

Corporate Strategic Trade-off Between Selective Disclosure and Real Environmental Efforts: Evidence from Investor Perceptions*

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Abstract

The credibility of corporate environmental disclosures has come under increasing scrutiny in recent years. This study examines how firms make strategic trade-off between selective disclosure and real environmental efforts. Utilizing a global dataset spanning from 2011 to 2023, we find consistent evidence that selective disclosure behaviors is negatively associated with abatement performance both in the short and long term. However, this phenomenon weakens with a long-term orientation culture, a more transparent information environment and heightened compliance requirements. By studying investors' perceptions on these two corporate environmental behaviors, we find that investors strategically tolerate a modest level of selective disclosure rather than reacting in a completely negative manner. This reveals a potential reason why firms tend to substitute selective disclosure for emission reduction actions. Overall, our findings provide evidence for the trade-off between corporate selective disclosure and actual emissions reduction, and highlight the importance of responsible investment in achieving sustainability targets.

JEL classification: G01, G32, G38, M14, Q5

Keywords: Corporate environmental disclosure, Selective disclosure, Decarbonization, Market valuation, Institutional ownership, Time horizon, Information environment, Compliance

Word count: 6981

1 Introduction

To address climate change and achieve the Paris Agreement’s goal of limiting global temperature rise to 1.5 degrees Celsius above pre-industrial levels, many countries have committed to transitioning to a net-zero economy by mid-century (TCFD, 2021). As major contributors to global warming, corporations are increasingly expected to take decisive decarbonization actions. However, in response to mounting stakeholder pressure, some firms resort to “greenwashing” activities to mislead the public and maintain legitimacy. Despite reporting a wide range of environmental information, firms engaging in greenwashing often fail to fulfill their environmental commitments, and their symbolic disclosures rarely translate into actual improvements in environmental performance (Schoeneborn et al., 2020; Rogelj et al., 2023; Kudlak, 2024).

We identify three main types of corporate “greenwashing” behaviors in the existing literature. First, firms overstate their environmental efforts to obscure their poor environmental performance by reporting a wide range of environmental information to mislead stakeholders (Delmas and Burbano, 2011; Yu et al., 2020; Zhang, 2022; Chen and Dagestani, 2023; Hu et al., 2023). Second, firms usually set ambitious environmental targets but fail to implement them or subsequently rescind their environmental commitments (Rogelj et al., 2023; Jiang et al., 2025). Third, they tend to selectively highlight positive environmental information while concealing negative aspects, thus creating a misleading impression to the public (Lyon and Maxwell, 2011; Walker and Wan, 2012; Marquis et al., 2016; Arouri et al., 2021; Pope et al., 2024). In this research, we focus on the third type of “greenwashing” and use selective disclosure magnitude developed by Marquis et al. (2016) to measure the extent to which firms disproportionately reveal relatively benign performance indicators while concealing harmful ones.

In this paper, we investigate how firms make strategic trade-off between selective disclosure and actual environmental efforts. Our analysis yields several key findings. First, firms’ selective disclosure in terms of environmental indicators signals a lack of sustainability commitment in the long run. A greater extent of selective disclosure is associated with fewer actual efforts on reducing their carbon emissions in the future. Second, we prove that firms are less likely to substitute actual carbon abatement with selective disclosure when they have a long-term orientation, operate in a more transparent information environment and face higher compliance requirements. Third, a modest degree of selective disclosure may enhance perceptions or attract investors, especially institutional investors, which may explain why firms tend to substitute selective disclosure for emission reduction actions. Overall, our findings indicate that firms view selective disclosure as a short-term cost-saving alternative to actual carbon abatement, which can help save resources and mitigate external concerns.

We start our research by investigating the correlation between corporate selective disclosure and real abatement efforts. There is inconsistent understanding of the relationship between corporate greenwashing behaviors and subsequent environmental efforts and actions, either they serve as the substitutes (Bingler et al., 2024; Grewal et al., 2024) or complements (Kleinert, 2023). Our study distinguishes itself by viewing selective disclosure and abatement actions as two environmental strategies that may contribute to the objective function of market value maximization. We investigate the correlation instead of causation of these two strategies, our goal is to determine how firms balance the costs and benefits of selective disclosure and abatement efforts when jointly engage in these two activities simultaneously, as the costs and benefits of one activity may influence the costs and benefits of the other. In this way, firms’ intensive engagement in selective disclosure may signal a lack of credible commitment in net zero transitions. Our research on this issue enhances the understanding of the relationship

between firms' green communication and actions (Lyon and Maxwell, 2011; Marquis et al., 2016; Hu et al., 2023), providing new insights into the relationship between selective disclosure and carbon abatement from the perspectives of institutional theory.

Despite the growing body of research on corporate environmental strategies (Roberts, 1992; Clarkson et al., 2008; Artiach et al., 2010; Bingler et al., 2024), it remains unclear how firms' preferences toward selective disclosure and carbon abatement can be predicted depending on the institutional environment. Our study extends the stream of research by identifying boundary conditions that moderate the selective disclosure–carbon abatement relationship. We view selective disclosure and abatement actions as two environmental strategies that firms substitute based on their relative costs. If firms perceive increasing implied cost of making selective disclosure or increasing benefit of abatement, they may be less likely to substitute selective disclosure for actual carbon abatement to avoid the excessive costs associated with greenwashing behaviors (Marquis et al., 2016; Duchin et al., 2024; Grewal et al., 2024). We confirm that a set of institutional factors relevant to implied costs and benefits influence the trade-off between corporate selective disclosure and carbon abatement, such as time horizon, information transparency and compliance. This investigation on the moderating factors is significant as it provides evidence of firms' dynamic responses to the institutional environment, demonstrating their flexibility in optimizing green efforts on communication and actions based on different situations.

To clarify the mechanisms underlying the substitution between firms' selective disclosure and abatement efforts, we extend previous research by analyzing the financial market reaction to these two environmental strategies from the institutionally grounded perspective. Previous studies mainly focus on market reactions to media-reported greenwashing controversies, finding investors' negative responses to controversial news (Du, 2015; Cartellier et al., 2023). However, other studies find that a certain degree of greenwashing can increase firm value by improving information readability, alleviating stakeholder concerns, and reducing financing constraints (Schons and Steinmeier, 2016; Chen and Dagestani, 2023). Therefore, the current debate over how investors perceive a company's selective disclosure remains unresolved, particularly among institutional investors. As important corporate shareholders, institutional investors monitor corporate operations through equity holdings (Liu et al., 2020; Fauver et al., 2024). Our research fills this gap and extends the literature on stakeholders' reactions to green talk and walk by showing how investors perceive firms' selective disclosure and carbon abatement simultaneously, which offers a potential explanation as to why firms may choose to engage in “greenwashing”. Due to strategic tolerance by investors, firms have greater leeway to engage in greenwashing, viewing it as a substitute for actual environmental achievements to alleviate external concerns.

The rest of this paper is structured as follows. Section 2 presents a review of literature and the development of hypothesis. Section 3 presents an overview of data collection, variable construction and empirical methodology. Section 4 presents the analysis of empirical results and the discussion of main findings, and Section 5 provides the conclusion of the paper.

2 Literature review and hypothesis development

2.1 Selective disclosure and real environmental efforts

As one specific type of corporate greenwashing, selective disclosure occurs when firms disclose relatively benign environmental metrics while concealing those more representative of their overall environmental hazards (Marquis et al., 2016). Prior research has examined various factors—at the micro, meso, and macro levels—that influence firms' propensity for greenwashing. These include firm-level governance (Yu et al., 2020), moral insurance (Kassinis et al., 2022), cross-listing status (Marquis et al., 2016; Yu et al., 2020), the presence of green financial systems to alleviate financial constraints (Zhang, 2023; Xia et al., 2023), and public attention from social media (Lyon and Montgomery, 2013; Pope et al., 2024; Long et al., 2024).

There is limited literature studying the correlation between firms' decisions to abate and to greenwash. This trade-off is significant as it reflects firms' credibility in transitioning toward net-zero emissions and their accountability for meeting corporate transition targets (Jiang et al., 2025). Bingler et al. (2024) investigate the relationship between a cheap talk index and relative changes in total emissions, finding that this kind of greenwashing behavior correlates with higher emissions growth from 2017 to 2020. Grewal et al. (2024) also suggest the substitution between greenwashing and real environmental efforts. Low-quality disclosures may indicate a lack of commitment to sustainability and an inability to reduce their environmental impacts. However, Kleinert (2023) identifies a complementary relationship between start-up firms' cheap talk and costly actions, thus transforming high ambitions from cheap talk into credible signals. It remains unclear whether corporate selective disclosure is genuinely associated with worse abatement performance in the future years.

We aim to examine whether the relationship between selective disclosure and carbon abatement is substitutive or complementary. Clarifying this issue can help differentiate between "vocal green" and "vocal brown" firms (Delmas and Burbano, 2011). Since firms sometimes engaging in greenwashing can create a misleading impression in environmental management, they may lack the motivation to invest in genuine mitigation measures when they can maintain their green image and alleviate external concerns in a more cost-effective manner. Based on these perspectives, the first hypothesis is formulated as follows:

Hypothesis 1: Contemporaneous selective disclosure is associated with poorer carbon abatement in future years.

2.2 The moderating role of institutional factors

Next, we aim to figure out how firms' trade-offs between selective disclosure and real environmental efforts can be influenced by institutional environment. Institutional theory posits that organizations are influenced by the norms, values, and expectations of their institutional environments, leading them to adopt certain practices to gain legitimacy and resources (DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Suchman, 1995). The identification of institutional factors that moderate the relationship between selective disclosure and actual environmental efforts adds another layer to the institutional theory framework. These moderating factors may influence the cost-benefit analysis in the firm's decision-making process when pursuing the objective function of market value maximization.

2.2.1 Long time horizon

Reilly et al. (2016) argue that corporate investment is inherently dependent on time horizon, as profits are derived from acquiring assets or developing capabilities with future benefits in excess of upfront costs. In the existing literature, short-termism is defined as a suboptimal behavior, whereby decision makers abandon good long-term opportunities in favor of valuing short-term targets (Marginson & McAulay, 2008; Jackson & Petraki, 2011; Reilly et al., 2016). Time horizon is an essential factor influencing firms' choice in terms of sustainability when measuring the financial materiality of transition risks (Chan et al., 2024). Previous literature has suggested that time horizon can influence organizational action on climate change (Bansal and DesJardine, 2014; Slawinski et al., 2017). As investments in abatement technologies add a significant cost burden within short time horizon, short-term oriented firms would inherently find actual abatement actions less cost-effective than selective disclosure compared to long-term oriented firms, who perceive abatement capacity as a beneficial approach to reduce transition risks in the long run. Taking actual abatement actions requires huge investment in the short term but will pay off in the long term as the urgency toward net zero transitions grows. Selective disclosure might be a cost-saving strategy to manage impression of stakeholders in the short term, but probably cause litigation and reputation risks in the long run if firms still lack mitigation capacity toward net zero transitions.

We identify one state-level factor related with corporate long- or short-time horizon, which is the country culture in terms of long- or short-term orientation. Hofstede (2011) identifies six cultural dimensions across countries, including long- versus short-term orientation, which reflects a country's time horizon and sense of gratification. Choi et al. (2023) demonstrate that corporate CSR engagement is higher when a country has a long-term oriented culture. Instead, firms in countries with short-term orientation emphasizes short-term success and are less likely to operate in alignment with CSR. The costs of selective disclosure are high within a long time horizon, therefore long-term oriented firms are less likely to substitute selective disclosure for more costly abatement to maximize benefits in the short run, especially with the urgency of net-zero transitions (Bolton and Kacperczyk, 2023). Consequently, we propose the following hypothesis:

Hypothesis 2 (a): Organizations' long time horizon culture positively moderates (weakens the substitution) the relationship between selective disclosure and actual carbon abatement.

2.2.2 Information environment

In the realm of environmental disclosure, the credibility of green communication is influenced by many factors. Cartellier et al. (2023) suggest that greenwashing risk is exacerbated in environments with significant information asymmetry. Low transparency encourages profit-driven companies to misrepresent their environmental disclosures, misleading the public and investors. Conversely, increased transparency can reduce such behaviors by motivating socially responsible firms to invest in observable environmental improvements (Wu et al., 2020). Marquis et al. (2016) also find that firms engage less in selective disclosure with stricter scrutiny and social norms of transparency. Therefore, implied costs of selective disclosure increase with information transparency, as firms may incur litigation and reputational damage if they continue to make selective disclosures while ignoring actual emissions reductions.

We consider one exogenous policy shock that influence the information environment and firms' credibility in environmental disclosure, i.e., the implementation of mandatory ESG

disclosure regulations across different countries (Krueger et al., 2024). Mandatory ESG disclosure regulations can increase implied costs of selective disclosure, as firms may get penalized if their disclosure quality is low, thus curbing firms' intensive selective disclosure. Consequently, firms with mandatory ESG disclosure requirements increase their abatement rate where they can't engage a lot in selective disclosure to gain a green reputation and attract investors. We propose the hypothesis as follows:

Hypothesis 2 (b): Information transparency positively moderates (weakens the substitution) the relationship between firms' selective disclosure and actual carbon abatement.

2.2.3 Compliance requirements

Firms usually have ethics and legal compliance management requirements to maintain reputation and mitigate litigation risks (Treviño et al., 1999). We identify one macro-level factor that influence compliance with respect to corporate environmental disclosure, namely legal orientation. Liang and Renneboog (2017) find that the legal orientation of a firm's home country significantly influences its attitude toward CSR engagements. In common law countries, firms have discretion to decide on the adoption of CSR, whereas the adoption of CSR in civil law countries is determined by explicit or implicit rules, such as laws and regulations or societal preferences. Compared to common law countries, civil law countries have stricter regulatory protections for other stakeholders and more societal expectations for firms. As a result, the implied costs of selective disclosure in civil law countries are more likely to be higher than in common law countries, due to the potential dissatisfaction and boycotts by other stakeholders if firms continuously use intensive selective disclosure as a substitute for actual carbon abatement. Firms in civil law countries can be more willing to engage in actual carbon reduction activities rather than to use selective disclosure to meet regulatory requirements and social expectations. Consequently, we propose the hypothesis as follows:

Hypothesis 2 (c): Stricter compliance requirements in terms of CSR positively moderate (weaken the substitution) the relationship between firms' selective disclosure and actual carbon abatement.

