Does Public Attention Raise Corporate Biodiversity Awareness? Evidence from Conference Calls in Europe

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Abstract: Climate change and biodiversity loss are two defining environmental crises of our time. While climate change has prompted significant corporate action, biodiversity loss remains largely overlooked in the business sector. Given the urgent implications of biodiversity loss, there is a critical need to increase corporate awareness about this risk. This study examines whether public attention raises corporate biodiversity awareness by analyzing conference call transcripts from a broad sample of European-listed firms between 2012 and 2023. We document a significantly positive association between public attention to biodiversity and the likelihood of biodiversity discussions during conference calls. We also find that managers use less symbolic language under heightened public attention, suggesting a shift toward more substantive discourse on biodiversity issues. However, we do not find evidence that biodiversity awareness translates into actual corporate actions. Our findings emphasize the important role of public attention in raising corporate awareness of biodiversity risks—an essential first step toward meaningful engagement with this critical issue and concrete corporate actions.

Keywords: Biodiversity Risk, Corporate Awareness, Public Attention, Conference Call

JEL: G30, M40, Q50

Declaration of competing interest:
The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements:
We gratefully acknowledge helpful comments and suggestions from Henrik Andersson, Araks Ayvazyan, and Henrik Nilsson. Irina Gazizova acknowledges funding from the Tore-Browaldh Foundation. Ting Dong acknowledges funding from the Wallander scholarship (*Wallanderstipendier*).

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"Today we face the double, interlinked emergencies of human-induced climate change and the loss of biodiversity, threatening the well-being of current and future generations."
-WWF 2022

1. Introduction

Humanity is facing major social and ecological consequences from climate change and the precipitous decline of biodiversity (Pörtner et al. 2023; WEF, 2020). Although interconnected, these two crises are driven by different factors and require distinct policy responses (WEF 2025, Soto-Navarro et al. 2020). In contrast to climate risk, which concerns disruptions to our climate system, biodiversity risk specifically confronts the alarming threats to Earth's variety of life forms and the cascading, far-reaching consequences of their disappearance (Adamolekun, 2024; Giglio et al., 2023).

For complex global challenges like climate change and biodiversity loss, widespread awareness and open discussion are essential to driving meaningful change and concrete action (Timmons & Lunn, 2022; United Nations, 2025). Over the past decades, corporate engagement with climate change has significantly increased, encompassing enhanced disclosure and real actions. In sharp contrast, corporate environmental initiatives frequently overlook biodiversity preservation, and biodiversity risk reporting remains a significantly underdeveloped topic despite its close interrelation with business risk and potentially devastating consequences for humanity (Adler et al., 2018; Giglio et al., 2023; Legagneux et al., 2018; Maione et al., 2023; Rousseau & Deschacht, 2020; Tonello 2024; Zhou et al. 2025). This disparity

underscores a critical lack of understanding regarding the factors shaping corporate biodiversity awareness, a crucial prerequisite for greater corporate engagement and effective responses.

Prior literature has shown that public attention to climate risk affects corporate behavior and investor reactions (Aliano et al. 2023; Choi et al. 2020; Li & Tian, 2024; Todaro et al. 2021). However, given the comparatively limited public attention to biodiversity risk relative to climate risk (The Royal Society, 2023), it is *ex ante* unclear whether such attention can meaningfully influence corporate biodiversity awareness and actions. Figure 1 clearly illustrates the stark discrepancies in Google search volumes for ESG-related topics worldwide since 2012. We can observe that Google search volume on "Biodiversity" is almost negligible compared to "Climate." Furthermore, biodiversity is a more complex concept, as biodiversity loss is an invisible process that, unlike temperature change, cannot be directly perceived by humans. Despite these challenges, its urgent and far-reaching implications for humanity underscore the critical need to investigate effective strategies for raising corporate biodiversity awareness.

In this paper, we examine whether public attention to biodiversity risk affects corporations' biodiversity awareness in the European setting. Measuring corporate biodiversity awareness is inherently challenging. In this study, we use a proxy based on the presence of biodiversity-related discussions during conference calls. We believe that conference calls offer a valuable opportunity to gauge corporations' awareness of

biodiversity risk for at least two reasons. First, conference calls are time-constrained, carry significant capital market implications, and involve high litigation risk.[1] Thus, to engage in open discussion of biodiversity-related matters in conference calls, firms must possess an internal understanding and awareness of these issues, including the associated risks and opportunities. The extensive literature on ESG disclosure consistently demonstrates that enhanced disclosure of ESG-related matters reflects heightened corporate awareness of ESG issues and improved internal processes for collecting and reporting ESG information (Christensen et al., 2021; Eccles et al., 2014). Thus, we posit that conference call narratives can reflect corporate biodiversity awareness.

Second, unlike written disclosures such as ESG reports or regulatory filings, which provide static, one-way communication, conference calls facilitate real-time, dynamic exchanges between senior management and market participants (Davis et al., 2015). This less controlled communication format allows for more nuanced and potentially less scripted discussions than written disclosures, which are often criticized for greenwashing on ESG issues (Gatti et al., 2021; Marquis et al., 2016). Taken together, we believe that examining corporate biodiversity awareness through the lens of conference calls can provide meaningful insights.

Our empirical analysis is based on a sample of 49,516 conference call transcripts from 1,938 European-listed firms over the period from 2012 to 2023. We perform

[1] See, for example, Bushee et al. (2003, 2004), Cao and Narayanamoorthy (2011), Eccles and Serafeim (2013), Eckerle et al. (2020), Henry et al. (2024), Tomlinson et al. (2021).

textual analyses of conference call transcripts to evaluate corporate biodiversity discussions, including both management presentations and subsequent Q&A interactions. We evaluate biodiversity discussions at firm-year level, and we use the presence of biodiversity discussions as our proxy for corporate biodiversity awareness. We extract biodiversity-related sentences from conference calls using a biodiversity dictionary constructed by Giglio et al. (2023). Then, we manually review all the extracted sentences to ensure correct classification. To measure public attention to biodiversity across different countries, we develop a measurement based on El Ouadghiri et al. (2021) and use Google search volumes for the term "biodiversity" in various languages and regions.[2]

Our main results are as follows. First, we find a significantly positive association between public attention and the presence of biodiversity discussions in conference calls, suggesting that public attention to biodiversity significantly raises corporate biodiversity awareness. To ensure the validity of our baseline findings, we perform a set of robustness checks. First, since biodiversity risk and climate risk are interrelated, public attention on biodiversity may be driven by perceived climate risk. Thus, the observed baseline result may primarily reflect the effect of public attention to climate risk rather than public attention to biodiversity risk. To alleviate this concern, we control for public attention to climate change risk (measured by Google search volume) and the impacts of natural disasters (proxied by the country-year level number of people

[2] Previous research demonstrates that country-level factors influence corporate social and environmental transparency (Alraz et al., 2016; de Villiers & Marque, 2016; Guo et al., 2022), supporting our approach to measure public attention to biodiversity at the country level.

affected by natural disasters). Our results remain statistically significant after including these additional control variables, suggesting that the effect of biodiversity-related public attention is distinct from climate change-related public attention.

Second, instead of using the population-scaled Google search volumes, we use the unscaled Google search volumes as an alternative measure of public attention (El Ouadghiri et al., 2021; Ferguson et al., 2023; France et al., 2021). Our baseline results continue to hold. Furthermore, we use the New York Times biodiversity news index (Giglio et al., 2023) to proxy for worldwide public attention to biodiversity risk, and the results remain consistent with our baseline results.

Third, to alleviate potential endogeneity concerns that unobservable confounding factors may drive both public attention and earnings call discussion of biodiversity-related issues, we use the country-year level market share of the Google search engine to instrument for Google search volume. Our results based on the instrumental variable estimation remain statistically significant.

Next, we perform four cross-sectional tests to examine how our main findings vary based on firm-level characteristics. If biodiversity narratives in conference calls reflect firms' response to public attention and stakeholder concerns, we expect the relationship between public attention and corporate biodiversity awareness to be more pronounced in settings where (1) firms have more resources to address biodiversity risk, (2) biodiversity risks are more salient and (3) when firms adhere to more transparent sustainability reporting practices. Consistent with this expectation, we predict and find

that the effect of public attention is more pronounced among firms that are more profitable, those in high-exploitation industries, those that follow GRI initiatives, and those that obtained external sustainability assurance services.

At large, biodiversity risk is interrelated with other environmental risks, such as the well-discussed climate risk. It is therefore an intriguing question how public attention on biodiversity affects earnings call narratives on other topics related to the environment. To perform this analysis, we extract earnings call discussions on environmental issues based on the Pencle and Mălăescu (2016) environmental risk dictionary, excluding biodiversity-related phrases. We do not find evidence that public attention to biodiversity affects the likelihood that other environmental-related topics appear in earnings calls. Interestingly, we find some evidence that public attention to biodiversity decreases the frequency of discussion on other environment-related topics. This finding aligns with the time constraint of conference calls, and it further supports our baseline result, suggesting that biodiversity narratives are distinct from climate-related discussions.

In additional analysis, we find a significantly negative association between public attention on biodiversity and the likelihood of using symbolic narratives on biodiversity issues. This result is consistent with the transparent disclosure theory (An et al., 2020; Iliev et al., 2021; Lyon & Montgomery, 2013), which posits that firms have the incentive to reduce disclosures when stakeholder scrutiny is high, as is the case with heightened public attention to biodiversity risk. However, we do not find evidence that public attention to biodiversity translates into concrete corporate actions, proxied by

capital expenditure, SG&A cost, and operating expenditure.

Taken together, our results suggest that heightened public attention raises corporate awareness of biodiversity loss. This finding is important for understanding how firms and their management perceive biodiversity risk and respond to public attention on this topic. Given the strict time limit of conference calls and their salient impact on investor reactions, the fact that firms are dedicating valuable, albeit limited, time to biodiversity discussions signals a positive shift towards a growing awareness of the importance of biodiversity risk. Our result also suggests that public attention can effectively elevate corporate awareness of this salient risk factor.

Our study makes three important contributions. First, we contribute to the large literature on the awareness and perception of environmental risks (e.g., Choi et al., 2020; Lee et al., 2015; Li & Tian, 2024; Lindemann-Matthies & Bose, 2008; Todaro et al., 2021). Our study is the first to document that public attention, an area that governments can actively influence, significantly raises corporate biodiversity awareness. This finding has important implications for governments and policymakers, as corporate awareness and communication about biodiversity risk are the crucial first step towards concrete actions to address biodiversity loss.

Second, our paper is the first to document the evolution of biodiversity narratives in conference calls for a large sample of listed firms over a decade. In doing so, we contribute to the rapidly growing literature on biodiversity disclosure and corporate sustainability practices. Prior research has identified various firm-level determinants of

biodiversity disclosure.[3] We extend this literature by highlighting public attention, a noncompulsory monitoring mechanism, as another channel that enhances firms' communication about biodiversity-related issues with stakeholders.

Finally, we expand the geographical scope of biodiversity disclosure research. While Giglio et al. (2023) conduct the first comprehensive study on biodiversity disclosure among U.S.-listed firms, our study extends this analysis to European public companies. To the best of our knowledge, this is the first large-scale examination of biodiversity discussions across European firms, offering valuable insights into regional variations in corporate biodiversity awareness and communications.

2. Related literature and hypotheses

2.1. Biodiversity loss and business risk

Earth is currently experiencing an extinction rate approximately 1,000 times higher than the historical background rate of one to five species per year, with projections suggesting that 30-50% of all species could face extinction by mid-century if current trends continue (Deutz et al., 2020). According to WWF's 2024 Living Planet Report, wildlife populations have decreased by 73% in just five decades (WWF, 2024). This biodiversity crisis represents not only an ecological emergency, but also poses significant economic challenges for businesses in the following ways.

[3] These include, for example, external assurance (Hassan et al., 2020), board size (Duho et al., 2024), board gender diversity (Carvajal et al., 2022; Haque & Jones, 2020; Issa & Zaid, 2023), and financial leverage (Duho et al., 2024).

First, companies face direct operational impacts through supply chain vulnerabilities and resource scarcity. As ecosystems degrade, businesses that depend on natural inputs experience increased volatility in both availability and pricing of essential resources (Dempsey, 2013). The impact extends to companies without explicit direct links to biodiversity, as ecosystem services contribute to more than half of global GDP, equating to an annual value of $44 trillion (WEF, 2020). A healthy natural environment is thus indispensable for stable economies and resilient business operations.

