Disclosure standards and communication norms: Evidence of voluntary sustainability standards as a coordinating device for capital markets

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In this paper, we examine how the development of *voluntary* sustainability standards has affected the nature of information covered in conference calls. Using industry-specific dictionaries of sustainability terms contained in the disclosure standards developed by the Sustainability Accounting Standards Board (SASB), we find a significant increase in companies' coverage of sustainability topics associated with the development of the SASB standards, particularly for entities that had little or no coverage of sustainability issues historically. This trend begins around the time when SASB released a *provisional* disclosure standard for a given company's industry and continues in the years after. We also find a stronger impact of SASB standards on conference call content for firms operating in industries with greater *ex-ante* uncertainty about which sustainability topics are more likely to be financially material. Overall, our paper provides timely evidence as jurisdictions around the world consider whether to support sustainability reporting in their capital markets and, if so, how.

Keywords: voluntary disclosure; sustainability reporting standards; earnings conference calls; environmental, social, and governance (ESG) issues.

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I. Introduction

What role do disclosure standards play in shaping voluntary corporate communications in capital markets? Voluntary disclosure, by definition, is governed by market forces, rather than mandates (e.g., Grossman and Hart (1980), Milgrom (1981), Milgrom and Roberts (1986)). Therefore, if the disclosure standards themselves are also voluntary, they should have little effect on voluntary corporate communications unless the standards mitigate, in some way, conditions that prevent more complete disclosure (Beyer et al. 2010). In this paper, we provide evidence that the development of reporting standards can indeed serve as an important coordinating mechanism to help reduce frictions that might otherwise prevent market forces from inducing voluntary disclosure on issues of interest to market participants. Specifically, we examine how managements' conversations with analysts and investors changed as provisional voluntary sustainability disclosure standards were developed and released.

The volume of corporate sustainability disclosures and investor demand for this type of information has significantly increased in the last decade. As an example, KPMG's Survey of Sustainability Reporting indicates that in 2020, around 80% of large companies worldwide engaged in sustainability reporting, which is four times higher than the 20% reporting rate in 2002 (KPMG 2020). Similarly, asset managers globally are expected to increase their sustainability-related assets under management to US$33.9tn by 2026, from US$18.4tn in 2021 (PwC 2022). However, one of the challenges for sustainability reporting is that corporate sustainability can cover a wide range of issues and topics – from human capital to the environment to supply chain management – and can reflect multiple user perspectives. The diversity of potential topics and reporting angles has led to confusion and disagreement in the marketplace when it comes to questions about sustainability (Mackintosh 2018), and companies have expressed having difficulty in determining what sustainability information investors and others need, while investors raised concerns about the quality of existing disclosures (USCC 2018).

From a theoretical perspective, uncertainty around sustainability reporting can undermine the ability of market forces to induce voluntary disclosure of sustainability information (Beyer et al. 2010).[1] In other words, when managers are uncertain about which sustainability issues to report on and it is costly (e.g., high costs of making the disclosure, high proprietary costs) to report on *all* sustainability issues, when managers are uncertain about how investors will respond to disclosures (or to the absence of disclosure) or when investors are uncertain as to whether managers are endowed with information on a particular issue, market forces are less likely to induce voluntary disclosure. In the face of these market frictions, the development of sustainability disclosure standards, even when voluntary, could help induce greater disclosure of sustainability issues by helping to coordinate expectations between companies and investors.

To test this premise, we take advantage of a unique setting in which investor-oriented sustainability disclosure standards were developed on a staggered basis across various industries by the Sustainability Accounting Standards Board (SASB). Specifically, SASB standards identify disclosure topics and performance metrics for sustainability issues, such as the management of human capital or natural resources, that are reasonably likely to be financially material for a given industry.[2] The resulting standards are *industry-specific* and cover 77 industries across 11 sectors. Moreover, these standards were developed and released, on a provisional basis, one sector at time (in a quasi-random order) between 2012 to 2016 before being formally approved by the SASB Standards Board for use by companies in late 2018.

We use a difference-in-differences research design and examine whether the development and release of SASB standards are associated with changes in the nature of sustainability

[1] As summarized in Beyer et al. (2010), the conditions for the "unraveling result" that would induce voluntary disclosure, include: "(1) disclosures are costless; (2) investors know that firms have, in fact, private information; (3) all investors interpret the firms' disclosure in the same way and firms know how investors will interpret that disclosure; (4) managers want to maximize their firms' share prices; (5) firms can credibly disclose their private information; and (6) firms cannot commit ex-ante to a specific disclosure policy" (p. 300-301).

[2] SASB uses the term *materiality* in the same sense as U.S. securities law. Because materiality determinations are inherently firm- (and indeed, item-) specific, SASB looks for evidence of financial impact (e.g., revenue growth, cost structure, or cost of capital implications) and investor interest for the purposes of capital allocation and/or stewardship decisions.

information discussed in earnings conference calls. We examine sustainability disclosures in the context of earnings calls because earnings calls represent one of the major forms of management communications with investors (Frankel et al. 1999; Kimbrough 2005; Matsumoto et al. 2011; Bochkay et al. 2020), and brokerage firms, asset management firms, and media outlets often highlight ESG disclosures in the context of earnings calls (e.g., Langley (2019), Carlson (2021), Butters (2021), Bullard (2021), and Brower and Jacobs (2021)). Unlike written sustainability reports that get released annually by some companies (but not the others) or SEC filings that span dozens of pages and are often boilerplate, management-analyst interactions in earnings calls provide a dynamic setting to study the discussion of most relevant company matters for a large sample of companies (of different sizes and industries).

