# Cui Bono? Selective Disclosure as a Measure of ESG-washing

*Unfinished and preliminary, please do not circulate*

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**Abstract**

Firms keep ESG symbolic resolutions in the public eye but would hold back some substantive information when they expect trouble. Categorizing firm's disclosures into symbolic and substantive types, we define the selective disclosure measure – the relative difference between the two categorized disclosures – which predicts firm's ESG performance. Particularly, a firm with more selective disclosure likely reduces their ESG performance in the next year, alongside with less worker satisfaction, worse internal governance and incurring more lawsuits. Such firm also commits 8 out of 10 controversies more likely. We propose the selective disclosure to be used as a novel ESG-washing measure.

**Keywords:** Selective Disclosure, Symbolic Management, Substantive Information, Sustainability Reporting, ESG-washing, Corporate Social Responsibility.

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# 1 Introduction

In the past decade, Environmental, Social, and Governance (ESG) considerations have become deeply embedded in the strategic narratives of modern firms. From public sustainability pledges to detailed ESG reports, companies now routinely disclose their ESG ambitions to gain legitimacy among regulators, investors, and civil society. However, this institutional pressure to disclose has also generated new incentives for firms to strategically manage impressions, sometimes at the expense of transparency. A growing concern in this regard is ESG-washing—the act of overstating or misrepresenting ESG commitments or achievements to cultivate a favorable reputation without undertaking corresponding substantive actions.

This paper investigates selective disclosure as a measurable and predictive indicator of ESG-washing. We define selective disclosure as the firm-level difference between symbolic ESG communications (such as high-level policy statements, plans, and targets) and substantive disclosures (quantified ESG outcomes and internal performance metrics). Drawing on symbolic management theory, we argue that a firm's relative emphasis on symbolic over substantive content signals potential misalignment between external narratives and internal realities. To operationalize this concept, we construct a novel index based on 215 ESG disclosure items obtained from LSEG/Refinitiv, categorizing 25 as symbolic and 71 as substantive through a rigorous screening process using boolean/numerical criteria and VIF analysis to eliminate redundancy.

Using a global panel of over 109,000 firm-year observations from 2002 to 2024, we find that selective disclosure is a statistically significant negative predictor of future ESG performance. Specifically, firms with higher selective disclosure—those disproportionately emphasizing symbolic information—tend to receive lower ESG scores in the following year. This finding is robust across two independent ESG rating systems (Refinitiv and S&P), alternative model specifications, and subsample periods including major economic shocks such as the Global Financial Crisis and the COVID-19 pandemic. Moreover, the effect holds for both U.S. and non-U.S. firms, reinforcing the measure's generalizability across institutional contexts.

Beyond headline ESG scores, selective disclosure is also associated with deteriorations in specific ESG performance indicators. Firms with higher selective disclosure tend to experi-

ence lower employee satisfaction, weaker board gender diversity, and a higher incidence of legal disputes. Notably, the measure predicts increased likelihood of involvement in 8 out of 10 ESG controversy categories reported by Refinitiv, including issues related to accounting transparency, bribery, anti-competitive behavior, and executive compensation. These associations highlight the broader implications of selective disclosure for a firm's internal culture, governance practices, and external accountability.

To address potential biases stemming from changes in ESG disclosure practices over time, we scale our symbolic and substantive measures by the maximum possible disclosures per year, producing a relative selective disclosure index bounded between -1 and 1. This relative measure retains its predictive power while offering improved time-series stability. We further validate the stationarity of this metric using a panel unit root test, confirming its suitability for dynamic panel analyses.

Importantly, we also test whether the observed relationships are simply driven by disclosure volume rather than disclosure asymmetry. Our regression analyses show that while total disclosure volume is positively associated with future ESG scores, this effect is offset when selective disclosure is included in the model—suggesting that how firms disclose matters more than how much they disclose. The selective disclosure measure captures a strategic dimension of ESG communication that is otherwise obscured by aggregate disclosure counts or ESG rating levels alone.

This paper contributes to both the ESG and corporate transparency literatures in three key ways. First, it provides a scalable and theoretically grounded measure of ESG-washing that can be applied across firms, industries, and jurisdictions. Second, it reveals that disclosure asymmetry—rather than just disclosure quantity—plays a central role in shaping stakeholder perceptions and firm outcomes. Third, it highlights the practical relevance of selective disclosure for investors, regulators, and watchdogs seeking to assess the credibility of corporate ESG claims.

In light of rising skepticism toward ESG reporting and increasing calls for regulatory intervention, this study offers timely and actionable insights. As stakeholders navigate a complex ESG landscape marked by divergent ratings, fragmented standards, and mounting greenwash-

ing allegations, the ability to systematically detect selective disclosure offers a powerful tool for restoring accountability. We encourage future work to explore the institutional drivers of selective disclosure and to investigate whether firms adapt their disclosure strategies in response to regulatory scrutiny or reputational risk.

# 2 Methodology and Data

## 2.1 Selective disclosure definition

We define a firm's selective disclosure as the difference between its symbolic and substantive disclosures. Symbolic disclosure is referred as a firm's ESG actions that are often used symbolically to cater for stakeholder's demand, but much less is known about "how, when, and why" it pursue its strategies (Scott, 2013; Bromley and Powell, 2012). In practice, we link firm's symbolic disclosure to its ESG policy, plan, and target. On other hand, substantive disclosure is referred as ESG outcomes or achievements supported with quantitative evidence. Therefore, a firm $i$'s selective disclosure at time $t$ is calculated by:

$$Selective_{it} = Symbolic_{it} - Substantive_{it} \tag{1}$$

where *Symbolic* and *Substantive* are the symbolic and substantive disclosures. In practice, these disclosures are counted at the firm-year basis based on some datasets containing ESG disclosure items. Denoting that $\Omega_{Symbolic}$ and $\Omega_{Sustantive}$ are the sets of symbolic or substantive disclosure, and $j$ (or $k$) is some ESG item *disclosed* by some firm $i$ at time $t$. The selective disclosure in Eq. (1) is then re-written as:

$$Selective_{it} = \left( \sum_{j} \mathbb{1}\{j \in \Omega_{Symbolic}\} \right)_{it} - \left( \sum_{k} \mathbb{1}\{k \in \Omega_{Substantive}\} \right)_{it} \tag{2}$$

where $\mathbb{1}\{\cdot\}$ is an indicator function, returning 1 when an ESG item is categorized as symbolic or substantive disclosure, and 0 otherwise. To interpret this measure, a firm is called to be *more selective* in its ESG disclosure when a more positive *Selective* value is observed, i.e., a firm gives more symbolic responses to its stakeholders while comparatively less factual information is supported. Such firms, conceptually, could mislead their stakeholders more easily. The intuition is opposite for firms with more negative *Selective* value.

There are some potential caveats when using this measure. Firstly, when it comes to ESG disclosure categorization, we assume a piece of information belongs only to one of them: symbolic, substantive, or neither. We do not assign a piece of information to more than one category, although categorically some information might belong to, e.g., both symbolic and

substantive types. This assumption of mutual exclusion in categorization is useful when we categorize ESG information.

The second caveat is about the nature of firm disclosures. Each disclosure element may not be distinguished from the others; in fact, it is more common to have overlapped among the disclosure items. However, it also potentially inflates the set of ESG disclosures. To build an effective set, we use VIF to reduce redundant ESG disclosure items.

Thirdly, there is no presumption on the size of the $\Omega_{Symbolic}$ and $\Omega_{Substantive}$, meaning that if one set is much larger than the other, then the *Select* measure may be driven by that larger set. To avoid this concern, the counts of the symbolic or substantive disclosures are scaled by the number of the universe elements in each set, in which we use a prefix "Rel" to code these relative measures. Hence the relative symbolic and substantive disclosures are bounded by [0,1], respectively, and the relative selective disclosure is thus calculated by the difference of the relative symbolic and relative substantive disclosures, which is therefore bounded by [-1.1]:

$$\begin{aligned} &Rel_Selective_{it} = Rel_Symbolic_{it} - Rel_Substantive_{it}, \\ &\text{with } Rel_Symbolic_{it} = \left( \sum_j \mathbb{1}\{j \in \Omega_{Symbolic}\} \Big/ \#\{\Omega_{Symbolic}\} \right)_{it} \\ &\text{and } Rel_Substantive_{it} = \left( \sum_k \mathbb{1}\{k \in \Omega_{Substantive}\} \Big/ \#\{\Omega_{Substantive}\} \right)_{it}, \end{aligned} \tag{3}$$

where $\mathbb{1}\{\cdot\}$ is an indicator function and $\#\{\cdot\}$ counts the number of the elements in a set. We use the *Rel_Selective* as a main selective disclosure measure and investigate how firm's selective disclosure impacts.

## 2.2 Selective disclosure estimation

We next detail the construction procedure for our proposed disclosure measures outlined in the previous section. First of all, we use LSEG/Refinitiv to shortlist all possible ESG performance indicators for the possible sets of the symbolic ($\Omega_{Symbolic}$) and substantive disclosures ($\Omega_{Substantive}$). LSEG/Refinitiv is chosen because it has the largest ESG information set to calculate its proprietary ESG scores among its peer raters (Berg et al., 2022). Note that ESG raters have their own in-house methodology and access to the ESG information. We are indif-

ferent to the methodology used to construct their ESG scores, but we intend to access the ESG performance indicators as many as possible, to obtain comprehensive disclosure set. Having said that, one may concern if some ESG performance indicators may fundamentally overlap with others; for this regard, we use VIF to further improve the effectiveness of the ESG item sets (cf. the discussion in the previous section).

Firm's ESG performance has become many investor's attention recently, and hence the ESG raters, including LSEG/Refinitiv, adjust their ESG constituents and construction methods from time to time, as a response of end-user's demand. Although the change in ESG score construction method does not generally have an impact on the proposed construction of selective disclosure measure, change in the ESG performance indicators may have the impact of the disclosure construction. Normally, ESG raters gradually increase their pools of ESG performance indicators so that the ESG score constructed is more comprehensive. However, as we are unable to trace the history of the change in ESG constituents, we use a static set of ESG constituents as on the data collection date.

Specifically, we use the ESG constituents in LSEG/Refinitv as at 14 February 2025. Shown in Figure 1, there are 215 ESG performance indicators used in LSEG/Refinitiv (cf. upper screenshot). Then we use these ESG items as a base to further decide whether an ESG item discloses symbolic or substantive ESG information. Note that the mnemonic in the set are the manipulated values; to get the original indicator, we simply remove the "Score" in the mnemonic, as the original data item provides better information for categorization (cf. bottom screenshot).