Second, firms must navigate an evolving regulatory landscape as governments worldwide implement stricter biodiversity protection measures (Deutz et al., 2020). These regulations often impose new compliance requirements, disclosure obligations, and potential penalties, compelling businesses to adapt their strategies and governance structures to address biodiversity considerations (Whelan & Fink, 2016). Moreover, as public awareness of biodiversity loss grows, companies perceived as contributing to environmental degradation may face increasing scrutiny, which can lead to reputational damage, consumer boycotts, and a loss of social license to operate (Bach et al., 2024; Wang, 2025). Taken together, prior literature suggests that biodiversity risk is a salient macro-level risk that has profound impacts on firms.

2.2. Corporate biodiversity awareness and earnings call

Despite biodiversity loss emerging as a critical component of business risk and the increasing stakeholder demands for transparency regarding firms' biodiversity impacts (Boiral & Heras-Saizarbitoria, 2017), corporate biodiversity awareness remains notably

limited. Prior literature has mainly examined firms' biodiversity communications with external stakeholders.[4] A recent study by Giglio et al. (2023) documents that fewer than 5% of U.S. firms discuss any biodiversity-related matters in their 10-K filings, highlighting a persistent gap between stakeholder expectations and corporate disclosure practices. This evidence suggests that corporations have very limited communication of the risk posed by biodiversity loss to humanity, leading us to question the extent of corporate and executive awareness regarding this potent threat.

In the natural sciences, there is a large literature examining people's awareness of environmental risk, how they perceive it, and the strategies to elevate environmental risk awareness (e.g., Lindemann-Matthies & Bose, 2008; Lee et al., 2015; Poortinga et al., 2019; Kleespies et al., 2024). This is a crucial area of study, as widespread awareness and open communication are prerequisites for driving concrete actions from individuals and society at large (United Nations, 2025). However, despite tremendous research efforts from the scientific community, the general public's understanding about biodiversity loss remains inadequate (Kleespies et al., 2024; WWF, 2023), and misconceptions about environmental risks—particularly about biodiversity loss—persist (e.g., Caro et al., 2022).

In the business sector, little is known about the extent to which corporations recognize the implications of biodiversity risk on business operations. Given that

[4] Early work by Rimmel and Jonäll (2013) analyze corporate websites and reports in Sweden and find low levels of biodiversity disclosure, with only a few companies providing consistent biodiversity information. Similarly, Adler et al. (2018) analyze annual reports, sustainability reports, and website disclosures of Fortune Global 150 companies, finding minimal biodiversity reporting.

corporate actions are essential for effective biodiversity conservation, understanding how companies become aware of this risk is a critical first step. We acknowledge the inherent challenge of measuring corporate biodiversity awareness. In this paper, we propose a proxy based on the presence of biodiversity-related discussions during conference calls. This approach offers two distinct advantages.

First, conference calls are time-constrained, carry significant capital market implications, and involve substantial litigation risk. For firms to openly discuss biodiversity matters in such a demanding environment, they must possess a genuine internal understanding and awareness, including associated risks and opportunities. Second, unlike static written disclosures criticized for greenwashing (Gatti et al., 2021; Marquis et al., 2016), conference calls facilitate real-time, dynamic exchanges (Davis et al., 2015). This less controlled format allows for more nuanced and less scripted discussions, providing a more potent and credible indicator of salient corporate awareness than formal reports (Eckerle et al., 2020). We therefore argue that the allocation of scarce call time to biodiversity issues in conference calls should represent a strong signal of management's internal awareness and their assessment of its materiality to investors.

2.3. The effect of public attention on corporate biodiversity awareness

Prior research has identified several firm-level determinants of biodiversity risk communication through traditional disclosure channels, but the role of public attention

in shaping corporate awareness of biodiversity risk is underdeveloped.[5] The nature and extent of the influence of public attention on biodiversity awareness, as captured by earnings call narratives, are *ex ante* not clear. On the one hand, public attention is arguably a relevant factor for raising firms' biodiversity awareness. This is because there is increasing global concern over biodiversity loss, and prior research on broader ESG disclosures shows that firms enhance their ESG communications under increased public scrutiny (de Villiers & van Staden, 2006; Moser & Martin, 2012; Huang & Kung, 2010; Islam & Deegan, 2010; Chi et al., 2020).

On the other hand, however, there are also compelling reasons why public attention on biodiversity may not have any meaningful influence on corporate awareness. First, public attention is significantly lower on biodiversity than on climate risk. As illustrated in Figure 1, global Google search volume data for "climate" versus "biodiversity" clearly shows that public attention on biodiversity is almost negligible compared to climate change. Even with climate change being a prominent topic in public media for decades and attracting significant attention, recent studies still question corporations' genuine commitment, citing persistent issues like greenwashing and limited tangible action. Given this, the far lower level of public attention on biodiversity is unlikely to exert an observable effect on corporate awareness.

[5] For example, Haque and Jones (2020) find that boards with greater gender diversity tend to provide more comprehensive biodiversity disclosures, as female directors often demonstrate stronger environmental consciousness, which is further supported by Issa and Zaid (2023). Further, Duho et al. (2024) argue that board size plays a significant role and find that larger boards are associated with more biodiversity reporting. In terms of external monitoring, Hassan et al. (2020) document that firms employing external assurance services provide more detailed and credible biodiversity disclosures, suggesting that third-party verification enhances disclosure quality.

Second, given the time constraints of conference calls, managers typically prioritize traditional financial and operational matters over ESG concerns during these sessions (Eccles & Serafeim, 2013; Eckerle et al., 2020; Tomlinson et al., 2021). Despite the alarming nature of biodiversity risk and its tangible business implications, other ESG topics—such as climate change, carbon footprint, inclusion, and diversity—consistently generate significantly higher levels of public discourse, media coverage, and stakeholder pressure (Ferjančič et al., 2024; Hummel et al., 2024; Legagneux et al., 2018). This disparity in public attention likely creates an incentive structure where firms prioritize allocating their limited conference call time to addressing ESG issues perceived as most salient to their primary stakeholders. Thus, biodiversity issues may be overshadowed by ESG topics that are more prominently featured on the public agenda.

Last, managers may even choose to refrain from discussing biodiversity during conference calls to avoid potential scrutiny, challenging questions, or the need to address complex environmental commitments in a time-constrained format. This is consistent with the concept of "greenhushing", where companies downplay sustainability disclosures (Font et al., 2017; Ginder et al., 2021). In this scenario, we would expect to find a negative association between public attention and the presence of biodiversity discussion in conference calls.

Given these competing perspectives, we formulate the first hypothesis in the null form:

H1: Public attention to biodiversity risk is not significantly associated with the level of corporate biodiversity awareness.

3. Research design

3.1. Data and variable constructions

3.1.1. Measuring the occurrence of biodiversity-related discussions

Our study primarily relies on conference call transcripts[6] sourced from Thomson Reuters Refinitiv Eikon. For transcripts not available in Refinitiv Eikon, we supplement them using transcripts from Capital IQ. We collected 49,516 transcripts from quarterly, semi-annual, and annual conference calls of 1,938 European publicly listed companies between 2012-2023. We exclude analysts' questions from the transcript, as we only want to capture the content of corporate executives' discussion.

To identify biodiversity-related discussions in conference call transcripts, we use a two-step approach. First, we follow Giglio et al. (2023) and employ regular expression searches using a biodiversity dictionary that contains specific biodiversity-related terms. Figure 2 presents the biodiversity word dictionary. A sentence[7] is classified as biodiversity-related if it contains a term from the biodiversity dictionary. Then we aggregate the extracted sentences at the firm-year level, categorizing a firm as having

[6] The content of conference calls has been extensively utilized in academic research to examine various aspects, including exposure to political risks (Gad et al., 2024; Hassan et al., 2019; Mekhaimer et al., 2024) and climate risks (Chatjuthamard et al., 2024; Li et al., 2024).

[7] To ensure accurate context and meaningful interpretation of biodiversity discussions, we extract not only the sentences containing biodiversity-related vocabulary but also the immediately preceding and following sentences. This three-sentence window approach provides comprehensive contextual understanding and enables more accurate verification of biodiversity-related content.

biodiversity discussions in a given year if its aggregated transcripts contain at least one biodiversity-related sentence. We aggregate the transcript data at the firm-calendar year level since biodiversity-related discussions are not uniformly distributed across quarterly calls. This approach aligns with Goldman Sachs (2020) report, which examines ESG discussions and finds that these discussions predominantly occur during fourth-quarter conference calls, particularly among European companies, as year-end calls often focus on strategic initiatives and long-term planning.

To address the potential concern of misclassification in some terms, we implement two additional steps. First, as Giglio et al. (2023) note, while certain terms like "deforestation" reliably identify biodiversity-related content, other terms can have broader connotations that lead to false positives. For instance, the term "ecosystem" might refer to a “software ecosystem” rather than a “biological system.” To address this misclassification concern, we follow Giglio et al. (2023) by employing additional qualifying terms in the machine-extracting process to refine our identification of biodiversity-related sentences when dealing with these less precise terms. Appendix B presents the terms used to narrow down biodiversity-related sentences.

Our second step addresses potential misclassifications that may arise when speakers use biodiversity-related terms metaphorically,[8] reference general biodiversity facts unrelated to the firm's operations, or when such terms appear in company names. Panel A of Appendix C provides examples of such misclassifications. To address these

[8] E.g., "forest" in figurative speech.

concerns and ensure classification accuracy, we manually review all extracted sentences and eliminate those that do not represent genuine biodiversity-related discussions. Our main dependent variable, *BIODIS,* is an indicator variable equal to one if a company mentions biodiversity-related matters in conference calls in a given year, and zero otherwise.

Figure 3 illustrates the evolution of biodiversity discussions (*BIODIS*) in conference calls among European firms over the past decade. During the period 2012-2016, biodiversity disclosure frequency remained relatively low and stable, with only 3-4% of firms addressing the topic. However, a notable upward trend emerged around 2017, followed by a sharp acceleration between 2019 and 2021, ultimately reaching over 10% of firms by 2023. This trend indicates that managers increasingly prioritize biodiversity matters in conference calls. This trajectory parallels the pattern observed by Giglio et al. (2023) in their analysis of biodiversity-related matters addressed in U.S. firms' 10-K filings. However, compared with Giglio et al. (2023), our findings indicate that European firms consistently maintain higher levels of biodiversity-related discussions in conference calls, with approximately twice the percentage of reporting firms compared to their U.S. counterparts (10% versus 5% by 2023). Figure 4 presents the percentage of firms across different industries that address biodiversity issues during conference calls. The utilities industry exhibits the highest prevalence of such discussions, followed by the mining, quarrying, oil, and gas industry. This industry distribution is consistent with the findings of Giglio et al. (2023) for U.S. firms.

3.1.2. Measuring public attention to biodiversity

To measure public attention to biodiversity issues, we use Google search volumes as a proxy, building on the work of Da et al. (2011) and Drake et al. (2012), who show that Google search volumes for company tickers effectively capture investor attention. Further, Google search volumes are widely used in recent studies across various contexts to measure stakeholders' attention.[9]

We measure public attention to biodiversity across countries and over time. Specifically, we collect data on country-year level absolute search volumes,[10] incorporating both the English term "biodiversity" and its translations in the most used languages within each country.[11] Appendix D presents different linguistic translations and contexts of "biodiversity" used in our Google Trends search across different countries. Following Ferguson et al. (2023), we exclude countries where the Standard Google Trends volume size is zero. We specifically use only the term "biodiversity" rather than the broader biodiversity-related vocabularies (e.g., "species," "ecosystem," and "forest") from our constructed dictionary because using additional terms could

[9] For instance, El Ouadghiri et al. (2021) use country-level Google search volumes for the words "climate change" and "pollution" to measure the level of public attention to these matters in the U.S. Ru et al. (2021) measure cross-country attention to COVID-19 by Google searches. Marmora (2023) employs Google search volumes of financial terms to gauge investors' attention toward emerging market economies. Ferguson et al. (2023) analyze country-level Google search activity to measure stakeholders' attention to sustainability reports.

[10] To obtain absolute search volume data, we utilize the Glimpse Google Trends Chrome Extension, which converts standard search volume metrics into absolute search volumes. We do not use the standard Google Trends data because it presents search volume data on a relative scale from 0 to 100, where values are normalized against the peak search volume in the specified period. This normalized value does not provide actual search counts.