To examine whether the development of SASB standards resulted in changes in the ESG content of earnings calls, we first created dictionaries of industry-specific ESG terms. To do so, we extracted the disclosure topics and their descriptions for all of the disclosure topics contained in SASB's 77 industry standards.[3] We then hired research assistants to read descriptions of every ESG disclosure topic in SASB standards and extract relevant keywords and phrases that characterize each topic. In this manner, we coded 444 disclosure topics across 77 industries, corresponding to around five or six ESG topics per industry.

Industry-specific dictionaries of ESG terms allow us to test whether ESG topics, deemed by SASB as reasonably likely to be financially material for a given industry, are being more covered in corresponding companies' earnings conference calls after the release of SASB standards.[4] As such, our analysis considers, for example, whether greenhouse gas emissions is a topic of conversation in earnings calls of airline companies or whether data privacy is a topic of conversation among e-commerce companies, but not the reverse. While we would expect various ESG topics that are financially material to be covered at least occasionally

[3]We thank SASB for providing access to the SASB Standards copyrighted content and the Sustainable Industry Classification System® (SICS®).

[4]Note that we are not looking for a discussion of the SASB or SASB standards or companies' reporting of SASB metrics as it takes time and resources to formally adopt the standards. Instead, we are interested in examining whether ESG disclosure topics identified in a SASB industry standard are more likely to be discussed in an earnings call after that industry standard has been developed.

in quarterly earnings conference calls, we have no *ex-ante* prior on how often that would be the case on average.[5] That said, we would expect corporate executives to be more likely to include – and analysts more likely to inquire about – ESG topics when those topics are financially material to their company's operations. More importantly, for our empirical tests, we exploit differences in the content of the industry standards to distinguish general trends from those that are industry-specific.

Using the release of SASB provisional industry standards, which was staggered across 11 sector groups, and our industry ESG dictionaries, we find a significant increase in the amount of industry-specific ESG discussion in earnings calls following the release of SASB standards. The increase translates to a 21.3% increase in ESG disclosures relative to the sample median. Moreover, we find that the increase in ESG disclosures begins around the time when SASB started working on provisional standards and continues in the years after, providing evidence that the standards development process likely helped to coordinate sustainability relevant discussions in earnings calls. When we ignore industry-specificity and instead use a combined dictionary of SASB ESG terms across all industries, we find no change in this broader measure of ESG disclosure following the release of SASB standards. In addition, if we focus on ESG topics that were identified as material for *other* industries but not the focal industry, we find a *reduction* in this measure of ESG disclosure. Both of these results provide additional support that the shifts in voluntary ESG disclosures are specific to SASB industry standards. Moreover, to the extent that SASB accurately reflects likely financial materiality of ESG issues, the increase (decrease) in SASB industry-specific information (non-industry-specific information) in earnings calls suggests that the signal-to-noise ratio from an investor perspective increased following the release of the standards.

Next, we examine whether firms' response to SASB standards varies with their pre-standards sustainability disclosure strategy. Specifically, we distinguish between firms that

[5]For instance, a common misconception is that managers must disclose all material information. However, as noted by SEC Commissioner Allison Herren Lee: "Absent a duty to disclose, the importance or materiality of information alone simply does not mandate its disclosure [...] The securities laws currently include little in the way of explicit climate or other sustainability disclosure requirements" (SEC 2021).

were already disclosing relevant sustainability information and those that provided little or no such disclosure prior to SASB standards. If the development of SASB standards acts as a coordination mechanism that helps to resolve uncertainty in investor and manager expectations, we expect to see an increase in ESG disclosure, particularly among firms that provided little or no ESG disclosures historically. It is plausible, however, that even firms with high ESG disclosure prior to SASB standards might increase their disclosure to keep differentiating themselves (Verrecchia 1983). Indeed, we find evidence consistent with both coordination and differentiation, though the former effect is stronger.

To provide more evidence on the resolution of ESG reporting uncertainty, we examine whether companies operating in industries with higher initial disagreement around sustainability reporting are likely to respond to SASB standards more than those operating in industries with higher agreement. For this test, we look at the level of agreement among corporate participants who provided survey feedback to SASB on the likely materiality of potential ESG topics for their industry. We find support for this prediction, providing further support that SASB standards help mitigate uncertainty in ESG reporting.

In acting as a coordinating device, a written standard can have two important, yet somewhat distinct, roles - coordinating the language used to communicate on a given issue and coordinating beliefs about the importance of that issue. While it can be difficult to completely disentangle these two related effects, we further exploit the industry nature of our dictionaries. Specifically, we classify pre-period earnings calls as containing (or not) disclosures that are consistent with SASB topics for their own industry and containing (or not) disclosures consistent with SASB topics for other industries. This two-by-two sample partition allows us to better reflect firms disclosures of material and non-material ESG issues prior to SASB standards and, as a result, understand whether SASB standards help coordinate the language for any covered ESG topic (whenever it is communicated) versus coordinate beliefs around which sustainability topics to cover in which industries.