[Figure 1 is about here.]

Next step, we scan through the 215 ESG items and group them into symbolic or substantive information. We use rather simple but strict rules in screening, in order to avoid subjective judgment. The screening steps are briefed below:

S1 Extracting unique values and their data descriptions for each ESG items. This step is to understand the components of the data items.

S2 Categorizing ESG items into symbolic or substantive information.

S2.1 Criteria of symbolic disclosure:

Cr1 The data item is a boolean variable.

Cr2 The ESG item description is related to *policies*, *plans*, or *targets* only.

S2.2 Criteria of substantive disclosure:

Cr1 The data item is a numerical variable.

Cr2 The data item should be an internal value (e.g., gender diversity), not an external estimate (e.g., Corporate Equity Index).

After ESG items are categorized, we further calculate the VIFs under each category so as to remove potentially overlapped items when an item has a VIF exceeding 10. At the end, the set of symbolic disclosure ($\Omega_{Symbolic}$) contains 25 ESG disclosure items while the set of substantive disclosure ($\Omega_{Substantive}$) contains 71 ESG disclosure items. We list these ESG items in Table (A.1) in Appendix with their item name with the corresponding mnemonic in LSEG/Refinitiv. To mimic the time-varying set, we take maximum number of disclosure for any given category varies over time to proxy the complete set ($\Omega_{\{\cdot,t\}}$). This procedure yields both relative disclosure measures that range from zero to one for each category-year, and the scaling approach is in line with Lins et al. (2017). We then follow Eqs. (2) and (3) to calculate the firm-year symbolic and substantive disclosures as well as the (relative or non-relative) selective disclosure.

**Selective disclosure characteristics:**

Here we describe the ESG data collection process. The complete global firm list is obtained from COMPUTSTAT via WRDS, then match the ISIN in COMPUSTAT with LSEG/Refinitiv using the `symbol_conversion` package. The matching method is recommended by Refinitiv and it reduces matching error to minimum.[1] After matching all the firms have ESG data, we finally match 109465 firm-year observations. The dataset spans from 2002 to 2024 with unique 13119 firms across 76 countries.[2] Table 1 reports the averaged symbolic and substantive disclosures

[1] We modify the LSEG's code for firm's ISIN-RIC matching using the link provided: https://github.com/LSEG-API-Samples/Example.RDPLibrary.Python.ConvertSymbology, where RIC stands for Refinitiv Instrument Code and it is the main instrument identifier in LSEG/Refinitiv

[2] Since the nature of lagged reporting in ESG dataset, data in 2024 may not be complete when we collect the ESG data in early 2025. We still keep the 2024 data in the main analyses. As robustness check for reporting bias, all the results are not changed when we remove 2024 data.

for all countries as well as the country breakdown.

[Table 1 is about here.]

The average of symbolic disclosure is 23.94 out of the potentially highest symbolic disclosure items of 25. It implies the symbolic disclosure is rather transparent across the firm-year observations.[3]

When broken down into country level, the firm-year observations are quite different across countries. The sample consists large of the US firms (43% of the overall observations), while several countries, e.g., Botswana (BWA), Cote d'Ivoire (CIV), Ghana (GHA), etc, have less than 10 firm-year observations. The averaged symbolic disclosures are not varied much. Regardless, firms in India (IND) have the highest symbolic disclosure level on average (24.50), while firms in Greece (GRC) have the lowest (23.30), considering countries with more than 100 firm-year observations.

On the other hand, the firm-year sample has 29.56 out of the potentially highest 71 substantive disclosure items. Country-specifically, we observe more cross-country difference is substantive disclosure. Firms in Thailand (THA) reveal the highest number of substantive disclosure items on average (36.27), and firms in Egypt (EGY) do the lowest on average (18.55), among countries with more than 100 firm-year observations.

Next we plot the ESG disclosure averages over time in Figure 2 and inspect the trend of the disclosures. It shows that both levels of symbolic and substantive disclosures increases over the years. Interestingly, we observe that both types of disclosures started to increase since 2007, but apparently the strength of increase is much stronger for substantive disclosure than for symbolic disclosure. Such increases might be motivated by some of the financial information disclosure mandate (e.g., Dodd-Frank Act) caused by 2007-09 Great Financial Crisis. Before 2007, the averages of symbolic and substantive disclosures were at similar level of just above 20.

[3]Again, we would like to remind our reader that the disclosure value is referred to transparency, not performance. A mindful example is that: assuming that there are 5 symbolic items relating to ESG policies. Two firms, one of which discloses that it has none of the policies while the other of which discloses that it has all, are supposed to have the same symbolic disclosures (both scored at 5) but their ESG performance will be different (the former would be scored at 0 but the latter would be scored at 5).

[Figure 2 is about here.]

We also study the ESG disclosures by sectors. Using SIC (Standard Industrial Classification) codes to divide our firms into 10 divisions,[4] we plot the average symbolic and substantive disclosures of the firm-year observations in Figure 3. In general, all divisions show that the level of substantive disclosure is higher than the level of symbolic disclosure. We also observe some cross-division variation but reckon the variation is not that strong for different division. Divisions B (Mining) and E (Transportation, Communications, Electric, Gas, and Sanitary Services) have the highest averages of symbolic and substantive disclosure among other divisions (Division B: 24.55 for symbolic disclosure and 30.70 for substantive disclosure; Division E: 23.99 for symbolic disclosure and 30.82 for substantive disclosure). In contrast, Division I (Services) has on average the lowest symbolic (23.44) and substantive (27.65) disclosures, excluding the non-classifiable division (J).

[Figure 3 is about here.]

The last set of analysis on the ESG disclosures is the comparison between (original) selective disclosure and relative selective disclosure, the latter is the difference between symbolic and substantive disclosures both scaled by the maximum of the category-year numbers. We plot the yearly average for the two selective disclosures in Figure 4. Recall from the previous analyses that the number of substantive disclosure items has increases dramatically in the later sample period; therefore, selective disclosure without scaling is likely to be dominated by the substantive disclosure, as is expected in Figure 4. Relative selective disclosure, on the contrary, exhibits time-series stability, as it is less sensitive to the size of the category-disclosure set.

[Figure 4 is about here.]

**Panel unit root test for relative selective disclosure:**

We further test the time-series stationarity of the relative selective disclosure. Augmented Dickey-Fuller (ADF) test is a popular test for unit root process in data but the test can be only used for time-series data while we have panel data. So we follow Levin et al. (2002), which is panel data version of the ADF test, to test if relative selective disclosure is a unit root.

[4] SIC codes can be found in https://www.osha.gov/data/sic-manual.

If we assume the stochastic process $\{y_{it}\}$ for a panel of individuals is generated by $y_{it} = y_{it-1} + \zeta_{it}$, where the error process is distributed independently across individuals and follows a stationary invertible ARMA process. Based on (Levin et al., 2002), the panel unit root test can be conducted in two steps: (a) Perform ADF regressions and generate orthogalized residuals. In this step, the ADF regression is implemented for each individual $i$ by:

$$\Delta y_{it} = \delta_i y_{it-1} + \sum_{p_i}^{L=1} \theta_{iL} \Delta y_{it-L} + \varepsilon_{it},$$

where the lag order $p_i$ is permitted to vary across individuals. Having determined autoregression order $p_i$ in the individual ADF regressions, the two auxiliary regressions are run to generate orthogalized residuals. Specifically, the first set of residuals (denoted by $\tilde{e}_{it}$) is generated by regressing $\Delta y_{it}$ on past $p_i$ of $\Delta y_{it-L}$ $(L = 1, ..., p_i)$, then adjusted by its standard error. The second set of residuals (denoted by $\tilde{v}_{it}$) is generated by regressing $y_{it-1}$ on past $p_i$ of $\Delta y_{it-L}$ $(L = 1, ..., p_i)$, also adjusted by its standard error.

(b) Once the two sets of orthogalized residuals are obtained, a pooled regression is used to compute the panel test statistics:

$$\tilde{e}_{it} = \delta\, \tilde{e}_{it-1} + \tilde{\varepsilon}_{it}.$$

The conventional regression $t$-statistic for testing $\delta = 0$ is used for panel unit root test. Under the null hypothesis ($\delta = 0$), the panel data is a unit root process.

We intend to test the impact of firm's selective disclosure. Given that the relative selective disclosure is rather stable over time, we use the first-order difference to construct a panel data with stationary process. Therefore, we set $y_{it} = \Delta Rel_Selective_{it}$ and the test result shows that the coefficient $\delta$ is -2.78 with standard error of 0.002 (equivalently $t_\delta = -1681.504$), rejecting the null hypothesis of panel unit root process with statistical significance at 1% level.

## 2.3 Other variables

**Dependent variables:**

In this paper, we mainly test the impact of firm's selective disclosures on their ESG performance. The LSEG/Refinitiv total ESG scores are used as main dependent variable of interest. It is well known that the construction of ESG ratings is not regulated, and their methodologies can be opaque and proprietary, leading to substantial divergence across data providers (e.g., Mackintosh, 2018; Berg et al., 2022). Therefore, to resolve the impact due to rater bias (Avramov et al., 2022), we also include S&P ESG rating as alternative ESG scores. Note that S&P ESG rating has a relatively shorter sample period, only having data from 2013. After matching LSEG/Refinitiv to S&P Capital IQ, we are able to match 7859 unique firms with S&P ESG scores.

In addition to ESG scores, we also test the impact on individual ESG performance indicators. Retrieved in LSEG/Refinitiv, we choose seven numerical performance indicators, including (1) CO2 emissions, (2) RnD expense on green projects, (3) environmental fines, (4) accounting legitimate expense, (5) board gender ratio, (6) worker's satisfaction, and (7) female workers. These individual key performance indicators are used to test how firm's performance in separate ESG areas. Notably, since these performance indicators are numerical variables, they are also a part of substantive disclosure. Therefore, we lag the selective disclosure variable by 1 year to avoid spurious results.

Finally, we also test the impact of selective disclosure on firm's media coverage. LSEG/Refinitiv also provides information on firm's media controversies. In this paper, we include 10 areas of corporate controversies: (1) aggressive or non-transparent accounting issues, (2) anti-competitive behavior, price-fixing or kickbacks, (3) bribery and corruption, political contributions, improper lobbying, money laundering, parallel imports or any tax fraud, (4) consumer complaints or dissatisfaction about to its products, (5) its products or services quality and responsibility, (6) environmental impact of its operations on natural resources or local communities, (7) high executive or board compensation, (8) insider dealings and other share price manipulations, (9) company's marketing practices, and (10) wage, layoff disputes or working conditions. Firm's media controversies are expressed as dummy variable. We run logit regression to test the impact

on controversies,

**Control variables:**

Firm characteristics are obtained from COMPUTSTAT. Firm characteristics include firm size, cash ratio, revenue, leverage, ROA, market-to-book ratio, and stock volatility.

