonlinear relationship between residual state ownership and CSR intensity in privatized companies, suggesting that political objectives interact with profit incentives. Experimental evidence also indicates that private capital providers price ESG information: Crifo et al. (2015) find that unfavorable ESG disclosures reduce valuations among private equity professionals. Overall, prior findings provide no uniform prediction for how ownership structure relates to aggregate ESG performance, particularly when ESG measures combine underlying practices with reporting and disclosure components.

These ambiguities are particularly relevant in emerging economies such as Brazil, where family and private ownership dominate and ESG reporting infrastructures have historically been less standardized. Accordingly, whether ownership form systematically translates into higher measured ESG performance across environmental, social, and governance pillars remains an open empirical question in this context.

2.5. ESG and CFP performance in Brazil

Empirical evidence on the ESG–financial performance relationship in Brazil remains limited. Possebon et al. (2024) show that higher ESG scores among companies listed on the B3 stock exchange are associated with lower cost of capital and higher ROA, particularly driven by environmental performance. Related research links ESG practices to governance improvements through better audit quality (Del Giudice and Rigamonti, 2020), while other studies indicate that stronger market competition may reduce ESG engagement in Brazil (Martins, 2022). Moreover, the OECD reports persistent transparency and governance

weaknesses among Brazilian listed companies, including limited board independence, weak ESG-linked incentives, and insufficient stakeholder transparency (OECD, 2022).

2.6. Regulatory shocks and ESG disclosure

A growing literature examines the effects of mandatory ESG disclosure regulations. Disclosure mandates can reshape reporting routines and the production of ESG information, influencing both underlying practices and what becomes visible and comparable to external audiences (Caglio et al., 2020; Contrafatto, 2014; O'Dwyer et al., 2011; Bischof et al., 2022). Empirical evidence highlights several channels. Some studies find that disclosure requirements lead to improvements in corporate sustainability practices (Ioannou and Serafeim, 2011), while others emphasize gains in transparency and reporting quality with more limited real-economy effects (Christensen et al., 2021; Gerwing et al., 2022). Additional research documents capital-market consequences: Grewal et al. (2019) show heterogeneous stock market reactions to the EU Non-Financial Reporting Directive, and Krueger et al. (2024) find improved liquidity and information environments when disclosure mandates are strongly enforced. Overall, the literature suggests that mandatory disclosure enhances transparency and investor confidence by increasing the informational content and credibility of sustainability reporting (Caglio et al., 2020; Driss et al., 2024). However, its effects on corporate behavior depend on institutional context. To date, no study has used a mandatory disclosure reform in Brazil to estimate its causal effect on company-level ESG performance.

2.7. Hypotheses development

Drawing on these theoretical perspectives and empirical gaps, we formulate four hypotheses on ownership differences in ESG behavior and organizational performance. Ownership structure may influence ESG engagement through competing mechanisms. Public companies face stricter disclosure requirements, financial oversight, and capital market pressures, which may encourage stronger ESG governance and transparency. By contrast, private companies, particularly those with concentrated, long-term ownership, may be better positioned to pursue stakeholder-oriented strategies and invest in ESG without short-term performance pressures (Hart and Zingales, 2017; Berrone et al., 2010). Existing evidence remains mixed and largely focuses on developed markets (Duque-Grisales and Aguilera-Caracuel, 2021), while the Brazilian context introduces additional institutional and regulatory uncertainties.

H1. ESG performance differs systematically between public and private companies, with differences expected to be most pronounced in governance-related components linked to disclosure and accountability.

Second, the relationship between ESG performance and profitability can arise through several competing mechanisms. The financial slack hypothesis suggests that companies

with stronger financial performance possess excess resources that can be allocated to ESG initiatives without threatening core operations (Waddock and Graves, 1997; Seifert et al., 2004; Lys et al., 2015). In Brazil’s emerging market context, characterized by heterogeneous capital access, fragmented ESG regulation, and largely voluntary sustainability practices, profitability may therefore enable ESG engagement. At the same time, the weak disclosure environment prior to CVM59 created scope for managerial opportunism, whereby managers facing performance pressure may emphasize ESG engagement to protect legitimacy (Preston and O’Bannon, 1997; Prior et al., 2008; Kao et al., 2018). By contrast, the trade-off and good management perspectives offer opposing predictions: ESG investments may divert resources from profit-maximizing activities (McWilliams and Siegel, 2001; Brammer et al., 2006; Makni et al., 2009), or reflect stronger governance and stakeholder relations (Porter and van der Linde, 1995; Orlitzky et al., 2003; Lins et al., 2017). Because these latter mechanisms require more mature ESG integration and institutionalized accountability, they are likely weaker in our setting. Overall, we expect prior profitability to increase ESG performance by enabling ESG-related investments and their formalization.

H2. Higher prior profitability (ROA) is positively associated with stronger ESG performance.

Third, ownership concentration and family control shape managerial incentives and organizational efficiency. Concentrated family ownership aligns decision rights and residual claims, reducing agency conflicts and strengthening monitoring of managerial actions (Anderson and Reeb, 2003; Bertrand and Schoar, 2006). These advantages are particularly pronounced in privately held companies, where family owners face fewer disclosure requirements and less short-term capital market pressure. In such settings, families can pursue long-term value strategies emphasizing operational efficiency, conservative investment, and stable stakeholder relationships. When family ownership persists in publicly listed companies, however, these benefits may be weakened by conflicts with minority shareholders and stricter disclosure and regulatory requirements. In emerging markets such as Brazil, where pyramidal ownership structures and control-enhancing mechanisms are common, these tensions can generate entrenchment risks that limit the performance benefits of family control (La Porta et al., 1999; Leal and Carvalhal-da-Silva, 2005). Accordingly, profitability advantages associated with family ownership are expected to be strongest in private companies.

H3. Family ownership is positively associated with profitability (ROA), with the effect being stronger in private companies than in publicly listed companies.

Fourth, ESG disclosure regulations aim to enhance transparency, reduce information asymmetries, and strengthen accountability by requiring companies to report sustainability-related information (Bischof et al., 2022; Gerwing et al., 2022). Such mandates limit selective

reporting and increase external scrutiny, which may encourage improvements in both disclosure and underlying ESG practices. Prior research finds that mandatory disclosure regimes can produce diverse effects, including improvements in corporate sustainability practices, transparency, and capital-market outcomes, particularly where prior standards were weak or voluntary (Ioannou and Serafeim, 2011; Krueger et al., 2024; Christensen et al., 2021). In Brazil, the introduction of ESG disclosure requirements for publicly listed companies represents a major institutional change likely to amplify differences in measured ESG performance between public and private companies.

H4. ESG disclosure regulation leads to a significant increase in reported ESG scores.

3. Sample, data, and construction of ESG scores

3.1. *Sample and data set*

The empirical analysis uses company-level data from the *Época Negócios* “360 Best Companies” ranking, a long-running business-journal initiative surveying large companies operating in Brazil. The ranking has become an important corporate reference point, with participation increasing from about 200 companies in the early 2010s to more than 400 in recent waves. Results are disseminated through a high-visibility publication and an annual awards event attended by senior executives. This institutional prominence creates reputational stakes around participation and performance, reinforcing the ranking’s role as an evaluative infrastructure rather than a purely academic survey.

The ranking targets companies based on revenue thresholds and industry prominence, covering both publicly listed companies on the B3 (formerly Bovespa) Stock Exchange and large privately held companies across multiple industries. The initial contact database comprised about 3,000 companies. From this pool, a revenue cutoff of BRL 250 million (approximately USD 45–50 million) was applied to identify economically significant companies.

Data are collected annually through a structured online questionnaire administered by the ranking organization.¹ Participating companies receive formal email invitations followed by at least two reminders to encourage participation and clarify survey items. Between 2017 and 2023, 715 unique companies submitted valid responses, each completing at least three survey modules with a minimum of 70% valid information. This process produced 2,582 company-year observations.

¹Although questionnaire-based data collection raises concerns about strategic responding and self-selection, these concerns are mitigated because ESG-related questions are embedded in a broader corporate ranking with reputational stakes. We therefore interpret the results as differences in measured ESG performance within this evaluative infrastructure, while emphasizing patterns less consistent with purely symbolic reporting, such as within-company changes over time.

Annual response rates averaged about 15–16% of contacted companies, while completion rates among respondents exceeded 90% across survey waves and remained stable over time. Although modest, such response rates are common in surveys targeting senior executives and sensitive organizational information, particularly among private companies. Participation is resource-intensive: companies complete up to seven modules covering functions such as finance, governance, HR, and sustainability and report several hundred indicators beyond audited financial data. Participation also entails reputational exposure because results are publicly released and companies may rank poorly within their sector, creating a credible downside risk that discourages low-effort or purely symbolic participation.