We find that companies lacking disclosures on any ESG topic (relevant to their own indus-

try or other industries) increase industry-relevant ESG discussion following SASB standards. We observe no increase in ESG discussion of topics not material to their industry. Further, we find that companies with relatively high levels of discussion of sustainability topics not material to their industry reduce the level of such discussion subsequent to SASB standards, while increasing the discussion of industry relevant topics. Collectively, these results are consistent with the development of SASB standards coordinating market beliefs and expectations and not just standardizing the ESG reporting language.

Our findings are not sensitive to alternative measurements of ESG content and alternative research designs. First, we examine if our results remain significant when we exclude the discussion of climate change, which have been an important sustainability topic for many parties (e.g., the Task Force on Climate-related Financial Disclosures). To do so, we exclude a list of common climate-related topics from our analysis. This can limit our ability to detect an effect of SASB standards because climate is the most commonly occurring theme in the standards. However, we continue to observe a significant impact of SASB standards on ESG disclosures, consistent with ESG disclosures being broader than just climate and mitigating the concern that our results reflect the growing focus on climate change.

Second, an important concern in our analyses of ESG content in earnings calls is the reliance on human coders to construct industry-specific dictionaries of ESG terms. To address this concern, we calculate a measure of cosine similarity between earnings calls and SASB industry standards which captures how similar topics discussed in earnings calls are to those in SASB standards. We find a significant increase in similarity following the release of SASB standards. This further corroborates our earlier findings and validates industry-specific ESG dictionaries developed by human coders. Finally, our results are not driven by the introduction of SASB standards for a specific industry and we find no results when examining placebo periods of standards introduction.

Our paper provides timely evidence on the role of sustainability standards in serving as a coordination device to facilitate the *voluntary* provision of sustainability information

to investors. At a time when jurisdictions around the world are considering whether to support sustainability reporting in their capital markets and, if so, how (i.e., on a mandatory or voluntary basis, whether to use principles-based or prescriptive reporting standards, and whether to stand up their own standard-setting body to develop such guidance), our study demonstrates that sustainability standards, even when voluntary, can meaningfully coordinate sustainability disclosures. Our identification strategy, which takes advantage of the industry-specific and staggered development of SASB standards, and various sensitivity tests reduce the likelihood that our results reflect a general shift in sustainability reporting independent of SASB's standards development.

In addition, our study contributes to the literature that analyzes the accounting standards formation. Given that voluntary corporate disclosure standards are relatively rare and unstudied (Barton and Waymire 2004; Serafeim 2011), the development of SASB standards is a unique setting that allows us to better disentangle the effect of creating a standard from the regulatory and enforcement effects associated with an imposed mandate to use a new standard (Leuz and Wysocki 2016). Our study also contributes to the literature on voluntary disclosure (Beyer et al. 2010). It is not obvious that managers will respond to the release of voluntary standards given that voluntary ESG disclosures were always allowed prior to the standards. Our study demonstrates that SASB standards reduce uncertainty associated with sustainability reporting, resulting in increased disclosures on relevant industry topics.[6]

Finally, our study contributes to the growing literature on corporate sustainability disclosures (e.g., Dhaliwal et al. (2011), Cheng et al. (2014), Lys et al. (2015), and Ferrell et al. (2016) and recently summarized in Christensen et al. (2021b)). While prior studies examine investors' response to CSR/sustainability reports and sustainability rankings, we study how the development of sustainability standards change the topic of conversation for managers and investors. Our dictionary of industry-specific ESG terms based on SASB

[6]Nelson and Pritchard (2016), Bochkay et al. (2018), and Bourveau et al. (2021) are examples of studies examining voluntary disclosure settings that were eventually mandated (e.g., risk factors disclosure, going concern disclosure, and audit report, respectively).

standards opens new avenues for future research. Researchers interested in examining textual ESG information could use our dictionary to study the amount of ESG disclosure, its determinants, and its information content.

II. Background: Sustainability Accounting Standards Board (SASB)

In 2011, SASB was formed to develop sustainability accounting standards that help public corporations disclose material, decision-useful information to investors. The basic idea for SASB was first articulated in Lydenberg et al. (2010). In that paper, Lydenberg et al. (2010) argued that capital markets needed improved disclosure of sustainability issues and that the type of disclosure needed would be industry-specific and supported by key performance measures for each disclosure topic. While Lydenberg et al. (2010) provided some initial thinking on how to develop industry-specific standards, they also acknowledged that more work would need to be done to develop a process for "how to determine relevant sector-specific key performance indicators as a minimum basis for sustainability reporting" (pg. vi). The concept of "Sustainability Accounting Standards Board" to oversee that process was floated in an appendix of that paper, and one of the authors, Jean Rogers, went on to establish SASB as a 501(c)(3) the following year. Some of the earliest work of SASB involved fundraising and hiring of a research team as well as forming a board of directors to oversee mission and strategy. In 2012, a Standards Council was formed to monitor the due process activities involved in the standards development. In that year, SASB also received its first operating grant from Bloomberg Philanthropies, and the work of developing standards got officially underway with the launch of standard setting activities for the health care sector.