All the variable definitions is provided in Table A.2 in Appendix. The variables – firm ESG disclosures, individual numerical ESG performance indicators, and firm characteristics – are winsorized at the level with the thresholds of 5%/95%, to avoid the results being driven by outliers. We do not winsorize ESG total scores because the score itself is bounded between 0 and 100, nor media controversy variables because they are binary variables.

Table 2 reports the summary statistics for the main variables. The top panel reports the disclosure measures (both level and change); middle panels report the summary statistics for the dependent variables, including ESG total scores, individual ESG performance indicators, and media controversies; the bottom panel reports the statistics for firm controls.

[Table 2 is about here.]

# 3 Empirical Results

## 3.1 Firm selective disclosure and ESG performance

Now we investigate firm's disclosure in relation to its ESG performance. To begin with, we gauge firm's ESG disclosure by their annual counts of the ESG-related indicators available publicly

We first look into the individual types of disclosures. Reported in the first three columns of Table 4, it show that symbolic disclosure is likely to reduce firm's ESG scores in the next year; in contrast, substantive disclosure is likely to increase firm's ESG score in the next year. Both have statistical significance at at least 5% level, but the statistical significance is much stronger for substantive disclosure, possibly due to the fact that there are larger variations in the changes of the individual firm's substantive disclosure (cf. previous section on disclosure characteristics), but the variations in the changes of symbolic is small. Note the the disclosure measures are constructed to the gauge the level of information transparency not used to gauge the performance; therefore the counts of ESG information items do not necessarily contribute to the ESG performance positively. Having said that, we still hypothesize an overall positive relationship between disclosure and ESG score because normally corporate top management team reveal positive news to cheer up the stakeholders. However, we further hypothesize that positive association is more pronounced for substantive disclosure while indecisive for symbolic disclosure. The positive statistical significance for substantive disclosure supports our hypothesis while we fine negative statistical significance for symbolic disclosure.[5]

[Table 4 is about here.]

In Column (3), both disclosure measures are statistically significant, indicating that both measures are informative in explaining ESG performance in the next year.

Columns (4)–(6) test the combined disclosure measures. We find indeed total disclosure increases firm's ESG in the next year, while the main disclosure of interest – selective disclosure – negatively predict ESG in the next year. The results support our hypothesis: positive

[5]In a separate note, our later analysis when we test firm's disclosure on ESG performance, we find positive impact of symbolic disclosure while the rest of the results holds. Therefore we do not rush into explanation on negative coefficient for the moment.

relationship between firm's total disclosure and ESG performance. But the selective disclosure does decreases ESG performance.

Combined with previous evidence, it shows that firm's symbolic disclosure has comparatively smaller variation in the yearly change, while substantive disclosure yearly change is larger, the impact of selective disclosure on ESG is mainly driven by the substantive disclosure. In Column (6), we put total disclosure and selective disclosure together and find selective disclosure has stronger prediction power. The significance of total disclosure is offset by the symbolic disclosure. We further test the impact of selective disclosure considering the AR(1) effect of the ESG scores, and the results are still strong (see Column (7)). In the final test, we test the contemporaneous effect and the results are consistent. All in all we find strong evidence on the firm's ESG information transparency measured by the counts of disclosure, is informative to ESG performance.

Firms with more selective disclosure indeed worsen their future ESG performance. Therefore the selective disclosure is a valid measure for transparency and quality potentially for ESG washing.

The approach of counting disclosure items may be sensitive to time as firms are faced to improve their transparency due to event or sustainability reporting mandate . To alleviate these potential concerns, we further revise our disclosure measures, scaled by the maximum counts of the year, to become a relative disclosure measure. Recall from previous section that the scaling approach is applied to symbolic and substantive measures separately, and the re-scaled measure does not overweigh the substantive disclosure (as substantive have more counts). Therefore, the selective disclosure is bounded between -1 and 1.

As in the previous set-up, we include year, sector and country FEs to alleviate the potential and unobservable country regulator difference / accounting reporting mandate influence on ESG and disclosure. Table 5 reports the result for relative ESG disclosure and ESG scores. Overall we find our arguments are not altered when re-scaled measures are used (Columns (1)–(7)). In the final column, we also control for firm characteristic and again firms with more selective disclosure have worsened ESG performance in the next year.

[Table 5 is about here.]

**Further robustness check:**

We provide several additional tests for the robustness of the selective disclosure impact. First of all, we check if the results are driven by some extreme change in disclosure; this is perhaps, but less likely, due to potential formation collection lag. Recall that in we only winsorize our variables at the level, not at the change. So we further winsorize the disclosure changes at 5% and 95% levels and repeat the main regression analysis. We do not find winsorization affects our results [6] The results of winsorization is not reported in order to space space. But will be provided upon request.

We next test the selective disclosure impact on sub-samples. Table 6 reports selective disclosure results for subsample periods. We first half our sample period into 2002–2013 and 2014–2024 periods. Results are reported in Columns (1) and (2) of Table (6), and we find our proposed selective disclosure measure is consistent in different sample period splits. In addition, we find the statistical significant is slightly higher in the second half sample period, perhaps reflect the increased trend and mandate of substantive information after Great Financial Crisis. Columns (3) and (4) are regression results for the two economic turmoils in our sample period – Great Financial Crisis and COVID-19. We are intrigued to see if selective disclosure impact on firm's ESG performance different from relatively abnormal period. We show that the selective disclosure still negatively predict firm's ESG performance. The analyses on sub-sample periods show that selective disclosure is coherent throughout the samples.

[Table 6 is about here.]

Next we choose alternative ESG rater to test if firm's ESG selective disclosure. To test if our results are different when different rater is used. Given the data availability, here we test S&P ESG scores. Note that given the ESG indicators are not the same among raters, we do not re-construct our disclosure because the maybe some indicators missing. Also, S&P ESG score has relatively shorter sample period (starting from 2013). Hence we repeat the regression specification presented in Table 5 but with the S&P ESG score just as alternative dependent variable.

Reported in Table 7 we show that selective disclosure indeed negatively predicts firm's ESG

[6] we also use the winsorized change of disclosure in our later analyses; again results remain unchanged

performance measure by S&P ESG total scores, while the overall conclusion is consistent with our main argument, it is interesting to see that symbolic disclosure is positively related to ESG performance. It reflects our previous footnote that symbolic is less determinants due to (1) different raters have different method to construct their score (2) symbolic disclosure has more inconclusive impact, and (3) different sample period may give alternative results for symbolic disclosure.

[Table 7 is about here.]

Overall from this set of results, we show that our proposed measure is not altered by using different raters. FN(Given this set of result, total disclosure is also significant alongside with selective disclosure, From Columns (7) and (8), we also alternatively include total disclosure in the regression and the results are not changed. We don't report here to save space but will provide upon request.

Our global firm sample consists of large size of US firms. Hence, the final set of robustness is to check if the impact of selective disclosure on ESG scores is purely driven by US sample. Reported in Table 8, we split the whole sample into US and non-US samples and test the selective disclosure for the Refintiv and S&P ESG scores, separately. We find, again, negative association on the selective disclosure for both US and non-US firms.

[Table 8 is about here.]

## 3.2 Selective disclosure and individual ESG Indicators

The analyses so far focus on the overall ESG performance. In the coming set of analyses, we further explore individual dimension of the selective disclosure consequences. We first test the numerical ESG performance indicators. Specifically, we choose the following seven performance indicators – (1) CO2 emissions, (2) RnD expense on green projects ($EnvRnD$), (3) environmental fines (EnvFines), (4) accounting legitimate expense $Lawsuit$, (5) board gender ratio, (6) worker's satisfaction, and (7) percentage of female workers ($FemaleEmp$). These ESG performance indicators are popularly studied in literature.

Reported in Table 9, we find that firms with more selective disclosure is more likely to have

more lawsuit, lower board gender diversity, and less employee satisfaction. Interestingly, we find these firms have less CO2 emissions. Possible explanation is that selective disclosure is triggered by firm's financial performance, hence at the same time CO2 emissions are also lower given less sales (Zhang, 2025).

[Table 9 is about here.]

We finally test if firm's selective disclosure is linked to ESG controversies. We include 10 Refinitiv ESG controversy indicators, which are dummy variables, and test it with logit regressions.

Reported in Table 10, we show that firm with more selective disclosure are more likely to commit ESG controversies. Astonishingly, 8 our of 10 controversies are positively significantly associated with selective disclosure. On the contrary, we do not find work condition controversy is significant to selective disclosure, and environmental controversy is negatively associated with selective disclosure, possibly due to similar reason associated to dropped sales. Note that controversy are not used as selective disclosure, therefore the results are less endogenous.

[Table 10 is about here.]

# 4 Conclusion

This study introduces a novel approach to measuring ESG-washing by constructing a selective disclosure measure – the difference between a firm's symbolic and substantive ESG disclosure items. Using a large-scale global dataset from Refinitiv spanning over two decades, we demonstrate that selective disclosure is not only a persistent feature of corporate ESG reporting but also a powerful predictor of deteriorating ESG performance. Firms with higher levels of selective disclosure are more likely to exhibit adverse outcomes in governance quality, employee satisfaction, and exposure to legal and reputational risks.

Our findings suggest that the form and substance of ESG disclosures matter profoundly. While symbolic disclosures may serve legitimate signaling purposes, an overreliance on them without accompanying substantive evidence can mislead stakeholders and obscure underlying weaknesses. The selective disclosure measure provides an interpretable, data-driven tool to identify such discrepancies, offering regulators, investors, and researchers a method to better detect ESG-washing behavior.

Beyond its empirical contributions, this study deepens the understanding of how communication strategies reflect corporate intent and integrity in sustainability discourse. As ESG transparency becomes increasingly institutionalized, tools that differentiate between genuine engagement and performative compliance will be essential. We encourage future research to extend this framework across different regulatory environments, disclosure mandates, and industry contexts to further assess its generalizability and policy relevance.