[11] Another interesting research avenue would be to examine the effect of public attention on biodiversity risk at the firm level. We attempted to measure it by conducting search queries combining the term 'biodiversity' (translated into multiple languages) with company names or ticker symbols. However, this search methodology yields negligible search volumes.

introduce noise by capturing searches unrelated to biodiversity concerns, and we cannot effectively filter out irrelevant search contexts. We also avoid using compound phrases such as "biodiversity loss" or "biodiversity risk" because these multi-word expressions may not have accurate equivalents across different languages, potentially introducing translation bias in our cross-country analysis.

To ensure comparability of our biodiversity attention measure across countries with varying sizes and IT development levels, we scale search volumes by the product of each country's population and internet access rate.[12] As shown in Figure 5, the upward trend in European-level public attention to biodiversity (aggregated country-level data) closely mirrors the trend in corporate biodiversity discussions (constructed in the previous section), indicating a strong positive correlation. In Figure 6, we illustrate the variation in Google search volumes for the term "biodiversity" across European countries and over time. The color intensity (from light to dark blue) represents the average searches per thousand capita, with darker blue indicating a higher level of search volumes (scale from 0 to 3). Figure 6 reveals notable geographic disparities in public attention to “biodiversity” across European countries, with certain regions, particularly France and Ireland, exhibiting significantly higher average search volumes per thousand capita. We can also observe that the search volume is higher over time, even though the overall level remains very low for the period 2020-2023.

[12] Data on country-level population and internet access rate are obtained from the Eurostat database. Year 2012 is the first year for which we have access to the internet access rate data.

3.2. Empirical model

We use the following conditional logistic model to test hypothesis H1:

$$P(BIODIS_{it} = 1) = \mathrm{G}\left[\alpha + \beta ATTN_{st} + \theta \boldsymbol{X_{it}} + Fixed\ Effects + \varepsilon_{i,t}\right] \quad (1)$$

where G denotes the cumulative logistic function. The dependent variable ($BIODIS_{it}$) is a binary indicator that equals one if a company mentions biodiversity-related matters in its conference calls in one year, and zero otherwise. Our primary explanatory variable ($ATTN_{st}$) measures country-year level public attention to biodiversity, calculated using Google search volumes adjusted by population and internet access rate.

The model includes a set of firm-year level control variables ($\boldsymbol{X_{it}}$) to account for other factors affecting corporate reporting practices (e.g., Bingler et al., 2024; Muslu et al., 2019). Specifically, we control for firm characteristics such as firm size (*SIZE*), asset growth rate (*GROWTH*), ROA (*ROA*), years since IPO (*AGE*), average annual return (*RT*), leverage ratio (*LEVERAGE*), market-to-book ratio (*MTB*), and the number of analysts following (*ANALYSTS*). We also control for total carbon emissions (*EMI*, including scopes 1, 2, and 3 emissions) as a proxy for a firm's negative biodiversity impact, given the documented correlation between carbon emissions and biodiversity impact by Garel et al. (2024). We incorporate fixed effects at the country, year, and industry levels to account for unobserved heterogeneity across these dimensions. Appendix A provides definitions of all variables and their respective data sources.

3.3. Sample selection

The sampling procedure begins with 49,516 individual conference call transcripts downloaded from Refinitiv and Capital IQ spanning 2012-2023. These transcripts are first aggregated at the firm-year level, resulting in 16,648 firm-year observations. Next, 3,285 observations are removed due to company delisting, bringing the sample to 13,363 firm-year transcript observations. The sample is further reduced by excluding 1,065 observations with missing values for public attention metrics, and 3,185 observations with missing control variables used in the regressions. After these exclusions, the final sample consists of 9,113 firm-year observations. Table 1 summarizes our sample selection process.

4. Empirical results

4.1. Descriptive statistics and correlations

Table 2 presents the descriptive statistics of our sample. Biodiversity discussions (*BIODIS*) have a mean of 0.094 with a standard deviation of 0.291, indicating relatively low average discussion levels with moderate variation across the sample. When broken down by conference call sections, biodiversity discussions in the presentation section (*BIODIS_PRE*) have a mean of 0.084, while the Q&A section (*BIODIS_QA*) has a notably lower mean of 0.022. This disparity suggests that while companies are increasingly proactive in addressing biodiversity issues during their prepared remarks, the limited biodiversity discussions in Q&A sessions may indicate that investors and analysts continue to pay less attention to biodiversity. This pattern aligns with prior

studies showing that ESG information is perceived as less quantifiable than traditional financial metrics, leading to reduced attention from market participants (e.g., Eccles & Serafeim, 2013; Eckerle et al., 2020; Tomlinson et al., 2021).

The public attention measure (*ATTN*) has a mean value of 1.203, representing approximately 1.2 Google searches for "biodiversity" per thousand internet users annually per country. The standard deviation of 0.712 suggests substantial variation in biodiversity-related search intensity across different countries and years, which is consistent with Figure 6 discussed in section 3.1.2. The distribution of other firm-level control variables is similar to that in previous studies (e.g., Bingler et al., 2024; Muslu et al., 2019).

Table 3 presents the sample composition by country. Our sample contains 15 European countries, with the United Kingdom representing the largest portion at 28.42% (2,590 observations), followed by France and Germany, each contributing approximately 10% of the sample. Pearson pairwise correlation table shows that *ATTN* is significantly positively correlated with *BIODIS* (coef.=0.08, p<1%), providing preliminary evidence for the positive relationship between public attention to biodiversity and firms' biodiversity discussions in conference calls (Online Appendix, Table OA1).

4.2. Univariate analysis

We carry out univariate analysis and report the results in Table 4. In Panel A, the sample is divided into high and low public attention groups based on whether the *ATTN* value

is above or below the sample median, respectively. The results in Panel A suggest that firms with high public attention exhibit significantly higher *BIODIS* levels compared to those with low attention (0.107 vs. 0.078, difference = 0.029). This pattern is also evident in the presentation session of conference calls (*BIODIS_PRE*). This result is consistent with public attention raising corporate biodiversity.

In Panels B-E, we find that *BIODIS* is consistently higher in more profitable firms, firms in high-exploitation industries, firms that adopt the GRI reporting framework, and firms that have obtained assurance on sustainability information. These results suggest that the presence of biodiversity-related topics in conference calls is related to firm performance, industry characteristics, and sustainability reporting practices.

4.3. Baseline results

Table 5 presents the logistic regression results from Model (1). Columns 1 and 2 examine how public attention affects the overall presence of biodiversity discussions in earnings calls. The coefficient on *ATTN* is positive and statistically significant at the 1% level in the first specification and at the 5% level in the second specification (coef.=0.650 and 0.599, respectively), with column 2 including industry fixed effects. The positive relationship is also economically meaningful. The results in column 2 suggest that a one-standard-deviation increase in *ATTN*, equivalent to 1,000 biodiversity-related Google searches per million internet users, increases the odds of firms mentioning biodiversity in conference calls by 82% (odds ratio = $e^{0.599}$ = 1.820). This translates to raising a baseline probability of 1% to 1.82%. These findings suggest that firms are substantially more likely to discuss biodiversity issues in conference calls

when public attention is higher.

We find a similar pattern when examining the presentation session and the Q&A session separately in columns 3 and 4. The coefficient on *ATTN* remains positive (0.462) and significant at the 10% level for presentation sessions. In the Q&A sessions, our regression analysis reveals that the coefficient on *ATTN* is positive and statistically significant (1.329) at the 1% level. However, the marginal effect analysis reveals that a one-standard-deviation increase in *ATTN* is associated with only a 0.024 percentage point increase in the probability of biodiversity discussions in Q&A session, compared to a 1.037 percentage point increase in the presentation session—a difference that renders the Q&A effect economically negligible. We also observe that carbon emissions (*EMI*) consistently exhibit positive and significant coefficients across all specifications. This relationship suggests that firms with stronger environmental impacts are more likely to be aware of biodiversity risk and are more likely to communicate this matter. Overall, our findings consistently highlight that public attention is positively associated with the presence of biodiversity discussions, suggesting that public attention raises corporate biodiversity awareness. Hence, we reject our first hypothesis (H1).

4.4. Robustness tests

4.4.1. Controlling for climate risk attention

We acknowledge that biodiversity risk and climate risk are interrelated, and public attention to these issues often moves in parallel (Giglio et al., 2023). Therefore, what appears to be a response to biodiversity attention might, in part, reflect firms' reactions

to climate-related public concerns. Thus, the baseline result we observe may primarily reflect the effect of public attention on climate risk rather than the effect of public attention on biodiversity risk. To alleviate this concern, we further add two control variables. First, we control for public attention on climate change risk, which is measured by Google search volume on "Climate" at country-year level (*CLATTN*). Second, we control for the impacts of natural disasters, proxied by the country-year level number of people affected by natural disasters (*ND*).

Our results in Table 6 remain statistically significant after adding these additional controls. Interestingly, the coefficients on *CLATTN* and *ND* are not statistically significant across all model specifications, and the magnitude of the coefficients on *ATTN* remains similar to the results in Table 5. This finding further supports the notion that the effect of biodiversity-related public attention is both distinguishable from and more pronounced than that of climate-related public attention on corporate biodiversity awareness.

4.4.2 Alternative measures of public attention on biodiversity

We also consider two alternative measures of public attention. First, instead of using the population-scaled Google search volumes (*ATTN*), we use the unscaled Google search volumes (*ATTN10K*) as an alternative measure of public attention (El Ouadghiri et al., 2021; Ferguson et al., 2023; France et al., 2021). *ATTN10K* is the country-year level absolute Google search volumes of the word "biodiversity" (in different linguistic contexts), divided by 10,000. Second, we use the New York Times biodiversity news

index (Giglio et al., 2023), scaled by 100, to proxy for worldwide public attention on biodiversity risk (*NYTATTN*).

We present the results in Table 7. The results in columns 1 and 4 suggest that both *ATTN10K* and *NYTATTN* have statistically significant effects on *BIODIS*. Next, we separately examine the effect of public attention on biodiversity-related discussions during the presentation session and the Q&A session. In columns 2 and 5, we show that both *ATTN10K* and *NYTATTN* have statistically significant effects on the likelihood of biodiversity discussion during the presentation session (*BIODIS_PRE*). In columns 3 and 6, we do not find evidence that public attention affects the likelihood of biodiversity-related discussions during the Q&A session. Overall, the results from Table 7 support our baseline results, suggesting that public attention to biodiversity risk indeed raises the likelihood that biodiversity-related topics are discussed in conference calls.

4.4.3 Using Google market share as an instrument

One potential concern in studying the relationship between public attention and earnings call discussions of biodiversity issues is endogeneity, particularly omitted variable bias. To address this concern, we use the country-year level market share of the Google search engine (*GMKTS*) to instrument for Google search volume (*ATTN* and *ATTN10K*). The rationale for using this instrument is that country-level Google market share likely affects Google search volume for any topic, but it is not likely to affect listed firms' earnings call contents. The first stage results in Table 8, columns 1 and 3

suggest that *GMKTS* is a valid instrument for both *ATTN* and *ATTN10K*. Further, in columns 2 and 4, we tabulate results from the second-stage regressions. We find that the coefficients on the predicted Google search volume (*ATTN* and *ATTN10K*) remain positive and significant.

4.4.4 Alternative model specifications

A potential limitation of logistic regressions used in our baseline tests is that, when incorporating complex fixed effects, they may suffer from the incidental parameters problem, leading to biased and inconsistent estimates (Greene, 2004). To address this issue, we follow Ashraf (2024) and employ Linear Probability Models (LPM) as an alternative estimation approach to assess the robustness of our findings. We report the LPM results in the online appendix, Table OA2. Applying the same control variables and fixed effects as in our main analysis, we find consistent results that support our baseline results.

Another potential issue with our methodological approach is that the independent variable is measured at the country level, whereas the dependent and control variables are at the firm level. This two-level structure, in which firm-level observations are nested within countries, requires careful consideration, as traditional regression models may not adequately capture the relationships between variables in hierarchical data (Li et al., 2013). To distinguish the effects occurring at the country level from those at the firm level, we adopt a hierarchical linear modeling (HLM) approach, following Zhang

et al. (2024).[13] The results from this approach are consistent with our baseline findings, suggesting that public attention significantly increases the likelihood of biodiversity-related discussions in conference calls (see online appendix, Table OA3).

4.5. Cross-sectional results

In this section, we perform several cross-sectional analyses. We focus on four firm characteristics: firm profitability, the level of natural resource exploitation, the adoption of GRI reporting framework, and the use of external sustainability assurance services.