Importantly, non-response in this setting is unlikely to indicate an absence of ESG activity. Instead, it likely reflects differences in reporting capacity and willingness to undergo external evaluation. The panel structure mitigates this concern: repeated participation and stable completion rates provide a consistent pattern over time, increasing confidence in within-company changes.

Financial and ESG-related information are self-reported by participating companies but subject to several validation mechanisms. First, the questionnaire includes overlapping items across modules (e.g., governance and sustainability), enabling internal consistency checks that penalize inconsistent responses. Second, financial information is verified using audited balance sheets. Third, companies ranking at the top are fact-checked against public sources such as annual and sustainability reports and undergo editorial review that considers adverse media coverage. In some cases, companies have reportedly been downgraded or excluded following these reviews. Fourth, selected indicators require supporting documentation (e.g., sustainability reports). Finally, all submissions are screened for plausibility and completeness before inclusion in the final ranking dataset.

The resulting panel is unbalanced, reflecting variation in participation over time: nearly half of the companies (330) appear only once, while 85 companies provided complete responses in all seven years.² Despite this variation, the sample includes many companies that shape Brazil’s economy and operate in ESG-relevant sectors. For example, eight of the ten largest companies by sales participate in the ranking data. The panel covers major industries such as agriculture and food processing, petrochemicals and chemicals, mining and metals, and energy. This diversity places the analysis in sectors where ESG practices are particularly salient and closely scrutinized.

Overall, the dataset captures a broad cross-section of large Brazilian companies across ownership structures, sizes, and industries. It provides a rare opportunity to examine differences in ESG performance and financial outcomes between public and private companies

²Participation distribution: 330 (1 year), 163 (2 years), 170 (3 years), 76 (4 years), 58 (5 years), 38 (6 years), and 85 (7 years).

in an emerging-market setting over multiple years.

3.2. Construction of ESG scores

We construct harmonized ESG pillar scores (E, S, and G) and a composite ESG score using company responses to the structured questionnaire. This process translates diverse organizational practices into standardized numerical measures, enabling comparability across companies with different ownership structures, disclosure obligations, and reporting capacities (Kornberger et al., 2017). Responses are coded into ESG variables aligned with the LSEG methodology, such that higher values indicate better performance.³

Each ESG pillar consists of several underlying *categories* that group related questionnaire indicators. For example, the environmental pillar includes the categories emissions, innovation, and resource use. Tables A1 and A2 in the appendix report definitions, measurement details, and descriptive statistics for the ESG variables.

To ensure consistency across ESG pillars and comparability with the composite ESG score, we restrict the sample to company-year observations with non-missing values for all three pillar measures. Because the aggregate ESG score is constructed from the environmental, social, and governance pillars, observations with incomplete pillar information cannot be meaningfully compared and would introduce measurement noise. Moreover, partial non-response is unlikely to be random and may reflect differences in reporting scope rather than underlying ESG activity (Gray, 2010). We therefore exclude 214 company-year observations with incomplete pillar data.

To construct ESG scores, we use two complementary approaches:

(i) *Equal-weighting approach*. Each category is normalized to the unit interval $[0, 1]$ by year and averaged with equal weights to obtain pillar scores. The three pillars are then equally weighted to construct the composite ESG score. This approach requires no regression and serves as a transparent benchmark.

(ii) *Weight-calibration approach*. For a subsample of 60 publicly listed companies (226 company-year observations) with available LSEG data, we regress LSEG scores (E, S, G, and aggregate ESG) on the corresponding normalized categories. The estimated coefficients capture the relative importance of each category in LSEG’s methodology.⁴ Following LSEG’s benchmarking practice, we include industry fixed effects to capture within-industry variation rather than structural cross-industry differences. The fitted values are then normalized to the unit interval. The general regression specification is as follows.

³LSEG’s methodology can be accessed here (as of October 2024): https://www.lseg.com/content/dam/data-analytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf

⁴The calibration reflects how ESG categories are weighted within a dominant market-based evaluative infrastructure and does not imply that these weights represent an objective or universal measure of sustainability.

For observation i , let Score_i denote the observed LSEG (E, S, G, or ESG) benchmark (where available), and let Cat_{ij} denote the j -th normalized category belonging to that pillar. The weight-calibration regression is specified as:

$$\text{Score}_i = \beta_0 + \sum_{j=1}^J \beta_j \text{Cat}_{ij} + \sum_{k=1}^K \gamma_k D_{i,k} + \varepsilon_i, \quad (1)$$

where $D_{i,k}$ are industry dummies. The fitted values are obtained as

$$\widehat{\text{Score}}_i = \hat{\beta}_0 + \sum_{j=1}^J \hat{\beta}_j \text{Cat}_{ij} + \sum_{k=1}^K \hat{\gamma}_k D_{i,k}. \quad (2)$$

All regression-based fitted values are rescaled to the unit interval by year:

$$\text{Score}_i^* = \frac{\widehat{\text{Score}}_i - \min_j \widehat{\text{Score}}_j}{\max_j \widehat{\text{Score}}_j - \min_j \widehat{\text{Score}}_j}, \quad \text{Score}_i^* \in [0, 1], \quad (3)$$

with Score_i^* denoting the calibrated and normalized ESG score for observation i .

For each pillar (E, S, and G) and for the composite ESG score, we estimate both approaches and retain the specification with the higher correlation to the LSEG benchmark. The environmental pillar captures how companies manage ecological impacts and environmental innovation. It combines three questionnaire-based categories: *emissions* (climate-related emissions management and decarbonization commitments), *innovation* (environmental investments and cost reductions), and *resource use* (monitoring practices across the supply chain). Under the weight-calibration framework, the normalized environmental score E_i^* achieves a correlation of 0.313 with the LSEG environmental benchmark, exceeding the equal-weighting approach. We therefore adopt the calibrated score as the final environmental measure.

The social pillar captures how companies manage stakeholder relationships and labor practices. It consists of four categories: *community* engagement, *human rights* (proxied by the absence of labor lawsuits), *product responsibility* (share of sustainable products), and *workforce* practices such as training, evaluation systems, and employee participation. For this pillar, the calibrated score performs poorly relative to the LSEG benchmark (correlation 0.072), whereas the equal-weighted score reaches 0.160. This likely reflects measurement differences: our human rights proxy relies on negative indicators (lawsuits), whereas LSEG emphasizes policies and controversy screening. In addition, product responsibility is measured by a single variable with only 196 non-missing observations, limiting coverage. Consequently, the social score effectively places greater weight on the community and workforce categories, which have broader data availability. We therefore adopt the equal-weighted specification as

the final S_i^* .⁵

The governance pillar captures the institutional framework supporting ESG engagement. Because governance indicators are closely linked to disclosure practices, oversight structures, and accountability mechanisms, they are particularly relevant for understanding differences between public and private companies operating under distinct reporting regimes. The pillar aggregates two categories: *CSR strategy* (e.g., reporting standards and stakeholder inclusion) and *management practices* (e.g., compliance systems and board structures). After calibration, the normalized governance score G_i^* achieves a correlation of 0.139 with the LSEG governance benchmark, exceeding the equal-weighting approach. We therefore adopt the calibrated score as the final governance measure.

The composite ESG score is initially constructed as the equally weighted average of the three normalized pillar scores. Calibrating this measure to the LSEG ESG benchmark yields a correlation of 0.693, indicating strong alignment. We therefore adopt the calibrated score as the final composite ESG measure.

As a robustness check, we construct an alternative composite ESG score by aggregating the three equal-weighted pillar scores before calibration. Calibrating and normalizing this measure against the LSEG ESG benchmark yields a correlation of 0.681, only slightly below the calibrated pillar–composite approach. The correlation between this alternative measure and our main calibrated ESG score is 0.778. These close correlations indicate that the results are not sensitive to the calibration order. We therefore retain our preferred specification, which selects pillar scores based on the highest correlation with LSEG and calibrates the composite ESG score accordingly, consistent with the LSEG methodology and its industry benchmarking.

3.3. Data cleaning and matching to company characteristics

We apply several data-cleaning steps to ensure the validity and comparability of the ESG measures. Due to structural differences in business models, financial reporting, and ESG disclosure requirements, we exclude companies from the financial industry, including banks, insurance companies, and other financial service providers (248 observations), as well as nonprofit organizations (152 observations). This approach follows prior ESG literature, as ESG performance of financial institutions is assessed differently, complicating comparisons with non-financial companies (e.g., Scholtens, 2009). The exclusion helps ensure that observed ESG differences are not mechanically driven by sector-specific reporting requirements.

Next, we match the ESG scores with company-level variables used in the empirical analysis. Following standard practice in the ESG–CFP literature (e.g., Flammer, 2015; Benlemlih and

⁵ESG ratings from different providers often diverge due to differences in indicator selection, weighting, and methodology (Berg et al., 2022).