2.3 Investor perspectives on green communication and green actions

A corporation's objective function is a rule or set of rules to guide managers in making the optimal trade-offs among multiple stakeholders. A long-standing corporate objective function is that managers should make decisions to maximize shareholder wealth (Grossman and Stiglitz, 1977; Sundaram and Inkpen, 2004; Inkpen and Sundaram, 2022). From this perspective, if managers replace real carbon abatement with more cost-saving selective disclosure, more resources can be allocated to business operations, thereby enhancing market valuation. Therefore, understanding how investors perceive corporate sustainability communication and performance can help us clarify why firms substitute selective disclosure for genuine environmental efforts.

According to institutional theory, stock market valuations are the result of investors' perceptions of signals related to a firm's legitimacy, rather than rational, efficiency-oriented assessments (Suchman, 1995). Previous studies suggest that stock market reaction to corporate strategic decisions tend to be socially constructed (DiMaggio and Powell, 1983; Zajac and Westphal, 2004; Bell et al., 2014; Krause et al., 2015). Firms may engage in CSR activities and disclose environmental information to achieve support and attract external resources (Roberts,

1992; Chen and Roberts, 2010). However, not all corporate environmental disclosures are credible, as firms may conceal negative information while highlighting positive achievements to mislead the public (Walker and Wan, 2012). Even though corporate green communication can be a signal to various stakeholders (Li et al., 2023), more disclosure in terms of corporate environmental information does not necessarily imply a higher level of green action. The decoupling of corporate environmental communication and action can be seen as a means of impression management of stakeholders (Fiss and Zajac, 2006; Kudlak, 2024).

Testa et al. (2018) show that pressure from shareholders encourages corporate greening. Investors usually respond positively to firms with strong environmental performance (Cordeiro and Tewari, 2015) and may demand a risk premium for holding shares in more polluting firms (Hsu et al., 2023). However, investors typically react negatively to controversies related to greenwashing. Du (2015) suggested that investors penalize greenwashing firms through disinvestment following environmental controversies. Punitive actions by green investors can effectively curb firms' such behaviors (Cartellier et al., 2023). However, the negative consequences of greenwashing can be minimized without external accusations (Seele & Gatti, 2017). Consequently, firms might have the incentives to engage in selective disclosure to maintain their reputation and mislead investors. Alternatively, investors strategically tolerate firms' selective disclosure, viewing it as an improvement of information readability to attract more resources (Schons and Steinmeier, 2016; Chen and Dagestani, 2023).

As the largest shareholders in most corporations, institutional investors care about firms' practice in corporate social responsibility (Nofsinger et al., 2019) and CSR reporting regimes (García-Meca and Pucheta-Martínez, 2018). They increasingly value and demand climate disclosure, with growing expectations for transparency and accountability (Boone and White, 2015; Aluchna et al., 2022; Ilhan et al., 2023). For example, Ilhan et al. (2023) find a positive association between institutional ownership and voluntary environmental disclosure. Gibbons (2023) also shows that corporate reporting of E&S information is associated with increased investment by institutional owners. Consequently, institutional investors prefer firms to disclose environmental information that enhances the firm's financial value. However, if firms disclose more substantive environmental information, institutional investors might react negatively, as such disclosures could reveal significant environmental impacts from the firms' operations, potentially harming their green image. Hence, we propose the following hypothesis:

Hypothesis 3: Both selective disclosure and actual carbon abatement increase firm valuation and institutional ownership.

3 Data and Methodology

3.1 Sample

We utilize an unbalanced panel dataset spanning from 2011 to 2023, focusing on the listed firms from FR Global Index as selected by the London Stock Exchange Group (LSEG), formerly known as Refinitiv Workspace. The FR Global Index contains over 10,000 stocks from 51 markets, broken down into different countries, regions, and sectors. LSEG employs a four-tier approach that specifies the minimum size, cumulative market capitalisation, trading frequency, and traded values to be included in the Index, ensuring that all the liquid securities in a market are covered and excluding those illiquid, infrequently traded, and micro-cap securities (LSEG, 2024). Therefore, this index is well suited to meet our requirements for studying global companies. Our sample starts from 2011, as we want to rule out the systemic influence of global financial crisis from late 2007 to mid-2009. Therefore, we collect data from 2010 and calculate the reduction rate of emissions intensity starting from 2011 based on the intensity in 2010. The final sample ranges from 2011 to 2023.

To measure firms' selective disclosure magnitude, we use the difference between absolute disclosure ratio and weighted disclosure ratio from Trucost (Marquis et al., 2016). We also merge the Scope 1 and Scope 2 emissions data (generated by corporate operation directly) from Trucost to calculate the dependent variable, i.e., the reduction rate of emissions intensity. The financial statement information is retrieved from LSEG, and all monetary financial indicators are transferred to U.S. dollars. We merge data from different databases and supplement the dataset with variables from other sources, such as Hofstede culture dimensions data from Hofstede (2011) and mandatory ESG disclosure data from Krueger et al. (2024), and so on. Firms with missing emissions data, missing selective disclosure magnitude, missing financial information, or those in the financial sector are excluded from the analysis. Eventually, the data sample comprises 38,476 firm-year observations, including 5,452 firms in 69 countries. Appendix 1 presents variable definitions. Appendix 2 presents the country and sector composition of all sampled firms. Appendix 3 describes the distribution of global firms' selective disclosure magnitude and abatement rate at the country average level.

3.2 Variables

3.2.1 Dependent variable

We adopt the outcome-based measure from Delmas et al. (2013), using quantitative environmental indicators such as greenhouse gas emissions. This measurement approach allows for close tracking of the actual environmental impacts of corporations and is not easily communicated by firms. Carbon emissions is one of the most important environmental impacts from corporate operation, and decarbonization is crucial in mitigating global warming and achieving net zero economy. Our dependent variable is real abatement efforts, which is proxied by abatement rate. We focus on the firms' abatement rate in the next year period, as selective disclosure may occur by the fiscal year-end in the environmental reporting, after which firms still have the opportunity to adjust the actual abatement level based on the outcome of selective disclosure until the end of the calendar year-end. To calculate firms' abatement rate, we adopt the annual reduction rate of firms' emissions intensity. Emissions intensity is calculated as the ratio of scope 1 and scope 2 emissions to total assets (Hsu et al., 2023), winsorized at the 1% and 99% levels. Different from Bingler et al. (2024) using the change rate of total emissions, our measurement can rule out the influence of varying production or scale over time.

Another dependent variables are Tobin's Q and institutional ownership, which are used to measure investors' perceptions of corporate strategical signals. Tobin's Q is calculated as the ratio of market value to total assets, which can be seen as an approximation of market valuation from the investor's perspective (Yermack, 1996). This market-based indicator is a forward-looking measurement on corporate performance (Luo & Bhattacharya, 2006). Institutional ownership is calculated as the ratio of shares held by the institutional investors to total issued common shares (Chung and Zhang, 2011). To assess the institutional investors that prioritize long-term value creation, we adopt the institutional ownership with long horizon from Krueger et al (2020), which refer to the proportion of shares held by institutional investors for more than two years out of the total issued common shares.

3.2.2 Independent variable

In this paper, our independent variable is the selective disclosure magnitude in environmental information. This indicator is calculated as the difference between absolute disclosure ratio and weighted disclosure ratio from Trucost, and has been widely adopted by the literature studying firms' selective environmental disclosures (Marquis et al., 2016; Arouri et al., 2021; Pope et al., 2024). Absolute disclosure ratio measures the proportion of relevant environmental metrics disclosed by the firm each year, i.e., the ratio of environmental indicators disclosed by the firm to total environmental indicators that can be disclosed by the firm. Weighted disclosure ratio measures the proportion of monetary value of associated environmental damage disclosed by the firm each year, i.e., the ratio of environmental damage caused by the environmental indicators disclosed by the firm to total environmental damage caused by the firm. Therefore, selective disclosure magnitude can reveal firms' greenwashing levels by evaluating the extent to which firms exhibit symbolic transparency that exceeds substantive transparency. This metric captures the degree to which firms disproportionately disclose favorable or relatively benign performance indicators while obscuring genuinely harmful information. Appendix 4 provides a detailed example of how to calculate corporate selective disclosure magnitude based on their absolute and weighted disclosure levels of environmental information.

3.2.3 Moderating variables

To measure the time horizon, we employ one country culture dimension from Hofstede (2011). *LongOriented* is a standardized continuous variable based on Hofstede's measurement of the country-level long-term orientation. The higher the variable value, the more likely it is that firms in that country have a long-term oriented culture. To measure the information environment, we find the enactment time of mandatory ESG disclosure regulations across different countries from Krueger et al. (2024) and set the dummy variable *ESGmandate* to one if the firm is headquartered in the countries with mandatory ESG disclosure regulations implemented. To measure compliance requirements, we also collect the classification of common and civil law countries from Liang and Renneboog (2017), and define a dummy variable *CivilLaw* equal to one if the firm is headquartered in a civil law country.

3.2.4 Control variables

Following Artiach et al. (2010), Asgharian et al. (2024) and Bingler et al. (2024), we include a number of control variables that have been shown to be associated with environmental

performance. Firm size (LogMC) represents the natural logarithm of the firm's market capitalization. Cash holdings (Cash) is calculated as the ratio of cash and cash equivalents to total assets. Leverage (Debt) is measured as long-term debts scaled by total assets. We also control for profitability (EBITDA), which is calculated as the earnings before interest, tax, depreciation and amortization divided by total assets, and tangible assets (PPE), which is measured as the ratio of net property, plant and equipment to total assets. Besides, cash flow volatility (CFVolatility), which is represented by the value of rolling standard deviation of cash flow over a 10-year period, is controlled in our regression. We also control for the current level of corporate social responsibility (highCSR), which is a binary variable for above median ESG score in each year, and the normalized current emissions intensity (EIAssets), which is calculated as the normalized ratio of scope 1 and 2 emissions to total assets. By controlling these two indicators related with the current environmental performance, we can isolate the effect of selective disclosure on firms' carbon abatement rate in next period. To minimize the influence of outliers, all control variables are winsorized at the 1% and 99% levels, except for binary variables. We also control for year, country, industry and firm fixed effects across different specifications.

4 Empirical results

4.1 Descriptive statistics and correlation matrix

The descriptive statistics are reported in Panel A of Table 1. We report summary statistics for firms with positive and non-positive selective disclosure magnitude respectively. In the full sample, the average (median) firm in our sample has an abatement rate of -4.3% (3.4%), and a selective disclosure magnitude of -0.19 (-0.03). Furthermore, 58.1% of the firm-year observations abate emissions intensity, and 11.6% of the firm-year observations have positive selective disclosure magnitude (tendency to selective disclosure). The average (median) firm in the full sample has a Tobin's Q of 1.745 (1.136), an institutional ownership of 0.393 (0.253), a market capitalization of 4.292 (4.042) billion US dollars, a cash ratio of 0.103 (0.072), a leverage ratio of 0.22 (0.202), a profitability ratio of 0.119 (0.111), an asset tangibility ratio of 0.302 (0.247), a cash flow volatility of 0.041 (0.027). When comparing firms with and without selective disclosure tendency, we find that firms with higher selective disclosure magnitude are less likely to locate in the countries with long-term orientation cultures and civil-law rules. Panel B of Table 1 reports the Pearson correlation matrix among main variables. The matrix shows that there is a significant negative correlation between firms' selective disclosure (*SelectiveDisc*) and actual carbon abatement (*AbateRate_for1*), indicating that more selective disclosure is significantly associated with lower abate rate.

4.2 Regression results

4.2.1 The predictors of selective disclosure behaviors

First, we figure out the predictors of firms' selective disclosure behaviours. Table 2 reports the OLS estimates of different predictors with the year, country and industry fixed effects in column 1 and the year and firm fixed effects in column 2. We find that selective disclosure magnitude is negatively associated with corporate social responsibility, and emissions intensity. The results are consistent with the literature studying the characteristics associated with firms' greenwashing behaviors (Yu et al., 2020; Chen and Dagestani, 2023; Bingler et al., 2024).

4.2.2 Firms' selective disclosure and carbon abatement

In this section, we examine whether firms' selective disclosure can be a significant predictor of firms' carbon abatement in a multivariate setting. Table 3 presents the regression results for hypothesis 1. First, we use a continuous variable *SelectiveDisc_{i,t}* to measure firms' selective disclosure magnitude in columns 1 and 2. We document that a one standard deviation increase in selective disclosure magnitude is associated with a decrease in the abatement rate by 1.46% with year, country and industry fixed effects and 5.65% with year and firm fixed effects. In columns 3 and 4, we use the dummy variable *Selective_{i,t}* to measure if the firm *i* has the positive selective disclosure magnitude in year *t*. We find that firms with positive selective disclosure magnitude decrease their abatement rate by 5.35% and 10.3% compared to other firms. In columns 5 and 6, we use the dummy variable *HighSelectiveDisc_{i,t}* to measure if the firm *i* has the above median selective disclosure magnitude within the industry in year *t*. We find that firms with above median selective disclosure magnitude decrease their abatement rate by 4.49% and 9.54% compared to other firms.

The negative coefficients of the independent variables $SelectiveDisc_{i,t}$, $Selective_{i,t}$ or $HighSelectiveDisc_{i,t}$ suggest a substitution between firms' selective disclosure and carbon abatement. Some firms use "greenwashing" in substitution for real efforts to reduce emissions in order to save resources. The more they engage in selective disclosure behaviors, the less they spend on actual carbon abatement. This finding is supported by Figure 1, which depicts the substitution relationship between firms' selective disclosure and carbon abatement across the sample period. Furthermore, we plot the continuous influence of selective disclosure on future carbon abatement in Figure 2, revealing that past selective disclosure behaviors are significantly associated with lower abatement rate. Our result is consistent with the finding of Bingler et al. (2024), showing that firms' greenwashing behaviors are associated with higher emissions growth. The result supports that low-quality environmental disclosure signals corporate poor ability to perform well in terms of environmental aspects.