4.5.1. Firm profitability

Firms with higher ROA typically possess greater financial slack and superior resource availability. This may enable them to be more responsive to external public attention on environmental issues like biodiversity. Furthermore, more profitable firms are often under greater public and stakeholder scrutiny, making them more sensitive to reputational concerns and the need to maintain their social license to operate, particularly when an issue gains public traction. Conversely, less profitable firms, constrained by limited resources, may prioritize core operational survival over biodiversity risks. Therefore, we expect that the positive relationship between public attention and corporate biodiversity awareness is more pronounced among firms with higher ROA.

[13] Li et al. (2013) demonstrate that Hierarchical Linear Modeling offers distinct advantages by effectively addressing sample size variations across countries and preventing spurious significance in country-level variables. HLM achieves this by simultaneously modeling both firm-level and country-level regressions, where the country-level analysis is weighted by the precision of firm-level data, inversely proportional to each country's sample size, thereby providing more reliable statistical inferences.

The univariate tests in Table 4, Panel B show that firms with higher ROA have significantly higher *BIODIS* compared to those with lower ROA. Our results in Table 9, column 2, show that the coefficient on *ATTN* is statistically significant on *BIODIS* (coef.=0.737, p<5%) for the subsample with higher ROA. However, the coefficient on *ATTN* in column 1 is not significant (coef.=0.464). These results suggest that, indeed, the effect of *ATTN* on *BIODIS* is more pronounced among more profitable firms.

4.5.2. High-exploitation industries

Prior research indicates that environmentally sensitive industries tend to exhibit stronger adherence to social norms and provide more CSR disclosures (de Villiers & Marques, 2016; Zeng et al., 2012). Therefore, we expect that firms in high-exploitation industries—specifically agriculture, forestry, fishing, mining, construction, and manufacturing—exhibit a stronger association between public attention and biodiversity discussions, as these industries have a substantial direct impact on biodiversity. Following the classification established by Boiral and Heras-Saizarbitoria (2017), we split the sample into high- and low-exploitation firms.

The univariate tests in Table 4, Panel C show that firms in high-exploitation industries have significantly higher *BIODIS* compared to those in low-exploitation industries. Columns 3 and 4 of Table 9 present the regression results. Consistent with our prediction, the association between *ATTN* and *BIODIS* is positively significant (coefficient = 1.170, $p < 0.01$) for firms in high-exploitation industries (*EXPLOIT*=1), but insignificant (coefficient = -0.115) in low-exploitation industries (*EXPLOIT*=0).

This result indicates that firms with greater environmental impact are more responsive to public attention in their conference calls.

4.5.3. GRI initiative

Next, we examine how biodiversity-related initiatives influence the relationship between public attention and corporate biodiversity awareness. When firms participate in biodiversity initiatives, they gain access to established frameworks and standardized guidelines for biodiversity management and reporting (Cooper & Morgan, 2013), which may enhance their awareness of environmental risks. Using data from Refinitiv Eikon, we study whether following the Global Reporting Initiative (GRI) guidelines affects the relationship between public attention and biodiversity awareness.

The univariate tests in Table 4, Panel D show that firms following the GRI reporting framework exhibit significantly higher *BIODIS* than those that do not follow GRI. This may indicate that GRI adopters are more aware of environmental risks and more willing to discuss environmental topics in conference calls. The regression results in columns 5 and 6 of Table 9 suggest that firms following the GRI framework are also more responsive to public attention (*ATTN*). Specifically, the results in column 6 show a positive and significant association between *ATTN* and *BIODIS* (coefficient = 0.524, $p < 0.10$) for GRI-adopting firms (*GRI*=1), whereas in column 5, firms not following GRI standards (*GRI*=0) exhibit a positive but statistically insignificant relationship (coefficient = 0.611). Although the lack of significance in non-GRI firms could be attributed to limited statistical power, these results indicate that the significant

association between public attention and biodiversity awareness is mainly driven by firms that have implemented GRI guidelines.

4.5.4. Sustainability assurance

Finally, we examine the role of external sustainability assurance on the relationship between public attention and corporate biodiversity awareness. Independent third-party assurance of sustainability information plays a crucial role in enhancing the credibility and reliability of corporate environmental disclosures. Prior research suggests that external assurance strengthens corporate accountability for biodiversity protection (Robert et al., 2022) and improves the overall quality of sustainability disclosures and reduces information asymmetry (Ballou et al., 2018; Fuhrmann et al., 2017; Gerwanski et al., 2019). Building on these insights, we expect firms that purchase sustainability assurance services to exhibit a stronger relationship between public attention and biodiversity awareness, as they have established mechanisms for producing and verifying high-quality environmental information in response to stakeholder interests. We extract data on firms' external assurance of sustainability reports from Refinitiv Eikon.

The univariate tests in Table 5, Panel E show that firms with external sustainability assurance have significantly higher *BIODIS.* The regression results are reported in columns 7 and 8 of Table 9. The association between *ATTN* and *BIODIS* is positively significant (coefficient = 0.565, $p < 0.10$) for firms that purchase external assurance (*AUDIT*=1), but insignificant (coefficient = 0.276) for firms without external assurance

(*AUDIT*=0). While the insignificant results for non-assured firms may be due to the smaller sample size, our findings suggest that the significant relationship between public attention and biodiversity discussions is primarily driven by firms with externally assured sustainability reports.

4.6 Additional analyses

4.6.1. Public attention and other environmental discussions in conference call

Biodiversity risk is closely intertwined with climate risk, making it an intriguing question how public attention on biodiversity affects conference call narratives on other environmental topics. If the observed public attention to biodiversity largely reflects spillover from broader climate risk attention, we would expect a positive relationship between biodiversity-related public attention and discussions of other environmental-related topics in conference calls. Such a finding would suggest our baseline result captures not a distinct biodiversity effect, but rather a broader environmental focus.

Another concern is that the dictionary that we used to capture "biodiversity"-related topics might overlap with the underlying risks associated with other environmental topics. If this were the case, our baseline results could merely reflect a heightened awareness of a wider range of environmental issues, rather than specific corporate awareness of biodiversity. To address these possibilities, we conduct the following analysis.

We extract earnings call discussions on environmental issues based on the Pencle and Mălăescu (2016) environmental risk dictionary, excluding biodiversity-related

phrases. This dictionary contains 451 environmental-related phrases, and after excluding biodiversity-related phrases, we are left with 287 phrases such as "emission", "groundwater," and "global warming." In Table 10, we present the results examining the relationship between biodiversity public attention (*ATTN*) and these other environmental discussions in earnings calls.

We first focus on the likelihood that other environmental-related topics would appear in conference calls. In column 1 of Table 10, we estimate the same model as model (1), but we replace the dependent variable *BIODIS* with *ENVDIS,* which is equal to 1 if other environmental-related topics have appeared at least once in conference calls, and zero otherwise. Our results in column 1 suggest that public attention to biodiversity (*ATTN*) is not associated with the likelihood that other environmental-related topics will appear in conference calls.

We note that over the past decade, environmental concerns have been high on the corporate agenda, and the topic is often discussed in earnings calls. That is, many firms may have consistently discussed environmental issues in conference calls, leaving us with little variation in *ENVDIS*. Thus, we also examine the frequency of these topics in conference calls. We count the number of times that other environmental topics appeared in conference calls in a given year (*EVNCT*), and use it as our dependent variable. We tabulate OLS regression results in column 2. We find some evidence that public attention to biodiversity actually *decreases* the frequency of discussion on other environment-related topics. This finding aligns with the time constraint of conference calls, and it further supports our baseline result, suggesting that biodiversity narratives

are distinct from climate-related discussions.

4.6.2. Public attention and symbolic biodiversity discussions

Beyond examining the presence of biodiversity discussions, which is a proxy for biodiversity awareness, it is also important to investigate how public attention influences the substantive nature of biodiversity discussions. Understanding whether public attention reduces symbolic narratives can help better evaluate the effectiveness of public attention as a mechanism for improving corporate awareness regarding biodiversity issues. This leads us to examine how public attention affects firms' propensity to engage in symbolic discussions about biodiversity in conference calls.

Following Bingler et al. (2024), we classify biodiversity-related discussions as either "symbolic" or "non-symbolic." A firm's biodiversity narrative in conference calls is classified as symbolic if it contains only general information without any specific details or concrete actions related to biodiversity. Symbolic discussions are characterized by general narratives and vague declarations about biodiversity protection, such as broad statements to improve biodiversity or unspecified collaborations with environmental organizations, without providing concrete details about implementation or outcomes. In contrast, non-symbolic discussions are identified by specific, measurable actions and detailed performance information, including quantifiable metrics (such as the number of trees planted), named biodiversity projects, specific geographical locations of initiatives, or financial investments allocated to biodiversity conservation efforts. Appendix C, Panel B provides examples of non-

symbolic and symbolic discussions regarding biodiversity issues.

Table 11 reports the logistic regression results from estimating the relationship between *ATTN* and the likelihood of symbolic discussions during conference calls. In columns 2, 3, and 4, we add *TONE* as an additional control, measured as the number of positive biodiversity sentences minus the number of negative sentences for each firm-year. Columns 1 and 2 present the results examining how public attention affects overall symbolic discussion levels. The coefficient on *ATTN* is negative and statistically significant at the 1% level in the first specification and at the 5% level in the second specification (-1.677 and -1.700, respectively). The negative effect is also economically meaningful. The results in column 2 suggest that a one-standard-deviation increase in *ATTN* reduces the odds of firms engaging in symbolic biodiversity discussions during conference calls by 82.1% (odds ratio = $e^{-1.721}$ = 0.179). This translates to reducing a baseline probability of 1% to 0.179%.

We then separate the sample into the presentation session and the Q&A session in columns 3 and 4. The coefficient on *ATTN* remains negative and significant at the 5% level for the presentation session (-1.669), and is insignificant for Q&A sessions (-1.062), possibly due to the limited sample size in Q&A sessions. Regarding the control variables, the tone of discussions (*TONE*) has negative and significant coefficients in columns 2 and 3, while the coefficients on carbon emissions (*EMI*) are insignificant. The negative relationship between tone and symbolic biodiversity discussions suggests that firms with more positive discussion tones are less likely to engage in symbolic biodiversity statements. Overall, our findings are consistent with the presumption that

public attention is negatively associated with symbolic biodiversity discussions in conference calls.

4.6.3. Public attention and firm action

Finally, we extended our investigation to examine whether public attention on biodiversity translates into concrete corporate actions.[14] We assessed this by analyzing the association between public attention and firms' capital expenditures (*CAPEX*), operating expenses (*OPEX*), and selling, general, and administrative (*SG&A*) expenses, considering both current and one-year-ahead periods. Across these analyses, we find no statistically significant evidence that public attention to biodiversity is associated with measurable impacts on real corporate investments or operational expenditures. This suggests that while public attention may elevate awareness, it does not appear to drive tangible shifts in firms' resource allocation toward biodiversity-related initiatives during our sample period.

5. Conclusion

We study the role of public attention to biodiversity issues in shaping corporate biodiversity awareness. We find a positive association between public attention and the likelihood of corporate biodiversity discussions during conference calls, suggesting that public attention is effective in raising corporate biodiversity awareness. We corroborate

[14] From an accounting perspective, it is difficult to determine whether firms are making investments that reduce biodiversity risk, as there is no dedicated line item on the balance sheet or income statement. However, if firms are taking real actions to mitigate biodiversity risk, these efforts may result in increased capital expenditures and operating expenses—for example, through the renewal or acquisition of property, plant, and equipment. Firms may also invest in training employees on new standards and practices to reduce biodiversity impact, which could be reflected in higher SG&A expenses.

our results with a battery of robustness checks, including an instrumental variable approach, alternative model specifications, additional control variables, and alternative measurements of public attention. Further cross-sectional results show that the effect is more pronounced for firms that are more profitable, operate in high-exploitation industries, follow GRI initiatives, and purchase external sustainability assurance services.

Given the critical role of biodiversity in maintaining ecosystem stability and sustainable business operations (Dempsey, 2016; Whelan & Fink, 2016), this research carries profound implications, particularly for policymakers and governments engaged in biodiversity conservation efforts. Our findings underscore that cultivating and leveraging public attention may be an effective strategy for raising corporate biodiversity awareness. Since heightened awareness is a critical prerequisite for meaningful action, policymakers should consider initiatives that effectively mobilize public attention to biodiversity as a first step toward driving concrete corporate engagement and ultimately, reversing biodiversity loss.