The process that SASB used to develop the provisional industry standards for each sector involved five stages, outlined in Figure 1. First, the staff engaged in industry research to identify potential issues and disclosure topics. Second, the industry briefs were vetted with industry working groups (IWGs). Each IWG consisted of individuals with relevant corporate, investor, or other subject matter expertise, who were recruited to review the industry

briefs and provide comments (through structured surveys) on the potential disclosure topics identified by SASB, including whether any should be removed and/or others added. After receiving feedback from the IWGs, the third step was for staff to release for public comment an exposure draft of the revised set of topics and metrics identified for the sector. At the close of public comment, the full drafts of industry standards were developed, including topic descriptions and technical guidance for each performance metric. The fifth and final step was to publicly release the completed industry standards on a provisional basis.[7]

The above process was repeated for 11 sectors.[8] The entire process took approximately a year for each sector with some sectors taking a few months more or less time depending on a number of factors, including sector size, industry complexity, and team capacity. The sectors were developed on a staggered, overlapping basis, beginning with the health care sector in the fourth quarter of 2012 and culminating with the issuance of eight industry standards for the infrastructure sector in the first quarter of 2016. Importantly, the order and schedule for developing provisional standards across all 11 sectors was laid out at the start of the process in 2012, and took approximately three and a half years to complete.[9] Table 1 outlines the release dates (with links to relevant press releases) of provisional SASB standards.

[7]Khan et al. (2016) and Spandel et al. (2020) assess capital market effects of SASB's provisional standards. Khan et al. (2016) find that SASB's materiality framework helps to better screen companies for ESG performance, while Spandel et al. (2020) find that, conditional on ESG performance, SASB standards change investors' perceptions of firm value.

[8]Health Care; Financials; Technology & Communications; Non-Renewable Resources; Transportation; Services; Resource Transformation; Consumption I; Consumption II; Renewable Resources and Alternative Energy; Infrastructure. After the provisional industry standards were developed, SASB revised SICS®. As a result, most of the industries in Consumption I and II were reorganized into two new sector classifications: Consumer Goods and Food & Beverage.

[9]While the release dates of provisional SASB standards are publicly observable (see Table 1), the SASB's original plans are less publicly observable. The earliest public reference to target release dates that we were able to find is Battilana and Norris (2014), which provides the standards development timeline at the point when only the first three sectors had been completed. In comparing the actual release dates for the remaining sectors with dates projected in Battilana and Norris (2014), we see that the development process took longer than anticipated, but followed the projected sequence. One notable change to the standards timeline is that the Consumption sector (targeted for release on June 2, 2015) was later split into two sectors (labeled Consumption I and Consumption II at the time of the split and later relabeled Consumer Goods and Food & Beverage). This split effectively extended the standards development timeline by necessitating a separate public comment period for Consumption II. As a result, while the provisional industry standards for Consumption I were actually released on June 30, 2015, the provisional industry standards for Consumption II were not released until September 23, 2015. This split caused the last two sectors to be delayed by 3-4 months compared to their target release dates.

After the work of developing the provisional standards was completed, SASB began the second phase of its standard setting activities. During 2016 and 2017, SASB engaged in outreach and consultation across all sectors. As an organization, it also adapted its structure, moving from having a Standards Council to monitor due process to having a Standards Board with sole responsibility for all standard setting activities, from technical agenda setting to final approval of standards content. In 2017, the Standards Board was seated, and it announced a technical agenda for potential revisions to the provisional standards, across all sectors. After review and approval by the Standards Board, exposure drafts of proposed changes were released (simultaneously) for a public comment period in Q4 of 2017. SASB received 120 comment letters in response to the public comment period, which closed in Q1 of 2018. After redeliberating the proposed changes in light of the feedback received during the public comment period, the staff prepared a set of final set of revisions to the provisional standards for the Standards Board to review. In Q4 of 2018, the Standards Board voted to approve these changes and to remove the provisional status of all 77 industry standards, officially launching the codified set of standards.

SASB's organizational milestones over the period 2011-2020, including the sector ordering of the provisional standards development, are summarized in Figure 2. More details about the standards setting process can be found in Hayne and Malsch (2021) who review organization materials and conduct a series of interviews to understand the political economy underlying the development of the SASB standards and their use in the marketplace.

In the time since the launch of the SASB standards, there has been a considerable amount of activity in the sustainability reporting space, including two major organizational announcements that are related to the SASB Standards Board. First, in late 2020, SASB announced an intent to merge with the International Integrated Reporting Council (IIRC) under a new organization, the Value Reporting Foundation (VRF). IIRC maintains the ⟨IR⟩ Framework, which provides guidance on integrated reporting. The framework was developed between September 2011 and April 2013. While the framework references six capitals

(financial, manufactured, intellectual, human, social, and natural), the framework does not identify specific disclosures. The merger between SASB and IIRC was finalized in June of 2021 and did not alter the SASB Standards Board's responsibility for the oversight of the SASB standards or its mission.