Bitar, 2017), we include control variables in four groups: company size and financial structure (log total assets, leverage, liquidity), operational complexity (capital intensity, R&D intensity, foreign sales share), profitability (return on assets), and ownership structure (e.g., family ownership, public listing status).⁶ This matching step removes 482 additional observations. The final sample consists of 317 private companies (939 company-year observations) and 156 public companies (547 company-year observations). To limit the influence of outliers, all continuous financial variables are winsorized at the 1st and 99th percentiles.

4. Empirical results

4.1. Descriptive statistics

Table 1 reports descriptive statistics for the full sample (Panel A) and by ownership type (Panel B). Panel A summarizes ESG scores, financial variables, and ownership characteristics across 1,486 company-year observations, while Panel B compares public and private companies using t-tests for mean differences. Although the average composite ESG score does not differ significantly across ownership types, private companies show lower environmental and social scores but significantly higher governance scores, with governance exhibiting the largest gap (0.14). Environmental and governance scores also display greater variability than social scores. The share of family-owned companies is similar across groups, with private companies slightly more likely to be family-owned. Despite smaller asset bases, private companies report significantly higher returns on assets (2.38 difference) and are more concentrated in B2B sectors, whereas public companies exhibit higher leverage, liquidity, and R&D intensity.

Figure 1 complements the descriptive statistics by illustrating the evolution of ESG scores for public and private companies over time. The overall ESG score shows a modest improvement for public companies beginning in 2018, while private companies display greater volatility, increasing from 2017 to 2021 before declining between 2022 and 2023. Environmental scores decrease for both ownership types, particularly after 2021, whereas social scores rise throughout the sample period. Governance trends diverge: private companies experience a gradual decline, while public companies show a marked increase, especially since 2020.

4.2. ESG performance across ownership types and financial performance

To examine how ESG performance varies across ownership structures, we estimate OLS regressions of ESG scores on a *public-company* indicator and a set of control variables. These include financial structure (*leverage*, *liquidity*), company *size*, operational complexity (*capital intensity*, *R&D intensity*, *foreign operations*), and year fixed effects to capture temporal heterogeneity. During the sample period, 24 company-year observations reflect companies

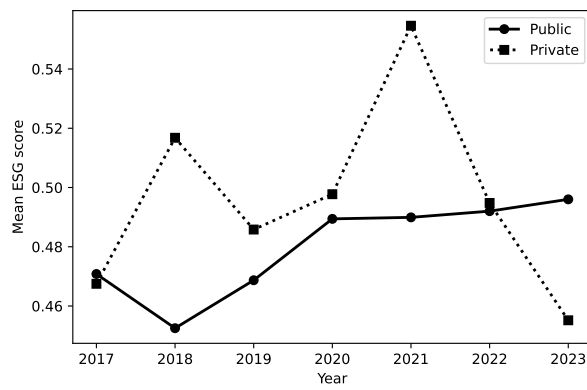
⁶Definitions of all variables used in the empirical analysis are reported in Table A3 in the appendix.

Table 1: Descriptive statistics for company-level variables and ownership differences

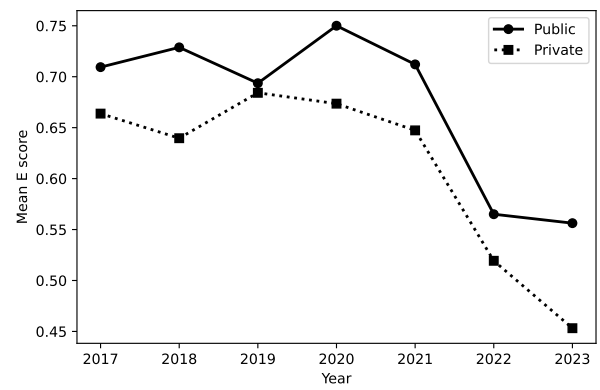
Panel A. Descriptive statistics for company-level variables						
Variable	Obs.	Mean	Std.	Min	Median	Max
ESG score	1,486	0.49	0.21	0.00	0.51	1.00
E score	1,486	0.63	0.32	0.00	0.60	1.00
S score	1,486	0.67	0.18	0.00	0.70	1.00
G score	1,486	0.58	0.33	0.00	0.62	1.00
LSEG ESG score	191	0.56	0.20	0.03	0.58	0.89
LSEG E score	191	0.56	0.24	0.00	0.61	0.96
LSEG S score	191	0.59	0.23	0.01	0.61	0.95
LSEG G score	191	0.54	0.22	0.01	0.58	0.96
Public	1,486	0.37	0.48	0.00	0.00	1.00
Family	672	0.46	0.50	0.00	0.00	1.00
ROA	1,486	5.92	7.59	−14.83	4.65	33.21
Size	1,486	8.06	1.62	4.81	7.94	11.80
Leverage	1,486	0.29	0.19	0.00	0.28	0.80
Liquidity	1,486	0.43	0.49	−1.01	0.41	1.73
Capital intensity	1,486	0.03	0.03	0.00	0.02	0.13
B2B	1,486	0.51	0.50	0.00	1.00	1.00
R&D operations	1,486	0.83	0.38	0.00	1.00	1.00
Foreign operations	1,486	0.37	0.48	0.00	0.00	1.00
Go private	1,486	0.07	0.08	0.00	0.00	1.00
Go public	1,486	0.01	0.12	0.00	0.00	1.00

Panel B. Descriptive statistics by ownership type							
Variable	Public			Private			Diff.
	Obs.	Mean	Std.	Obs.	Mean	Std.	
ESG score	547	0.482	0.186	939	0.509	0.217	0.015
E score	547	0.666	0.310	939	0.602	0.325	−0.064***
S score	547	0.693	0.161	939	0.663	0.184	−0.030***
G score	547	0.496	0.338	939	0.636	0.307	0.140***
Family	262	0.405	0.492	410	0.490	0.501	0.086**
ROA	547	4.416	6.631	939	6.792	7.966	2.376***
Total assets	547	9.160	1.390	939	7.412	1.384	−1.747***
Leverage	547	0.339	0.191	939	0.260	0.182	−0.079***
Liquidity	547	0.491	0.495	939	0.401	0.485	−0.090***
Capital intensity	547	0.031	0.023	939	0.031	0.026	−0.000
B2B	547	0.417	0.493	939	0.560	0.497	0.143***
R&D operations	547	0.887	0.317	939	0.794	0.404	−0.092***
Foreign operations	547	0.375	0.485	939	0.368	0.483	−0.006

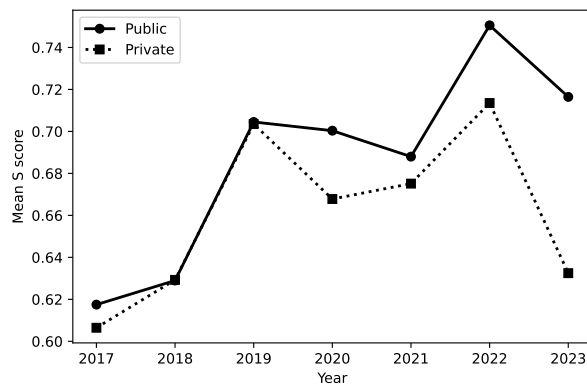
Notes: Panel A reports summary statistics on company-level variables for the full sample of 1,486 company-year observations. Panel B reports descriptive statistics with t-tests across 156 public and 317 private companies. “Diff.” is the mean difference between public and private companies. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.



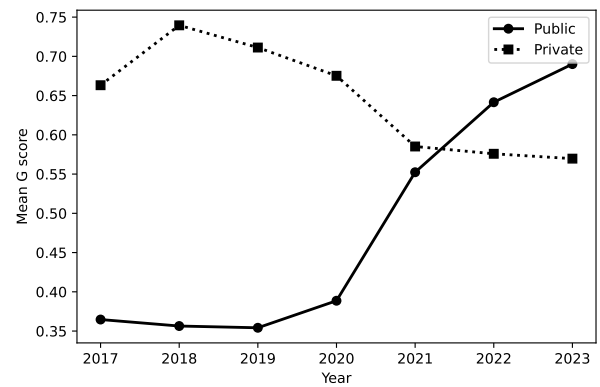
(a) ESG score



(b) E score



(c) S score



(d) G score

Figure 1: Evolution of ESG and pillar scores by ownership. Each panel plots year-by-year averages for public companies (solid line) vs. private companies (dashed line).

going public (*go public*) and 12 reflect companies going private (*go private*). Pearson correlations for all variables are reported in Table A4 in the appendix.