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Table 1: Average Disclosure by Countries

This table reports the averaged symbolic and substantive disclosures by countries as well as the number of observations by countries. Country's ISO code is used as identifier.

| | | Average Disclosure | | | | Average Disclosure | |
|---|---|---|---|---|---|---|---|
| Country | N | Symbolic | Substantive | Country | N | Symbolic | Substantive |
| All cty | 109465 | 23.94 | 29.56 | | | | |
| ARE | 351 | 23.71 | 27.98 | KEN | 9 | 24.00 | 36.22 |
| ARG | 365 | 24.23 | 23.00 | KOR | 1740 | 24.03 | 28.31 |
| AUS | 5081 | 24.03 | 27.72 | KWT | 167 | 23.61 | 22.54 |
| AUT | 348 | 23.73 | 30.93 | LBN | 1 | 24.00 | 21.00 |
| BEL | 514 | 23.49 | 30.60 | LKA | 15 | 23.53 | 29.27 |
| BGR | 5 | 24.00 | 24.40 | LUX | 20 | 23.50 | 23.40 |
| BHR | 77 | 23.90 | 25.68 | MAR | 175 | 23.50 | 23.65 |
| BRA | 1310 | 24.13 | 28.67 | MEX | 544 | 23.91 | 26.34 |
| BWA | 1 | 24.00 | 38.00 | MUS | 2 | 24.00 | 37.50 |
| CAN | 66 | 24.03 | 24.52 | MYS | 1572 | 24.33 | 32.27 |
| CHE | 1350 | 23.73 | 30.98 | NGA | 28 | 23.61 | 26.68 |
| CHL | 419 | 24.09 | 30.81 | NLD | 423 | 23.94 | 32.47 |
| CHN | 4847 | 23.82 | 30.75 | NOR | 604 | 24.02 | 31.35 |
| CIV | 1 | 24.00 | 31.00 | NZL | 568 | 23.83 | 27.39 |
| COL | 185 | 24.13 | 30.98 | OMN | 96 | 23.40 | 23.22 |
| CYP | 16 | 23.63 | 28.75 | PAK | 53 | 24.34 | 26.04 |
| CZE | 34 | 23.68 | 28.29 | PER | 197 | 24.31 | 25.68 |
| DEU | 1636 | 23.80 | 28.72 | PHL | 382 | 23.98 | 30.82 |
| DNK | 481 | 23.96 | 30.49 | POL | 463 | 23.78 | 32.77 |
| ECU | 19 | 24.37 | 30.84 | PRT | 243 | 24.00 | 35.33 |
| EGY | 166 | 23.60 | 18.55 | PSE | 20 | 23.15 | 25.75 |
| ESP | 917 | 23.73 | 34.71 | QAT | 258 | 23.80 | 21.18 |
| FIN | 636 | 23.93 | 34.70 | ROU | 36 | 24.14 | 31.50 |
| FRA | 1417 | 23.80 | 35.64 | RUS | 422 | 24.01 | 30.51 |
| GBR | 6242 | 23.60 | 30.42 | SAU | 367 | 23.76 | 25.68 |
| GHA | 1 | 24.00 | 22.00 | SGP | 978 | 23.71 | 27.88 |
| GRC | 412 | 23.30 | 27.00 | SVK | 4 | 23.00 | 18.00 |
| HKG | 5975 | 23.66 | 31.66 | SVN | 11 | 24.64 | 38.09 |
| HUN | 73 | 23.89 | 34.69 | SWE | 1898 | 23.96 | 30.79 |
| IDN | 637 | 24.21 | 29.95 | THA | 1063 | 24.25 | 36.27 |
| IND | 3176 | 24.50 | 35.01 | TUN | 2 | 23.00 | 18.50 |
| IRL | 141 | 23.39 | 29.71 | TUR | 737 | 23.98 | 33.46 |
| ISL | 46 | 22.96 | 29.24 | TWN | 2030 | 24.25 | 30.27 |
| ISR | 133 | 23.47 | 26.93 | UGA | 14 | 24.14 | 28.43 |
| ITA | 1220 | 23.78 | 33.59 | USA | 46964 | 24.04 | 29.17 |
| JOR | 39 | 23.62 | 32.54 | VNM | 203 | 23.59 | 29.61 |
| JPN | 7290 | 23.55 | 23.41 | ZAF | 1492 | 23.98 | 32.80 |
| KAZ | 23 | 24.13 | 32.87 | ZWE | 14 | 24.00 | 18.93 |

Table 2:
This table reports the summary statistics of the key variables in the paper. Two ESG raters – Refinitiv and S&P – summary statistics are reported in the first panel. The summary statistics of the disclosure measures based on the Refinitiv ESG items are reported in the second panel. The symbolic disclosure is the annual counts of firm's ESG boolean variables relating to firm's ESG policies, plans or targets, while substantive disclosure is the annual *counts* of firm's numerical ESG variable relating to firm's ESG performance. Total disclosure is the sum of the symbolic and substantive disclosure, and selective disclosure is the symbolic disclosure subtracted by the corresponding substantive disclosure; therefore, higher value implies the firm is more selective to information transparency. All four disclosure measures are also scaled by the maximum counts of the year (relative disclosure measures, with $REL$ before the variable names) and thus their summary statistics are reported at count and scaled levels. Firm characteristics are reported in the finale panel. $\Delta$ is the yearly change operator. Sample period is from 2002 to 2024, except for S&P rating, which covers from 2013 to 2024.

Table 2: Summary Statistics

| | N | Mean | STD | Min | 25% | 50% | 75% | Max |
|---|---|---|---|---|---|---|---|---|
| *Panel A: ESG Disclosures* | | | | | | | | |
| ΔSymbolic | 95482 | 0.09 | 0.51 | -4.00 | 0.00 | 0.00 | 0.00 | 4.00 |
| ΔRel_Symbolic | 95482 | 0.00 | 0.02 | -0.16 | 0.00 | 0.00 | 0.00 | 0.16 |
| ΔSubstantive | 95482 | 0.90 | 2.61 | -28.00 | 0.00 | 0.00 | 2.00 | 28.00 |
| ΔRel_Substantive | 95482 | 0.01 | 0.05 | -0.48 | -0.01 | 0.00 | 0.03 | 0.48 |
| ΔTotDisc | 95482 | 0.99 | 2.79 | -29.00 | 0.00 | 0.00 | 2.00 | 27.00 |
| ΔRel_TotDisc | 95482 | 0.02 | 0.06 | -0.52 | -0.01 | 0.00 | 0.04 | 0.49 |
| ΔSelective | 95482 | -0.80 | 2.77 | -26.00 | -2.00 | 0.00 | 0.00 | 22.00 |
| ΔRel_Selective | 95482 | -0.01 | 0.06 | -0.45 | -0.03 | 0.00 | 0.02 | 0.45 |
| *Panel B: ESG Total Scores* | | | | | | | | |
| ΔREF_ESG | 95482 | 2.27 | 7.27 | -74.62 | -1.97 | 1.27 | 5.62 | 69.07 |
| ΔSPG_ESG | 38580 | 0.74 | 6.81 | -56.00 | -3.00 | 1.00 | 4.00 | 62.00 |
| *Panel C: Individual ESG Performance Indicators* | | | | | | | | |
| ΔCO2 | 94736 | 0.00 | 0.62 | -9.56 | -0.11 | 0.00 | 0.11 | 9.90 |
| ΔEnvRnD | 1845 | 0.01 | 0.75 | -6.45 | -0.16 | 0.00 | 0.16 | 7.29 |
| ΔEnvFines | 2519 | 0.01 | 1.95 | -8.42 | -1.01 | 0.00 | 1.02 | 9.36 |
| ΔLawsuit | 4437 | 0.00 | 1.41 | -6.68 | -0.65 | 0.00 | 0.64 | 6.56 |
| ΔBoardGender | 94077 | 0.01 | 0.06 | -0.43 | 0.00 | 0.00 | 0.02 | 0.43 |
| ΔSatisfaction | 7254 | 0.59 | 4.81 | -33.00 | -1.00 | 0.00 | 2.04 | 32.80 |
| ΔFemaleEmp | 44042 | 0.00 | 0.03 | -0.54 | 0.00 | 0.00 | 0.01 | 0.54 |
| *Panel D: Firm Controversies* | | | | | | | | |
| Environment | 95472 | 0.01 | 0.11 | 0.00 | | | | 1.00 |
| WorkCOnditino | 95472 | 0.02 | 0.14 | 0.00 | | | | 1.00 |
| Bribery/Fraud | 95472 | 0.08 | 0.27 | 0.00 | | | | 1.00 |
| AntiCompetition | 95472 | 0.04 | 0.20 | 0.00 | | | | 1.00 |
| Complaints | 95472 | 0.02 | 0.15 | 0.00 | | | | 1.00 |
| Customer | 95472 | 0.04 | 0.20 | 0.00 | | | | 1.00 |
| Marketing | 95472 | 0.02 | 0.13 | 0.00 | | | | 1.00 |
| ExecComp | 95472 | 0.01 | 0.07 | 0.00 | | | | 1.00 |
| Insider | 95472 | 0.01 | 0.07 | 0.00 | | | | 1.00 |
| Accounting | 95472 | 0.01 | 0.07 | 0.00 | | | | 1.00 |
| *Panel E: Firm Characteristics* | | | | | | | | |
| Size | 93238 | 22.90 | 2.41 | 19.07 | 21.06 | 22.63 | 24.47 | 27.76 |
| CashRt | 84785 | 0.16 | 0.15 | 0.01 | 0.05 | 0.11 | 0.22 | 0.58 |
| RevRt | 106788 | 0.64 | 0.51 | 0.03 | 0.21 | 0.54 | 0.94 | 1.83 |
| Lev | 106729 | 0.57 | 0.23 | 0.16 | 0.40 | 0.57 | 0.74 | 0.94 |
| ROA | 97168 | 0.03 | 0.08 | -0.18 | 0.01 | 0.04 | 0.07 | 0.17 |
| MBRt | 91035 | 3.10 | 3.16 | 0.37 | 1.06 | 1.93 | 3.73 | 12.73 |
| StoVol | 101980 | 1.73 | 2.90 | 0.05 | 0.10 | 0.20 | 2.09 | 10.59 |