Around the same time that SASB and IIRC were in talks to merge, the IFRS Foundation began considering whether it should establish a sustainability standards board. In 2021, the IFRS Foundation set up a Technical Readiness Working Group, consisting of the Value Reporting Foundation, the Climate Disclosure Standards Board (CDSB), the Task Force on Climate-related Financial Disclosure, the International Accounting Standards Board, and the World Economic Forum, with the task of doing preparatory work for the new board. At COP26, the IFRS Foundation announced the establishment of the International Sustainability Standards Board and the intent to further consolidate the standards setting landscape by acquiring the intellectual property and staff of the CDSB and the VRF. The acquisition of the CDSB was completed in February of 2022. The acquisition of the VRF was finalized in June of 2022.

III. Data and methodology

III.1. Industry-specific dictionary of ESG terms

As noted in the previous section, SASB's standard setting process was designed to identify sustainability issues that are reasonably likely to have a material impact on operating performance and financial condition of companies in a given industry. Because SASB's standards are industry-specific, they are intended to facilitate communication between companies and investors about decision-useful information on sustainability matters. In total, SASB's codified standards identify and provide guidance on 444 industry-specific disclosure topics.[10]

We use SASB's description of 444 topics in the standards to construct dictionaries of

[10]See https://materiality.sasb.org/ for a visual summary of the topic structure by industry.

ESG terms specific to each industry.[11] Specifically, we hired research assistants who had accounting and finance background and whose native language was English and asked them to read disclosure topic descriptions for each industry and select keywords and phrases that characterize that disclosure topic. Table 2 provides several examples of ESG relevant keywords for three different industries and disclosure topics in our dictionary. For example, the standard for the *Food Retailers & Distributors* industry identifies *Labor Practices* as a material disclosure topic. Given the description of that disclosure topic in the corresponding industry standard, our dictionary includes words and phrases like 'worker(s)', 'average wage', 'employee strike', etc. as being relevant to sustainability topics for companies in the *Food Retailers & Distributors* industry.

Constructing industry-specific dictionaries based on SASB standards, rather than using a generic dictionary of ESG terms, allows us to directly assess whether voluntary SASB standards help coordinate corporate disclosures. These dictionaries, therefore, can help with identification because general trends unrelated to SASB's work would be expected to be more widespread across industries and less tied to the specific timing of SASB's standard setting efforts. In contrast, our dictionaries specify which topics would be expected to occur more frequently in which industries in the post-SASB period. For example, rather than expecting data security and workforce safety to be more generally prominent disclosures in the post-SASB period, our dictionaries would capture that SASB identified data security, but not workforce safety, as a disclosure topic for e-commerce companies, and the reverse for coal companies. On average, our industry dictionaries contain 11 words and/or phrases for a given disclosure topic, with the minimum (maximum) of 3 (28) words/phrases per topic.

III.2. Earnings conference calls sample

Earnings conference calls are one of the most important and timely public spoken events that connect firm management with participating analysts and investors. Typically, earnings

[11] We obtained codified standards directly from SASB by signing a research copyright agreement.

calls begin with management prepared remarks where executives (usually the CEO and/or CFO) discuss firm performance and provide information on the company's prospects, strategy, and operations. After management remarks, the calls are open for questions from analysts and investors. Unlike written sustainability reports (that are available for some companies but not the others) or mandated SEC filings that span dozens of pages and are often boilerplate, earnings calls are live events that last around 45-60 minutes and give managers and analysts an opportunity to discuss most relevant company matters. In addition, SEC filings contain certain required speech, whereas earnings calls are largely voluntary. As such, analyzing earnings calls provides a unique setting to study how sustainability issues appear in the conversation between managers and investors and how voluntary sustainability standards help shape that conversation.

To construct our sample of earnings calls, we used *www.seekingalpha.com* - one of the largest investor-oriented websites in the United States.[12] Using a Python script, we downloaded all transcripts of earnings calls available on Seeking Alpha for the period January 2006 to August 2019. All transcripts are in the HTML format, making it relatively easy to extract the textual content from each file. We then attempted to match company names, tickers, and dates of earnings calls to relevant COMPUSTAT data. To ensure the accuracy of our matching, we performed extensive manual checks of matched company names and earnings announcement dates. Most companies in our sample hold earnings calls on the day of the earnings announcement (around 80%) or on the following day (around 18.6%), and a few companies hold the call within one week of the earnings announcement (around 1.4%). From our initial sample of 93,250 earnings calls, we were able to obtain matching COMPUSTAT data for 84,899 firm-quarters.