The results in Table 2 show that public companies exhibit significantly lower ESG scores than private companies, even after controlling for company characteristics. The *public*-company coefficient is negative and highly significant across Models 1–3, supporting hypothesis H1. Decomposing ESG into its pillars (Models 4–6) reveals that this gap is driven primarily by governance. In Model 6, the coefficient on the *public*-company indicator is -0.23 , indicating that public companies score on average 0.23 lower on governance than comparable private companies (23 percentage points on the 0–1 scale). By contrast, environmental and social scores do not differ significantly across ownership types.

Turning to financial performance, Models 1 and 2 include contemporaneous and lagged return on assets (*ROA*). In both specifications, *ROA* is positively associated with ESG scores, consistent with the financial slack hypothesis that more profitable companies can allocate greater resources to ESG activities (Waddock and Graves, 1997; Seifert et al., 2004; Lys et al., 2015). A one percentage point increase in *ROA* corresponds to a 0.2 percentage point increase in the *ESG score*. This relationship does not appear at the pillar level, where coefficients are small and statistically insignificant.

Model 3 examines ownership transitions.⁷ Companies transitioning from public to private status (*lagged go private*) experience a statistically significant increase in the *ESG score* of 0.13. This pattern is consistent with the broader finding that private ownership is associated with stronger ESG performance. By contrast, transitions from private to public (*lagged go public*) are not significantly related to ESG.

Company *size* shows a strong positive association with ESG scores, consistent with the size effect documented in prior studies (Dobrick et al., 2023; Drempetic et al., 2020). Companies operating in business-to-business (*B2B*) sectors also tend to score higher on ESG, mainly driven by stronger environmental performance (Model 4). *Capital intensity* is positively related to all three ESG pillars (E, S, and G), although this does not translate into a significant effect on the aggregate ESG score. Finally, *R&D operations* are positively associated with ESG performance both at the aggregate level (Model 1) and across all three pillars.

Overall, the results support hypothesis H1: public–private differences in ESG performance are concentrated in the governance pillar, while environmental and social pillars show no robust conditional differences. For hypothesis H2, we find weak evidence that higher prior profitability is positively associated with ESG scores.

⁷Because the number of observed transitions is small (12 go-private and 24 go-public company-years), these estimates should be interpreted as suggestive rather than causal.

Table 2: Determinants of ESG scores

	ESG			E	S	G
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Ownership variables</i>						
Public	−0.060** (0.024)	−0.069** (0.029)		−0.035 (0.029)	−0.014 (0.014)	−0.225*** (0.027)
<i>Performance variables</i>						
ROA	0.002** (0.001)		0.002 (0.002)	0.000 (0.001)	0.001 (0.001)	−0.000 (0.001)
Lagged ROA		0.002* (0.001)				
<i>Transition variables</i>						
Lagged go public			0.022 (0.057)			
Lagged go private			0.131*** (0.030)			
<i>Company controls</i>						
Size	0.030*** (0.007)	0.034*** (0.009)	0.022*** (0.008)	0.055*** (0.008)	0.023*** (0.005)	0.038*** (0.008)
Leverage	0.065 (0.052)	0.056 (0.057)	0.019 (0.057)	0.045 (0.068)	−0.002 (0.034)	0.092 (0.062)
Liquidity	−0.017 (0.021)	0.006 (0.024)	−0.005 (0.024)	−0.030 (0.023)	−0.014 (0.012)	−0.009 (0.023)
Capital intensity	0.431 (0.364)	0.522 (0.396)	0.433 (0.401)	0.746* (0.438)	0.485** (0.227)	1.257*** (0.410)
B2B	0.067*** (0.019)	0.068*** (0.022)	0.070*** (0.023)	0.054** (0.024)	0.008 (0.014)	−0.019 (0.022)
R&D operations	0.040* (0.024)	0.030 (0.032)	0.033 (0.033)	0.088*** (0.032)	0.063*** (0.017)	0.094*** (0.025)
Foreign operations	−0.012 (0.020)	−0.017 (0.022)	−0.012 (0.022)	0.014 (0.022)	0.034** (0.015)	0.016 (0.024)
Constant	0.159*** (0.059)	0.164** (0.074)	0.246*** (0.070)	0.145** (0.072)	0.369*** (0.044)	0.218*** (0.072)
Year	Yes	Yes	Yes	Yes	Yes	Yes
N	1,486	985	998	1,486	1,486	1,486
Adjusted R^2	0.075	0.070	0.049	0.155	0.121	0.102

Notes: This table reports regression coefficients where the dependent variable is the ESG score (Models 1–3) or the pillar scores (Models 4–6). Company-level clustered standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

4.3. Heterogeneity in ESG relationships across company characteristics

Table 3 reports OLS regressions of ESG scores on public ownership and lagged ROA across ten subsamples defined by size, leverage, liquidity, capital intensity, industry, and year fixed effects. Public ownership is negatively associated with ESG performance in several subsamples. The coefficient is negative and significant among large companies (-0.08), companies with low leverage (-0.11), high liquidity (-0.10), and low capital intensity (-0.08). These results suggest that publicly listed companies score lower on ESG than comparable private companies in specific company environments, particularly among larger companies and those with greater financial flexibility. This pattern is consistent with the view that ESG scores reflect not only underlying practices but also differences in reporting and accountability infrastructures across company types (Kornberger et al., 2017; van Weeren and Bluntz, 2025). However, the regressions do not allow direct identification of the underlying mechanisms.

Lagged ROA is positively associated with ESG performance only in specific contexts. Significant effects appear among large companies (0.003), companies with low leverage (0.004), low capital intensity (0.005), and those operating in brown industries (0.005). This pattern supports a conditional financial-slack interpretation, whereby prior profitability is linked to higher ESG scores where internal resources are more easily deployed or environmental externalities are more salient.

Taken together, the subsample analyses show that both ownership status and prior profitability relate to ESG performance in a context-dependent manner. Public listing is associated with lower ESG scores in several subsamples, while profitability translates into higher ESG performance only under specific conditions. These results indicate that neither market discipline nor financial slack alone fully explains cross-company differences in ESG performance.

4.4. Financial performance across ownership structure and ESG performance

Next, we examine how ESG performance and ownership structure relate to companies' financial outcomes. We estimate *ROA* as the dependent variable and include industry and year fixed effects to control for sector-specific and time-varying influences. Table 4 reports the results.

Model 1 includes the *lagged ESG score* as the main explanatory variable, but the coefficient is statistically insignificant. This indicates that past ESG performance does not systematically predict current profitability once company characteristics and fixed effects are controlled for.

Model 2 introduces *family* ownership as a key explanatory variable. The results show that *family*-controlled companies report significantly higher *ROA*, with an estimated effect of 3.18 percentage points. This relationship remains robust and strengthens in Model 3, which includes an interaction between public status and family ownership. The interaction coefficient is negative and significant, indicating that the *ROA* premium for *family* ownership

Table 3: Determinants of ESG scores: Subsample analysis

	Size			Leverage		Liquidity		Capital intensity		Industry	
	Large	Small		High	Low	High	Low	High	Low	Brown	Green
<i>Ownership variables</i>											
Public	-0.077** (0.034)	-0.055 (0.041)		-0.035 (0.039)	-0.109*** (0.039)	-0.090*** (0.035)	-0.038 (0.037)	-0.062 (0.040)	-0.082** (0.034)	-0.071 (0.048)	-0.044 (0.033)
<i>Performance variables</i>											
Lagged ROA	0.003* (0.002)	0.002 (0.002)		0.000 (0.002)	0.004** (0.002)	0.001 (0.002)	0.004** (0.002)	-0.002 (0.002)	0.005*** (0.002)	0.005** (0.002)	-0.000 (0.002)
<i>Company controls</i>											
Size	0.059*** (0.014)	-0.032 (0.026)		0.021 (0.013)	0.048*** (0.011)	0.041*** (0.012)	0.022** (0.011)	0.036*** (0.012)	0.030*** (0.011)	0.054*** (0.013)	0.021* (0.012)
Leverage	0.013 (0.064)	0.082 (0.090)		0.113 (0.087)	-0.025 (0.173)	0.071 (0.075)	0.037 (0.073)	0.020 (0.074)	0.071 (0.072)	0.099 (0.099)	-0.006 (0.069)
Liquidity	0.027 (0.026)	0.019 (0.041)		-0.016 (0.034)	0.018 (0.030)	0.022 (0.045)	0.023 (0.038)	0.052 (0.033)	-0.029 (0.027)	0.002 (0.035)	0.026 (0.032)
Capital intensity	1.667*** (0.485)	-0.497 (0.536)		0.150 (0.506)	0.857 (0.545)	0.750 (0.595)	0.389 (0.473)	-0.158 (0.505)	2.802 (2.021)	1.861*** (0.559)	-0.284 (0.510)
B2B	0.070** (0.027)	0.066** (0.033)		0.061** (0.027)	0.085*** (0.032)	0.097*** (0.028)	0.031 (0.031)	0.024 (0.027)	0.100*** (0.030)	0.023 (0.033)	0.109*** (0.028)
R&D operations	0.010 (0.044)	0.049 (0.040)		0.074 (0.048)	-0.013 (0.037)	0.052 (0.046)	0.010 (0.034)	-0.040 (0.037)	0.071* (0.042)	-0.001 (0.039)	0.030 (0.045)
Foreign operations	-0.008 (0.026)	-0.051 (0.039)		0.003 (0.029)	-0.039 (0.030)	-0.032 (0.030)	0.006 (0.029)	-0.013 (0.027)	-0.039 (0.031)	-0.031 (0.032)	-0.012 (0.029)
Constant	-0.106 (0.130)	0.641*** (0.170)		0.225** (0.109)	0.077 (0.098)	0.059 (0.103)	0.290*** (0.092)	0.287*** (0.094)	0.108 (0.096)	-0.059 (0.108)	0.326*** (0.100)
Year	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	580	405		516	469	506	479	517	468	394	591
Adjusted R^2	0.159	0.050		0.058	0.098	0.107	0.033	0.048	0.142	0.175	0.066