Table 3: ESG Disclosure and Firm Characteristics

This table reports the panel regression results for the determinants of the ESG disclosure. The variables of interest are relative total and selective disclosure. The dependent variables are in the forms of level and in change. Firm characteristics, i.e., size, cash ratio, revenue, leverage, ROA, market-to-book ratio, and stock volatility are used as possible determinants; control variables include change in ESG scores and 1-year lagged dependent variable. All independent variables are lagged by 1 year with country, year, and sector fixed effects. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

| y= | Rel_TotDisc | ΔRel_TotDisc | Rel_Selective | ΔRel_Selective |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *(All independent variables are lagged by 1 year)* | | | | |
| Size | 0.030*** | 0.001*** | -0.028*** | -0.001*** |
| | [78.477] | [5.801] | [-79.934] | [-8.686] |
| CashRt | -0.066*** | -0.006*** | 0.037*** | 0.006*** |
| | [-18.199] | [-3.061] | [11.096] | [3.499] |
| RevRt | 0.014*** | -0.000 | -0.005*** | 0.001 |
| | [11.850] | [-0.750] | [-4.640] | [1.338] |
| Lev | 0.103*** | 0.002 | -0.088*** | -0.002 |
| | [38.258] | [1.370] | [-35.425] | [-1.440] |
| ROA | 0.147*** | 0.014*** | -0.126*** | -0.010*** |
| | [22.976] | [4.385] | [-21.366] | [-3.209] |
| MBRt | -0.006*** | -0.000* | 0.005*** | 0.000 |
| | [-34.770] | [-1.652] | [31.322] | [1.367] |
| StoVol | -0.004*** | -0.000 | 0.005*** | 0.000 |
| | [-20.776] | [-1.113] | [28.171] | [0.944] |
| *Controls:* | | | | |
| ΔREF_ESG | | 0.001*** | | -0.001*** |
| | | [17.245] | | [-14.911] |
| ΔRel_TotDisc | | -0.178*** | | |
| | | [-25.689] | | |
| ΔRel_Selective | | | | -0.204*** |
| | | | | [-24.839] |
| Controls | No | Shown | No | Shown |
| Lagged y | No | Shown | No | Shown |
| Country FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes |
| N | 66901 | 58296 | 66901 | 58296 |
| $R^2$ | 0.45 | 0.107 | 0.38 | 0.121 |

Table 4: ESG Disclosure Counts and ESG Scores

This table reports the results for the panel regression of the ESG disclosure and ESG scores. The dependent variable is the Refinitiv ESG total scores and the independent variables include firm's ESG disclosure. The symbolic disclosure is the annual counts of firm's ESG boolean variables relating to its ESG policies, plans or targets, while substantive disclosure is the annual counts of firm's ESG numerical information. Total disclosure is the sum of the symbolic and substantive disclosure, and selective disclosure is the symbolic disclosure subtracted by its substantive disclosure. Higher value of the selective disclosure implies that the firm is more selective to information transparency. Sample period is from 2002 to 2024. All independent variables are lagged by 1 year with country, year, and sector fixed effects. $\Delta$ is the yearly change operator. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

| y= | ΔREF_ESG | | | | | | | ΔREF_ESG (t-1) |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| *(All independent variables are lagged by 1 year)* | | | | | | | | |
| ΔSymbolic | -0.109** | | -0.126** | | | | | |
| | [-2.039] | | [-2.363] | | | | | |
| ΔSubstantive | | 0.056*** | 0.058*** | | | | | |
| | | [5.044] | [5.180] | | | | | |
| ΔTotDisc | | | | 0.045*** | | 0.013 | | 0.714*** |
| | | | | [4.318] | | [0.979] | | [46.918] |
| ΔSelective | | | | | -0.053*** | -0.044*** | -0.169*** | -0.322*** |
| | | | | | [-5.246] | [-3.334] | [-16.289] | [-22.761] |
| ΔREF_ESG | | | | | | | -0.142*** | |
| | | | | | | | [-32.059] | |
| Controls | No | No | No | No | No | No | No | No |
| Lagged y | No | No | No | No | No | No | Shown | No |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 82257 | 82257 | 82257 | 82257 | 82257 | 82257 | 82257 | 95356 |
| $R^2$ | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.044 | 0.155 |

Table 5:
This table reports the results for the panel regression of the ESG disclosure and ESG scores. The dependent variable is the Refinitiv ESG total scores and the independent variables include firm's ESG disclosure. The symbolic disclosure is firm's ESG revelation to its policies, plans or targets, while substantive disclosure is firm's ESG revelation of numerical performance. Total disclosure is the sum of the symbolic and substantive disclosure, and selective disclosure is the symbolic disclosure subtracted by its substantive disclosure. Higher value of the selective disclosure implies that the firm is more selective to information transparency. All reported disclosure measures here are scaled by the maximum counts of the year (relative disclosure measures, with $REL$ before the variable names). Sample period is from 2002 to 2024. All independent variables are lagged by 1 year with country, year, and sector fixed effects. Firm characteristics and AR(1) are used as control variables. $\Delta$ is the yearly change operator. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

Table 5: Relative ESG Disclosure and ESG Scores

| y= | ΔREF_ESG | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| *(All independent variables are lagged by 1 year)* | | | | | | | | |
| ΔRel_Symbolic | -2.721** | | -3.000** | | | | | |
| | [-2.039] | | [-2.247] | | | | | |
| ΔRel_Substantive | | 2.340*** | 2.406*** | | | | | |
| | | [3.735] | [3.840] | | | | | |
| ΔRel_TotDisc | | | | 1.312** | | 0.550 | | |
| | | | | [2.524] | | [0.993] | | |
| ΔRel_Selective | | | | | -1.864*** | -1.605*** | -1.644*** | -6.122*** |
| | | | | | [-3.725] | [-3.021] | [-2.861] | [-10.363] |
| *Controls:* | | | | | | | | |
| Size | | | | | | | -0.020 | -0.025 |
| | | | | | | | [-1.037] | [-1.300] |
| CashRt | | | | | | | -0.177 | -0.204 |
| | | | | | | | [-0.703] | [-0.813] |
| RevRt | | | | | | | -0.023 | -0.022 |
| | | | | | | | [-0.278] | [-0.266] |
| Lev | | | | | | | -0.472** | -0.527*** |
| | | | | | | | [-2.503] | [-2.814] |
| ROA | | | | | | | 1.819*** | 2.161*** |
| | | | | | | | [3.906] | [4.679] |
| MBRt | | | | | | | 0.030*** | 0.033*** |
| | | | | | | | [2.592] | [2.907] |
| StoVol | | | | | | | 0.038*** | 0.041*** |
| | | | | | | | [3.055] | [3.329] |
| ΔREF_ESG | | | | | | | | -0.133*** |
| | | | | | | | | [-26.073] |
| Controls | No | No | No | No | No | No | Shown | Shown |
| Lagged y | No | No | No | No | No | No | No | Shown |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 82257 | 82257 | 82257 | 82257 | 82257 | 82257 | 58296 | 58296 |
| $R^2$ | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.029 | 0.046 |

Table 6: Sub-sample Analysis – Relative ESG Disclosure

This table reports the results for the panel regression of the ESG disclosure and ESG scores for sub-samples. The dependent variable is the Refinitiv ESG total scores and the independent variables include firm's relative selective ESG disclosure, measured by the symbolic disclosure subtracted by its substantive disclosure and scaled by the maximum counts of the year. Higher value of the selective disclosure implies that the firm is more selective to information transparency. Column (1) [or (2)]reports the first [or second] half sample period. Column (3) reports results for Great Financial Crisis and Column (4) reports results for COVID-19 period. All independent variables are lagged by 1 year with country, year, and sector fixed effects. Firm characteristics and AR(1) are used as control variables. $\Delta$ is the yearly change operator. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

| y= | ΔREF_ESG | | | |
|---|---|---|---|---|
| | 2002–2013 | 2014–2024 | 2007–2009 | 2020–2022 |
| | (1) | (2) | (3) | (4) |
| *(All independent variables are lagged by 1 year)* | | | | |
| ΔRel_Selective | -4.053*** | -6.341*** | -4.678** | -9.056*** |
| | [-3.770] | [-9.063] | [-2.538] | [-6.860] |
| *Controls:* | | | | |
| Size | 0.087** | -0.072*** | 0.150* | -0.104*** |
| | [2.063] | [-3.326] | [1.778] | [-3.076] |
| CashRt | -0.153 | -0.311 | -0.907 | 0.451 |
| | [-0.279] | [-1.105] | [-0.822] | [1.033] |
| RevRt | 0.442*** | -0.216** | 0.898*** | -0.121 |
| | [2.682] | [-2.283] | [2.857] | [-0.779] |
| Lev | -0.110 | -0.499** | 1.032 | -0.597* |
| | [-0.277] | [-2.373] | [1.278] | [-1.829] |
| ROA | 2.015** | 2.420*** | 0.043 | 1.301 |
| | [1.991] | [4.625] | [0.022] | [1.630] |
| MBRt | -0.044* | 0.051*** | -0.122** | 0.051*** |
| | [-1.710] | [4.110] | [-2.351] | [2.725] |
| StoVol | 0.056** | 0.036*** | 0.057 | 0.064*** |
| | [2.197] | [2.614] | [1.265] | [3.073] |
| ΔREF_ESG | -0.209*** | -0.084*** | -0.179*** | -0.079*** |
| | [-24.093] | [-14.113] | [-13.458] | [-8.996] |
| Controls | Shown | Shown | Shown | Shown |
| Lagged y | Shown | Shown | Shown | Shown |
| Country FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes |
| N | 19252 | 39044 | 5193 | 15364 |
| $R^2$ | 0.083 | 0.034 | 0.083 | 0.052 |

Table 7: Alternative ESG Score Results

This table reports the results for the panel regression of the ESG disclosure but S&P ESG scores is used as robustness check for ESG disclosure measures. We repeat the analyses presented in Table 5: The dependent variable is the S&P ESG total scores and the independent variables include firm's ESG disclosure. The symbolic disclosure is firm's ESG revelation to its policies, plans or targets, while substantive disclosure is firm's ESG revelation of numerical performance. Total disclosure is the sum of the symbolic and substantive disclosure, and selective disclosure is the symbolic disclosure subtracted by its substantive disclosure. Higher value of the selective disclosure implies that the firm is more selective to information transparency. All reported disclosure measures here are scaled by the maximum counts of the year (relative disclosure measures, with *REL* before the variable names). Sample period is from 2013 to 2024 as S&P started providing ESG ratings at a later time. All independent variables are lagged by 1 year with country, year, and sector fixed effects. Firm characteristics and AR(1) are used as control variables. $\Delta$ is the yearly change operator. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

| y= | ΔSPG_ESG | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| *(All independent variables are lagged by 1 year)* | | | | | | | | |
| ΔRel_Symbolic | 16.684*** | | 15.184*** | | | | | |
| | [6.720] | | [6.206] | | | | | |
| ΔRel_Substantive | | 15.533*** | 15.394*** | | | | | |
| | | [19.933] | [19.834] | | | | | |
| ΔRel_TotDisc | | | | 13.452*** | | 10.854*** | | |
| | | | | [19.327] | | [13.028] | | |
| ΔRel_Selective | | | | | -10.751*** | -4.295*** | -10.576*** | -10.143*** |
| | | | | | [-15.825] | [-5.479] | [-13.358] | [-11.699] |
| Controls | No | No | No | No | No | No | Yes | Yes |
| Lagged y | No | No | No | No | No | No | No | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 36790 | 36790 | 36790 | 36790 | 36790 | 36790 | 27081 | 22481 |
| $R^2$ | 0.27 | 0.28 | 0.281 | 0.279 | 0.276 | 0.28 | 0.277 | 0.284 |