In Appendix 5, we also replace the dependent variable with the scores of environmental expenditure investment and environmental innovation from LSEG for the robustness check. The results are consistent with the baseline results.

4.2.3 The moderating role of institutional factors

To test the moderating role of implied cost variables on the substitution between firms' selective disclosure and carbon abatement (hypothesis 2a, 2b and 2c), we introduce various interaction terms between $SelectiveDisc_{i,t}$ and $Moderators_{i,c,t}$.

We examine the moderating role of time horizon on the relationship between selective disclosure and carbon abatement in Table 4. We find that firms' substitution behaviors can be curtailed if the implied cost associated with selective disclosure increases under certain circumstances. As shown in Table 4, without considering time horizon, the coefficient of $SelectiveDisc_{i,t}$ is significantly negative for the dependent variable abatement rate, which is consistent with the baseline results in Table 3. In column 2, the positive interaction term between $SelectiveDisc_{i,t}$ and $LongOriented_{c,t}$ with year and firm fixed effects suggests that firms headquartered in countries with long-term oriented cultures are less likely to substitute selective disclosure for real abatement efforts, compared with firms in countries with short-term orientation. Therefore, hypothesis 2(a) is supported by our results. The results are consistent with previous findings, demonstrating that short time horizon negatively affects corporate social responsibility and environmental actions (Bansal and DesJardine, 2014; Slawinski et al., 2017).

Next, we examine the moderating role of information environment on the relationship between selective disclosure and carbon abatement in Table 5. The interaction term between $SelectiveDisc_{i,t}$ and $ESGmandate_{c,t}$ is significantly positive in column 1 and insignificantly positive in column 2 with different fixed effects. We provide weak evidence to support hypothesis 2(b) that information transparency curtails firms from substituting selective disclosure for more actual carbon abatement efforts by increasing the implied cost of selective disclosure. Firms with mandatory ESG disclosure requirements increase their abatement rate where they can't engage a lot in selective disclosure to gain a green reputation and attract investors. This is consistent with the finding from Grewal et al. (2024), which suggests that mandated carbon reporting can curtail firms' greenwashing behaviors in terms of carbon performance.

Next, we test the moderating role of compliance requirements on the relationship between selective disclosure and carbon abatement in Table 6. In columns 1 and 2, the interaction term between $SelectiveDisc_{i,t}$ and $CivillLaw_{c,t}$ is insignificantly positive with year,

country and industry fixed effects and significantly positive with year and firm fixed effects. The result shows that firms headquartered in civil law countries substitute less abatement efforts with selective disclosure due to state regulations or societal preferences, compared with firms in common law countries. Therefore, hypothesis 2(c) is supported. The results are consistent with existing literature (Marquis et al., 2016; Liang and Renneboog, 2017), which suggest that these institutional factors can influence corporate social responsibility. We visualize the moderating role of these institutional factors in Figure 3. Overall, the findings in Tables 4 to 6 show that the substitution behavior diminishes if the implied costs of selective disclosure increase due to a long time horizon, a more transparent information environment and higher compliance requirements.

4.2.4 Why might firms want to substitute selective disclosure for actual carbon abatement?

Numerous papers have studied the factors that promote firms to engage in greenwashing (Testa et al., 2018; Wu et al., 2020; Cartellier et al., 2024; He et al., 2024). However, why firms substitute greenwashing behaviors for real environmental efforts remain unclear. Presumably, firms substitute selective disclosure for actual carbon abatement because both can reinforce their green image as long as greenwashing controversies are not identified by stakeholders. It's difficult for stakeholders to identify those firms with real environmental potential in some cases due to information asymmetries in the market and the additional costs that may be incurred in verifying a firm's actual environmental improvements.

Therefore, to identify the mechanism that supports the substitution effect, we test the how investors perceive firms' selective disclosure behaviors and actual carbon abatement (Hypothesis 3). In Table 7, we find significantly positive coefficients of $SelectiveDisc_{i,t}$ and insignificantly negative coefficients of $AbateRate_{i,t}$ on the dependent variable Tobin's Q, suggesting that firms with high levels of selective disclosure have higher market valuation, while investors do not reward firms with actual environmental improvements. In columns 1 and 2 of Table 8, we find both positive coefficients of $SelectiveDisc_{i,t}$ and $AbateRate_{i,t}$ on the independent variable institutional ownership, suggesting that firms with both high levels of selective disclosure and actual environmental improvements have higher institutional ownership. The results are similar for long horizon institutional ownership in columns 3 and 4. Therefore, hypothesis 3 is partially supported. A contradictory finding is that investors show ambiguous attitudes toward corporate abatement efforts, indicating that some investors tend to favor short-term interests. The findings are also consistent with the existence of investor clientele (Graham and Kumar, 2006; Christensen et al., 2021), which indicates that the investor base would change by different environmental strategies.

So far, we are still unclear about the motives behind investors' reactions to selective disclosure. Is it because investors fail to detect the green image created by selective disclosure, or are they deliberately tolerating corporate selective disclosure? To answer this question, we depict the regression continuity of investor perceptions regarding selective disclosure magnitude and abatement rate around 0. As selective disclosure magnitude is a continuous variable as the difference between absolute and weighted disclosure ratio from Trucost, firms are unlikely to manipulate their selective disclosure magnitude around the threshold. Therefore, the firm's selective disclosure level is randomly assigned around zero, and thus should not systematically covary with observable and unobservable confounders. As shown in Figure 4, investor favourability experiences a sharp increase when selective disclosure crosses the 0 threshold, further supporting the robustness of the benchmark results. Since the difference

between selective disclosure slightly above and slightly below zero is trivial, the significant discrepancy in investor perceptions supports the second argument, namely that investors strategically tolerate a modest degree of selective disclosure, which provides incentives for some firms to substitute selective disclosure for abatement efforts. However, firms may manipulate their GHG emissions for impression management (Talbot and Boiral, 2018). We can't observe the significant changes when abatement rate exceeds the 0 threshold.

Radu and Francoeur (2017) suggest that selective disclosure can be seen as an alternative corporate strategy to disseminate biased environmental information to mislead investors, especially from those bad environmental performers. Our results show investors' perceptions toward selective disclosure and abatement efforts simultaneously and indicate that investors sometimes strategically tolerate corporate selective disclosure as a certain degree of selective disclosure can help firms attract more resources. Investors may value financial materiality information more than impact materiality information, so they probably do not like the notion that firms truthfully disclose their harmful environmental metrics and view this as an inability to manage their environmental impacts. Overall, our results support the notion that higher market valuation or institutional ownership is the consequence of selective disclosure, which suggests a potential reason why firms may want to substitute selective disclosure for actual carbon abatement in the absence of a long-time horizon, a transparent information environment and strict compliance requirements. Appendix 6 underpins our interpretations by showing the influence of separate disclosure ratios on corporate market valuation and institutional ownership. The negative association between separate disclosure ratios and investor indicators provide evidence for our explanation of results, suggesting investors do not reward firms with more disclosure in terms of environmental impacts. Especially, the U-shape relationship between absolute disclosure ratio and Tobin's Q shows that both low and high levels of absolute disclosure are associated with higher firm value, indicating that investors value transparency but may penalize moderate levels of disclosure.

4.3 Robustness check

This section performs a robust check on the baseline results. Our research may suffer from the problem of measurement error or sample selection bias. To check the robustness of our baseline results, we adopt several methods: sensitivity tests, replacement of main variables, and propensity score matching. We conduct sensitivity tests in Table 9. The dependent variable is replaced by decarbonization forecasting error in Table 10, following Lintner (1956) and Grullon and Michaely (2002) in formulating the dividend forecasting error. In Table 11, we use one to one nearest neighbor matching method and run the regressions using the matched sample. Overall, the results in the robustness check are qualitatively similar to the baseline results.

5 Conclusion

This study investigates the relationship between corporate selective disclosure and real environmental efforts. We emphasize that corporate behavior is based on a joint decision-making process weighing the costs and benefits of these two environmental strategies, rather than a causal relationship. Analyzing a global sample of firms from 2011 to 2023, we find that frequent and intensive engagement in selective disclosure is associated with poor future abatement performance, indicating selective disclosure firms lack credible sustainability commitment. By engaging in “greenwashing”, firms seek to conform to societal expectations regarding environmental responsibility without incurring the costs associated with genuine abatement efforts. This decoupling allows firms to mitigate institutional pressures without making significant investments in genuine environmental actions, thus highlighting the gap between rhetoric and reality in corporate sustainability.

Additionally, we identify a set of institutional factors that moderate the relationship between firms’ selective disclosure and real environmental efforts. A long time horizon, transparent information environment, and high compliance requirements serve as institutional mechanisms that can reduce the prevalence of selective disclosure and curb the substitution of real abatement with selective disclosure. These factors create a context where stakeholders are more likely to scrutinize corporate disclosures, thereby increasing the costs of engaging in selective disclosure. This observation highlights the role of institutional conditions in shaping corporate behavior and suggests that stronger regulatory environments can promote genuine environmental efforts by increasing the risks associated with selective disclosure.

We further demonstrate that selective disclosure is associated with higher market valuation and institutional ownership. This is a consequence that firms may have in mind when choosing their strategy, as investors sometimes strategically tolerate firms’ selective disclosure behaviors. This behavior reflects the complex interplay between market dynamics and institutional expectations, suggesting that firms may leverage selective disclosure to attract investment while navigating the competing demands of legitimacy and profitability. Our findings further elaborate on the institutional theory perspective, suggesting that firms view selective disclosure as a cost-saving alternative to actual abatement to maintain legitimacy and attract external resources. This research sheds lights on the understanding of firms’ trade-offs between different environmental strategies and highlights the importance of strict regulatory frameworks and responsible investment to achieve environmentally friendly targets.

Beyond theoretical contributions, our research offers important implications for business leaders, policymakers, regulators, investors, and other stakeholders concerned with corporate sustainable development. From a corporate governance perspective, investors should push for implementing governance structures that constrain managers to align their environmental communication strategies with credible green actions. Governments need to establish transparent and comprehensive environmental disclosure systems to enhance the information environment and reduce information asymmetry, thereby discouraging firms to substitute selective disclosure for carbon abatement efforts. Policymakers should recognize the importance of alleviating financial burdens to encourage corporate decarbonization efforts and may consider providing additional assistance to firms with abatement potential and willingness. When making sustainable investment decisions, investors need to critically assess the credibility of corporate sustainability commitments and improve their ability to identify firms with genuine abatement potential and credible information disclosure in terms of environment and sustainability. Our findings underscore the urgency for stricter environmental regulations and transparent information environment to help businesses, policymakers, and investors navigate the complexities of a global low-carbon transition. This research also emphasizes the

importance of reducing abatement costs and developing advanced abatement technologies to aid firms in transitioning to net-zero.

This study has several limitations. First, it primarily focuses on carbon performance when assessing firms' environmental impacts. Future research could also consider other types of corporate environmental outcome. Second, we use the reduction rate of Scope 1 and 2 emissions intensity to measure carbon abatement. As Scope 3 emissions encompass indirect emissions from the corporate value chain, future research should extend the analysis of corporate carbon abatement to include the value chain. Given the increasing climate policy uncertainty and net-zero transition risks, future studies can also explore how commitments to net-zero transitions influence corporate environmental strategies.

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Figure 1

Mean normalized AbateRate and SelectiveDisc over years.

This figure plots mean values of standardized AbateRate and SelectiveDisc (with a mean of 0 and a standard deviation of 1) for firms with selective disclosure over the period 2011 to 2023.

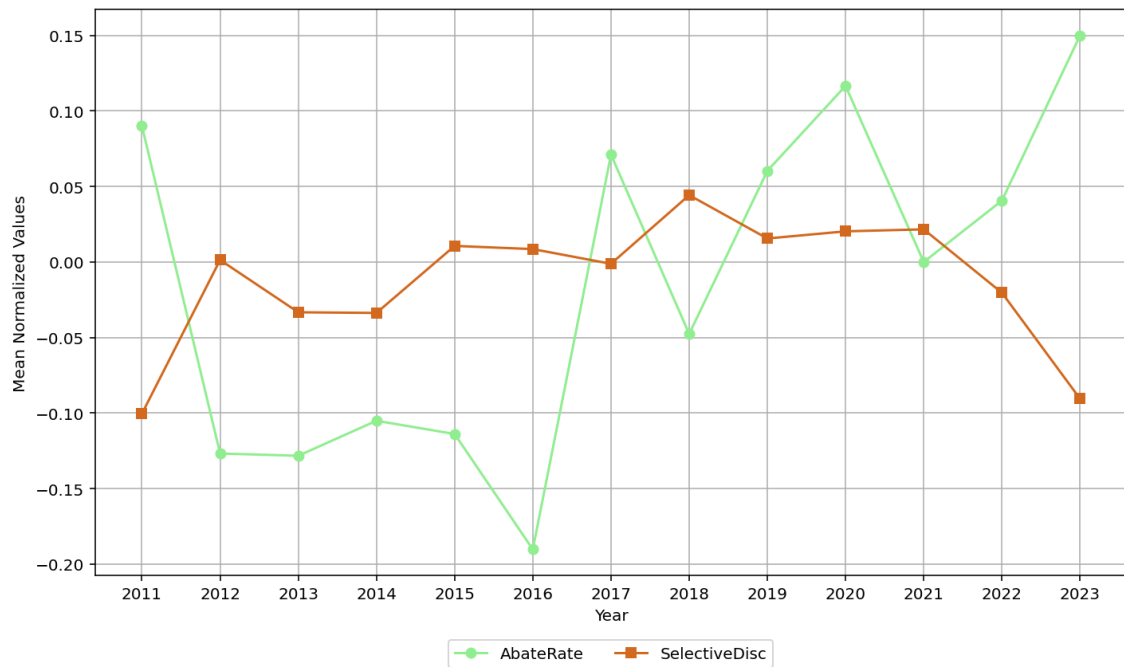


Figure 2

Annual influence of selective disclosure on firms' carbon abatement.