Notes: Each column reports a subsample regression of ESG score on public dummy, lagged ROA, and controls. Splits are defined at median values. "Green" industries comprise agribusiness; food and beverage; wholesale and retail trade; information technology and telecommunications; software and services; professional services; education; healthcare; water and sanitation; pharmaceuticals and cosmetics; hygiene and beauty; electronics; and paper and pulp. "Brown" industries comprise civil construction; infrastructure; construction materials and decoration; mechanical engineering and metallurgy; mining and steelmaking; chemicals and petrochemicals; energy (oil & gas); transportation; textiles, leather and apparel; and vehicles and auto parts. Company-level clustered standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

is concentrated in private companies. In other words, *family*-owned public companies do not experience the same financial advantage as their private counterparts. This finding supports hypothesis H3 and is consistent with prior research showing that the performance implications of family control depend on the surrounding ownership and governance environment (Anderson and Reeb, 2003; Bertrand and Schoar, 2006; La Porta et al., 1999; Bergmann, 2024).

Regarding control variables, the results align with expectations. Larger companies report lower *ROA*, while greater *liquidity* is positively associated with profitability. *Leverage* is strongly negatively related to *ROA*. Other characteristics, including *capital intensity*, *B2B* orientation, *foreign operations*, and *R&D operations*, are not consistently significant across models.

Overall, we find robust evidence that family ownership enhances profitability, particularly in private companies, while ESG performance does not significantly predict *ROA* once detailed controls are included. These results underscore the importance of ownership structure for financial outcomes in the Brazilian context.

4.5. Policy-driven changes in ESG performance over time

In 2021, the Brazilian Securities and Exchange Commission (CVM) issued CVM59, significantly restructuring ESG disclosure requirements for publicly listed companies. The regulation requires listed companies to include detailed ESG information in their annual Reference Form or explain omissions under a “comply or explain” framework. CVM59 aligns Brazil’s disclosure practices with international standards such as the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), and the Task Force on Climate-Related Financial Disclosures (TCFD), promoting more standardized and transparent ESG reporting.

We treat the implementation of CVM59 as a regulatory shock to the ESG disclosure environment and examine whether it is associated with changes in ESG scores of listed companies relative to private companies. To estimate this effect, we employ a difference-in-differences (DiD) design using private companies as the control group.

The DiD specification interacts a post-2020 indicator ($Year \geq 2021$) with a dummy for *public* companies and includes controls for company characteristics, as well as year, industry, and company fixed effects. To examine dynamic treatment effects and relax the common-trends assumption, we estimate a dynamic DiD model interacting the *public* indicator with year dummies from 2017 to 2023, using 2020 as the reference year. Standard errors are clustered at the company level to account for serial correlation.

As shown in Table 5, ESG scores of *public* companies increased significantly after the disclosure mandate took effect. In the DiD model (Column 1), the interaction term $Public \times Year \geq 2021$ is positive and significant at the 1% level, with a coefficient of 0.044. This indicates that ESG scores of *public* companies increased by 4.4 percentage points relative to

Table 4: Determinants of financial performance

	(1)	(2)	(3)
<i>ESG variables</i>			
Lagged ESG score	−1.932 (2.174)	0.299 (2.679)	0.272 (2.664)
<i>Ownership variables</i>			
Public	0.247 (0.647)	0.724 (0.870)	2.321** (1.110)
Family		3.182*** (0.726)	4.492*** (0.918)
Public × Family			−3.260** (1.264)
<i>Company controls</i>			
Size	−0.830*** (0.258)	−1.052*** (0.334)	−1.120*** (0.335)
Leverage	−11.097*** (1.761)	−11.985*** (2.046)	−11.660*** (2.045)
Liquidity	3.289*** (0.644)	3.246*** (0.821)	3.243*** (0.815)
Capital intensity	6.824 (12.511)	−8.119 (14.736)	−9.473 (14.067)
B2B	0.563 (0.619)	0.801 (0.716)	0.816 (0.710)
R&D operations	0.857 (0.851)	1.859* (1.042)	1.640 (1.046)
Foreign operations	0.047 (0.626)	0.659 (0.678)	0.793 (0.664)
Constant	13.040*** (2.326)	13.413*** (2.866)	13.677*** (2.861)
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
N	998	514	514
Adjusted R^2	0.293	0.409	0.417

Notes: This table reports the results of regression models where the dependent variable is ROA. Company-level clustered standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

private companies following the implementation of CVM59. The estimates also show that, prior to the reform, *public* companies had lower ESG scores overall (-0.061).

A decomposition of the aggregate ESG score shows that the post-reform increase is driven by the governance component. As reported in Table A5 in the appendix, the DiD coefficient is positive and statistically significant for the G score, while the effects for the E and S scores are small and insignificant. This pattern is consistent with the focus of CVM59 on disclosure practices, reporting standards, and governance arrangements rather than environmental or social operations.

The dynamic DiD model (Column 2) confirms and extends these results. The interaction terms $Public \times Year \geq 2021$, $Public \times Year \geq 2022$, and $Public \times Year \geq 2023$ are positive and significant at the 1% level, with increasing magnitudes of 0.036, 0.047, and 0.061, respectively. By contrast, interaction terms for 2017–2019 are small and statistically insignificant, consistent with approximately parallel pre-trends. Both specifications show strong explanatory power, with adjusted R^2 values of 0.96.

Figure 2 complements these results by illustrating the estimated ESG score differences between public and private companies over time. The figure plots the average predicted *ESG score* differential from an OLS model with public-by-year interactions, full controls, and fixed effects. The vertical axis shows ESG score differences, while the horizontal axis reports years relative to the 2020 baseline (marked by a red dashed line). Prior to 2021, the differences are statistically insignificant, with confidence intervals overlapping zero. From 2021 onward, however, a clear upward shift appears, indicating improving ESG scores for public companies relative to private companies. By 2023, the gap becomes significantly positive, suggesting that public companies began outperforming private companies in ESG performance following the regulation.

Taken together, the results support hypothesis H4: the DiD estimates show that CVM59 is associated with a sustained increase in reported ESG scores for listed companies relative to private companies, consistent with changes in disclosure-oriented governance and reporting practices. These findings suggest that mandatory ESG disclosure, particularly under a “comply or explain” framework, can promote meaningful changes in corporate sustainability reporting and strengthen transparency and accountability, especially in emerging markets where voluntary adoption may be uneven.