We then proceeded to download relevant financial statements, analyst forecasts, and market data from COMPUSTAT, IBES, and CRSP, respectively. For our empirical tests

[12]Seeking Alpha was founded in 2004, but a comprehensive coverage of firms on the website started in 2006. Chen et al. (2014) and Bochkay et al. (2020) are examples of large-scale empirical studies that use Seeking Alpha's articles to study investor opinions, management disclosures, market returns, and earnings surprises.

at the firm-quarter level, we require non-missing values for earnings call characteristics, analyst forecast activity prior to the call, the number of analysts following the firm, and enough information to calculate earnings surprise, return-on-assets, market capitalization, pre-announcement return, market-to-book ratio, leverage, Altman's Z-Score, earnings volatility, return volatility, and firm age. To estimate earnings surprise, we used the most recent analyst consensus forecast of one- or two-quarters-ahead earnings issued or reviewed in the last 60 days before the earnings announcement. We also required at least 1,000 words in each earnings call transcript as sometimes Seeking Alpha publishes a short summary of an earnings call instead of the whole transcript. These data requirements reduced our sample to 50,535 firm-quarter observations. For some specifications we require Morgan Stanley Capital International (MSCI) ESG ratings, further reducing our sample to 40,965 observations.[13] Table 3 outlines all variables with definitions and data sources used in our analyses.

III.3. Measures of ESG disclosures in earnings conference calls

There are many empirical studies in the literature that attempt to capture companies' focus on corporate sustainability matters using numerical sustainability scores and/or indicators of sustainability reports. For example, Cheng et al. (2014), Ferrell et al. (2016), Dhaliwal et al. (2011), and Lys et al. (2015) use corporate social responsibility (CSR) scores and reports to study the relationships between companies' sustainability activities and financial performance, access to finance, cost of capital, and corporate governance.[14] While these studies provide initial evidence on the value of ESG information to the market, several important limitations pertain to the use of numerical ESG scores to capture companies' ESG disclosures. The construction of ESG ratings/scores is often a "black box", and it is often unclear whether or how rating agencies aggregate different sustainability metrics that

[13]Numerical MSCI ESG ratings are missing for many company years. Therefore, to keep as many observations in the sample as possible, we impute a missing ESG rating for a company in year t if there is a sufficient number of historical ratings for the company in prior years.

[14]Christensen et al. (2018) and Grewal and Serafeim (2020) provide extensive surveys of the relevant studies in accounting, finance, management, and economics.

companies report. As such, it can be easier to identify when a company makes a public disclosure on their ESG activities (e.g., verbal statements about workforce diversity), than to identify how or when such statements were incorporated in ESG ratings, if at all. Indeed, numerical ESG ratings often contain missing or outdated information that they intend to capture. Moreover, even if a rating agency had a very clear and transparent methodology for its ratings, research suggests there is considerable disagreement in method and approach among various ratings agencies (Christensen et al. 2021a; Berg et al. 2020). Given our focus, we directly examine companies' verbal communications in earnings conference calls. To capture companies' focus on sustainability, we use our industry-specific dictionaries of ESG terms (see Section III.1). Specifically, we count the occurrences of ESG terms in management and analyst communications in earnings calls as follows:

$$ESG\ Own\ Ind = 100 \times \frac{\text{Number of ESG-Focused Sentences in the Call}}{\text{Number of All Sentences in the Call}}, \tag{1}$$

where *ESG Own Ind* measures the proportion of ESG sentences in a given earnings call.

Intuitively, earnings calls with higher (lower) values of *ESG Own Ind* exhibit greater (lower) focus on industry sustainability matters identified by SASB. In addition to measuring ESG disclosures for the entire call, we calculate separate measures for the introductory remarks and questions and answers (Q&A) sections of the call (*ESG Intro* and *ESG Q&A*) as well as for the executive and analyst parts of the call (*ESG Exec* and *ESG Ana*).

Table 3 provides formal definitions and Table 4 presents the descriptive statistics for our measures of ESG disclosures. Descriptively, we observe a significant variation in ESG disclosures across firm-quarters and across different parts of the earnings call. The mean (median) of *ESG Own Ind* is 2.98% (0.93%) and of *ESG Intro* and *ESG Q&A* is 4.09% (1.18%) and 2.24% (0.61%), respectively. The mean (median) of *ESG Exec* is 10.27% (3%) and of *ESG Ana* is 1.77% (0). It is important to note that industry-specific dictionaries of ESG terms allow us to capture the 'buzz' sentences related to industry ESG topics, not the

entire conversation around ESG. To help interpret averages of our ESG measures relative to discussion of financial performance, we calculate the proportion of performance-oriented sentences in earnings calls (i.e., those sentences that contain words "earnings", "earnings per share", "EPS", "income", "loss", "gain", "losses", "gains", "profit", "profits"). We observe that around 10.4% (6.38%) of all sentences in the prepared remarks (entire call) are performance-oriented. This demonstrates that while company performance is a more widely-discussed topic in earnings calls, the discussion around ESG is also relatively substantial.

III.4. The impact of SASB standards on conference call content

As discussed in Section II, between 2012 and 2016, SASB was issuing sets of industry-specific provisional ESG standards on a staggered basis for 11 industry sectors. We use dates of those staggered releases (see Table 1) to examine the impact of voluntary sustainability standards by SASB on corporate disclosures in earnings conference calls. Specifically, we estimate the following generalized difference-in-difference model:

$$\begin{aligned} ESG\ Disclosure_{ijt} = \beta_0 + \beta_1 SASB\ Standards_{jt} + \gamma_i + \theta_t \\ + Controls_{ijt} + \epsilon_{ijt}, \end{aligned} \tag{2}$$

where *i, j* and *t* denote firm, industry (as per the Sustainable Industry Classification System, SICS) and year-quarter, respectively. *ESG Dislosure* measures the level of ESG disclosures in the entire earnings call or its parts (e.g., introductory remarks, Q&A section), depending on the analysis.