This figure depicts the continuous influence of firms' selective disclosure on their abatement rate. In Figure 2, each dot is the coefficient of *SelectiveDisc* in columns (1) to (5) of Appendix 7 with 95% confidence intervals, representing the influence of past few years' selective disclosure on firms' current abatement rate.

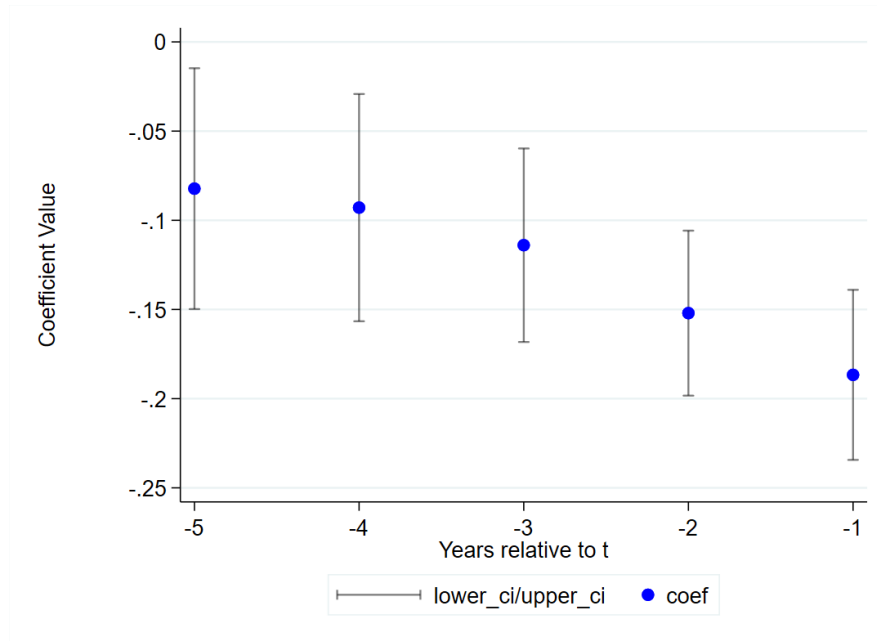


Figure 3

Moderating role of implied cost variables.

This figure depicts the moderating role of different implied cost variables on the relationship between selective disclosure and firms' carbon abatement. Each dot is the coefficient of institutional factors for firms from different subgroups with year and firm fixed effects, multiplied by the average selective disclosure magnitude for each decile based on the industry and year. Lines of different colors depict the influence of selective disclosure on the abatement rate for firms from different subgroups.

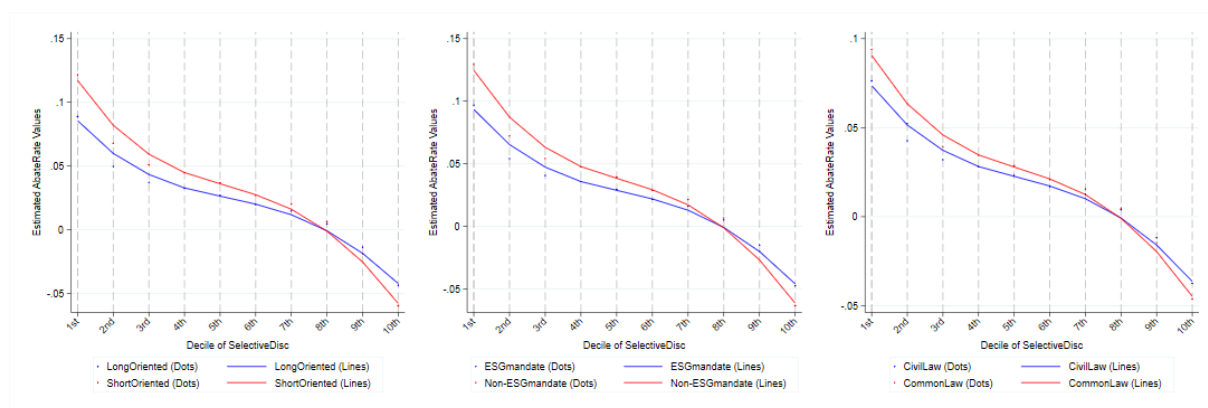
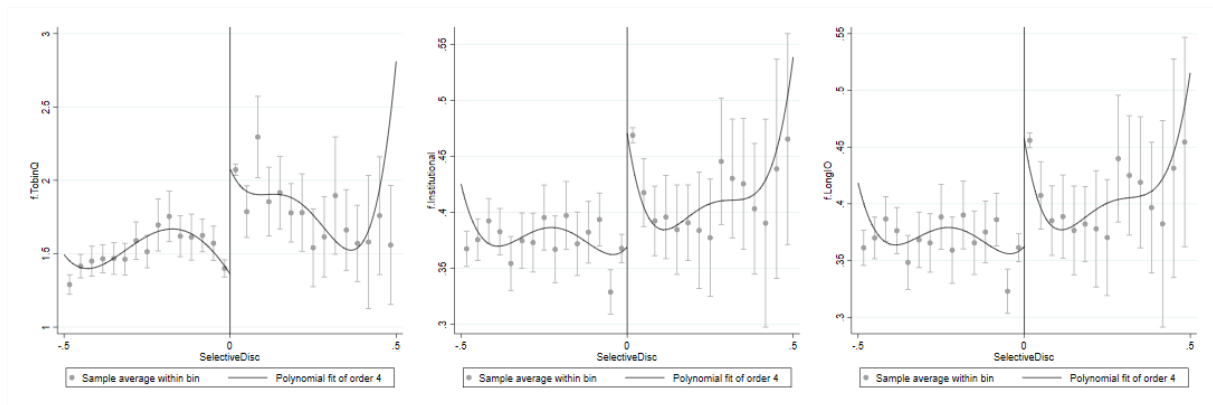


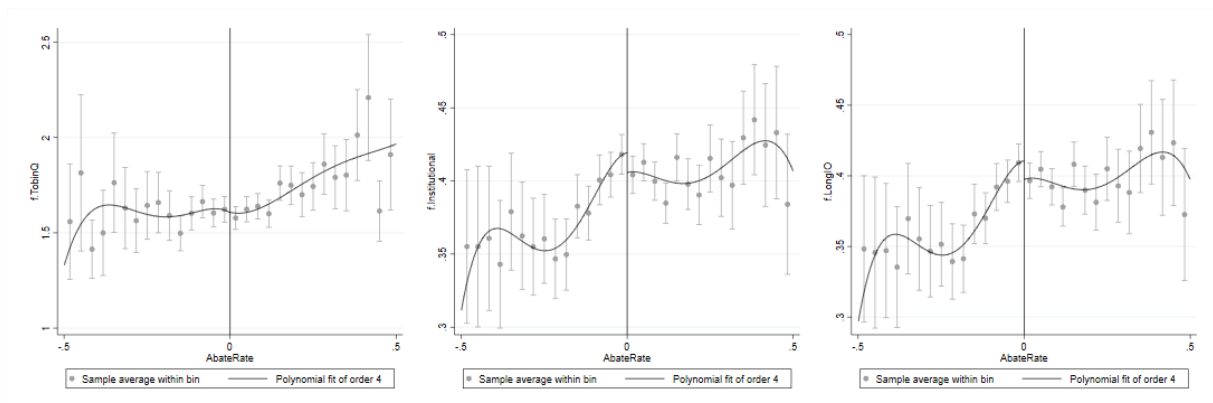
Figure 4

The regression continuity of investor perceptions regarding selective disclosure magnitude and abatement rate slightly above and below zero.

This figure depicts the regression continuity of investor perceptions regarding selective disclosure magnitude and abatement rate around 0. We employ local polynomial estimation with a mean square error (MSE) optimal bandwidth choice and the triangular kernel. The selected range from -0.5 to 0.5 is divided into 15 bins, with each dot illustrating how investor perceptions relate to selective disclosure in Figure 4(a) or abatement rate in Figure 4(b). The fitted curve represents the estimated average outcome for different ranges of the running variable, showing how the outcome changes when moving across the cutpoint at 0.



(a) Investor perceptions regarding selective disclosure magnitude slightly above and below zero



(b) Investor perceptions regarding abatement rates slightly above and below zero

Table 1

Descriptive statistics and correlation matrix.

These tables report summary statistics for the full sample, the selective disclosure (positive selective disclosure score) and non-selective disclosure (zero and negative selective disclosure score) subsamples in *Panel A*, and the correlation matrix of all main variables in *Panel B*. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information.

Panel A: Descriptive Statistics

variable	Full sample				Selective disclosure firms				Non-selective disclosure firms			
	N	mean	sd	median	N	mean	sd	median	N	mean	sd	median
AbateRate	36930	-0.043	0.559	0.034	4344	0.033	0.527	0.070	32586	-0.054	0.562	0.030
Abate	36930	0.581	0.493	1	4344	0.640	0.480	1	32586	0.573	0.495	1
AbateRate_for1	32456	-0.041	0.548	0.033	3662	-0.065	0.620	0.041	28794	-0.037	0.538	0.033
Abate_for1	32456	0.581	0.493	1	3662	0.589	0.492	1	28794	0.580	0.494	1
Error	30764	0.038	0.528	-0.019	3778	-0.031	0.508	-0.058	26986	0.047	0.530	-0.014
SelectiveDisc	38476	-0.190	0.302	-0.03	4469	0.220	0.223	0.140	34007	-0.243	0.268	-0.100
AbsoluteDisc	38476	0.285	0.311	0.200	4469	0.504	0.348	0.410	34007	0.257	0.294	0.170
WeightedDisc	38476	0.475	0.424	0.500	4469	0.284	0.291	0.170	34007	0.500	0.432	0.600
Selective	38476	0.116	0.320	0	4469	1	0	1	34007	0	0	0
LongSelective2	37033	0.084	0.278	0	4354	0.717	0.450	1	32679	0	0	0
ShortSelective2	37033	0.057	0.231	0	4354	0.283	0.450	0	32679	0.027	0.161	0
NoSelective2	37033	0.859	0.348	1	4354	0	0	0	32679	0.973	0.161	1
Top25%	38476	0.124	0.329	0	4469	0.990	0.100	1	34007	0.010	0.098	0
Bottom25%	38476	0.429	0.495	0	4469	0	0	0	34007	0.485	0.500	0
HighSelectiveDisc	38476	0.203	0.402	0	4469	1	0	1	34007	0.098	0.297	0
TobinQ	38476	1.745	1.879	1.136	4469	1.941	2.089	1.237	34007	1.719	1.848	1.125
Institutional	38051	0.393	0.332	0.253	4390	0.419	0.321	0.312	33661	0.389	0.333	0.246
LongIO	38051	0.383	0.324	0.246	4390	0.410	0.316	0	33661	0.379	0.325	0.239
WeakFTR	38476	0.265	0.441	0	4469	0.266	0.442	0	34007	0.264	0.441	0
LongOriented	38184	0	1	-0.372	4454	-0.042	0.885	-0.272	33730	0.006	1.014	-0.372
ESGmandate	38476	0.422	0.494	0	4469	0.472	0.499	0	34007	0.416	0.493	0
CivilLaw	38476	0.446	0.497	0	4469	0.437	0.496	0	34007	0.448	0.497	0
LogMC	38476	22.18	1.367	22.12	4469	22.36	1.468	22.28	34007	22.15	1.352	22.10
Cash	38476	0.103	0.105	0.072	4469	0.112	0.104	0.082	34007	0.101	0.105	0.070
Debt	38476	0.220	0.162	0.202	4469	0.206	0.154	0.185	34007	0.222	0.163	0.205
EBITDA	38476	0.119	0.084	0.111	4469	0.129	0.081	0.116	34007	0.118	0.084	0.110
PPE	38476	0.302	0.237	0.247	4469	0.254	0.236	0.168	34007	0.308	0.237	0.257
CFVolatility	38476	0.041	0.044	0.027	4469	0.042	0.047	0.028	34007	0.040	0.044	0.026
highCSR	38476	0.500	0.500	0	4469	0.595	0.491	1	34007	0.487	0.500	0
EIAssets	38476	-0.017	0.637	-0.229	4469	-0.187	0.322	-0.265	34007	0.005	0.664	-0.223
EnvExpendInvest	31078	31.11	39.56	0	3171	24.06	37.97	0	27907	31.91	39.66	0
EnvInnovation	38168	29.53	32.04	19.74	4414	30.02	30.67	25.07	33754	29.46	32.21	18.83

Panel B: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) AbareRate_for1	1.000																		
(2) SelectiveDisc	-0.017***	1.000																	
(3) AbsoluteDisclor~e	0.038***	0.043***	1.000																
(4) WeightedDisclor~e	0.040***	-0.681***	0.702***	1.000															
(5) WeakFTR	0.008	-0.069***	0.059***	0.093***	1.000														
(6) LongOriented	0.001	-0.048***	-0.007	0.029***	0.433***	1.000													
(7) ESGmandate	-0.025***	-0.064***	0.137***	0.146***	-0.043***	-0.125***	1.000												
(8) CivilLaw	-0.016***	-0.121***	0.083***	0.147***	0.668***	0.358***	0.091***	1.000											
(9) LogMC	0.054***	-0.066***	0.293***	0.261***	0.057***	0.070***	-0.136***	0.025***	1.000										
(10) Cash	-0.017***	0.125***	-0.130***	-0.184***	0.102***	0.116***	-0.056***	0.067***	-0.067***	1.000									
(11) Debt	-0.013**	-0.003	0.108***	0.082***	-0.141***	-0.193***	-0.083***	-0.207***	0.037***	-0.247***	1.000								
(12) EBITDA	0.118***	-0.004	0.015***	0.014***	-0.083***	-0.136***	0.010**	-0.065***	0.190***	-0.038***	-0.071***	1.000							
(13) PPE	-0.039***	-0.233***	0.092***	0.234***	-0.071***	-0.003	0.001	-0.028***	-0.002	-0.254***	0.197***	0.121***	1.000						
(14) CFVolatility	-0.038***	0.055***	-0.135***	-0.138***	-0.138***	-0.127***	0.022***	-0.182***	-0.222***	0.274***	-0.023***	-0.057***	-0.010**	1.000					
(15) highCSR	0.057***	-0.181***	0.440***	0.451***	0.075***	0.014***	0.072***	0.117***	0.369***	-0.096***	0.037***	0.058***	-0.011**	-0.145***	1.000				
(16) ElAssets	0.048***	-0.303***	0.009*	0.223***	-0.019***	-0.019***	0.038***	0.061***	-0.017***	-0.108***	0.032***	0.030***	0.331***	0.007	0.000	1.000			
(17) TobinQ	0.022***	0.156***	-0.138***	-0.213***	-0.082***	-0.127***	-0.002	-0.068***	0.186***	0.281***	-0.103***	0.293***	-0.145***	0.207***	-0.102***	-0.118***	1.000		
(18) Institutional	0.059***	0.162***	-0.073***	-0.169***	-0.320***	-0.285***	-0.410***	-0.535***	0.138***	0.022***	0.219***	0.066***	-0.113***	0.123***	-0.027***	-0.127***	0.121***	1.000	
(19) LongIO	0.060***	0.160***	-0.065***	-0.162***	-0.318***	-0.283***	-0.409***	-0.533***	0.150***	0.015***	0.218***	0.071***	-0.112***	0.112***	-0.018***	-0.127***	0.119***	0.998***	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2

Firm-level predictors of selective disclosure behaviors.