While our study suggests that public attention can be effective in raising corporate biodiversity awareness, it also opens avenues for future research. Exploring how this relationship varies across different countries and cultural contexts outside Europe would be valuable. Moreover, future research may investigate whether conference call discussions about biodiversity issues would translate into specific actions such as reductions in emissions, implementation of biodiversity initiatives, or changes in supply

chain management. Such research could provide a more complete understanding of the implications of public attention on corporate sustainability and contribute to the development of more effective strategies for biodiversity protection.

Appendices

Appendix A Variable definitions

Variables	Description	Data Source
Corporate biodiversity awareness measurement		
BIODIS	Dummy equal to one, if a company mentioned biodiversity-related matters in conference calls in a given year, and zero otherwise	Transcripts downloaded from Refinitiv, complemented by Capital IQ
BIODIS_PRE	Dummy equal to one, if a company mentioned biodiversity-related matters in conference calls' presentation sessions in a given year, and zero otherwise	
BIODIS_QA	Dummy equal to one, if a company mentioned biodiversity-related matters in conference calls' Q&A sessions in a given year, and zero otherwise	
Public attention measurement		
ATTN	Country-year level public attention related to biodiversity, measured by [absolute Google search volumes of the word "biodiversity" (in different linguistic contexts) / (the number of population in thousands* internet access rate)]	Google trends, complemented by Glimpse's Extension; Eurostat
Controls		
EMI	Natural logarithm of total carbon dioxide emissions	Refinitiv
AGE	The age of a company since its IPO	Capital IQ
SIZE	Natural logarithm of total assets	Capital IQ
GROWTH	Total assets growth rate	Capital IQ
ROA	Return on assets	Capital IQ
LEVERAGE	Debt-to-asset ratio	Capital IQ
MTB	Market-to-Book ratio	Capital IQ
ANALYSTS	Number of analysts covering a company	Refinitiv
RT	Annual average stock return	Refinitiv
Variables used in additional analysis		
ND	The impact of natural disaster events, measured by the number of people affected by natural disasters, scaled by 10 million	EM-DAT
CLATTN	Country-year level public attention related to climate, measured by [absolute Google search volumes of the word "climate" (in different linguistic contexts) / (the number of population in thousands* internet access rate)]	Google trends, complemented by Glimpse's Extension; Eurostat
ATTN10K	Country-year level public attention related to biodiversity, measured by absolute Google search volumes of the word "biodiversity" (in different linguistic contexts), divided by 10,000	Google trends, complemented by Glimpse's Extension
NYTATTN	Attention for biodiversity matters, measured by New York Times biodiversity news index, scaled by 100	Giglio et al., 2023

GMKTS	The country-year level market share of Google search engine	StatCounter
EXPLOIT	Dummy equal one, if the company belongs to high exploitation industries including agriculture, forestry and fishing, mining, construction and manufacturing, and zero otherwise	Boiral and Heras-Saizarbitoria (2017)
GRI	Dummy equal one, if the company follows GRI initiative, and zero otherwise	Refinitiv
AUDIT	Dummy equal one, if the company purchases external sustainability assurance services, and zero otherwise	Refinitiv
ENVDIS	Dummy equal one, if a company mentioned environmental matters other than biodiversity in conference calls in a given year, and zero otherwise	Transcripts downloaded from
ENVCT	The frequency of mentions of environmental matters other than biodiversity in conference calls	Refinitiv, complemented by Capital IQ
SYMB	Dummy equal one, if biodiversity discussions in conference calls of a firm in a given year only contain symbolic discussions, without not any substantive information. Dummy equal to zero, if substantive information is present at least once in the conference calls.	Transcripts downloaded from Refinitiv, complemented by Capital IQ
SYMB_PRE	Dummy equal to one, if biodiversity discussions in conference calls' presentation sessions are symbolic discussions, not substantive commitments, and zero otherwise	Giglio et al., 2023
SYMB_QA	Dummy equal to one, if biodiversity discussions in conference calls' Q&A sessions are symbolic discussions, not substantive commitments, and zero otherwise	
TONE	The overall tone of the biodiversity-related mentions, calculated by the number of positive biodiversity sentences minus the number of negative sentences for each firm-year	
CAPEX	Capital expenditures scaled by revenue	Refinitiv
SGA	SG&A expenditures scaled by revenue	Refinitiv
OPEX	Operating expenses scaled by revenue	Refinitiv

Appendix B Terms used to narrow down biodiversity-related sentences

Words	Terms used to narrow down
Ecosystem(s)	Coast; Forest; Micro; Nature; Sustainability; Water
Marine	Biodiversity; Ecosystem; Environment; Life; Species
Tropical	Biodiversity; Ecosystem; Environment; Forest; Species
Species	Aquatic; Biodiversity; Bird; Endangered; Environment; Fish; Habitat; Invasive; List; Marine; Protect; Threat; ESA; EPA

Appendix C Classification examples

Labels	Examples
Panel A: Misclassifications by the word-dictionary method	
Use as metaphors	Remember the story, I mean, the joke I was telling you five or six years ago about the squirrels in the **forest**. I mean, if they mutualize the nuts, they survive the winter.
Unrelated to the firm's activity	Local community, I said it at the beginning, move away from taking something from the local community, do exactly the opposite, contribute, whether it is **biodiversity**, whether it's education, whether it is craftsmanship, whether it is supplies, just do something for them.
Use as company name	By the end of last year, **Forest** had achieved approximately 65% coverage of those patients with commercial insurance plans, and about 50% coverage of those patients under Medicare Part D.
Panel B: Classifications of non-symbolic (substantive) and symbolic discussions	
Non-symbolic discussion	A couple of seconds about King Charles because we started this beautiful project in the **Himalayas** for **regenerative agriculture for the wildlife**, for **planting trees**. And the other day, we received the first kilos of cashmere.
Non-symbolic discussion	Crayon developed an **AI computer vision model** that used remote sensing and machine learning to detect **illegal cultivation** through satellite imagery. In doing so, this will aim to prevent the cultivation from occurring and sustain the **wildlife and rare black gibbon** population.
Non-symbolic discussion	We're now over **300,000 farmers** trained. The results of that training are reductions in the use of agricultural inputs, reductions in water, increases in sales prices to the farmer, increases in farmer income, and increases in **biodiversity.**
Symbolic discussion	The first one is in terms of risk measures, starting with the transition risk and we'll continue with the physical risk as well as with the **biodiversity** risk.
Symbolic discussion	We continue to protect the environment and promote **biodiversity** across our sites as we remediate the site and deliver the developments.
Symbolic discussion	And that's why we've stepped up these investments, we've sharpened it, we've broadened the impact, we've brought in **biodiversity**, and we're making sure that we're capturing all aspects in terms of not only supporting our customers, which we've always done but also help our supplier base and supply chains in a more structured way than we had.

Appendix D Different linguistic contexts of "Biodiversity"

Country	Words Used for Google Trend Search
France	Biodiversity; Biodiversité
United Kingdom	Biodiversity
Spain	Biodiversity; Biodiversidad
Germany	Biodiversity; Biodiversität
Italy	Biodiversity; Biodiversità
Belgium	Biodiversity; Biodiversité; Biodiversiteit
Ireland	Biodiversity
Romania	Biodiversity; Biodiversitate
Netherlands	Biodiversity; Biodiversiteit
Sweden	Biodiversity; Biologisk mångfald; Biodiversitet
Austria	Biodiversity; Biodiversität
Denmark	Biodiversity; Biodiversitet
Norway	Biodiversity; Biodiversitet; Biologisk mangfold
Poland	Biodiversity; różnorodność biologiczna
Switzerland	Biodiversity; Biodiversité; Biodiversità; Biodiversität
Finland	Biodiversity; Biodiversiteetti; Luonnon monimuotoisuus

Note: This table presents the various linguistic translations and contexts of "biodiversity" used in our Google Trends search across different countries. It's important to note that we only include terms that yield actual search records. Although we examine common "biodiversity" notations in each country's primary language(s), some translations and variations lack search data and are therefore excluded.

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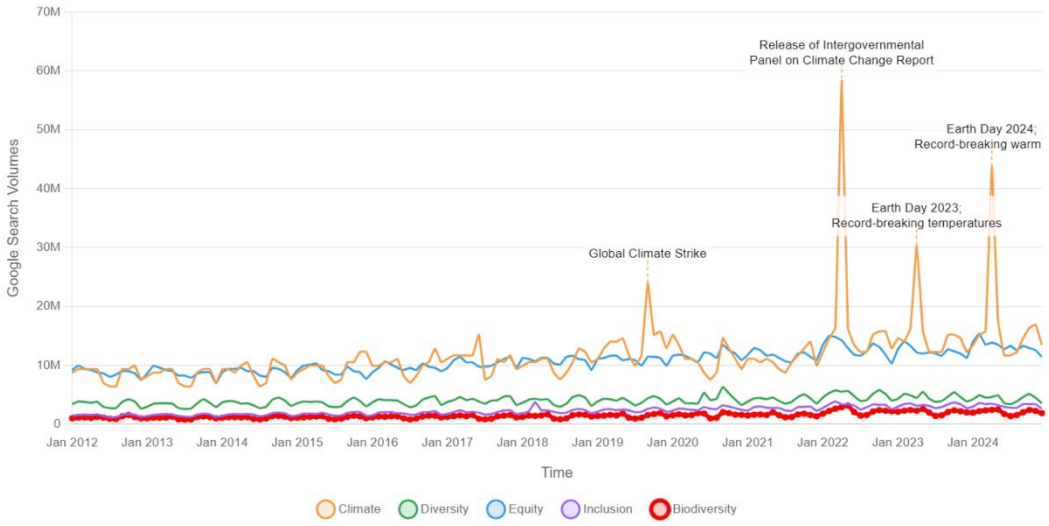
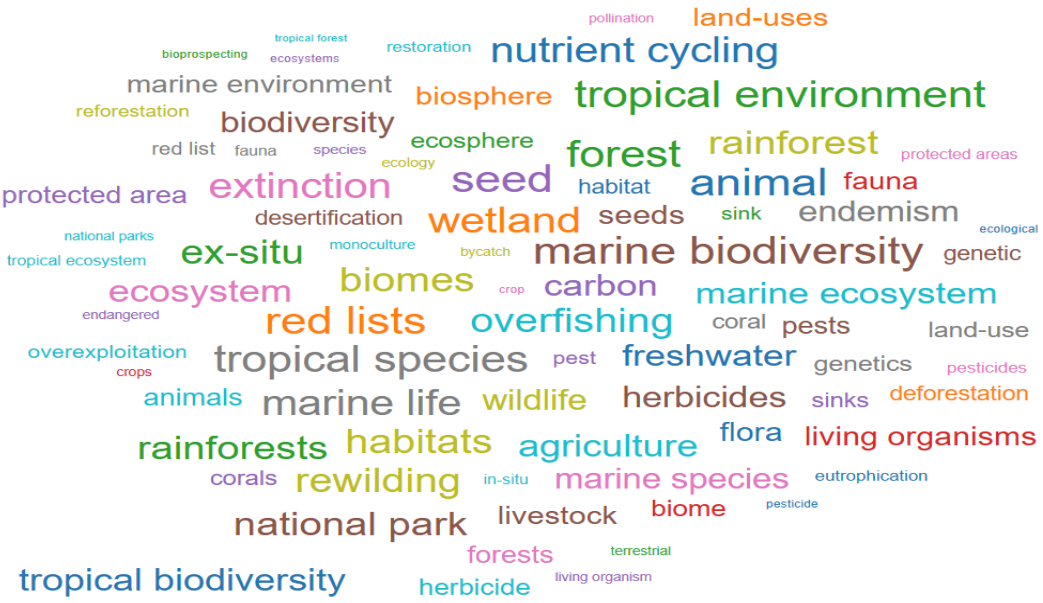
Figures

Figure 1 Worldwide Attention for ESG Topics



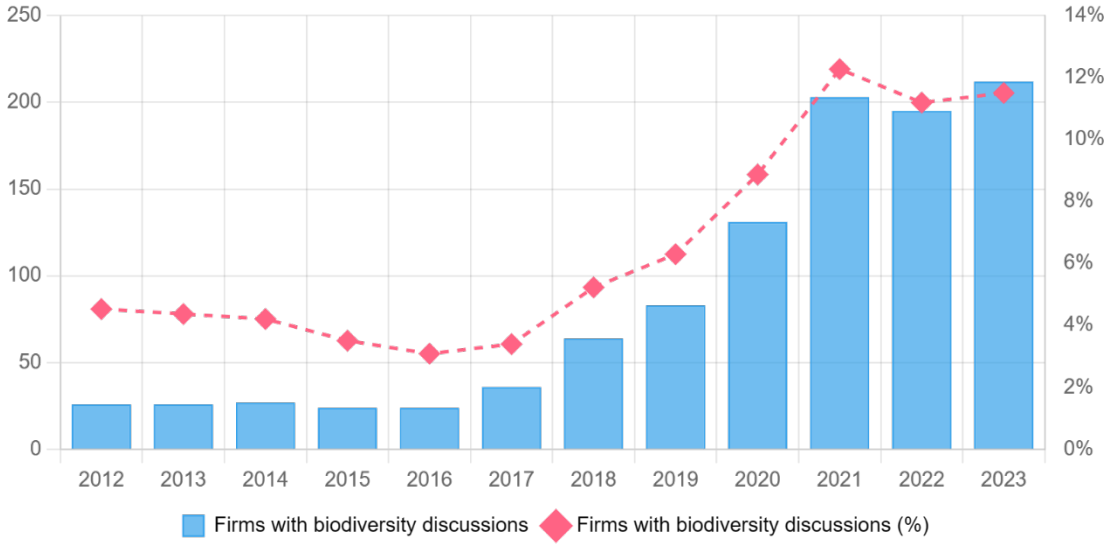
Note: This figure illustrates the worldwide attention for climate, diversity, equity, inclusion, and biodiversity topics over the period from 2012 to 2024, measured by Google search volumes. Key climate attention peaks are annotated with their relevant events.