Table 8: US vs. Non-US Results

This table reports the separate regression results for the US and non-US firms. The dependent variable is the Refinitiv ESG total scores (Columns (1) and (2)) or S&P ESG total scores (Columns (3) and (4)). The independent variables include firm's relative selective ESG disclosure, measured by the symbolic disclosure subtracted by its substantive disclosure and scaled by the maximum counts of the year. Higher value of the selective disclosure implies that the firm is more selective to information transparency. Columns (1) and (3) includes US firms only while Columns (2) and (4)includes non-US firms. All independent variables are lagged by 1 year with country, year, and sector fixed effects. Firm characteristics and AR(1) are used as control variables. $\Delta$ is the yearly change operator. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

| | $\Delta$REF_ESG | | $\Delta$SPG_ESG | |
|---|---|---|---|---|
| | US | Non-US | US | Non-US |
| | (1) | (2) | (3) | (4) |
| *(All independent variables are lagged by 1 year)* | | | | |
| $\Delta$Rel_Selective | -5.002*** | -6.580*** | -8.951*** | -10.293*** |
| | [-5.259] | [-8.725] | [-5.359] | [-10.260] |
| Controls | Yes | Yes | Yes | Yes |
| Lagged y | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes |
| N | 25845 | 32451 | 8713 | 13768 |
| $R^2$ | 0.056 | 0.045 | 0.28 | 0.291 |

Table 9: Selective Disclosure and E/S/G Behavior

This table reports the panel regression results for consequences of selective disclosure in terms of E/S/G behaviors. We choose CO2 emissions, RnD expense on green projects (*EnvRnD*), environmental fines (*EnvFines*), accounting legitimate expense *Lawsuit*, board gender ratio, worker's satisfaction, and percentage of female workers (*FemaleEmp*) as dependent variables, used to capture firm's performance in environmental, social, and governance aspects respectively. Independent variables include firm's relative selective ESG disclosure, measured by the symbolic disclosure subtracted by its substantive disclosure and scaled by the maximum counts of the year. Higher value of the selective disclosure implies that the firm is more selective to information transparency. Firm characteristics are included as control variables. Sample period is from 2002 to 2024. All independent variables are lagged by 1 year with country, year, and sector fixed effects. $\Delta$ is the yearly change operator. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

| y= | ΔCO2 | ΔEnvRnD | ΔEnvFines | ΔLawsuit | ΔBoardGender | ΔSatisfaction | ΔFemaleEmp |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| *(All independent variables are lagged by 1 year)* | | | | | | | |
| ΔRel_Selective | -0.140*** | 0.273 | 1.291 | 0.759* | -0.010** | -5.091*** | -0.001 |
| | [-3.271] | [0.584] | [1.352] | [1.669] | [-2.346] | [-2.993] | [-0.185] |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Lagged y | No | No | No | No | No | No | No |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sector FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 58063 | 1665 | 2168 | 3140 | 57715 | 4325 | 28663 |
| $R^2$ | 0.016 | 0.043 | 0.042 | 0.044 | 0.015 | 0.036 | 0.011 |

Table 10:
This table reports logit regression results for firm's selective and firm's ESG controversies. Refinitiv reveals 10 aspects of the corporate scandals: (1) aggressive or non-transparent accounting issues ($Accounting$), (2) anti-competitive behavior, price-fixing or kickbacks ($AntiCompetition$), (3) bribery and corruption, political contributions, improper lobbying, money laundering, parallel imports or any tax fraud ($BriberyFraud$), (4) consumer complaints or dissatisfaction about to its products ($Complains$), (5) its products or services quality and responsibility ($Consumer$), (6) environmental impact of its operations on natural resources or local communities ($Environment$), (7) high executive or board compensation ($ExecComp$), (8) insider dealings and other share price manipulations ($Insider$), (9) company's marketing practices ($Marketing$), and (10) wage, layoff disputes or working conditions ($WorkCondition$). The controversy is expressed as a dummy variable, taking 1 if the firm, $i$, is under the spotlight of the media because of a linked controversy in year $t$; 0, o.w. We group these 10 controversy dummies into two panels, with each panel reporting results for 5 controversies. Independent variables include firm's relative selective ESG disclosure, measured by the symbolic disclosure subtracted by its substantive disclosure and scaled by the maximum counts of the year. Higher value of the selective disclosure implies that the firm is more selective to information transparency. Firm characteristics are included as control variables. Sample period is from 2002 to 2024. All independent variables are lagged by 1 year. $\Delta$ is the yearly change operator. Robustness standard errors are used for statistical significance and $t$-statistic is reported in parentheses. ***, **, and * represent 1%, 5%, and 10% levels, respectively.

Table 10: Selective Disclosure and Controversies

| y= | Controversy Dummy | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *(All independent variables are lagged by 1 year)* | | | | | |
| *Panel A* | Accounting | AntiCompetition | BriberyFraud | Complaints | Customer |
| ΔRel_Selective | 2.864*** | 1.330*** | 1.418*** | 1.358*** | 1.351*** |
| | [3.441] | [4.658] | [5.796] | [2.945] | [4.302] |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Lagged y | No | No | No | No | No |
| Country FE | No | No | No | No | No |
| Year FE | No | No | No | No | No |
| Sector FE | No | No | No | No | No |
| N | 58315 | 58315 | 58315 | 58315 | 58315 |
| *Panel B* | Environment | ExecComp | Insider | Marketing | WorkCondition |
| ΔRel_Selective | -1.199*** | 2.714*** | 3.243*** | 1.781*** | 0.402 |
| | [-2.727] | [3.137] | [3.849] | [3.926] | [1.036] |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Lagged y | No | No | No | No | No |
| Country FE | No | No | No | No | No |
| Year FE | No | No | No | No | No |
| Sector FE | No | No | No | No | No |
| N | 58315 | 58315 | 58315 | 58315 | 58315 |

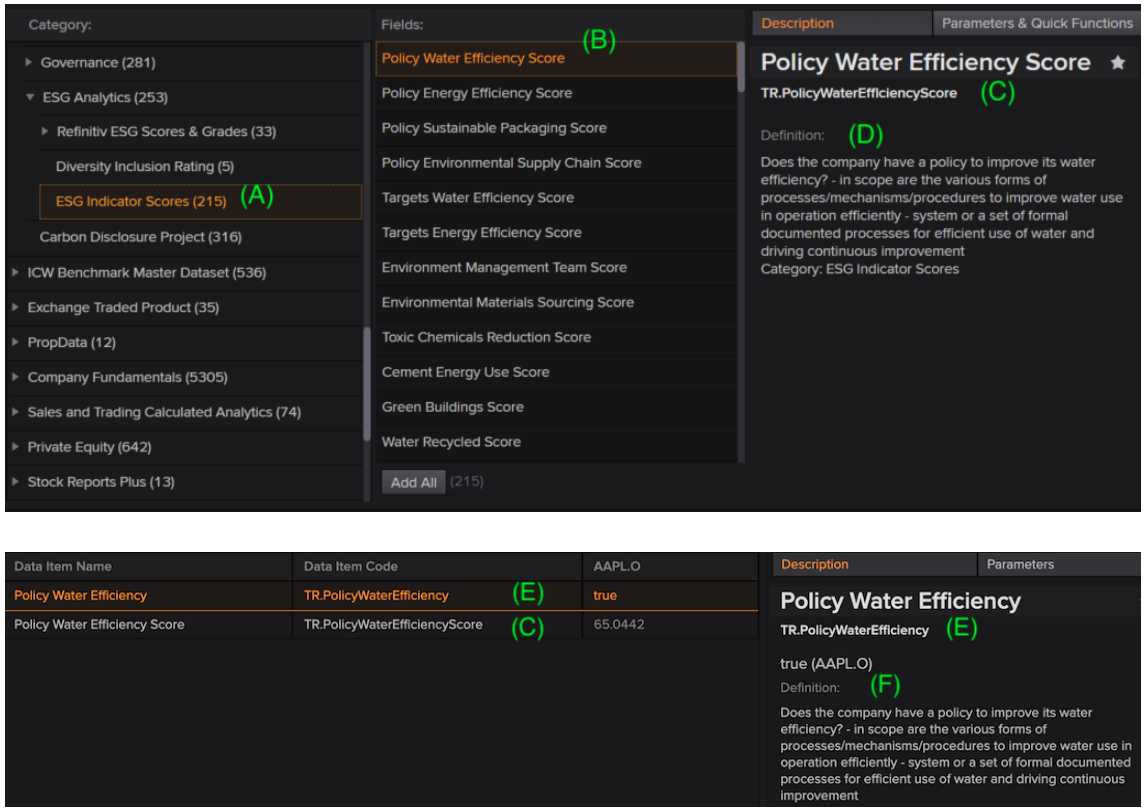


Figure 1: This figure provides LSEG/Refinitiv screenshots for ESG items. In the the upper screenshot: (A) The data item group for ESG performance indicators. (B) The list of the ESG items in the group. (C) The mnemonic for the ESG item Policy Water Efficiency Score. (D) The corresponding ESG item description. In the bottom screenshot: (E) The source mnemonic for the ESG item Policy Water Efficiency. (F) The corresponding ESG item description