This table presents OLS estimates of the firm-level predictors of firms' selective disclosure behaviors, using selective disclosure magnitude as the dependent variable in columns (1) and (2), absolute disclosure ratio in columns (3) and (4), weighted disclosure ratio in columns (5) and (6). Columns (1) (3) (5) include year, country and industry fixed effects in the regressions. Columns (2) (4) (6) include year and firm fixed effects in the regressions. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.SelectiveDisc	(2) F.SelectiveDisc	(3) F.AbsoluteDisc	(4) F.AbsoluteDisc	(5) F.WeightedDisc	(6) F.WeightedDisc
LogMC _t	-0.00709*** (-2.594)	0.00554 (1.300)	0.0529*** (17.90)	0.0208*** (4.933)	0.0544*** (16.23)	0.0153*** (2.878)
Cash _t	0.0904*** (3.256)	-0.0298 (-1.093)	-0.0276 (-0.982)	-0.0637** (-2.428)	-0.170*** (-4.704)	-0.0339 (-0.935)
Debt _t	-0.0343* (-1.776)	0.0180 (0.739)	-0.00218 (-0.103)	-0.0101 (-0.442)	0.0351 (1.374)	-0.0282 (-0.950)
EBITDA _t	0.0301 (0.833)	-0.00550 (-0.139)	-0.0596* (-1.733)	-0.0943*** (-2.577)	-0.188*** (-4.221)	-0.0888* (-1.840)
PPE _t	-0.165*** (-8.448)	-0.00751 (-0.244)	0.0904*** (4.498)	0.0975*** (3.307)	0.254*** (9.828)	0.105*** (2.606)
CFVolatility _t	0.0478 (0.700)	0.0470 (0.416)	0.0683 (1.072)	-0.224** (-2.405)	-0.0719 (-0.845)	-0.271* (-1.951)
highCSR _t	-0.0684*** (-11.03)	-0.0269*** (-4.959)	0.189*** (28.56)	0.0698*** (12.03)	0.266*** (31.61)	0.0967*** (12.97)
EIAssets _t	-0.0878*** (-11.08)	-0.0579*** (-6.256)	-0.00214 (-0.479)	0.00980 (1.437)	0.0880*** (9.496)	0.0677*** (5.682)
Constant	0.0377 (0.623)	-0.306*** (-3.188)	-0.958*** (-14.82)	-0.192** (-2.030)	-0.884*** (-11.87)	0.114 (0.951)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes		Yes		Yes	
Industry	Yes		Yes		Yes	
Firm		Yes		Yes		Yes
Observations	32,447	31,949	32,447	31,949	32,447	31,949
R-squared	0.315	0.717	0.383	0.768	0.409	0.772

Table 3

Selective disclosure behaviors and real environmental efforts.

This table presents OLS estimates of the relationship between firms' selective disclosure behaviors and real environmental efforts, using abatement rates as the dependent variable. Columns (1) (2) report estimates using the continuous variable *SelectiveDisc* as the main independent variable. Columns (3) (4) report estimates using the dummy variable *Selective* as the main independent variable. Columns (5) (6) report estimates using the dummy variable *HighSelectiveDisc* as the main independent variable. Columns (1) (3) (5) include year, country and industry fixed effects in the regressions. Columns (2) (4) (6) include year and firm fixed effects in the regressions. The dependent variable is forward by one period. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.AbateRate	(2) F.AbateRate	(3) F.AbateRate	(4) F.AbateRate	(5) F.AbateRate	(6) F.AbateRate
SelectiveDisc _t	-0.0483*** (-3.815)	-0.187*** (-7.675)				
Selective _t			-0.0535*** (-4.923)	-0.103*** (-5.930)		
HighSelectiveDisc _t					-0.0449*** (-6.441)	-0.0954*** (-8.594)
LogMC _t	0.00492* (1.813)	-0.0255*** (-2.781)	0.00575** (2.131)	-0.0250*** (-2.732)	0.00466* (1.717)	-0.0258*** (-2.826)
Cash _t	-0.178*** (-4.037)	-0.192** (-2.374)	-0.183*** (-4.148)	-0.198** (-2.432)	-0.179*** (-4.059)	-0.186** (-2.291)
Debt _t	-0.0626*** (-2.799)	-0.0853* (-1.662)	-0.0648*** (-2.897)	-0.0936* (-1.821)	-0.0631*** (-2.815)	-0.0921* (-1.799)
EBITDA _t	0.851*** (15.31)	1.680*** (16.04)	0.853*** (15.35)	1.661*** (15.85)	0.858*** (15.42)	1.658*** (15.91)
PPE _t	-0.120*** (-6.125)	0.239*** (3.536)	-0.117*** (-6.017)	0.239*** (3.532)	-0.122*** (-6.251)	0.238*** (3.522)
CFVolatility _t	-0.165* (-1.658)	-0.0780 (-0.283)	-0.162 (-1.639)	-0.0828 (-0.301)	-0.166* (-1.662)	-0.0424 (-0.154)
highCSR _t	0.0358*** (5.518)	0.00801 (0.699)	0.0418*** (6.436)	0.0182 (1.586)	0.0352*** (5.446)	0.0108 (0.942)
EIAssets _t	0.0989*** (13.66)	0.448*** (14.12)	0.101*** (14.07)	0.465*** (14.46)	0.0971*** (13.55)	0.455*** (14.39)
Constant	-0.203*** (-3.391)	0.263 (1.280)	-0.210*** (-3.516)	0.299 (1.462)	-0.171*** (-2.855)	0.341* (1.667)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes		Yes		Yes	
Industry	Yes		Yes		Yes	
Firm		Yes		Yes		Yes
Observations	32,447	31,949	32,447	31,949	32,447	31,949
R-squared	0.050	0.202	0.050	0.201	0.051	0.202

Table 4

The moderating role of time horizon on the relationship between selective disclosure and firms' real environmental efforts.

This table presents OLS estimates of the moderating role of time horizon on the relationship between selective disclosure and firms' actual environmental efforts, using abatement rates as the dependent variable. Columns (1) and (2) report estimates using the dummy variable *LongOriented* as the independent variable. Column (1) includes year, country and industry fixed effects in the regressions. Column (2) includes year and firm fixed effects in the regressions. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.AbateRate	(2) F.AbateRate
SelectiveDisc _t	-0.0469*** (-3.674)	-0.188*** (-7.654)
SelectiveDisc _t x LongOriented _t	0.00545 (0.564)	0.0518** (2.310)
ShortOriented _t	-0.0243 (-1.143)	
LogMC _t	0.00470* (1.724)	-0.0253*** (-2.751)
Cash _t	-0.176*** (-3.968)	-0.183** (-2.243)
Debt _t	-0.0694*** (-3.067)	-0.0959* (-1.862)
EBITDA _t	0.851*** (15.17)	1.676*** (15.87)
PPE _t	-0.121*** (-6.131)	0.231*** (3.409)
CFVolatility _t	-0.175* (-1.744)	-0.0846 (-0.305)
highCSR _t	0.0362*** (5.550)	0.00881 (0.766)
EIAssets _t	0.0987*** (13.57)	0.442*** (13.98)
Constant	-0.195*** (-3.242)	0.266 (1.286)
Year	Yes	Yes
Country	Yes	
Industry	Yes	
Firm		Yes
Observations	32,204	31,706
R-squared	0.049	0.202

Table 5

The moderating role of information environment on the relationship between selective disclosure and firms' real environmental efforts.

This table presents OLS estimates of the moderating role of information environment on the relationship between selective disclosure and firms' actual environmental efforts, using abatement rates as the dependent variable. Columns (1) and (2) report estimates using the dummy variable *ESGmandate* as the independent variable. Column (1) includes year, country and industry fixed effects in the regressions. Column (2) includes year and firm fixed effects in the regressions. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.AbateRate	(2) F.AbateRate
SelectiveDisc _{<i>t</i>}	-0.0635*** (-4.820)	-0.198*** (-7.396)
SelectiveDisc _{<i>t</i>} x ESGmandate _{<i>t</i>}	0.0342* (1.665)	0.0246 (0.646)
ESGmandate _{<i>t</i>}	0.00165 (0.125)	0.0145 (0.806)
LogMC _{<i>t</i>}	0.00493* (1.813)	-0.0256*** (-2.794)
Cash _{<i>t</i>}	-0.176*** (-3.984)	-0.191** (-2.365)
Debt _{<i>t</i>}	-0.0640*** (-2.865)	-0.0853* (-1.660)
EBITDA _{<i>t</i>}	0.851*** (15.30)	1.680*** (16.04)
PPE _{<i>t</i>}	-0.119*** (-6.045)	0.239*** (3.533)
CFVolatility _{<i>t</i>}	-0.168* (-1.691)	-0.0776 (-0.282)
highCSR _{<i>t</i>}	0.0354*** (5.441)	0.00788 (0.687)
EIAssets _{<i>t</i>}	0.0990*** (13.67)	0.448*** (14.11)
Constant	-0.203*** (-3.393)	0.260 (1.265)
Year	Yes	Yes
Country	Yes	
Industry	Yes	
Firm		Yes
Observations	32,447	31,949
R-squared	0.050	0.202

Table 6

The moderating role of compliance requirements on the relationship between selective disclosure and firms' real environmental efforts.

This table presents OLS estimates of the moderating role of compliance requirements on the relationship between selective disclosure and firms' real environmental efforts, using abatement rates as the dependent variable. Column (1) and (2) report estimates using the dummy variable *CivilLaw* as the independent variable. Column (1) includes year, country and industry fixed effects in the regressions. Column (2) includes year and firm fixed effects in the regressions. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.AbateRate	(2) F.AbateRate
SelectiveDisc _{<i>t</i>}	-0.0633*** (-4.040)	-0.241*** (-7.477)
SelectiveDisc _{<i>t</i>} x CivilLaw _{<i>t</i>}	0.0302 (1.490)	0.116** (2.350)
CivilLaw _{<i>t</i>}	-0.0143 (-0.572)	
LogMC _{<i>t</i>}	0.00496* (1.825)	-0.0255*** (-2.793)
Cash _{<i>t</i>}	-0.178*** (-4.016)	-0.193** (-2.385)
Debt _{<i>t</i>}	-0.0625*** (-2.791)	-0.0851* (-1.659)
EBITDA _{<i>t</i>}	0.851*** (15.32)	1.679*** (16.04)
PPE _{<i>t</i>}	-0.121*** (-6.155)	0.240*** (3.549)
CFVolatility _{<i>t</i>}	-0.165* (-1.655)	-0.0787 (-0.286)
highCSR _{<i>t</i>}	0.0358*** (5.515)	0.00817 (0.713)
EIAssets _{<i>t</i>}	0.0991*** (13.63)	0.448*** (14.18)
Constant	-0.197*** (-3.236)	0.266 (1.296)
Year	Yes	Yes
Country	Yes	
Industry	Yes	
Firm		Yes
Observations	32,447	31,949
R-squared	0.050	0.203

Table 7

The incentives for firms to substitute actual carbon abatement for selective disclosure behaviors: to increase market valuation.

This table presents OLS estimates of how investors perceive firms' selective disclosure behaviors and carbon abatement, using Tobin's Q as the dependent variable. Column (1) includes year, country and industry fixed effects in the regression. Column (2) includes year and firm fixed effects in the regression. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.TobinQ	(2) F.TobinQ
AbateRate _t	-0.0116 (-0.786)	-0.00690 (-0.732)
SelectiveDisc _t	0.320*** (6.224)	0.0758** (2.281)
LogMC _t	0.285*** (13.51)	0.281*** (10.27)
Cash _t	2.829*** (11.55)	0.470*** (2.581)
Debt _t	-0.0642 (-0.465)	0.366** (2.315)
EBITDA _t	6.381*** (14.73)	2.202*** (7.685)
PPE _t	0.100 (1.008)	0.157 (1.130)
CFVolatility _t	4.873*** (7.836)	0.360 (0.615)
highCSR _t	-0.423*** (-11.28)	-0.0507** (-2.425)
EIAssets _t	-0.130*** (-4.525)	0.0158 (1.121)
Constant	-5.657*** (-12.11)	-5.014*** (-7.888)
Year	Yes	Yes
Country	Yes	
Industry	Yes	
Firm		Yes
Observations	31,216	30,764
R-squared	0.398	0.853

Table 8

The incentives for firms to substitute actual carbon abatement for selective disclosure behaviors: to attract institutional investors.