Table 5: ESG disclosure mandate impact on ESG scores of public companies

	DiD	Dynamic DiD
	(1)	(2)
Public $\times$ Year $\geq$ 2021 (DiD term)	0.044*** (0.008)	
Public	-0.061*** (0.015)	-0.053*** (0.013)
Public $\times$ Year 2017		-0.008 (0.012)
Public $\times$ Year 2018		-0.011 (0.011)
Public $\times$ Year 2019		-0.014 (0.010)
Public $\times$ Year 2021 (cutoff)		0.036*** (0.011)
Public $\times$ Year 2022		0.047*** (0.011)
Public $\times$ Year 2023		0.061*** (0.011)
Constant	0.248*** (0.061)	0.248*** (0.062)
Controls	Yes	Yes
Year	Yes	Yes
Industry	Yes	Yes
Company	Yes	Yes
N	1,380	1,380
Adjusted R^2	0.955	0.955

Notes: This table reports the results of a difference-in-differences (DiD) regression model (Model 1) and a dynamic DiD regression model (Model 2), where the dependent variable is the ESG score. Both models include the same set of company-level control variables as in Table 2. Company fixed effects are absorbed. Year and industry effects are included as indicator variables. In Model 1, the coefficient of Public $\times$ Year $\geq$ 2021 equals the average change in ESG for public companies attributable to CVM59. In Model 2, Year 2020 is the omitted category in all Public $\times$ Year interactions. Company-level clustered standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

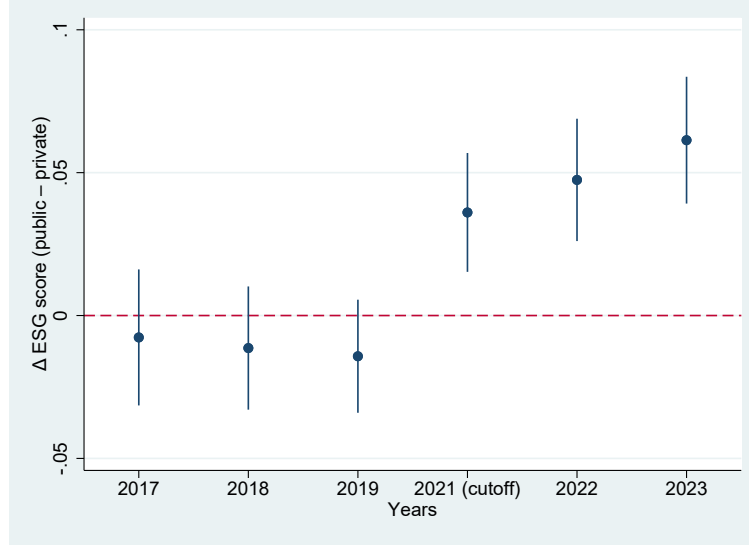


Figure 2: This illustration plots the average difference in predicted ESG scores between public and private companies in each calendar year from 2017 through 2023. The predictions are generated from an OLS regression that includes a public-by-year interaction term, control variables, and company- and industry-level fixed effects. Standard errors are clustered at the company level. The horizontal axis represents year (with 2020 as base year), and the vertical axis represents the average predicted ESG score with other covariates at their observed values and company fixed effects at 0. The difference between the public and private lines for a given year represents the impact of public ownership on ESG compared to 2020. A dashed red line at zero marks the 2020 baseline. Dots indicate point estimates of $\text{Public} \times \text{Year}$ from the lead-lag specification. Vertical lines show 95% confidence intervals.

4.6. Robustness checks

To assess robustness, we conduct two complementary checks.

(i) *Propensity-score matching.* To examine whether publicly listed companies exhibit lower ESG performance than comparable private companies, we apply a propensity-score matching (PSM) approach. Industries are first reclassified into GICS industry groups to reduce fragmentation and improve matching quality. We then estimate a logit model predicting public-listing status using company characteristics (*size*, *leverage*, *liquidity*, *capital intensity*, *B2B orientation*, *R&D operations*, and *foreign operations*), as well as year and GICS-industry fixed effects. Using the resulting propensity scores, we perform 1! :1! nearest-neighbour matching without replacement and a caliper of 0.05. All 547 treated observations (public companies) find suitable matches among the 939 private-company observations.

Table 6 reports the propensity-score matching results. Post-matching balance diagnostics show a substantial improvement in covariate balance: the standardized mean difference in propensity scores declines from 1.7273 before matching to 0.0001 after matching, and the variance ratio approaches unity. These diagnostics indicate that publicly listed companies are effectively matched with observationally similar private companies based on the included covariates.

The estimated average treatment effect on the treated (ATET) is -0.0534 ($p = 0.002$),

indicating that publicly listed companies exhibit lower ESG scores than matched private companies. This estimate is consistent in sign and magnitude with the baseline fixed-effects regressions. However, the PSM results should not be interpreted as causal: while matching reduces observable differences, unobserved factors, such as organizational culture, disclosure practices, and stakeholder exposure, may still influence listing status and ESG outcomes.

Accordingly, we interpret the PSM results as complementary evidence that the negative association between public ownership and ESG performance is not driven solely by observable company characteristics. Rather than identifying a causal effect of ownership form, the analysis reinforces the robustness of this association across alternative empirical approaches.

Table 6: Propensity score matching results: Impact of public ownership on ESG scores

	Treated	Matched	ATET	Std.	z	$P > z $	95% CI
ESG score	547	547	-0.0534***	0.0172	-3.11	0.002	-0.0871 — -0.0200
<i>Balance diagnostics</i>							
<i>Propensity score</i>							
Standardized difference	1.7273	0.0001					
Variance ratio	1.4475	0.9996					
Controls	Yes						
Year	Yes						
Industry	Yes						

Notes: The table presents propensity score matching (PSM) estimates of the impact of public ownership on ESG scores. First, we estimate a logit model for the likelihood of being publicly listed, including seven company-level covariates alongside year and 4-digit GICS-industry fixed effects. Predicted propensity scores are then used for 1:1 nearest-neighbour matching without replacement (caliper = 0.05), matching all 547 treated (public) companies to 547 of 939 private companies. “Balance diagnostics” report standardized differences and variance ratios of the propensity score, pre- and post-matching. ATET denotes the average treatment effect on the treated (public companies), i.e., the mean difference in ESG scores between matched public and private companies. *** denotes statistical significance at the 1% level.

(ii) *Alternative ESG score construction.* As an additional robustness check, we replicate all analyses using an alternative ESG measure constructed by first aggregating the equal-weighted pillar scores and then calibrating the composite score against LSEG benchmarks. The results remain qualitatively unchanged, indicating that our findings are not sensitive to the specific ESG score construction.

5. Concluding remarks and discussion

This study examines the relationship between ESG performance, financial outcomes, and ownership structure in Brazil, an emerging market with evolving regulatory institutions. Using a unique panel of public and private companies from 2017 to 2023, we show how ownership form shapes ESG scores in this context. Consistent with research on evaluative infrastructures, our findings suggest that ESG scores reflect not only underlying practices but also how governance and disclosure arrangements become visible and comparable through specific scoring systems (Gray, 2010; Kornberger et al., 2017; van Weeren and Bluntz, 2025).

Because evaluative infrastructures operate most strongly where companies are economically visible and subject to public comparison, our evidence primarily applies to large companies participating in a prominent Brazilian market ranking. The dataset does not represent SMEs or the broader population of companies. This boundary condition is substantively meaningful: disclosure routines, reputational exposure, and evaluative scrutiny are strongest in this segment, shaping how ESG becomes measurable across ownership forms.

Against this backdrop, our results clarify how ownership form interacts with governance and disclosure incentives in evaluative settings. First, public–private differences in ESG scores are concentrated in the governance pillar, while environmental and social differences are not robust once company characteristics are controlled for. Publicly listed companies exhibit lower governance scores than comparable private companies. This pattern contrasts with evidence from developed markets, where listing is often associated with stronger ESG disclosure incentives (Gillan et al., 2021; Grewal et al., 2019), and instead aligns with the “amoral drift” perspective of Hart and Zingales (2017). In Brazil’s institutional context, short-term market pressures may limit the adoption and formalization of governance and disclosure practices recognized by ESG scoring systems, particularly under the largely voluntary disclosure regime prevailing before CVM59.

Second, profitability is positively associated with ESG performance, but only under conditions of lower financial pressure (e.g., low leverage, low liquidity, or low capital intensity) or in environmentally sensitive industries. This pattern supports financial slack theory (Cyert and March, 1963; Bourgeois, 1981; Waddock and Graves, 1997; Seifert et al., 2004), which predicts that slack resources enable ESG engagement when competing financial demands are limited. From an accounting perspective, profitability may also facilitate the documentation and reporting of ESG activities in forms recognizable to external evaluators (Bebbington and Larrinaga, 2014; Cormier et al., 2005; Gray, 2010).

Third, family ownership is positively associated with profitability, particularly in privately held companies. This pattern is consistent with concentrated ownership aligning control and cash-flow rights, thereby reducing agency conflicts and improving operational efficiency (Anderson and Reeb, 2003; Bertrand and Schoar, 2006). In publicly listed companies, however, the profitability advantage of family control weakens, consistent with entrenchment risks and conflicts with minority shareholders in emerging-market ownership structures (La Porta et al., 1999; Leal and Carvalhal-da-Silva, 2005).

Fourth, companies transitioning from public to private ownership exhibit a significant increase in ESG scores. Given the small number of observed ownership transitions, this result should be interpreted as suggestive rather than causal. Combined with the cross-sectional findings, the pattern indicates that ownership form itself shapes how governance and reporting practices translate into measured ESG outcomes, consistent with evidence

that private companies can develop distinct accountability infrastructures outside mandatory reporting regimes (Dedman et al., 2014).