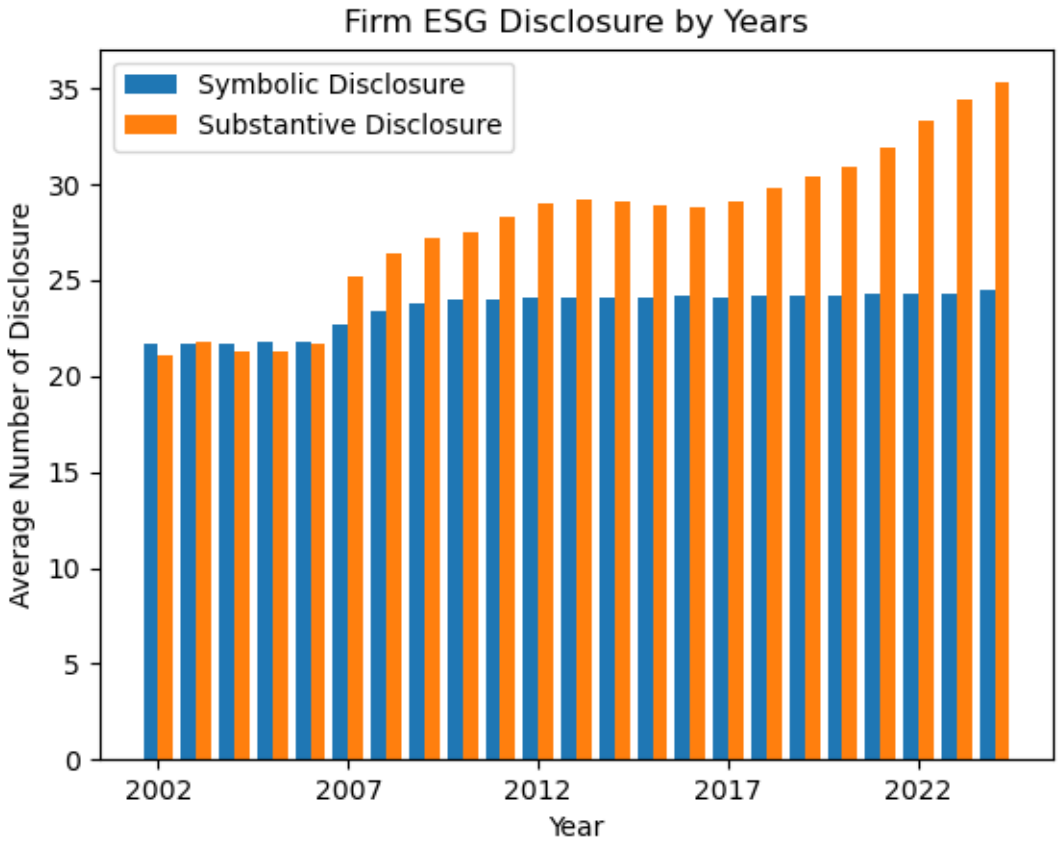


Figure 2: This figure plots firm's ESG disclosure by year. The blue bar indicates the yearly average symbolic disclosure while the orange bar indicates the average substantive disclosure. The disclosures are measured by the counts of the symbolic or substantive information for each firm-year observations.

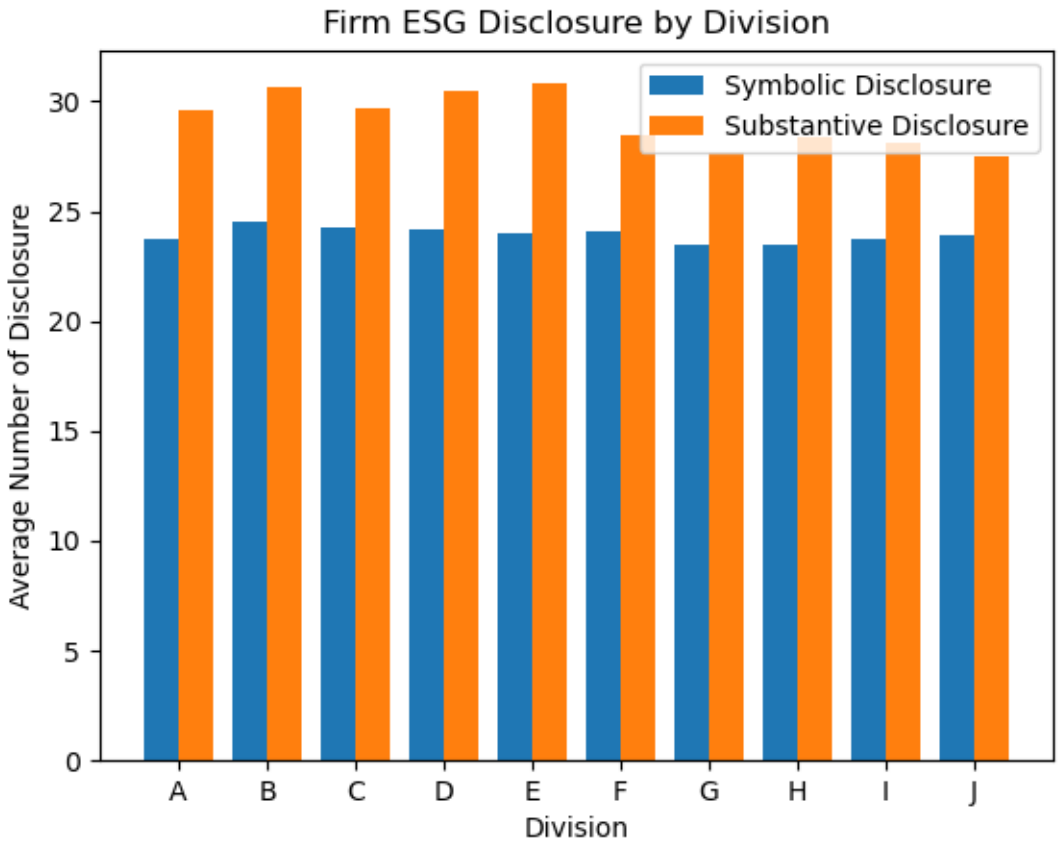


Figure 3: This figure plots firm's ESG disclosure by division. The blue bar indicates the average symbolic disclosure for each division while the orange bar indicates the average substantive disclosure. The disclosures are measured by the counts of the symbolic or substantive information for each firm-year observations. Maps on SIC division codes: (A) Agriculture, Forestry, and Fishing; (B) Mining; (C) Construction; (D) Manufacturing; (E): Transportation, Communications, Electric, Gas, and Sanitary Services; (F) Wholesale Trade; (G) Retail Trade; (H) Finance, Insurance, and Real Estate; (I) Services; (J) Non-classifiable.

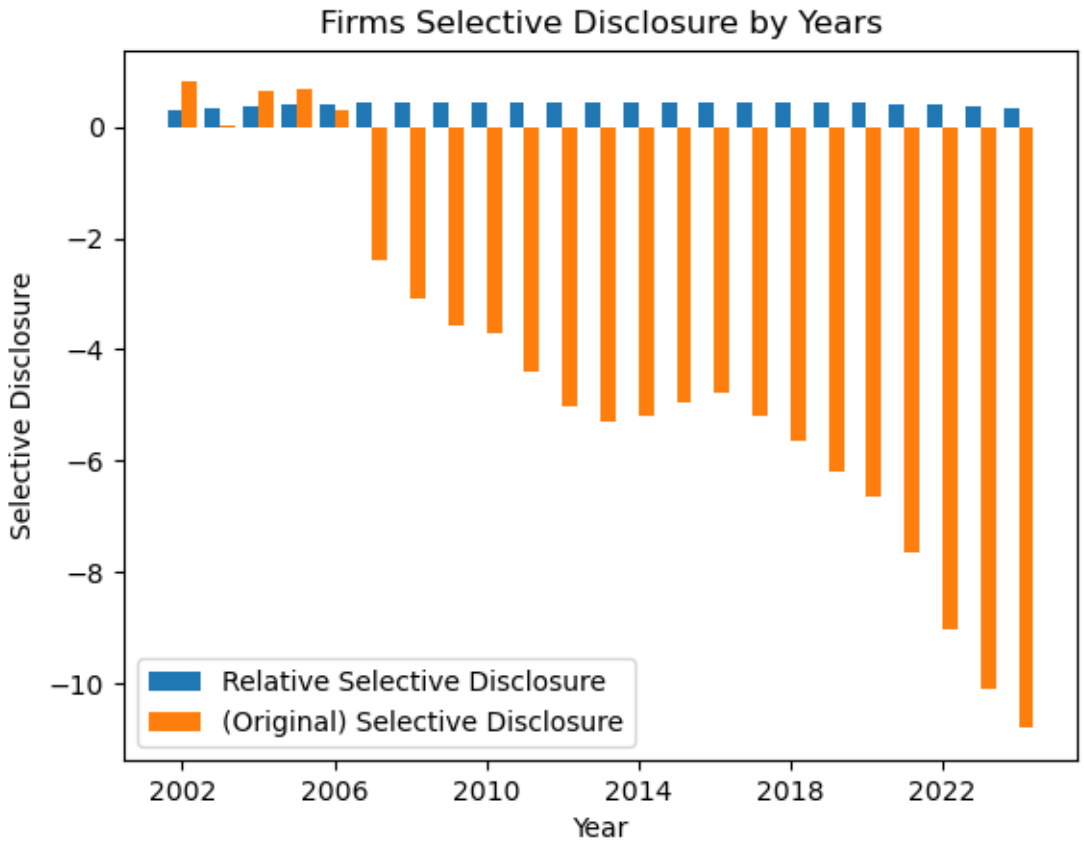


Figure 4: This figure plots firm's ESG selective disclosure by year. The blue bar indicates the relative selective disclosure, averaged by year, while the orange bar indicates the original selective disclosure by year, in which the absolute selective disclosure is calculated by the counts of the symbolic information subtracted by the counts of the substantive information for each firm-year observations.

# Appendix

## A Additional Results

Table A.1 provides the list of ESG symbolic or substantive disclosure items.
Table A.2 provides the variable definitions.