This table presents OLS estimates of how institutional investors perceive firms' selective disclosure behaviors and carbon abatement, using institutional ownership and long horizon institutional ownership as the dependent variables. Columns (1) (2) report estimates using *Institutional* as the dependent variable. Columns (3) (4) report estimates using *LongIO* as the dependent variable. Columns (1) (3) include year, country and industry fixed effects in the regressions. Columns (2) (4) include year and firm fixed effects in the regressions. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.Institutional	(2) F.Institutional	(3) F.LongIO	(4) F. .LongIO
AbateRate _t	0.00415*** (2.860)	0.00157** (2.383)	0.00409*** (2.896)	0.00151** (2.304)
SelectiveDisc _t	0.0160** (2.507)	0.00363 (1.261)	0.0161** (2.559)	0.00386 (1.338)
LogMC _t	0.00545*** (2.747)	0.0183*** (10.39)	0.00725*** (3.729)	0.0171*** (9.967)
Cash _t	-0.00727 (-0.348)	0.0361*** (3.309)	-0.0173 (-0.843)	0.0319*** (2.854)
Debt _t	0.0767*** (4.157)	-0.0195** (-2.327)	0.0703*** (3.908)	-0.0194** (-2.343)
EBITDA _t	0.104*** (3.438)	0.0486*** (3.070)	0.110*** (3.707)	0.0446*** (2.881)
PPE _t	-0.0486*** (-3.589)	0.00130 (0.0988)	-0.0492*** (-3.754)	-0.000303 (-0.0237)
CFVolatility _t	-0.0132 (-0.211)	-0.115*** (-2.762)	-0.0457 (-0.744)	-0.0977** (-2.368)
highCSR _t	0.0110*** (2.751)	-0.00297* (-1.725)	0.0125*** (3.189)	-0.00257 (-1.504)
ElAssets _t	-0.00714* (-1.956)	-0.00543* (-1.835)	-0.00734** (-2.044)	-0.00620** (-2.121)
Constant	0.258*** (5.806)	-0.00859 (-0.215)	0.212*** (4.861)	0.00924 (0.237)
Year	Yes	Yes	Yes	Yes
Country	Yes		Yes	
Industry	Yes		Yes	
Firm		Yes		Yes
Observations	30,901	30,457	30,901	30,457
R-squared	0.815	0.977	0.814	0.976

Table 9

Sensitivity tests: selective disclosure behaviors and real environmental efforts.

These tables present OLS estimates of the relationship between different levels of selective disclosure behaviors and corporate real environmental efforts, using abatement rates as the dependent variable. In *Panel A*, columns (1) (2) report estimates of the correlation between long selective disclosure records and corporate carbon abatement. Columns (3) (4) report estimates of the correlation between short selective disclosure records and corporate abatement. Columns (5) (6) report estimates of the correlation between no selective disclosure and corporate abatement. In *Panel B*, columns (1) (2) report estimates of the correlation between the highest 25% selective disclosure intensity and corporate abatement. Columns (3) (4) report estimates of the correlation between the lowest 25% selective disclosure intensity and corporate abatement. Columns (1) (3) (5) include year, country and industry fixed effects in the regressions. Columns (2) (4) include year and firm fixed effects in the regressions. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: Frequency of selective disclosure

VARIABLES	(1) F.AbateRate	(2) F.AbateRate	(3) F.AbateRate	(4) F.AbateRate	(5) F.AbateRate	(6) F.AbateRate
LongSelective2 _t	-0.0593*** (-4.885)	-0.107*** (-5.349)				
ShortSelective2 _t			-0.0216 (-1.430)	-0.0280 (-1.626)		
NoSelective2 _t					0.0490*** (4.997)	0.0982*** (6.217)
LogMC _t	0.00527** (1.961)	-0.0261*** (-2.825)	0.00496* (1.842)	-0.0267*** (-2.894)	0.00529** (1.968)	-0.0253*** (-2.748)
Cash _t	-0.149*** (-3.613)	-0.208** (-2.567)	-0.149*** (-3.618)	-0.209*** (-2.580)	-0.149*** (-3.618)	-0.207** (-2.567)
Debt _t	-0.0617*** (-2.805)	-0.0945* (-1.816)	-0.0582*** (-2.647)	-0.0933* (-1.793)	-0.0618*** (-2.808)	-0.0947* (-1.816)
EBITDA _t	0.755*** (14.26)	1.567*** (14.65)	0.753*** (14.21)	1.579*** (14.79)	0.756*** (14.26)	1.566*** (14.66)
PPE _t	-0.105*** (-5.404)	0.200*** (2.983)	-0.101*** (-5.264)	0.198*** (2.945)	-0.105*** (-5.413)	0.202*** (3.009)
CFVolatility _t	-0.208** (-2.134)	-0.162 (-0.574)	-0.211** (-2.163)	-0.178 (-0.628)	-0.207** (-2.130)	-0.166 (-0.587)
highCSR _t	0.0367*** (5.685)	0.0156 (1.357)	0.0354*** (5.492)	0.0150 (1.298)	0.0374*** (5.779)	0.0180 (1.558)
EIAssets _t	0.0989*** (13.68)	0.468*** (14.45)	0.101*** (13.98)	0.469*** (14.45)	0.0986*** (13.65)	0.468*** (14.48)
Constant	-0.188*** (-3.182)	-0.350* (1.686)	-0.186*** (-3.134)	0.357* (1.719)	-0.236*** (-3.952)	0.237 (1.145)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes		Yes		Yes	
Industry	Yes		Yes		Yes	
Firm		Yes		Yes		Yes
Observations	31,303	30,846	31,303	30,846	31,303	30,846
R-squared	0.046	0.195	0.046	0.194	0.046	0.196

Panel B: Intensity of selective disclosure

VARIABLES	(1) F.AbateRate	(2) F.AbateRate	(3) F.AbateRate	(4) F.AbateRate
Top25% _t	-0.0539*** (-4.719)	-0.105*** (-6.349)		
Bottom25% _t			0.0210*** (3.336)	0.0650*** (6.921)
LogMC _t	0.00570** (2.110)	-0.0251*** (-2.753)	0.00529* (1.953)	-0.0269*** (-2.938)
Cash _t	-0.183*** (-4.153)	-0.199** (-2.452)	-0.181*** (-4.092)	-0.191** (-2.355)
Debt _t	-0.0640*** (-2.864)	-0.0930* (-1.810)	-0.0625*** (-2.793)	-0.0961* (-1.878)
EBITDA _t	0.853*** (15.35)	1.660*** (15.88)	0.852*** (15.33)	1.673*** (16.00)
PPE _t	-0.118*** (-6.070)	0.236*** (3.484)	-0.118*** (-6.066)	0.238*** (3.531)
CFVolatility _t	-0.163* (-1.646)	-0.0837 (-0.304)	-0.166* (-1.666)	-0.0687 (-0.249)
highCSR _t	0.0414*** (6.367)	0.0176 (1.536)	0.0377*** (5.819)	0.0122 (1.065)
EIAssets _t	0.100*** (14.00)	0.464*** (14.48)	0.101*** (13.88)	0.457*** (14.34)
Constant	-0.207*** (-3.480)	0.303 (1.486)	-0.212*** (-3.561)	0.302 (1.473)
Year	Yes	Yes	Yes	Yes
Country	Yes		Yes	
Industry	Yes		Yes	
Firm		Yes		Yes
Observations	32,447	31,949	32,447	31,949
R-squared	0.050	0.201	0.050	0.201

Table 10

Robustness check: the substitution between firms' selective disclosure behaviors and real environmental efforts.

This table presents OLS estimates of the substitution between firms' selective disclosure behaviors and real environmental efforts, using decarbonization forecasting error as the dependent variable. Columns (1) (2) report estimates using the continuous variable *SelectiveDisc* as the independent variable. Columns (3) (4) report estimates using the dummy variable *Selective* as the independent variable. Columns (5) (6) report estimates using the dummy variable *HighSelectiveDisc* as the independent variable. Columns (1) (3) (5) include year, country and industry fixed effects in the regressions. Columns (2) (4) (6) include year and firm fixed effects in the regressions. The dependent variable is forward by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.Error	(2) F.Error	(3) F.Error	(4) F.Error	(5) F.Error	(6) F.Error
SelectiveDisc _t	-0.185*** (-11.91)	-0.402*** (-14.08)				
Selective _t			-0.0721*** (-7.192)	-0.163*** (-9.347)		
HighSelectiveDisc _t					-0.0669*** (-9.522)	-0.121*** (-10.68)
LogMC _t	-0.0214*** (-7.976)	-0.0595*** (-6.052)	-0.0193*** (-7.246)	-0.0596*** (-6.016)	-0.0209*** (-7.840)	-0.0614*** (-6.203)
Cash _t	-0.0505 (-1.145)	-0.231*** (-2.757)	-0.0694 (-1.581)	-0.242*** (-2.887)	-0.0633 (-1.438)	-0.225*** (-2.678)
Debt _t	-0.0398* (-1.838)	-0.131*** (-2.632)	-0.0389* (-1.808)	-0.147*** (-2.911)	-0.0372* (-1.732)	-0.144*** (-2.873)
EBITDA _t	0.142** (2.509)	0.824*** (6.956)	0.136** (2.421)	0.788*** (6.647)	0.145** (2.574)	0.790*** (6.695)
PPE _t	-0.0203 (-1.064)	-0.0160 (-0.198)	0.000846 (0.0445)	-0.0205 (-0.254)	-0.00773 (-0.407)	-0.0230 (-0.283)
CFVolatility _t	0.462*** (4.644)	0.254 (0.950)	0.460*** (4.607)	0.239 (0.884)	0.455*** (4.592)	0.289 (1.075)
highCSR _t	-0.0197*** (-2.844)	0.00772 (0.648)	-0.00223 (-0.328)	0.0280** (2.333)	-0.0116* (-1.692)	0.0176 (1.468)
EIAssets _t	0.0852*** (8.362)	0.639*** (13.82)	0.0995*** (9.485)	0.674*** (14.24)	0.0932*** (8.964)	0.663*** (14.09)
Constant	0.476*** (8.079)	1.236*** (5.615)	0.460*** (7.874)	1.334*** (6.022)	0.517*** (8.788)	1.399*** (6.319)
Year	Yes	Yes	Yes	Yes	Yes	Yes
Country	Yes		Yes		Yes	
Industry	Yes		Yes		Yes	
Firm		Yes		Yes		Yes
Observations	30,756	30,764	30,756	30,764	30,756	30,764
R-squared	0.042	0.221	0.036	0.212	0.037	0.213

Table 11

Propensity score matching: selective disclosure behaviors and real environmental efforts.

These tables present OLS estimates of the relationship between firms' selective disclosure behaviors and actual environmental efforts, using the matched sample for the robust check. The matched sample uses 1:1 nearest neighbor matching in propensity score matching with replacement and a caliper distance of 0.05. *Panel A* reports the descriptive statistics of the matched sample. In *Panel B*, columns (1) (2) report estimates using the dummy variable *Selective* as the main independent variable. Columns (3) (4) report estimates using the dummy variable *HighSelectiveDisc* as the main independent variable. Columns (1) (3) include year, country and industry fixed effects in the regressions. Columns (2) (4) include year and firm fixed effects in the regressions. The dependent variable is forward by one period. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises the matched firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: descriptive statistics after matching

Selective	Matched sample				Selective = 1				Selective = 0			
variable	N	mean	sd	median	N	mean	sd	median	N	mean	sd	median
AbateRate	7866	0.001	0.528	0.052	4014	0.033	0.528	0.070	3852	-0.033	0.525	0.038
AbateRate_for1	6549	-0.039	0.565	0.040	3296	-0.068	0.628	0.040	3253	-0.010	0.491	0.040
Selective	7866	0.510	0.500	1	4014	1	0	1	3852	0	0	0
LogMC	7866	22.38	1.425	22.32	4014	22.34	1.462	22.26	3852	22.43	1.384	22.38
Cash	7866	0.111	0.105	0.079	4014	0.109	0.100	0.080	3852	0.113	0.111	0.079
Debt	7866	0.208	0.158	0.187	4014	0.208	0.154	0.188	3852	0.208	0.163	0.187
EBITDA	7866	0.132	0.085	0.119	4014	0.127	0.078	0.114	3852	0.136	0.090	0.123
PPE	7866	0.257	0.227	0.183	4014	0.259	0.237	0.173	3852	0.255	0.215	0.194
CFVolatility	7866	0.041	0.046	0.027	4014	0.040	0.045	0.027	3852	0.042	0.047	0.027
highCSR	7866	0.605	0.489	1	4014	0.584	0.493	1	3852	0.626	0.484	1
EIAssets	7866	-0.166	0.339	-0.254	4014	-0.181	0.339	-0.264	3852	-0.151	0.339	-0.244
HighSelectiveDisc	Matched sample				HighSelectiveDisc = 1				HighSelectiveDisc = 0			
variable	N	mean	sd	variable	N	mean	sd	variable	N	mean	sd	variable
AbateRate	18587	-0.036	0.545	0.035	5168	0.005	0.537	0.054	13419	-0.051	0.547	0.030
AbateRate_for1	15618	-0.043	0.548	0.033	4115	-0.064	0.607	0.034	11503	-0.035	0.526	0.033
HighSelectiveDisc	18587	0.278	0.448	0	5168	1	0	1	13419	0	0	0
LogMC	18587	22.18	1.360	22.12	5168	22.21	1.460	22.14	13419	22.17	1.319	22.11
Cash	18587	0.102	0.103	0.073	5168	0.099	0.097	0.070	13419	0.104	0.105	0.074
Debt	18587	0.217	0.162	0.199	5168	0.225	0.159	0.206	13419	0.214	0.163	0.197
EBITDA	18587	0.121	0.082	0.111	5168	0.122	0.078	0.107	13419	0.120	0.083	0.113
PPE	18587	0.303	0.237	0.247	5168	0.323	0.255	0.266	13419	0.295	0.229	0.242
CFVolatility	18587	0.040	0.044	0.027	5168	0.041	0.044	0.027	13419	0.040	0.044	0.027
highCSR	18587	0.492	0.500	0	5168	0.530	0.499	1	13419	0.478	0.500	0
EIAssets	18587	-0.037	0.592	-0.231	5168	0.001	0.704	-0.241	13419	-0.052	0.542	-0.228