Finally, the introduction of CVM59 in 2021 is associated with a sustained increase in reported ESG scores among listed companies, consistent with disclosure mandates reshaping governance and reporting routines (Christensen et al., 2021; O'Dwyer et al., 2011; Contrafatto, 2014). Decomposing the ESG score shows that this effect is driven by improvements in governance, while environmental and social scores remain largely unchanged. This suggests that mandatory disclosure primarily affects governance and reporting infrastructures rather than underlying environmental or social practices. The results therefore align with international evidence on the effects of ESG disclosure regulation (Ioannou and Serafeim, 2011; Christensen et al., 2021; Krueger et al., 2024).

These findings have important implications for investors and regulators. For investors, ownership structure provides an important lens for interpreting ESG and financial performance. In emerging markets, private companies, particularly family-owned ones, may achieve stronger sustainability outcomes than public companies. For regulators, the evidence suggests that disclosure mandates can increase reported ESG scores without short-term profitability penalties. This supports extending standardized ESG disclosure requirements beyond listed companies to large private companies, while recognizing that whether such score increases reflect substantive behavioral change or reporting effects remains an open question.

This is particularly relevant as Brazil's securities regulator has introduced a framework for sustainability and climate disclosures aligned with ISSB standards. Voluntary reporting will begin in 2024, with mandatory reporting for listed companies in 2026.⁸ Our results suggest that these reforms may improve the quality and comparability of disclosures among listed companies, although whether similar gains will extend to private companies remains an open question.

Appendix

See Tables A1–A5.

⁸See: <https://www.thomsonreuters.com/en-us/posts/legal/brazil-lawyers-esg/>

Table A1: Definitions and measurements for ESG variables

Pillar	Category	Variable	Measurement
E pillar	Emissions	Emissions and climate factors in investments	D: 1 if the company includes the factors emissions and climate in investments, 0 otherwise.
		Carbon neutrality target year	How soon does the company have a public commitment to become carbon neutral? (0: no commitment, 1: > 15 years, 2: 11–15 years, 3: 6–10 years, 3(median): sector is not considered as main CO2 emitter, 4: 0–5 years).
	Innovation	Carbon absorbtion target year	Does the company have a public commitment to absorb more carbon than it emits in how long? (0: no, 1: > 15 years, 2: 11–15 years, 3: 6–10 years, 3(median): sector is not considered as main CO2 emitter, 4: 0–5 years).
		Climate certificates	D: 1 if the company has climate-related certificates, 0 otherwise.
		Cost reduction through ESG actions	Has the company implemented sustainability and ESG actions that have contributed to a reduction in costs? If so, how much does this reduction represent in relation to net revenue? (0: no actions, 1: < 5%, 2: 5.1% – 10%, 3: 10.1% – 15%, 4: 15.1% – 20%, 5: > 20%).
		ESG investments	The percentage of net revenue invested in sustainability and ESG last year. (0: 0%, 1: 0.01% – 0.5%, 2: 0.51% – 1%, 3: 1.01% – 2%, 4: 2.01% – 3%, 5: 3.01% – 4%, 6: > 4%).
	Resource use	Green R&D investments	The percentage of the R&D (Research and Development) budget invested in research and development of green technologies. (0: no measurement, 1: <= 20%, 2: 21% – 40%, 3: 41% – 60%, 4: 61% – 80%).
		Environmental and social supplier monitoring	D: 1 if the company monitors its suppliers for environmental and social aspects (including labor), 0 otherwise.
		Environmental and social supplier programs	D: 1 if the company has programs to develop the social and environmental practices of its suppliers, 0 otherwise.
		Products for low-income communities	D: 1 if the company offers products and services for the benefit of the inclusion of low-income people and disadvantaged communities in the sector in which it operates, 0 otherwise.
S pillar	Community	Income-generating opportunities for poor communities	D: 1 if the company creates income-generating opportunities for poor communities, 0 otherwise.
		Hiring employees from vulnerable groups	D: 1 if the company has targets for hiring employees from the most vulnerable groups in the region where it operates (e.g. illiterate people, people over 60, black people, women, others), 0 otherwise.
		Local development strategy	D: 1 if the company follows a local development strategy with shared goals with NGOs, local governments and other companies, 0 otherwise.
		Structured dialog processes with stakeholders	D: 1 if the company has structured dialog processes (identification of stakeholders, engagement planning, treatment of stakeholder opinions, others) in its relations with its stakeholders, 0 otherwise.
	Human rights	Number of labor lawsuits filed by employees	1 – total number of labor lawsuits filed by employees, regardless of outcome.
		Number of labor lawsuits filed by third parties	1 – total number of labor lawsuits filed by third parties, regardless of outcome
		Percentage of revenue from sustainable products	The percentage of net revenue obtained from new, more sustainable products and services. (0: 0%, 1: < 5%, 2: 10.1% – 15%, 3: 15.1% – 20%, 4: 20.1% – 25%, 5: > 50%).
		Frequency of performance appraisal process	The frequency of the companies formal performance appraisal process carried out.
	Workforce	Employee education	Count variable determining how the company encourages continuing education for employees. (Internal training, agreements with schools and universities, online training, corporate university, no offer).
		Identification of employee training needs	Count variable determining how the company identifies training needs. (Strategic planning, evaluation of performance, company performance indicators, request from supervisors and managers, negotiated between employees and supervisors, needs in employee's Individual Development Plans (IDPs), others, no formal evaluation).

Notes: This table provides definitions and measurements of the variables used to construct the ESG scores. All variables are sourced from survey data. Variable encoding is in parentheses. “D” determines dummy variable.

Table A1: continued

Pillar	Category	Variable	Description
G pillar		Employee training results	Count variable determining how the evaluation of training results is verified. (Optimization of work process, achievement of strategic planning goals, individual performance indicators, organizational performance indicators, others, no formal evaluation).
		Dealing with learning and retraining needs	Count variable determining how the company deals with the need for continuous learning, retraining and updating on the part of its professionals. (Facilitate access to short courses, facilitate access to postgraduate courses, enrollment in courses to think openly and innovatively, training system/platform or content, partnership with entity that provides training or courses, sending to innovation events in Brazil, sending to innovation events abroad, no actions on trainings).
		Employee dialogue channel	Which open channel for dialogue does the company use the most? (0: none, 1: ombudsman, 2: telephone line, 3: e-mail/mailbox/confidential intranet, 4: confidential intranet/mobile app).
		Deadline for answering questions	How is the deadline set for answering questions registered through the 'open channel'? (0: no answer, 1: answered according to the availability of the team responsible, 2: answered within a pre-established timeframe by the responsible team).
	CSR strategy	Employee satisfaction	How satisfied are most employees with the company? (1: < 60%, 2: 60% – 79.9%, 3: 80% – 89.9%, 4: 90% – 100%).
		Employee health plan	Offering of health plan by the company. (0: no offer, 1: fully paid by employee, 2: mostly paid by employee, 3: paid 50/50 by company and employee, 4: mostly paid by company, 5: fully paid by company).
		Performance reporting	Do the performance reports present economic-financial results and results relating to environmental and social responsibility issues? (0: no, 1: partially, 2: yes).
		Public performance reporting	C: Are performance reports containing economic and financial results and results relating to environmental and social responsibility issues made available to the external public? (0: no, 1: partially, 2: yes).
	Management	Sustainability report	Count variable determining the structure of the company's sustainability report. (Performance indicators developed with stakeholder engagement, includes negative results, is independently audited, indicators are presented with their time series, includes results on gender equality targets, GRI standard not adopted, not published).
		Compliance board	D: 1 if governance is existent in the company, 0 otherwise.
		Compliance advisory board	D: 1 if the company has an advisory board, 0 otherwise.
		Number of women in board	Number of women in board.
		Number of different nationalities in board	Number of board members of different nationalities or Brazilians living abroad (people living in other cultures).
		Board age difference	Difference in years between the age of the oldest board member and the youngest board member.
		Board evaluation	D: 1 if the company has a formal individual assessment process for the reappointment of board members, 0 otherwise.
		CEO performance evaluation	D: 1 if the company's board of directors evaluate the performance of the CEO (even if he/she is the owner or a member of the controlling family, in the case of family businesses), 0 otherwise.
		Employees taking part in setting their own targets	Do employees take part in setting their own targets? (0: no, 1: yes, everyone, 2: yes, only strategic, 3: yes, strategic and tactical, 4: yes, tactical and operational).

Notes: This table provides definitions and measurements of the variables used to construct the ESG scores. All variables are sourced from survey data. Variable encoding is in parentheses. "D" determines dummy variable.