The independent variable of interest, *SASB Standards*, takes the value of one if SASB's provisional industry-specific sustainability standards are released and available for an industry j in year-quarter t, and 0 otherwise.[15] Firm fixed effects, γ_i, account for time-invariant firm characteristics, while year-quarter fixed effects, θ_t, account for the variation in ESG

[15] In our setting, we have 11 different release dates for 77 industry-specific standards, corresponding to their 11 sector groupings. This staggered setting helps with identification in our empirical analyses by reducing the likelihood that our results are driven by an unidentified factor or event unrelated to the development of SASB standards.

disclosures across time.[16] The two-way fixed effects specification represents a generalized difference-in-difference model where firms operating in industries with no provisional SASB standards in a given year-quarter serve as a control group for firms in industries with released SASB standards in that year-quarter. As such, the coefficient β_1 in Eq. (2) captures the average effect of SASB's standards on ESG disclosures in earnings calls for treatment observations relative to the control group. Since including time-varying control variables may lead to inconsistent estimates (Gormley and Matsa 2014), we first estimate Eq. (2) with no controls. In this specification, we rely on fixed effects to control for time-invariant factors within firms and general variation in sustainability disclosures across time. We then estimate Eq. (2) with firm-level controls that include company size, earnings surprise, return-on-assets, stock return, market-to-book, leverage, earnings volatility, return volatility, Altman's Z score, number of analysts following the company, company age, earnings call length, and the company's ESG rating.[17]

To provide additional evidence on the impact of SASB standards on ESG disclosures, we further expand our difference-in-difference analysis by arguing that firms' response to sustainability standards likely depends on their disclosure strategy prior to the standards. If a firm was already disclosing relevant ESG information to investors, then SASB standards will have little effect on the firm's disclosure strategy. In other words, the value of the standards as a coordinating mechanism might be smaller when market forces have already induced some disclosure. In contrast, for firms not reporting on ESG matters, SASB standards may induce ESG disclosures by helping to resolve uncertainty around sustainability reporting. Therefore, we predict that SASB standards are likely to have a stronger impact on ESG disclosures of firms that were silent on these matters prior to SASB standards.

To test this prediction, we estimate the following difference-in-difference model:

[16] We cannot include industry–year fixed effects in the model, as such fixed effects would be perfectly correlated with our treatment variable, *SASB Standards*.

[17] Since our focus is on the amount of ESG disclosures in earnings calls, regardless of whether disclosures exhibit positive or negative tone, we take absolute values of the earnings surprise, return-on-assets, and stock return.

$$
\begin{aligned}
ESG\ Disclosure_{ijt} = \beta_0 &+ \beta_1 SASB\ Standards_{jt} + \beta_2 Low\ ESG\ Pre_i \\
&+ \beta_3 Low\ ESG\ Pre_i \times SASB\ Standards_{jt} \\
&+ \gamma_i + \theta_t + Controls_{ijt} + \epsilon_{ijt},
\end{aligned} \tag{3}
$$

where *Low ESG Pre* denotes companies that provided little or no ESG disclosures in the pre-SASB standards period. Since *Low ESG Pre* is a firm fixed effect, we estimate Eq. (3) with industry fixed effects (instead of firm fixed effects) and time fixed effects first and then run a specification with both firm and time fixed effects as in Eq. (2). The latter specification eliminates main effects of *SASB Standards* and *Low ESG Pre* and instead examines the interaction between the two terms. We expect the coefficient estimate on the interaction term of *Low ESG Pre* and *SASB Standards*, β_3, to be positive and significant.

To identify *Low ESG Pre* companies, we proceede as follows:

1. Identify all earnings conference calls in the pre-standards period that have ESG disclosures in the introductory remarks section of the call (i.e., *ESG Own Ind* for the introductory remarks) lower than the pre-period sample median.
2. Identify companies that have 50% or more of earnings conference calls in the pre-period that meet the first criteria. This criteria is to ensure the persistence of non-disclosure strategy.

Accordingly, our *Low ESG Pre* sample consists of companies that provided *little* or *no* ESG disclosure in their earnings calls prior to SASB standards, and our *High ESG Pre* sample consists of companies that provided *high* levels of ESG disclosures in their earnings calls prior to the standards. Collectively, we have 2,915 unique firms in our sample with 1,909 firms (or around 65.5%) in the *Low ESG Pre* group. Importantly, both *Low ESG Pre* and *High ESG Pre* groups have significant representation across all 11 industry sectors, mitigating the problem of one specific sector driving group assignments.