Panel B: regression based on the matched samples

VARIABLES	(1) F.AbateRate	(2) F.AbateRate	(3) F.AbateRate	(4) F.AbateRate
Selective _{<i>i</i>}	-0.0527*** (-3.430)	-0.0852*** (-2.881)		
HighSelectiveDisc _{<i>i</i>}			-0.0316*** (-3.386)	-0.0831*** (-5.573)
LogMC _{<i>t</i>}	0.00251 (0.376)	-0.0184 (-0.826)	0.00401 (0.985)	-0.0325** (-2.379)
Cash _{<i>t</i>}	-0.0468 (-0.582)	-0.248 (-1.405)	-0.213*** (-3.422)	-0.378*** (-3.193)
Debt _{<i>t</i>}	0.0354 (0.663)	0.177 (1.384)	-0.0664** (-2.080)	-0.0505 (-0.671)
EBITDA _{<i>t</i>}	0.669*** (6.203)	1.491*** (7.026)	0.838*** (10.63)	1.609*** (9.943)
PPE _{<i>t</i>}	-0.158*** (-3.038)	0.245 (1.470)	-0.161*** (-5.646)	0.0962 (0.845)
CFVolatility _{<i>t</i>}	-0.233 (-1.132)	-0.0240 (-0.0456)	-0.202 (-1.383)	-0.0783 (-0.175)
highCSR _{<i>t</i>}	0.0350** (2.126)	0.0174 (0.522)	0.0259*** (2.692)	0.0133 (0.744)
EIAssets _{<i>t</i>}	0.128*** (5.611)	0.802*** (6.067)	0.101*** (11.33)	0.518*** (10.48)
Constant	-0.109 (-0.751)	0.294 (0.587)	-0.134 (-1.500)	0.564* (1.866)
Year	Yes	Yes	Yes	Yes
Country	Yes		Yes	
Industry	Yes		Yes	
Firm		Yes		Yes
Observations	6,544	5,343	15,612	14,763
R-squared	0.053	0.308	0.052	0.282

Appendix 1: Variable definitions

Variable	Description
Abate	The dummy variable equals to one if emissions intensity in this year is smaller than that of the last year, otherwise equals to 0. Data source: Trucost and LSEG.
AbateRate	The rate of emissions intensity reduction. Data source: Trucost and LSEG.
AbsoluteDisclosure	The total number of environmental metrics that a company has disclosed that Trucost has determined as relevant to the company, divided by the total number of relevant metrics that a company could possibly disclose. Data source: Trucost.
AD_square	The square value of absolute disclosure ratio. Data source: Trucost.
Bottom25%	The dummy variable equals to one if SeletiveDisc is below the 25th percentile of all firms, otherwise equals to 0. Data source: Trucost.
Cash	The ratio of total cash and cash equivalent to total assets, winsorized at the 1% and 99% levels. Data source: LSEG.
CFVolatility	The rolling standard deviation of cash flow over a 10-year period (the current year and previous 9 years). Source: from LSEG.
CivilLaw	The dummy variable equals to one if the firm is headquartered in the civil law countries, otherwise equals to 0. Data source: Liang and Renneboog (2017).
CommonLaw	The dummy variable equals to one if the firm is headquartered in the common law countries, otherwise equals to 0. Data source: Liang and Renneboog (2017).
Debt	The ratio of total long-term debts to total assets, winsorized at the 1% and 99% levels. Data source: LSEG.
EBITDA	The ratio of EBITDA to total assets, winsorized at the 1% and 99% levels. Data source: LSEG.
EIAssets	The ratio of scope 1 and scope 2 emissions to total assets, normalized and winsorized at the 1% and 99% levels. Data source: Trucost and LSEG.
EnvExpendInvest	Environmental Expenditure Investment score. Data source: LSEG.
EnvInnovation	Environmental Innovation score. Data source: LSEG.
Error	Decarbonization forecasting error, estimated as $\Delta AbateRate_{i,t} - (\beta_{1,i} + \beta_{2,i}EBITDA_{i,t} + \beta_{3,i}EmissionsIntensity_{i,t} + \beta_{4,i}AbateRate_{i,t-1})$. Data source: Trucost and LSEG.
ESGmandate	The dummy variable equals to one if the firm-year observation is headquartered in the countries that have already implemented mandatory ESG disclosure regulations, otherwise equals to 0. Data source: Krueger et al. (2024).
ForecastError	$\Delta AbateRate - \text{predicted } AbateRate$. Data source: Trucost and LSEG.
highCSR	The dummy variable equals to one if the firm has above median ESG score within the year, otherwise equals to 0. Data source: LSEG.
HighSelectiveDisc	The dummy variable equals to one if SeletiveDisc is above the median value of all firms within the industry in the specific year, otherwise equals to 0. Data source: Trucost.
Institutional	The ratio of shares held by the institutional investors (on the last day of a calendar year) to total issued common shares, winsorized at the 1% and 99% levels. Data source: LSEG.
LogMC	The logarithmic transformation of market capitalization, winsorized at the 1% and 99% levels. Data source: LSEG.
LongIO	The ratio of shares held by the long horizon institutional investors (on the last day of a calendar year) to total issued common shares, winsorized at the 1% and 99% levels. Data source: LSEG and Krueger et al. (2020).
LongOriented	The standardized value of the country-level long-term orientation score. Data source: Hofstede (2011).
LongSelective2	The dummy variable equals to one if SeletiveDisc is positive for two years (the present year and the last year), otherwise equals to 0. Data source: Trucost.
NoSelective2	The dummy variable equals to one if SeletiveDisc is positive for none of recent two years, otherwise equals to 0. Data source: Trucost.
PPE	The ratio of net property, plant and equipment to total assets, winsorized at the 1% and 99% levels. Data source: LSEG.
Selective	The dummy variable equals to one if SeletiveDisc is larger than 0, otherwise equals to 0. Data source: Trucost.
SelectiveDisc	The difference between absolute disclosure ratio and weighted disclosure ratio. Data source: Trucost.
Selective_Increase	The dummy variable equals to one if SeletiveDisc in year t is higher than that of year t-1, otherwise equals to 0. Data source: Trucost.
Selective_Decrease	The dummy variable equals to one if SeletiveDisc in year t is lower than that of year t-1, otherwise equals to 0. Data source: Trucost.
ShortSelective2	The dummy variable equals to one if SeletiveDisc is positive only for one year of recent two years, otherwise equals to 0. Data source: Trucost.
TobinQ	$(TotalAssets - CommonEquityTotal + PriceClose * CommonSharesOutstanding) / TotalAssets$, winsorized at the 1% and 99% levels. Data source: LSEG.
Top25%	The dummy variable equals to one if SeletiveDisc is above the 75th percentile of all firms, otherwise equals to 0. Data source: Trucost.
WeightedDisclosure	The dollar value of associated damage disclosed by the company, as estimated by Trucost, that a company has inflicted upon the natural environment, divided by the total dollar value of associated damage that a company could generate. Data source: Trucost.

Appendix 2

Industry and country distributions of the sample.

These tables present the sector, industry and country composition of global firms in our data sample. Panel A presents the sector composition, and Panel B presents the country composition.

Panel A: Sector distribution

GICS Sector Name	Freq.	Percent	Cum.
Communication Services	2374	6.17	6.17
Consumer Discretionary	5471	14.22	20.39
Consumer Staples	3231	8.40	28.79
Energy	2351	6.11	34.90
Health Care	3430	8.91	43.81
Industrials	8503	22.10	65.91
Information Technology	3797	9.87	75.78
Materials	4488	11.66	87.44
Real Estate	2573	6.69	94.13
Utilities	2258	5.87	100.00
Total	38476	100.00	

Panel B: Country distribution

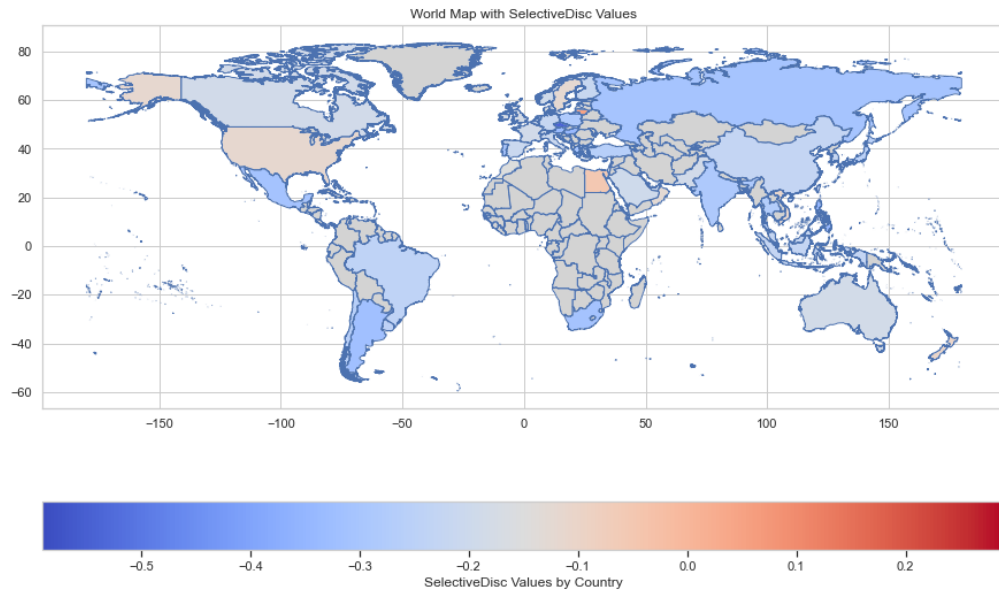
Country of Headquarters	Freq.	Percent	Cum.
Argentina	28	0.07	0.07
Australia	1767	4.59	4.67
Austria	185	0.48	5.15
Bahamas	3	0.01	5.15
Bahrain	3	0.01	5.16
Belgium	248	0.64	5.81
Bermuda	131	0.34	6.15
Brazil	665	1.73	7.88
Canada	1734	4.51	12.38
Cayman Islands	35	0.09	12.47
Chile	232	0.60	13.08
China	1251	3.25	16.33
Cyprus	6	0.02	16.34
Czech Republic	12	0.03	16.37
Denmark	254	0.66	17.03
Egypt	61	0.16	17.19
Faroe Islands	5	0.01	17.21
Finland	291	0.76	17.96
France	991	2.58	20.54
Germany	948	2.46	23.00
Gibraltar	7	0.02	23.02
Greece	109	0.28	23.30
Guernsey	8	0.02	23.32
Hong Kong	1017	2.64	25.97
Hungary	44	0.11	26.08
India	1430	3.72	29.80
Indonesia	342	0.89	30.69
Ireland; Republic of	319	0.83	31.52
Isle of Man	9	0.02	31.54
Israel	116	0.30	31.84
Italy	445	1.16	33.00
Japan	4036	10.49	43.49

Jersey	12	0.03	43.52
Korea; Republic (S. Korea)	1063	2.76	46.28
Kuwait	26	0.07	46.35
Lithuania	1	0.00	46.35
Luxembourg	132	0.34	46.69
Macau	35	0.09	46.79
Malaysia	520	1.35	48.14
Malta	16	0.04	48.18
Mexico	307	0.80	48.98
Monaco	13	0.03	49.01
Morocco	34	0.09	49.10
Netherlands	365	0.95	50.05
New Zealand	307	0.80	50.84
Norway	304	0.79	51.63
Oman	13	0.03	51.67
Pakistan	9	0.02	51.69
Panama	12	0.03	51.72
Philippines	237	0.62	52.34
Poland	182	0.47	52.81
Portugal	93	0.24	53.05
Qatar	63	0.16	53.22
Russia	243	0.63	53.85
Saudi Arabia	125	0.32	54.17
Singapore	370	0.96	55.14
South Africa	530	1.38	56.51
Spain	401	1.04	57.56
Sweden	838	2.18	59.73
Switzerland	667	1.73	61.47
Taiwan	956	2.48	63.95
Thailand	521	1.35	65.31
Turkey	321	0.83	66.14
United Arab Emirates	55	0.14	66.28
United Kingdom	1985	5.16	71.44
United States of America	10962	28.49	99.93
Uruguay	7	0.02	99.95
Vietnam	19	0.05	100.00
Total	38476	100.00	

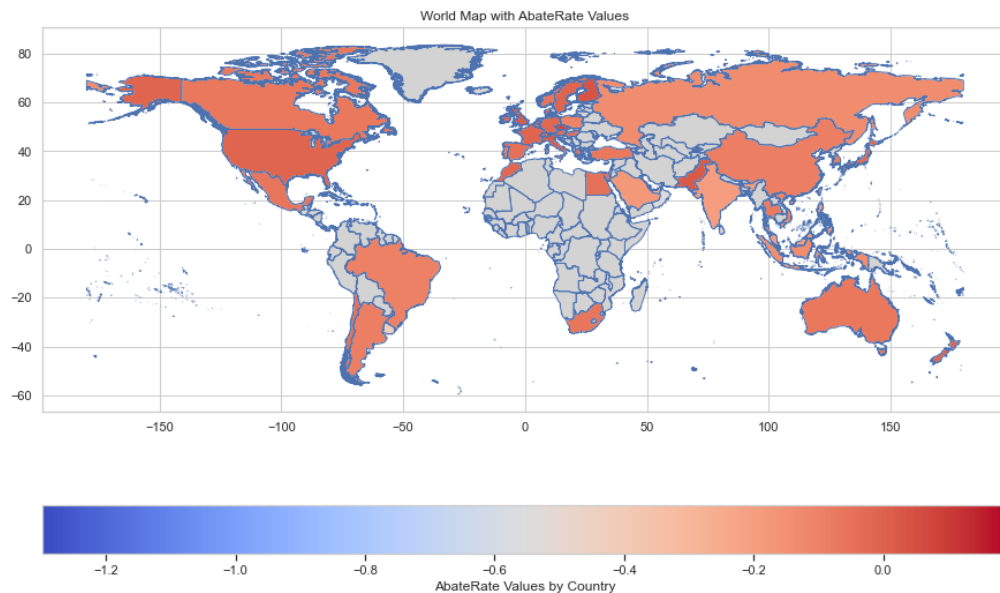
Appendix 3

Distribution of the values of main variables at the country average level.