Table A2: Descriptive statistics for ESG variables

Pillar	Category	Variable	Obs.	Mean	Std.	Min	Median	Max
E pillar	Emissions	Emissions and climate factors in investments	1,058	0.76	0.43	0.00	1.00	1.00
		Carbon neutrality target year	850	2.89	1.75	0.00	3.00	5.00
		Carbon absorption target year	845	2.98	1.95	0.00	3.00	5.00
	Innovation	Climate certificates	1,248	0.38	0.49	0.00	0.00	1.00
		Cost reduction through ESG actions	473	1.05	0.81	0.00	1.00	5.00
		ESG investments	504	2.55	1.96	0.00	2.00	6.00
		Green R&D investments	527	1.25	1.50	0.00	1.00	5.00
	Resource use	Environmental and social supplier monitoring	2,366	0.82	0.38	0.00	1.00	1.00
		Environmental and social supplier programs	2,312	0.51	0.50	0.00	1.00	1.00
S pillar	Community	Products for low-income communities	1,936	0.65	0.48	0.00	1.00	1.00
		Income-generating opportunities for poor communities	2,242	0.77	0.42	0.00	1.00	1.00
		Hiring employees from vulnerable groups	2,118	0.54	0.50	0.00	1.00	1.00
		Local development strategy	2,267	0.60	0.49	0.00	1.00	1.00
		Structured dialog processes with stakeholders	2,314	0.89	0.32	0.00	1.00	1.00
	Human rights	Number of labor lawsuits filed by employees	1,516	-256.91	911.41	-14,104	-38.00	0.00
		Number of labor lawsuits filed by third parties	1,260	-153.06	443.91	-5,859	-25.00	0.00
	Product responsibility	Percentage of revenue from sustainable products	196	1.83	2.04	0.00	1.00	5.00
		Frequency of performance appraisal process	2,453	3.11	0.91	1.00	3.00	6.00
	Workforce	Employee education	2,208	2.92	1.01	0.00	3.00	4.00
		Identification of employee training needs	2,487	3.22	1.52	0.00	3.00	7.00
		Employee training results	2,453	1.87	1.31	0.00	2.00	5.00
		Dealing with learning and retraining needs	1,516	3.79	2.00	0.00	4.00	7.00
		Employee dialogue channel	1,859	2.01	1.19	0.00	2.00	4.00
		Deadline for answering questions	1,751	1.86	0.36	0.00	2.00	2.00
		Employee satisfaction	2,287	2.57	0.94	1.00	3.00	4.00
		Employee health plan	2,043	3.88	0.95	0.00	4.00	5.00
	CSR strategy	Performance reporting issues	1,336	1.48	0.72	0.00	2.00	2.00
		Public performance reporting	469	1.54	0.69	0.00	2.00	2.00
G pillar	Management	Sustainability report	1,151	2.44	1.90	0.00	3.00	5.00
		Compliance board	557	0.76	0.43	0.00	1.00	1.00
	CSR strategy	Compliance advisory board	127	0.48	0.50	0.00	0.00	1.00
		Number of women in board	445	1.74	1.02	1.00	1.00	8.00
		Number of different nationalities in board	115	2.63	1.74	1.00	2.00	7.00
		Board age difference	247	26.91	10.66	1.00	27.00	60.00
		Board evaluation	1,451	0.42	0.49	0.00	0.00	1.00
		CEO performance evaluation	899	0.74	0.44	0.00	1.00	1.00
		Employees taking part in setting their own targets	1,809	1.86	1.17	0.00	1.00	4.00

Notes: This table reports summary statistics on the ESG variables pre standardization and aggregation into ESG pillar scores.

Table A3: Definitions of variables

Variable	Measurement	Source
ESG score	Environmental, social, governance (ESG) score.	Own calculation / survey
E score	Environmental pillar score.	Own calculation / survey
S score	Social pillar score.	Own calculation / survey
G score	Governance pillar score.	Own calculation / survey
LSEG ESG score	LSEG's environmental, social, governance (ESG) score divided by 100.	LSEG
LSEG E score	LSEG's environmental pillar score divided by 100.	LSEG
LSEG S score	LSEG's social pillar score divided by 100.	LSEG
LSEG G score	LSEG's governance pillar score divided by 100.	LSEG
Public	D: 1 if the company is listed on the Brazilian stock exchange B3, 0 otherwise.	Survey
Family	D: 1 if the company is family-owned?, 0 otherwise.	Survey
ROA	Return on assets in percent.	Survey
Size	(Logarithm of) total assets.	Survey
Leverage	Total short-term loans and financing plus total long-term loans and financing, divided by total assets.	Survey
Liquidity	(Logarithm of) liquidity.	Survey
Capital intensity	Depreciation divided by total assets.	Survey
B2B	D: 1 if the company is primarily engaged in business-to-business activities, 0 otherwise.	Survey
R&D operations	D: 1 if the company has Research and Development (R&D) / innovation operations in Brazil, 0 otherwise.	Survey
Foreign operations	D: 1 if the company operates abroad, 0 otherwise.	Survey
Go private	D: 1 if the company changed its ownership status from public to private, 0 otherwise.	Survey
Go public	D: 1 if the company changed its ownership status from private to public, 0 otherwise.	Survey

Notes: This table provides the definitions of the variables, which are used in econometric analyses. “D” determines dummy variable.

Table A4: Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 ESG score	1.00																			
2 E score	0.24	1.00																		
3 S score	0.18	0.31	1.00																	
4 G score	0.24	0.13	0.23	1.00																
5 LSEG ESG score	0.69	0.33	0.22	0.23	1.00															
6 LSEG E score	0.57	0.38	0.26	0.26	0.88	1.00														
7 LSEG S score	0.65	0.31	0.19	0.18	0.92	0.75	1.00													
8 LSEG G score	0.61	0.19	0.11	0.21	0.81	0.56	0.63	1.00												
9 Public	-0.03	0.10	0.08	-0.21	-0.25	-0.21	-0.22	-0.24	1.00											
10 Family	-0.05	-0.05	-0.08	-0.16	-0.39	-0.25	-0.48	-0.21	-0.08	1.00										
11 ROA	0.04	-0.07	0.02	-0.02	-0.04	-0.05	0.02	-0.08	-0.15	0.22	1.00									
12 Size	0.13	0.23	0.24	0.07	0.37	0.39	0.34	0.25	0.52	-0.19	-0.19	1.00								
13 Leverage	0.05	0.07	0.03	0.04	0.13	0.22	0.12	0.02	0.20	0.08	-0.34	0.19	1.00							
14 Liquidity	-0.05	-0.09	-0.04	-0.09	-0.21	-0.30	-0.14	-0.08	0.09	0.22	0.28	-0.10	-0.21	1.00						
15 Capital intensity	0.08	0.09	0.08	0.10	0.26	0.21	0.18	0.32	0.01	-0.00	-0.07	0.01	0.13	-0.22	1.00					
16 B2B	0.13	0.02	0.01	-0.02	0.08	0.06	0.08	0.09	-0.14	0.13	0.14	-0.22	-0.03	0.15	0.10	1.00				
17 R&D operations	0.10	0.14	0.20	0.12	0.21	0.24	0.20	0.14	0.12	0.02	0.03	0.23	0.01	0.06	-0.00	-0.00	1.00			
18 Foreign operations	0.06	-0.01	0.17	0.05	0.18	0.20	0.11	0.19	0.01	0.04	0.12	0.16	0.01	0.05	0.01	0.21	0.18	1.00		
19 Go private	0.04	0.02	0.04	0.06					-0.06	-0.03	-0.05	0.03	0.07	-0.05	0.03	-0.03	-0.01	-0.03	1.00	
20 Go public	0.03	-0.01	0.03	-0.04	-0.07	-0.11	0.01	-0.14	0.15	0.02	-0.01	0.04	-0.00	-0.04	-0.03	-0.00	0.01	-0.02	-0.01	1.00

Notes: This table reports the pairwise Pearson correlation coefficients.

Table A5: ESG disclosure mandate impact on E, S, and G scores of public companies

	E score	S score	G score
	(1)	(2)	(3)
Public $\times$ Year $\geq$ 2021 (DiD term)	0.000 (0.041)	0.006 (0.020)	0.344*** (0.056)
Public	-0.231*** (0.069)	0.063 (0.042)	-0.315*** (0.095)
Constant	0.036 (0.323)	0.466*** (0.156)	0.864*** (0.280)
Controls	Yes	Yes	Yes
Year	Yes	Yes	Yes
Industry	Yes	Yes	Yes
Company	Yes	Yes	Yes
N	1,380	1,380	1,380
Adjusted R^2	0.510	0.538	0.459

Notes: This table reports the results of difference-in-differences (DiD) regression models, where the dependent variable is the E score (Model 1), S score (Model 2), and G score (Model 3), respectively. All models include the same set of company-level control variables as in Table 2. Company fixed effects are absorbed. Year and industry effects are included as indicator variables. The coefficient of Public $\times$ Year $\geq$ 2021 equals the average change in the respective ESG pillar score for public companies attributable to CVM59. Company-level clustered standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

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