Table A.1: List of Disclosures

This table lists the ESG items for the symbolic and substantive disclosures. Panel A lists the symbolic disclosures while Panel B lists the substantive disclosures. Each panel provides the LSEG/Refinitiv mnemonic and the data item names. The final column reports the VIF for the data item.

| Mnemonic | Data Name | VIF |
|---|---|---|
| *Panel A: List of Symbolic Disclosure* | | |
| TR.AnalyticBoardFunctionsPolicy | Board Functions Policy | 2.23 |
| TR.EnvRestorationInitiatives | Environmental Restoration Initiatives | 1.64 |
| TR.AnalyticHealthSafetyPolicy | Health and Safety Policy | 7.00 |
| TR.AnalyticHumanRightsPolicy | Human Rights Policy | 7.09 |
| TR.PolicyChildLabor | Policy Child Labor | 8.61 |
| TR.PolicyCommunityInvolvement | Policy Community Involvement | 6.83 |
| TR.PolicyCustomerHealthSafety | Policy Customer Health and Safety | 1.73 |
| TR.PolicyDataPrivacy | Policy Data Privacy | 4.59 |
| TR.PolicyDiversityOpportunity | Policy Diversity and Opportunity | 6.68 |
| TR.PolicyEmissions | Policy Emissions | 5.66 |
| TR.PolicyEnergyEfficiency | Policy Energy Efficiency | 8.76 |
| TR.PolicyEnvSupplyChain | Policy Environmental Supply Chain | 3.66 |
| TR.PolicyForcedLabor | Policy Forced Labor | 8.36 |
| TR.PolicyHumanRights | Policy Human Rights | 3.87 |
| TR.PolicySustainablePackaging | Policy Sustainable Packaging | 1.52 |
| TR.PolicyWaterEfficiency | Policy Water Efficiency | 3.40 |
| TR.AnalyticResourceRedTargets | Resource Reduction Targets | 9.47 |
| TR.StaffTransportationReduction | Staff Transportation Impact Reduction | 1.44 |
| TR.BoardSuccessionPlan | Succession Plan | 3.76 |
| TR.TargetsDiversityOpportunity | Targets Diversity and Opportunity | 1.42 |
| TR.TargetsEnergyEfficiency | Targets Energy Efficiency | 5.69 |
| TR.TargetsWaterEfficiency | Targets Water Efficiency | 2.81 |
| TR.AnalyticTrainingDevPolicy | Training and Development Policy | 6.46 |
| TR.AnalyticVOCorPMReduction | VOC or Particulate Matter Emissions Reduction | 1.30 |
| TR.WhistleblowerProtection | Whistleblower Protection | 4.36 |
| *Panel B: List of Substantive Disclosure* | | |
| TR.AnalyticAccidentalSpills | Accidental Spills To Revenues USD in million | 1.00 |
| TR.AnalyticLayoffs | Announced Layoffs To Total Employees | 1.00 |
| TR.AnalyticAntiTakeoverDevices | Anti Takeover Devices Above Two | 1.52 |
| TR.AnalyticAuditCommInd | Audit Committee Independence | 2.15 |
| TR.AuditorTenure | Auditor Tenure | 1.24 |
| TR.AnalyticExperiencedBoard | Average Board Tenure | 1.17 |
| TR.AvgTrainingHours | Average Training Hours | 1.02 |
| TR.AnalyticBoardCulturalDiversity | Board Cultural Diversity, Percent | 1.29 |
| TR.AnalyticBoardFemale | Board Gender Diversity, Percent | 1.49 |
| TR.BoardMeetingAttendanceAvg | Board Meeting Attendance Average | 1.40 |
| TR.AnalyticBoardAffiliations | Board Member Affiliations | 1.04 |
| TR.AnalyticBoardMemberComp | Board Member Compensation | 1.00 |
| TR.AnalyticBoardSizeMore10Less8 | Board Size More Ten Less Eight | 1.00 |
| TR.AnalyticBoardSpecificSkills | Board Specific Skills, Percent | 0.94 |
| TR.CementCO2Emission | Cement CO2 Equivalents Emission | 1.00 |
| TR.CementEnergyUse | Cement Energy Use | 1.00 |
| TR.AnalyticCO2IndirectScope3 | CO2 Equivalent Emissions Indirect, Scope 3 To Revenues USD in million | 1.00 |
| TR.AnalyticCompCommInd | Compensation Committee Independence | 2.65 |
| TR.CustomerSatisfaction | Customer Satisfaction | 1.14 |
| TR.EmployeeHSTrainingHours | Employee Health and Safety Training Hours | 1.01 |
| TR.EmployeeSatisfaction | Employee Satisfaction | 1.19 |
| TR.EmployeesWithDisabilities | Employees With Disabilities | 1.13 |
| TR.EMSCertifiedPct | EMS Certified Percent | 1.39 |
| TR.AnalyticEnvRD | Env RnD Expenditures To Revenues in million | 1.00 |
| TR.AnalyticEstimatedCO2Total | Estimated CO2 Equivalents Emission Total | 1.07 |
| TR.AnalyticExecutiveMembersGenderDiversity | Executive Members Gender Diversity, Percent | 1.28 |
| TR.AnalyticExecutivesCulturalDiversity | Executives Cultural Diversity | 1.23 |
| TR.AnalyticFlaringGases | Flaring Gases To Revenues USD in million | 1.00 |
| TR.GenderPayGapPctage | Gender Pay Gap Percentage | 1.14 |
| TR.AnalyticHighestRemuneration | Highest Remuneration Package | 1.01 |
| TR.AnalyticIndepBoard | Independent Board Members | 2.93 |
| TR.AnalyticInjuries | Injuries To Million Hours | 1.02 |
| TR.InternalCarbonPriceTonne | Internal Carbon Price per Tonne | 1.00 |
| TR.LitigationExpenses | Litigation Expenses | 1.00 |

*(continued to the next page)*

| Mnemonic | Data Name | VIF |
|---|---|---|
| TR.AnalyticLitigationExpenses | Litigation Expenses To Revenues in million | 1.20 |
| TR.AnalyticLostDays | Lost Days To Total Days | 1.00 |
| TR.AnalyticEmploymentCreation | Net Employment Creation | 1.00 |
| TR.AnalyticNominationCommInd | Nomination Committee Independence | 1.57 |
| TR.AnalyticNomCommInvolvment | Nomination Committee Involvement | 1.02 |
| TR.AnalyticNonauditAuditFeesRatio | Non-audit to Audit Fees Ratio | 1.00 |
| TR.AnalyticNonExecBoard | Non-Executive Board Members | 1.84 |
| TR.AnalyticNOxEmissions | NOx Emissions To Revenues USD in million | 1.05 |
| TR.OccupationalDiseases | Occupational Diseases | 1.00 |
| TR.OzoneDepletingSubstances | Ozone-Depleting Substances | 1.03 |
| TR.AnalyticOzoneDepletingSubstances | Ozone-Depleting Substances To Revenues USD in million | 1.03 |
| TR.QMSCertifiedPct | QMS Certified Percent | 1.29 |
| TR.AnalyticRenewEnergySupply | Renewable Energy Supply | 1.05 |
| TR.AnalyticRenewEnergyUse | Renewable Energy Use Ratio | 1.14 |
| TR.RevenueEnvProducts | Revenue from Environmental Products | 1.05 |
| TR.AnalyticSalaryGap | Salary Gap | 1.01 |
| TR.AnalyticSOxEmissions | SOx Emissions To Revenues USD in million | 1.08 |
| TR.AnalyticStrictlyIndepBoard | Strictly Independent Board Members | 1.55 |
| TR.AnalyticCO2 | Total CO2 Equivalent Emissions To Revenues USD in million | 1.05 |
| TR.AnalyticTotalDonations | Total Donations To Revenues in million | 1.00 |
| TR.AnalyticEnergyUse | Total Energy Use To Revenues USD in million | 1.00 |
| TR.AnalyticHazardousWaste | Total Hazardous Waste To Revenues USD in million | 1.08 |
| TR.AnalyticTotalRenewableEnergy | Total Renewable Energy To Energy Use in million | 1.00 |
| TR.SeniorExecsTotalComp | Total Senior Executives Compensation | 1.00 |
| TR.AnalyticSeniorExecsTotalComp | Total Senior Executives Compensation To Revenues in million | 1.20 |
| TR.AnalyticTotalWaste | Total Waste To Revenues USD in million | 1.10 |
| TR.TradeUnionRep | Trade Union Representation | 1.23 |
| TR.AnalyticTrainingCosts | Training Costs Per Employee | 1.03 |
| TR.TurnoverEmployees | Turnover of Employees | 1.27 |
| TR.AnalyticVOCEmissions | VOC Emissions To Revenues USD in million | 1.00 |
| TR.VotingCapPctage | Voting Cap Percentage | 1.24 |
| TR.AnalyticWasteRecyclingRatio | Waste Recycled To Total Waste | 1.16 |
| TR.AnalyticDischargeWaterSystem | Water Pollutant Emissions To Revenues USD in million | 1.00 |
| TR.WaterRecycled | Water Recycled | 1.00 |
| TR.AnalyticWaterUse | Water Use To Revenues USD in million | 1.00 |
| TR.WomenEmployees | Women Employees | 1.89 |
| TR.WomenManagers | Women Managers | 1.85 |

Table A.2: Variable Definition

| Variable | Definition |
|---|---|
| *Panel A: ESG Disclosures and Scores* | |
| Symbolic or Rel_Symbolic | Firm-year counts of ESG symbolic disclosure items. Relative measure is calculated by the maximum of the category-year value. |
| Substantive or Rel_Substantive | Firm-year counts of ESG substantive disclosure items. Relative measure is calculated by the maximum of the category-year value. |
| TotDisc | Total ESG disclosure, defined as Symbolic + Substantive |
| Selective or Rel_Selective | Selective disclosure, defined as Symbolic - Substantive. The relative measure is defined as Rel_Symbolic - Rel_Substantive. |
| *Panel B: ESG Scores* | |
| REF_ESG | Refinitive ESG total scores. |
| SPG_ESG | S&P ESG total scores. |
| *Panel C: Individual ESG Performance Indicators* | |
| CO2 | Firm's total CO2 emissions in natural logarithm. |
| EnvRnD | Firm's RnD expense on enviromental project in natural logarithm. |
| EnvFines | Firm's enviromental fines in natural logarithm. |
| Lawsuit | Firm's legitimate expense in natural logarithm. |
| BoardGender | Firm's ratio of female board directors to all board directors. |
| Satisfaction | Firm's ratio of employee satisfaction |
| FemaleEmp | Firm's ratio of female employees to total employees. |
| *Panel D: Firm Controversies* | |
| Environment | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to the environmental impact of its operations on natural resources or local communities. |
| WorkCondition | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to the company's employees, contractors or suppliers due to wage, layoff disputes or working conditions. |
| Bribery/Fraud | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to bribery and corruption, political contributions, improper lobbying, money laundering, parallel imports or any tax fraud. |
| AntiCompetition | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to anti-competitive behavior, price-fixing or kickbacks |
| Complaints | Dummy variable, taking 1 if firm is under the spotlight of the media because of consumer complaints or dissatisfaction directly linked to its products or services. |
| Customer | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to its products or services quality and responsibility. |
| Marketing | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to the company's marketing practices, such as over marketing of unhealthy food to vulnerable consumers. |
| ExecComp | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to high executive or board compensation. |
| Insider | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to insider dealings and other share price manipulations. |
| Accounting | Dummy variable, taking 1 if firm is under the spotlight of the media because of a controversy linked to aggressive or non-transparent accounting issues. |
| *Panel E: Firm Characteristics* | |
| Size | Firm's market capitalization in natural logarithm. |
| CashRt | Firm's accounting cash and cash equivalents, scaled by total asset. |
| RevRt | Firm's accounting revenue, scaled by total asset. |
| Lev | Firm's accounting total liabilities, scaled by total asset. |
| ROA | Firm's accounting net income, scaled by total asset. |
| MBRt | Firm's market-to-book ratio. |
| StoVol | Firm's annual stock price volatility, using past 12-month stock prices. |