This figure visualizes the distribution of the values of SelectiveDisc and AbateRate over the country average. Appendix 3(a) presents the mean values of SelectiveDisc by country, 3(b) presents the mean values of AbateRate by country. Countries with missing values are shown in grey.



(a) Distribution of SelectiveDisc values all over the world



(b) Distribution of AbateRate values all over the world

Appendix 4

Assuming that there are two firms (firm 1 and firm 2) in industry i, and Trucost regards four indicators (GHG emissions, water, waste, land) as relevant environmental data information for this industry. Under this condition, firm 1 discloses GHG emissions and water data indicators, while firm 2 discloses GHG emissions and waste data indicators.

	GHG emissions	Water	Waste	Land
Firm 1	✓ (100 tons)	✓ (5000 m ³)	✗	✗
Firm 2	✓ (50 tons)	✗	✓ (10 tons)	✗

We first calculate their absolute disclosure ratio. As both firms disclose two data indicators out of four, their absolute disclosure ratios are both 0.5.

Next, to calculate the numerator of weighted disclosure ratio, we need to multiply the physical quantity by the environmental damage cost factor of each disclosed indicator and sum the values together.

1. Assume firm 1 discloses it releases 100 tons of GHG emissions in year t, firm 2 discloses it releases 50 tons of GHG emissions in year t. The damage cost factor for greenhouse gas emissions is \$31/ton (valuation by Trucost).
2. Firm 1 discloses it uses 5000 m³ of water, we assume the damage cost factor for water usage imposed on the environment is \$5.17/m³ of water use¹.
3. Firm 2 discloses it generates 10 tons of waste during its operation in year t, and we assume the damage cost factor for waste generation is \$35/ton of waste generated².

The denominator of weighted disclosure ratio is the sum of the products of the quantity (estimated based on firms' economic outputs by Trucost if not disclosed by firms) and the environmental damage cost factor of all relevant indicators in the industry i.

	GHG emissions	Water	Waste	Land
Firm 1	✓ (\$3100)	✓ (\$25850)	✗ (\$200<e>)	✗ (\$500<e>)
Firm 2	✓ (\$1550)	✗ (\$30000<e>)	✓ (\$350)	✗ (\$1500<e>)

Thus, firm 1's weighted disclosure ratio is 0.98, firm 2's weighted disclosure ratio is 0.06. Firm 1's selective disclosure magnitude is -0.48, firm 2's selective disclosure magnitude is 0.44. Obviously, compared to firm 1, firm 2 selectively disclose immaterial environmental indicators and conceal those indicators that are more representative of the overall environmental hazards. More details can be found in the online appendix of Marquis et al. (2016).

¹ The damage cost factor of water is drawn from the literature "Ligthart, TN, & van Harmelen, T. (2019). Estimation of shadow prices of soil organic carbon depletion and freshwater depletion for use in LCA. The International Journal of Life Cycle Assessment, 24, 1602-1619.". However, Trucost has their own environmental valuation coefficient for each environmental aspect.

² The damage cost factor of waste is drawn from the literature "World Bank. (2018) What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Available at: <https://openknowledge.worldbank.org/entities/publication/d3f9d45e-115f-559b-b14f-28552410e90a>". However, Trucost has their own environmental valuation coefficient for each environmental aspect.

Appendix 5

Alternative measures of the dependent variable: selective disclosure behaviors and real environmental efforts.

This table presents OLS estimates of the relationship between firms' selective disclosure behaviors and real environmental efforts, using environmental expenditure investment as the dependent variable in columns (1) (2) and environmental innovation score as the dependent variable in columns (3) (4). All columns report estimates using the continuous variable *SelectiveDisc* as the main independent variable. Columns (1) (3) include year, country and industry fixed effects in the regressions. Columns (2) (4) include year and firm fixed effects in the regressions. The dependent variable is forward by one period. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) F.EnvExpendInvest	(2) F.EnvExpendInvest	(3) F.EnvInnovation	(4) F.EnvInnovation
SelectiveDisc _t	-13.52*** (-8.252)	-4.692*** (-3.218)	-3.859*** (-3.248)	-2.634*** (-3.044)
LogMC _t	4.206*** (9.741)	1.276** (2.024)	3.199*** (10.65)	0.374 (1.078)
Cash _t	-9.275** (-1.972)	-1.743 (-0.412)	-12.48*** (-4.323)	-2.186 (-0.911)
Debt _t	-7.377** (-2.404)	0.723 (0.200)	-0.178 (-0.0832)	-3.314* (-1.738)
EBITDA _t	-13.29** (-2.402)	1.779 (0.318)	-16.84*** (-4.534)	-1.315 (-0.433)
PPE _t	17.38*** (6.048)	2.129 (0.503)	-7.146*** (-3.626)	0.0807 (0.0301)
CFVolatility _t	-24.57** (-2.333)	-5.930 (-0.382)	-9.054 (-1.308)	-2.132 (-0.234)
highCSR _t	19.65*** (20.46)	6.512*** (8.184)	18.84*** (28.31)	6.279*** (12.76)
EIAssets _t	3.082*** (4.056)	0.147 (0.118)	-0.158 (-0.218)	-0.774 (-1.005)
Constant	-75.22*** (-7.936)	-0.883 (-0.0626)	-44.47*** (-6.668)	20.42*** (2.601)
Year	Yes	Yes	Yes	Yes
Country	Yes		Yes	
Industry	Yes		Yes	
Firm		Yes		Yes
Observations	26,349	25,981	32,195	31,703
R-squared	0.306	0.751	0.389	0.829

Appendix 6

The influence of separate disclosure ratios on corporate market valuation and institutional ownership.

These tables present OLS estimates of the influence of separate disclosure ratios on corporate market valuation and institutional ownership, using Tobin's Q and institutional ownership as the dependent variables respectively. *Panel A* reports the estimates of the influence of separate disclosure ratios on corporate market valuation. *Panel B* reports the estimates of the influence of separate disclosure ratios on firms' institutional ownership. *Panel C* reports the estimates of U-shape relationship between absolute disclosure and Tobin's Q. In all panels, columns (1) (3) include year, country and industry fixed effects in the regressions. Columns (2) (4) include year and firm fixed effects in the regressions. The dependent variable is forward by one period. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Panel A: the relationship between disclosure ratios and Tobin's Q

VARIABLES	(1) F.TobinQ	(2) F.TobinQ	(3) F.TobinQ	(4) F.TobinQ
AbsoluteDisclosure _t	-0.456*** (-8.053)	-0.0811* (-1.875)		
WeightedDisclosure _t			-0.446*** (-11.19)	-0.0915*** (-3.454)
LogMC _t	0.303*** (14.04)	0.276*** (10.20)	0.307*** (14.27)	0.275*** (10.21)
Cash _t	2.941*** (12.43)	0.564*** (3.078)	2.900*** (12.27)	0.562*** (3.067)
Debt _t	-0.108 (-0.790)	0.322** (2.084)	-0.0927 (-0.679)	0.319** (2.065)
EBITDA _t	6.004*** (14.13)	2.066*** (7.431)	5.981*** (14.10)	2.061*** (7.407)
PPE _t	0.0863 (0.863)	0.169 (1.247)	0.149 (1.487)	0.167 (1.235)
CFVolatility _t	5.088*** (8.504)	0.107 (0.180)	5.068*** (8.485)	0.0962 (0.163)
highCSR _t	-0.368*** (-10.55)	-0.0493** (-2.368)	-0.333*** (-9.739)	-0.0448** (-2.157)
EIAssets _t	-0.155*** (-5.291)	0.0123 (0.939)	-0.112*** (-3.972)	0.0216 (1.603)
Constant	-5.961*** (-12.59)	-4.848*** (-7.734)	-5.988*** (-12.75)	-4.819*** (-7.713)
Year	Yes	Yes	Yes	Yes
Country	Yes		Yes	
Industry	Yes		Yes	
Firm		Yes		Yes
Observations	32,447	31,949	32,447	31,949
R-squared	0.393	0.850	0.396	0.850

Panel B: the relationship between disclosure ratios and institutional ownership

VARIABLES	(1) F.Institutional	(2) F.Institutional	(3) F.Institutional	(4) F.Institutional
AbsoluteDisclosure _t	-0.0165** (-2.232)	-0.0107*** (-3.163)		
WeightedDisclosure _t			-0.0198*** (-3.850)	-0.00890*** (-3.542)
TobinQ _t	-0.00165 (-1.369)	-0.00156 (-1.411)	-0.00192 (-1.586)	-0.00160 (-1.443)
LogMC _t	0.00652*** (3.096)	0.0207*** (10.86)	0.00696*** (3.320)	0.0206*** (10.86)
Cash _t	-0.00881 (-0.435)	0.0358*** (3.450)	-0.00997 (-0.493)	0.0358*** (3.448)
Debt _t	0.0802*** (4.485)	-0.0191** (-2.334)	0.0807*** (4.517)	-0.0194** (-2.360)
EBITDA _t	0.125*** (3.991)	0.0538*** (3.255)	0.125*** (3.995)	0.0537*** (3.254)
PPE _t	-0.0517*** (-3.904)	0.00250 (0.193)	-0.0484*** (-3.654)	0.00213 (0.165)
CFVolatility _t	-0.0132 (-0.217)	-0.0937** (-2.352)	-0.0122 (-0.200)	-0.0940** (-2.364)
highCSR _t	0.0123*** (3.079)	-0.00219 (-1.291)	0.0145*** (3.570)	-0.00196 (-1.156)
EIAssets _t	-0.00909** (-2.503)	-0.00659** (-2.130)	-0.00722** (-1.977)	-0.00573* (-1.851)
Constant	0.241*** (5.168)	-0.0537 (-1.280)	0.234*** (5.046)	-0.0512 (-1.221)
Year	Yes	Yes	Yes	Yes
Country	Yes		Yes	
Industry	Yes		Yes	
Firm		Yes		Yes
Observations	32,115	31,619	32,115	31,619
R-squared	0.813	0.977	0.813	0.977

Panel C: U-shape relationship between absolute disclosure and Tobin's Q

VARIABLES	(1) F.TobinQ1	(2) F.TobinQ1
AD_square	1.128*** (6.467)	0.333*** (3.201)
AbsoluteDisclosure	-1.471*** (-8.637)	-0.380*** (-3.465)
LogMC1	0.309*** (14.20)	0.276*** (10.21)
Cash1	2.894*** (12.24)	0.561*** (3.058)
Debt1	-0.111 (-0.813)	0.319** (2.069)
EBITDA1	6.017*** (14.20)	2.066*** (7.442)
PPE1	0.110 (1.107)	0.172 (1.271)
CFVolatility	5.087*** (8.533)	0.0944 (0.160)
highCSR	-0.322*** (-9.582)	-0.0425** (-2.030)
EIAssets_z1	-0.144*** (-4.979)	0.0162 (1.223)
Constant	-6.035*** (-12.72)	-4.829*** (-7.726)
Year	Yes	Yes
Country	Yes	
Industry	Yes	
Firm		Yes
Observations	32,447	31,949
R-squared	0.396	0.850

Appendix 7

Annual influence of selective disclosure on firms' actual carbon abatement.

This table presents OLS estimates of the relationship between firms' selective disclosure behaviors in the past few years and real environmental efforts, using abatement rates as the dependent variable. Columns (1) to (5) report estimates using the lagged values of the continuous variable *SelectiveDisc* as the main independent variable. All columns include year and firm fixed effects in the regressions. All control variables are lagged by one period in all columns. Standard errors are clustered at the firm level. Appendix 1 presents variable definitions. The sample comprises all firms in the FR Global Index from 2011 to 2023, excluding firms in the financial industries and firms with missing information. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

VARIABLES	(1) AbateRate	(2) AbateRate	(3) AbateRate	(4) AbateRate	(5) AbateRate
SelectiveDisc _{t-1}	-0.187*** (-7.675)				
SelectiveDisc _{t-2}		-0.152*** (-6.447)			
SelectiveDisc _{t-3}			-0.114*** (-4.118)		
SelectiveDisc _{t-4}				-0.0929*** (-2.859)	
SelectiveDisc _{t-5}					-0.0823** (-2.389)
LogMC _{t-1}	-0.0255*** (-2.781)	-0.0226** (-2.175)	-0.0180 (-1.547)	-0.0182 (-1.362)	-0.0335** (-2.254)
Cash _{t-1}	-0.192** (-2.374)	-0.241*** (-2.886)	-0.226** (-2.379)	-0.269** (-2.466)	-0.290** (-2.232)
Debt _{t-1}	-0.0853* (-1.662)	-0.0825 (-1.433)	-0.0354 (-0.532)	-0.0734 (-0.920)	-0.104 (-1.191)
EBITDA _{t-1}	1.680*** (16.04)	1.645*** (14.22)	1.639*** (13.60)	1.687*** (12.81)	1.709*** (10.59)
PPE _{t-1}	0.239*** (3.536)	0.271*** (3.455)	0.372*** (3.962)	0.394*** (3.468)	0.403*** (3.040)
CFVolatility _{t-1}	-0.0780 (-0.283)	-0.375 (-1.502)	-0.580* (-1.917)	-0.374 (-0.935)	-0.942** (-2.034)
highCSR _{t-1}	0.00801 (0.699)	0.00884 (0.715)	0.00952 (0.693)	0.0185 (1.102)	0.0135 (0.729)
EIAssets _{t-1}	0.448*** (14.12)	0.489*** (13.62)	0.500*** (13.11)	0.540*** (13.13)	0.556*** (13.60)
Constant	0.263 (1.280)	0.217 (0.925)	0.0870 (0.327)	0.0840 (0.274)	0.460 (1.353)
Year	Yes	Yes	Yes	Yes	Yes
Firm	Yes	Yes	Yes	Yes	Yes
Observations	31,949	26,897	22,447	18,524	15,175
R-squared	0.202	0.203	0.196	0.200	0.226