Figure 2 Biodiversity Word Dictionary



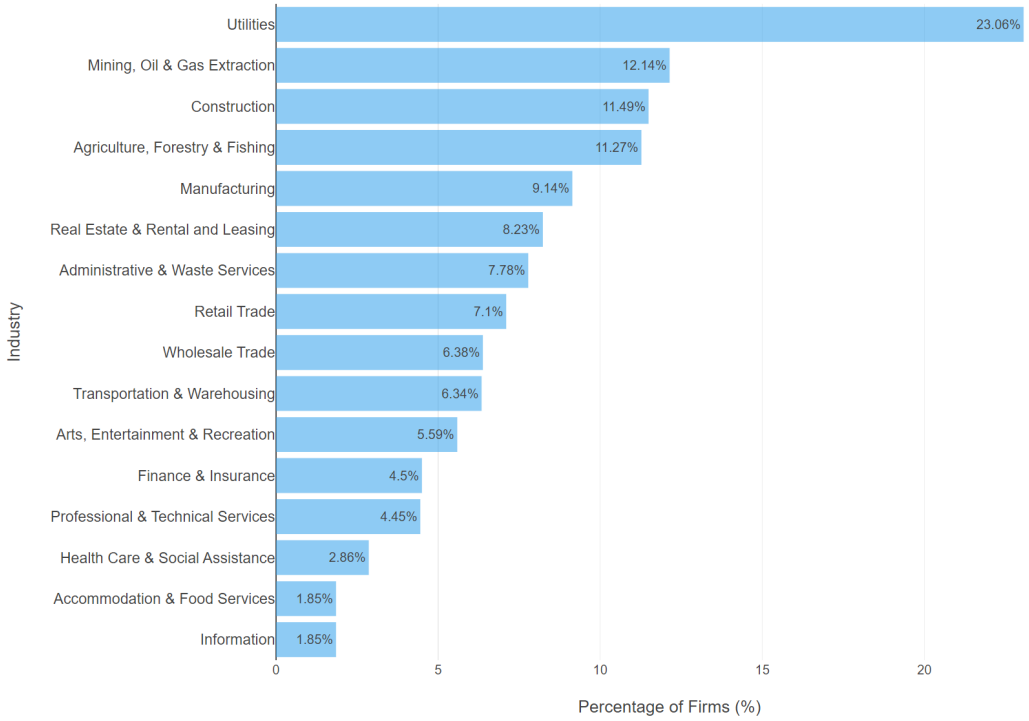
Note: This figure presents the word cloud of the biodiversity word dictionary (Giglio et al., 2023), which we use to extract sentences related to biodiversity discussion in conference calls.

Figure 3 Trend of Biodiversity Discussions in Conference Call Transcripts



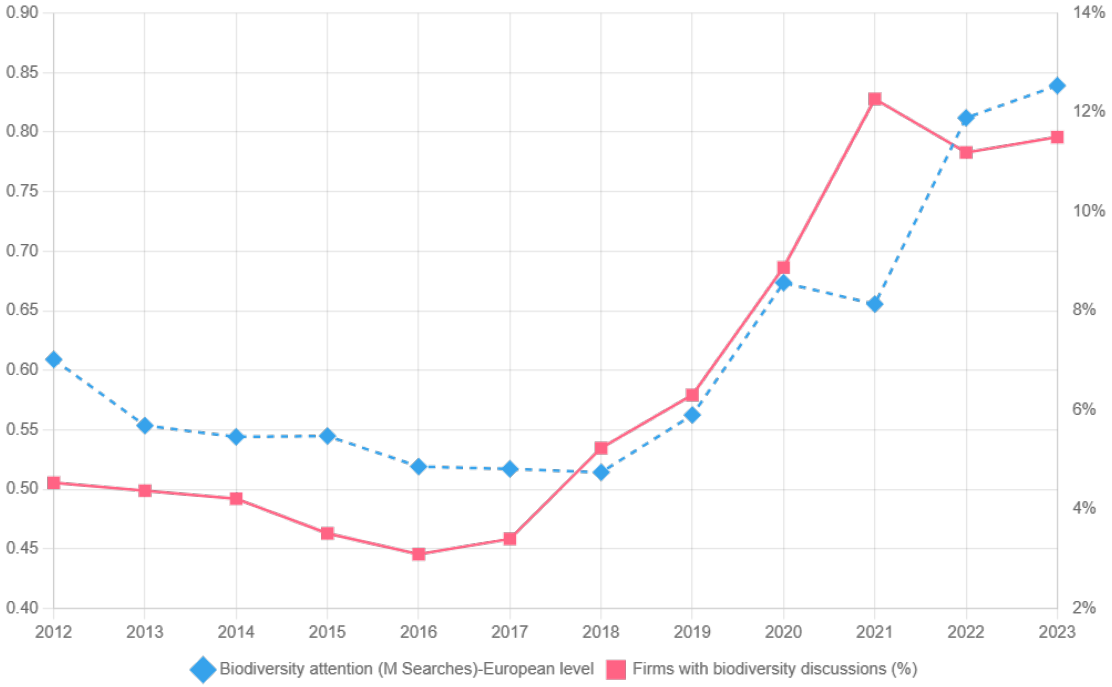
Note: This figure illustrates the number (percentage) of firms each year that addressed biodiversity-related topics in conference calls over the period from 2012 to 2023.

Figure 4 Industry Rankings Based on Biodiversity Discussions in Conference Call Transcripts



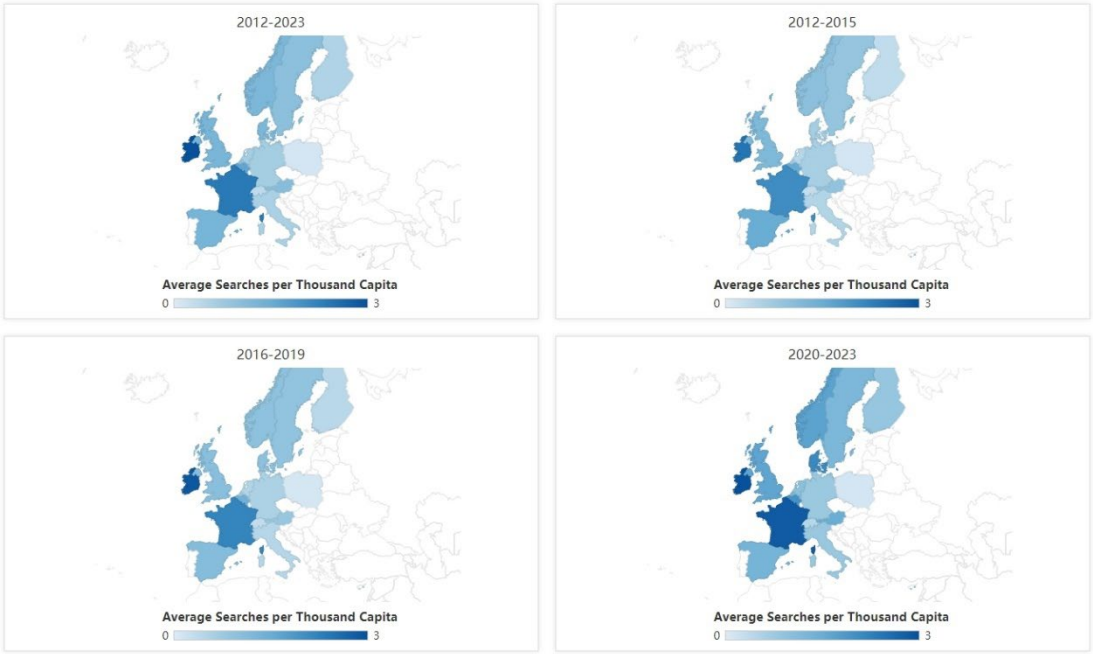
Note: This figure illustrates the percentage of firms across various industries that addressed biodiversity topics in conference calls during the period from 2012 to 2023.

Figure 5 Trends Comparison between Public Attention to Biodiversity and Firms' Biodiversity Discussions



Note: This figure compares two trends from 2012 to 2023: (1) the public attention to biodiversity each year measured by Google search volumes at the European level (million searches, left y-axis), and (2) the percentage of firms each year that addressed biodiversity-related topics in conference calls (right y-axis).

Figure 6 European Public Attention in "Biodiversity"



Note: This figure depicts the geographic distribution of Google search volumes for the term "biodiversity" across European countries included in our sample over different time periods. The color intensity (from light to dark blue) represents the average searches per thousand capita, with darker blue indicating higher level of search volumes (scale from 0 to 3).

Tables

Table 1 Sample Selection

Total conference call transcripts downloaded (2012-2023)	**49,516**
Total firm-year observations of conference call transcripts (2012-2023)	**16,648**
Less: observations excluded due to company delisting	(3,285)
Final number of firm-year transcript observations	13,363
Less: missing values for public attention measurements	(1,065)
Less: missing values for controls used in the regressions	(3,185)
Final Sample (2012-2023)	**9,113**

Note: This table illustrates the sample selection process for the regression analysis.

Table 2 Descriptive Statistics

	N	*mean*	*p50*	*sd*	*p25*	*p75*
Corporate biodiversity awareness measure						
BIODIS	9113	0.094	0.000	0.291	0.000	0.000
BIODIS_PRE	9113	0.084	0.000	0.277	0.000	0.000
BIODIS_QA	9113	0.022	0.000	0.147	0.000	0.000
Public attention measure						
ATTN	9113	1.203	1.054	0.712	0.708	1.612
Controls						
EMI	9113	11.196	11.248	2.902	9.295	13.077
AGE	9113	19.436	21.000	10.377	11.000	27.000
SIZE	9113	8.821	8.674	1.889	7.539	9.936
GROWTH	9113	0.071	0.040	0.210	-0.023	0.114
ROA	9113	0.039	0.037	0.078	0.008	0.070
LEVERAGE	9113	0.179	0.160	0.139	0.067	0.265
MTB	9113	2.891	1.790	3.573	0.987	3.429
ANALYSTS	9113	14.479	14.000	8.506	7.000	21.000
RT	9113	0.095	0.073	0.356	-0.131	0.287
Variables used in additional analysis						
ND	9113	0.212	0.000	1.015	0.000	0.032
CLATTN	9113	60.125	54.858	31.449	40.178	76.733
ATTN10K	9113	5.895	5.442	5.274	1.057	9.344
NYTATTN	9113	1.191	1.140	0.280	1.110	1.430
GMKTS	9113	0.934	0.935	0.019	0.921	0.949
EXPLOIT	9113	0.460	0.000	0.498	0.000	1.000
GRI	9113	0.667	1.000	0.471	0.000	1.000
AUDIT	9113	0.633	1.000	0.482	0.000	1.000
ENVDIS	9113	0.978	1.000	0.148	1.000	1.000
ENVCT	9113	42.597	25.000	54.214	11.000	52.000
SYMB	668	0.521	1.000	0.500	0.000	1.000
SYMB_PRE	634	0.521	1.000	0.500	0.000	1.000
SYMB_QA	106	0.462	0.000	0.501	0.000	1.000
TONE	851	0.790	1.000	1.713	0.000	1.000
CAPEX	7876	0.193	0.037	7.931	0.017	0.071
SGA	8108	0.252	0.192	1.003	0.106	0.320
OPEX	8038	0.822	0.902	7.144	0.817	0.959

Notes:

(1) This table reports descriptive statistics of key variables (see Appendix A for the definition of variables);

(2) All continuous variables are winsorized at the 1st and 99th percentiles.

Table 3 Country Composition of sample firms

Country	Freq.	Percent (%)
United Kingdom	2590	28.42
France	995	10.92
Germany	966	10.60
Sweden	893	9.80
Switzerland	624	6.85
Italy	448	4.92
Spain	427	4.69
Netherlands	418	4.59
Finland	336	3.69
Norway	329	3.61
Denmark	284	3.12
Ireland	265	2.91
Belgium	207	2.27
Austria	196	2.15
Poland	135	1.48
Total	**9,113**	**100**

Note: This table reports sample composition by country.

Table 4 Univariate Analysis

Panel A: T-tests low public attention vs. high public attention						
	Low	*Obs.*	*High*	*Obs.*	*Diff.*	*Obs.*
BIODIS	0.078	4186	0.107	4927	-0.029***	9113
BIODIS_PRE	0.066	4186	0.099	4927	-0.033***	9113
BIODIS_QA	0.022	4186	0.022	4927	0	9113
Panel B: T-tests low-ROA companies vs. high- ROA companies						
	Low	*Obs.*	*High*	*Obs.*	*Diff.*	*Obs.*
BIODIS	0.082	4275	0.104	4838	-0.023***	9113
Panel C: T-tests low-exploitation industries vs. high-exploitation industries						
	Low	*Obs.*	*High*	*Obs.*	*Diff.*	*Obs.*
BIODIS	0.077	4924	0.113	4189	-0.036***	9113
Panel D: T-tests non-GRI compliance firms vs. GRI compliance firms						
	Non-GRI	*Obs.*	*GRI*	*Obs.*	*Diff.*	*Obs.*
BIODIS	0.073	3038	0.104	6075	-0.031***	9113
Panel E: T-tests non-purchase of sustainability assurance vs. purchase of sustainability assurance						
	Non-Audit	*Obs.*	*Audit*	*Obs.*	*Diff.*	*Obs.*
BIODIS	0.061	3344	0.112	5769	-0.051***	9113

Notes:

(1) This table presents univariate analyses of firms' biodiversity awareness, measured by biodiversity discussions in conference calls. We define high public attention (High) if the *ATTN* is greater than the sample median; otherwise, it is deemed low public attention (Low); high ROA is defined if the ROA is greater than the sample median; otherwise, it is deemed low ROA;

(2) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively. Variable definitions are in Appendix A.

Table 5 The Association between Public Attention and Biodiversity Awareness

	(1)	(2)	(3)	(4)
	BIODIS	*BIODIS*	*BIODIS_PRE*	*BIODIS_QA*
ATTN	0.650***	0.599**	0.462*	1.329***
	(0.239)	(0.243)	(0.263)	(0.468)
EMI	0.175***	0.098***	0.082***	0.235***
	(0.016)	(0.024)	(0.025)	(0.049)
AGE	0.013***	0.013***	0.012***	0.015*
	(0.004)	(0.004)	(0.004)	(0.008)
SIZE	0.014	0.067	0.072	0.069
	(0.032)	(0.046)	(0.048)	(0.092)
GROWTH	0.066	-0.058	-0.177	0.247
	(0.198)	(0.207)	(0.221)	(0.375)
ROA	2.261***	2.301***	2.374***	0.867
	(0.650)	(0.674)	(0.701)	(1.450)
LEVERAGE	0.023	-0.212	-0.431	0.249
	(0.299)	(0.334)	(0.352)	(0.684)
MTB	-0.011	-0.007	-0.007	-0.033
	(0.014)	(0.015)	(0.016)	(0.036)
ANALYSTS	-0.008	-0.002	-0.001	-0.013
	(0.007)	(0.008)	(0.008)	(0.015)
RT	-0.086	-0.114	-0.147	0.084
	(0.124)	(0.127)	(0.134)	(0.252)
Pseudo R-sq	0.082	0.110	0.117	0.134
Observations	9,113	9,113	9,113	9,113
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Industry FE	NO	YES	YES	YES

Notes:

(1) This table reports the results of regressions estimating the association between public attention and firms' biodiversity awareness using model (1). Public attention to biodiversity is measured by *ATTN*, which is the Google search volumes adjusted by population and internet access rate, while firms' biodiversity awareness (*BIODIS*) is measured by the presence of biodiversity discussions in the conference calls;

(2) Columns 1 and 2 show the result when the dependent variable is *BIODIS*, which is a binary indicator on whether the firms have biodiversity discussions during the entire conference calls, while columns 3 and 4 show the results when the dependent variables are *BIODIS_PRE* (biodiversity discussions during presentation sessions) and *BIODIS_QA* (biodiversity discussions during Q&A sessions), respectively;

(3) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively. Variable definitions are in Appendix A.

Table 6 Controlling for public attention on climate change

	(1)	(2)	(3)	(4)
	BIODIS	*BIODIS*	*BIODIS_PRE*	*BIODIS_QA*
ATTN	0.677***	0.628**	0.501*	1.388***
	(0.243)	(0.247)	(0.269)	(0.478)
ND	-0.019	-0.020	-0.019	-0.116
	(0.031)	(0.032)	(0.032)	(0.092)
CLATTN	0.003	0.003	0.003	0.006
	(0.003)	(0.004)	(0.004)	(0.007)
EMI	0.176***	0.099***	0.083***	0.236***
	(0.016)	(0.024)	(0.025)	(0.049)
AGE	0.013***	0.013***	0.012***	0.015*
	(0.004)	(0.004)	(0.004)	(0.008)
SIZE	0.015	0.068	0.073	0.071
	(0.032)	(0.046)	(0.048)	(0.092)
GROWTH	0.068	-0.056	-0.176	0.251
	(0.198)	(0.207)	(0.221)	(0.376)
ROA	2.267***	2.309***	2.381***	0.898
	(0.650)	(0.675)	(0.702)	(1.455)
LEVERAGE	0.027	-0.211	-0.430	0.251
	(0.299)	(0.334)	(0.352)	(0.685)
MTB	-0.010	-0.006	-0.007	-0.031
	(0.014)	(0.015)	(0.016)	(0.036)
ANALYSTS	-0.008	-0.002	-0.001	-0.014
	(0.007)	(0.008)	(0.008)	(0.015)
RT	-0.090	-0.118	-0.152	0.086
	(0.124)	(0.127)	(0.134)	(0.252)
Pseudo R-sq	0.083	0.110	0.117	0.135
Observations	9,113	9,113	9,113	9,113
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Industry FE	NO	YES	YES	YES

Notes:

(1) This table reports the results of regressions estimating the association between public attention and firms' biodiversity awareness using model (1). Public attention to biodiversity is measured by *ATTN*, which is the Google search volumes adjusted by population and internet access rate, while firms' biodiversity awareness is measured by the presence of biodiversity discussions in the conference calls. We add two additional controls in these models: the impact of natural disasters (*ND*) and climate attention (*CLATTN*);

(2) Columns 1 and 2 show the result when the dependent variable is *BIODIS*, while columns 3 and 4 show the results when the dependent variables are *BIODIS_PRE* (biodiversity discussions during presentation sessions) and *BIODIS_QA* (biodiversity discussions during Q&A sessions), respectively;

(3) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels,

respectively. Variable definitions are in Appendix A.

Table 7 Alternative measures of public attention on biodiversity

	(1)	(2)	(3)	(4)	(5)	(6)
	BIODIS	*BIODIS_PRE*	*BIODIS_QA*	*BIODIS*	*BIODIS_PRE*	*BIODIS_QA*
ATTN10K	0.097***	0.086**	0.083			
	(0.036)	(0.039)	(0.072)			
NYTATTN				2.369***	2.613***	1.168
				(0.438)	(0.479)	(0.763)
EMI	0.098***	0.082***	0.238***	0.099***	0.083***	0.238***
	(0.024)	(0.025)	(0.050)	(0.024)	(0.025)	(0.050)
ND	-0.036	-0.034	-0.127	-0.009	-0.010	-0.096
	(0.033)	(0.034)	(0.098)	(0.031)	(0.032)	(0.094)
CLATTN	0.004	0.004	0.007	0.003	0.003	0.006
	(0.003)	(0.004)	(0.006)	(0.003)	(0.004)	(0.006)
AGE	0.013***	0.012***	0.015*	0.013***	0.012***	0.015*
	(0.004)	(0.004)	(0.008)	(0.004)	(0.004)	(0.008)
SIZE	0.069	0.074	0.064	0.063	0.069	0.060
	(0.046)	(0.048)	(0.092)	(0.046)	(0.048)	(0.092)
GROWTH	-0.059	-0.179	0.242	-0.065	-0.183	0.238
	(0.207)	(0.221)	(0.371)	(0.207)	(0.221)	(0.371)
ROA	2.333***	2.401***	0.946	2.307***	2.379***	0.910
	(0.674)	(0.702)	(1.449)	(0.673)	(0.701)	(1.447)
LEVERAGE	-0.192	-0.417	0.299	-0.201	-0.423	0.310
	(0.335)	(0.352)	(0.687)	(0.334)	(0.352)	(0.687)
MTB	-0.005	-0.006	-0.032	-0.007	-0.008	-0.034
	(0.015)	(0.016)	(0.036)	(0.015)	(0.016)	(0.036)
ANALYSTS	-0.002	-0.001	-0.012	-0.001	0.000	-0.010
	(0.008)	(0.008)	(0.015)	(0.008)	(0.008)	(0.015)
RT	-0.133	-0.164	0.062	-0.123	-0.156	0.074
	(0.127)	(0.134)	(0.253)	(0.127)	(0.134)	(0.252)
Pseudo R-sq	0.110	0.117	0.130	0.109	0.116	0.130
Observations	9,113	9,113	9,113	9,113	9,113	9,113
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Notes:

(1) This table reports the results of regressions estimating the association between public attention and firms' biodiversity awareness using model (1);

(2) Columns 1-3 use *ATTN10K* as the measure of public attention to biodiversity, capturing country-year level unscaled Google search volumes, while columns 4-6 use *NYTATTN*, the New York Times biodiversity news index (Giglio et al. 2023);

(3) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively. Variable definitions are in Appendix A.

Table 8 Instrumental variable estimation

	(1)	(2)	(3)	(4)
	First stage	Second stage	First stage	Second stage
	D.V.: *ATTN*	D.V.: *BIODIS*	D.V.: *ATTN10K*	D.V.: *BIODIS*
Instrument (GMKTS)	3.213***		44.667***	
	(0.174)		(0.900)	
ATTN		1.376**		
		(2.660)		
ATTN10K				0.144**
				(2.760)
EMI	-0.000	0.056***	0.006	0.055***
	(0.001)	(4.490)	(0.006)	(4.390)
ND	0.022***	-0.030	0.330***	-0.035
	(0.002)	(-1.42)	(0.011)	(-1.62)
CLATTN	0.002***	-0.002	-0.020***	0.002
	(0.000)	(-0.70)	(0.001)	(1.25)
AGE	0.000	0.007***	0.001	0.007**
	(0.000)	(3.360)	(0.001)	(3.280)
SIZE	-0.001	0.036	-0.019*	0.037
	(0.002)	(1.520)	(0.011)	(1.580)
GROWTH	-0.009	-0.020	-0.082*	-0.025
	(0.009)	(-0.190)	(0.049)	(-0.230)
ROA	0.024	1.201***	-0.012	1.243***
	(0.027)	(3.440)	(0.141)	(3.580)
LEVERAGE	0.022	-0.155	-0.056	-0.117
	(0.016)	(-0.890)	(0.081)	(-0.670)
MTB	-0.002***	-0.000	-0.010***	-0.001
	(0.001)	(-0.000)	(0.003)	(-0.160)
ANALYSTS	0.002***	-0.004	0.010***	-0.003
	(0.000)	(-1.000)	(0.002)	(-0.790
RT	-0.008	-0.053	0.029	-0.066
	(0.006)	(-0.790)	(0.031)	(-0.980
Observations	9,082	9,082	9,082	9,082
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Wald test of exogeneity Chi-sq		4.620**		3.71*
Prob > Chi2		(0.032)		(0.054)
Weak IV tests:				
AR test		7.130**		7.630**
P value		(0.008)		(0.006
Wald test		7.050**		7.610**
P value		(0.008)		(0.006

Notes:
(1) This table reports the results of the IV estimation in which the public attention regarding biodiversity is assumed to be an endogenous regressor. The instrumental variable used is *GMKTS*, which represents the country-year level market share of Google search engine;
(2) This table presents both first-stage and second-stage results of the IV estimation. Columns 1 and 2 show results when using *ATTN* (Google search volumes adjusted by population and internet access rate) as the endogenous regressor, while columns 3 and 4 show results when using *ATTN10K* (unadjusted Google search volume) as the endogenous regressor;
(3) The significance of the instruments is with respect to the variables that they instrument on in the first-stage estimation. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively. Variable definitions are in Appendix A.

Table 9 Cross-sectional tests

	ROA		*EXPLOIT*		*GRI*		*AUDIT*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Low	*High*	*=0*	*=1*	*=0*	*=1*	*=0*	*=1*
ATTN	0.464	0.737**	-0.115	1.170***	0.611	0.524*	0.276	0.565*
	(0.407)	(0.322)	(0.382)	(0.338)	(0.631)	(0.270)	(0.505)	(0.299)
EMI	0.168***	0.049	0.028	0.136***	0.155***	0.193***	0.110**	0.089***
	(0.040)	(0.032)	(0.036)	(0.035)	(0.033)	(0.019)	(0.047)	(0.029)
ND	-0.015	-0.023	0.038	-0.077*	0.030	-0.041	-0.093	-0.015
	(0.046)	(0.045)	(0.044)	(0.047)	(0.053)	(0.039)	(0.120)	(0.034)
CLATTN	0.004	0.002	0.004	-0.002	0.008	0.002	0.020*	0.002
	(0.005)	(0.005)	(0.005)	(0.006)	(0.013)	(0.004)	(0.011)	(0.004)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Pseudo R-sq	0.148	0.133	0.155	0.121	0.138	0.091	0.111	0.132
Observations	4,254	4,828	4,893	4,189	3,007	6,075	3,271	5,755
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES

Notes:

(1) This table reports the results of regressions estimating the association between public attention (*ATTN*) and firms' biodiversity awareness (*BIODIS*) in different subgroups using model (1). We divide the sample into low and high ROA firms (columns 1 and 2), firms in high-exploitation industries and other firms (columns 3 and 4), firms that follow the Global Reporting Initiative and those that do not (columns 5 and 6), and firms that purchase external sustainability assurance services and those that do not (columns 7 and 8);

(2) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively. Variable definitions are in Appendix A.

Table 10 Additional analyses: Public attention and other environmental discussions

	ENVDIS	*ENVCT*
	(1)	(2)
ATTN	-0.298	-6.407**
	(0.509)	(2.608)
EMI	0.098	5.809***
	(0.060)	(0.304)
ND	0.035	-0.111
	(0.117)	(0.522)
CLATTN	0.009	0.017
	(0.008)	(0.046)
AGE	-0.002	0.042
	(0.010)	(0.049)
SIZE	0.364***	-1.869***
	(0.105)	(0.543)
GROWTH	-0.443	11.544***
	(0.358)	(2.401)
ROA	0.304	-8.610
	(0.954)	(6.940)
LEVERAGE	-0.267	-11.177***
	(0.692)	(3.970)
MTB	-0.007	0.285*
	(0.025)	(0.158)
ANALYSTS	0.120***	0.884***
	(0.021)	(0.095)
RT	0.140	2.552*
	(0.229)	(1.539)
Pseudo R-sq	0.141	
R-squared		0.313
Observations	9,064	9,113
Year FE	YES	YES
Country FE	YES	YES
Industry FE	YES	YES

Notes:

(1) This table reports the results of additional analyses examining the association between public attention on biodiversity (*ATTN*) and the discussion of other environmental-related topics in conference calls (*ENVDIS, ENVCT*);

(2) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Table 11 Additional analyses: Public attention and symbolic biodiversity discussions

	(1)	(2)	(3)	(4)
	SYMB	*SYMB*	*SYMB_PRE*	*SYMB_QA*
ATTN	-1.677**	-1.700**	-1.669**	-1.062
	(0.662)	(0.674)	(0.780)	(2.535)
TONE		-0.317***	-0.342***	-0.194
		(0.064)	(0.0719)	(0.152)
EMI	-0.017	-0.009	-0.0136	-0.140
	(0.054)	(0.056)	(0.0638)	(0.232)
ND	-0.031	-0.029	-0.00243	-0.454
	(0.065)	(0.066)	(0.0710)	(0.479)
CLATTN	-0.005	-0.002	0.00127	-0.088*
	(0.008)	(0.008)	(0.00900)	(0.051)
AGE	0.015	0.017*	0.0173	-0.014
	(0.009)	(0.010)	(0.0114)	(0.039)
SIZE	0.031	-0.009	-0.0161	-0.253
	(0.106)	(0.107)	(0.124)	(0.453)
GROWTH	0.145	0.241	0.208	0.926
	(0.484)	(0.497)	(0.600)	(1.630)
ROA	-1.663	-1.747	-1.713	-2.394
	(1.743)	(1.789)	(1.995)	(8.160)
LEVERAGE	1.747**	2.064**	2.107**	1.568
	(0.805)	(0.831)	(0.974)	(2.771)
MTB	-0.006	-0.013	-0.0178	0.025
	(0.036)	(0.038)	(0.0423)	(0.179)
ANALYSTS	-0.014	-0.011	-0.0113	0.050
	(0.018)	(0.019)	(0.0214)	(0.079)
RT	0.558*	0.531	0.538	1.478
	(0.327)	(0.334)	(0.373)	(1.298)
Pseudo R-sq	0.082	0.117	0.135	0.321
Observations	668	668	624	100
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES

Notes:

(1) This table reports the results of regressions estimating the association between public attention (*ATTN*) and the likelihood of symbolic biodiversity discussions (*SYMB*);

(2) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively.

Online Appendix

Table OA1 Correlations of Key Variables

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	*BIODIS*	1												
(2)	*BIODIS_PRE*	0.93***	1											
(3)	*BIODIS_QA*	0.48***	0.24***	1										
(4)	*ATTN*	0.08***	0.09***	0.03***	1									
(5)	*EMI*	0.11***	0.09***	0.10***	-0.07***	1								
(6)	*AGE*	0.09***	0.09***	0.04***	0.11***	0.17***	1							
(7)	*SIZE*	0.09***	0.08***	0.05***	-0.05***	0.46***	0.32***	1						
(8)	*GROWTH*	-0.01	-0.01	0	-0.01	-0.09***	-0.12***	-0.06***	1					
(9)	*ROA*	0.05***	0.05***	0.03***	-0.08***	0.01	0.13***	0.26***	0.13***	1				
(10)	*LEVERAGE*	0.02**	0.01	0.02***	0.01*	0.14***	-0.05***	0.09***	-0.05***	-0.03***	1			
(11)	*MTB*	-0.04***	-0.03***	-0.02**	-0.01	-0.16***	-0.07***	-0.24***	0.13***	0.09***	-0.08***	1		
(12)	*ANALYSTS*	0.03***	0.03***	0.02***	-0.03***	0.42***	0.25***	0.66***	-0.05***	0.20***	0.02**	0.03***	1	
(13)	*RT*	0	0	0	-0.05***	0.03***	0.02*	0.06***	0.15***	0.23***	-0.04***	0.21***	0.06***	1

Notes:

(1) This table presents Pearson correlation coefficients between pairs of key variables. All continuous variables are winsorized at the 1st and 99th percentiles;

(2) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels respectively.

Table OA2 Linear Probability Model

	(1)	(2)	(3)	(4)
	BIODIS	*BIODIS*	*BIODIS_PRE*	*BIODIS_QA*
ATTN	0.044***	0.038**	0.025*	0.024***
	(0.016)	(0.016)	(0.015)	(0.008)
EMI	0.015***	0.009***	0.007***	0.006***
	(0.001)	(0.002)	(0.002)	(0.001)
AGE	0.001***	0.001***	0.001***	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	0.002	0.004	0.004	-0.001
	(0.002)	(0.003)	(0.003)	(0.002)
GROWTH	0.007	0.003	-0.005	0.009
	(0.015)	(0.015)	(0.014)	(0.008)
ROA	0.158***	0.153***	0.147***	0.009
	(0.043)	(0.043)	(0.041)	(0.022)
LEVERAGE	0.002	-0.021	-0.030	-0.008
	(0.022)	(0.025)	(0.023)	(0.013)
MTB	-0.001	0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
ANALYSTS	-0.001	-0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)
RT	-0.003	-0.006	-0.008	0.002
	(0.010)	(0.010)	(0.009)	(0.005)
R-sq	0.060	0.077	0.075	0.035
Observations	9,113	9,113	9,113	9,113
Year FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Industry FE	NO	YES	YES	YES

Notes:

(1) This table reports the results of regressions estimating the association between public attention and firms' biodiversity awareness using linear probability models instead of the logit regressions in model (1). Public attention to biodiversity is measured by *ATTN*, which is the Google search volumes adjusted by population and internet access rate, while firms' biodiversity awareness is measured by the presence of biodiversity discussions in the conference calls;

(2) Columns 1 and 2 show the result when the dependent variable is *BIODIS*, which is a binary indicator on whether the firms have biodiversity discussions during the entire conference calls, while columns 3 and 4 show the results when the dependent variables are *BIODIS_PRE* (biodiversity discussions during presentation sessions) and *BIODIS_QA* (biodiversity discussions during Q&A sessions), respectively;

(3) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively. Variable definitions are in Appendix A.

Table OA3 Hierarchical Linear Model

	BIODIS		*BIODIS_PRE*		*BIODIS_QA*	
	(1)	(2)	(3)	(4)	(5)	(6)
	_firmdev	*_ctymean*	*_firmdev*	*_ctymean*	*_firmdev*	*_ctymean*
ATTN		1.100***		1.160***		0.648***
		(0.090)		(0.094)		(0.172)
EMI	0.162***	0.330**	0.147***	0.267*	0.323***	-0.130
	(0.016)	(0.147)	(0.017)	(0.157)	(0.033)	(0.250)
AGE	0.016***	-0.415***	0.016***	-0.448***	0.015**	-0.176*
	(0.004)	(0.050)	(0.004)	(0.053)	(0.008)	(0.097)
SIZE	0.041	-1.035***	0.043	-0.976***	0.017	-1.329***
	(0.031)	(0.217)	(0.032)	(0.238)	(0.066)	(0.378)
GROWTH	0.224	-23.967***	0.148	-23.083***	0.439	-5.726
	(0.188)	(7.210)	(0.201)	(7.794)	(0.336)	(14.244)
ROA	2.031***	28.801***	1.971***	29.612***	0.832	27.418**
	(0.639)	(6.205)	(0.664)	(6.602)	(1.298)	(12.450)
LEVERAGE	-0.009	-2.342	-0.164	-1.891	0.299	-3.999
	(0.295)	(2.691)	(0.309)	(2.877)	(0.621)	(5.000)
MTB	-0.003	-0.484**	-0.003	-0.446**	-0.018	-1.392***
	(0.014)	(0.194)	(0.014)	(0.208)	(0.031)	(0.414)
ANALYSTS	-0.026***	0.173***	-0.028***	0.193***	-0.020	0.170**
	(0.007)	(0.040)	(0.007)	(0.043)	(0.012)	(0.087)
RT	-0.038	9.081***	-0.053	6.501**	0.062	29.171***
	(0.111)	(3.105)	(0.117)	(3.296)	(0.219)	(6.069)
Observations	9,113		9,113		9,113	

Notes:

(1) This table reports the results of regressions estimating the association between public attention and firms' biodiversity awareness using hierarchical linear models. Public attention to biodiversity is measured by *ATTN*, which is the Google search volumes adjusted by population and internet access rate, while firms' biodiversity awareness is measured by the presence of biodiversity discussions in the conference calls;

(2) Columns 1 and 2 show the result when the dependent variable is *BIODIS*, which is a binary indicator on whether the firms have biodiversity discussions during the entire conference calls. Columns 3 and 4 show the results when the dependent variables are *BIODIS_PRE* (biodiversity discussions during presentation sessions) and columns 5 and 6 show the results when the dependent variables are *BIODIS_QA* (biodiversity discussions during Q&A sessions), respectively;

(3) The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% confidence levels, respectively. Variable definitions are in Appendix A.