Identifying *Low ESG Pre* observations by looking at the ESG disclosures in each earnings call available for a given company in the pre-standards release period enables us to pinpoint the company's overall ESG disclosure strategy prior to the SASB standards, and then compare how such strategy changes after the industry's exposure to the standards.[18]

[18]We note that we use the introductory remarks section of the earnings call to assign companies to *Low*

IV. Results

IV.1. ESG content in earnings calls pre- and post-SASB

We begin with the results of our difference-in-difference analysis of whether the development of voluntary industry-specific sustainability standards by SASB is associated with a change in firms' ESG disclosures in earnings conference calls. Table 5 presents the results for the impact of SASB standards on sustainability disclosures using various specifications of Eq. (2). In Column (1), we estimate Eq. (2) with two-way fixed effects, by firm and by time, but with no other control variables because including covariates that may be affected by the release of SASB standards can undermine our ability to draw causal inferences (Gormley and Matsa 2014). The coefficient estimate of 0.199 on *SASB Standards* is positive and statistically significant at the 1% level, and translates to a 21.3% increase in sustainability disclosures relative to the sample median. When we add time-varying control variables, the magnitude of the coefficient for *SASB Standards* is slightly reduced (to 0.183), as shown in Column (2), but remains significant.[19] These results suggest that firms in the treatment group increased their level of ESG disclosures after the release of SASB standards relative to the control group (i.e., compared to firms in industries for which a provisional SASB standard had not yet been released).

In Column (3), we report the estimation results for Eq. (2) when using a reduced sample of 40,965 firm quarters for which we have Morgan Stanley Capital International (MSCI) annual ESG ratings. Including a company's ESG rating in the estimation helps to ensure that our results are robust to controlling for the company's past ESG performance. Similar to our findings in Columns (1) and (2), we observe that the coefficient estimate of 0.183 on

ESG Pre or *High ESG Pre* groups. This design choice ensures that analysts' focus on ESG (observable in the Q&A section of the call) does not impact our classification.

[19] In untabulated tests, we re-estimate Eq. (2) by excluding one of the eleven industry sectors at a time. In all instances, we find results similar to those reported in Table 5. We also estimate changes in sustainability disclosures around each of the 11 releases of SASB standards and find significant results for seven releases. These analyses help to rule out a possibility that one specific industry sector or changes in the treatment times drive our inferences.

SASB Standards remains positive and statistically significant at the 1% level.

In Table 5, the adjusted R-squared of 87% suggests substantial explanatory power of our empirical models, mitigating correlated omitted variable concerns. In addition, including or excluding the time-varying control variables has little effect on either the R-squared of the model or the magnitude of the coefficient of interest. These results help mitigate concerns that omitted variables, if found and added to Eq.(2), would significantly increase the explanatory power of the model or alter the significance of *SASB Standards* in the model (Oster 2019).

IV.2. Time trends in ESG content

While we use the release dates of SASB's provisional standards to align the standards development process across industries, it is important to note that standards development is a relatively lengthy process that did not begin (or end) on the day SASB released a provisional industry standard. The process leading up to the release of a provisional industry standard involved months of initial staff research, IWG recruiting and engagement, standards drafting, a public comment period, and redrafting. All of these steps took approximately 12-14 months per industry sector.

To help visualize the time trends, we plot the year-over-year evolution of the treatment effect. Event-study graphs in staggered settings like ours can be an important tool to confirm the parallel trend assumption and to examine dynamic effects of the treatment (Barrios 2021).[20] As seen in Figure 4, the year-over-year evolution confirms pre-treatment parallel trends in years $t-4$, $t-3$, $t-2$ relative to the release of SASB standards. We also begin observing an increase in ESG disclosures in year $t-1$, which roughly coincides with the period during which SASB started the development of the provisional standards. Importantly, we find a sustained increase in ESG disclosures following the release of provisional SASB standards. This sustained increase is observable when analyzing the content of the entire

[20]We thank John Barrios for publicly sharing code to build event graphs on his website.

earnings call (part (a) of Figure 4) as well as the content of the introductory remarks of the call (part (b) of Figure 4).

IV.3. General or SASB-specific trends in ESG disclosures

Our results so far suggest that firms increased their ESG disclosures subsequent to SASB standards. However, there is a possibility that firms increased their sustainability reporting of general ESG topics, not just reporting of ESG topics identified in the SASB standard for their industry. In this section, we examine whether our results reflect general trends in ESG reporting rather than coinciding with the timing and development of SASB standards.

To capture general ESG discussion in earnings calls, we combine all our industry dictionaries into one comprehensive dictionary of ESG terms and use this dictionary to capture overall ESG content, *ESG All Ind*. In other words, we ignore 'industry specificity' and 'materiality' of ESG topics and instead focus on a large set of ESG topics across all industries. We also construct a dictionary of ESG terms relevant to industries other than a given industry and use this dictionary to capture the discussion of other industries' ESG topics in earnings calls of the focal industry, *ESG Other Ind*. Figure 3 illustrates the collection of SASB topics across all industries, where ESG topics are split into those that were identified as material for a given industry, and those that are material for other industries, but the given industry.

If there was a general increase in ESG disclosures around SASB standards, then we might observe a positive and significant coefficient estimate on *SASB Standards* when we estimate Eq. (2) with *ESG All Ind* as the dependent variable. In contrast, if our results in Table 5 are specific to SASB's industry standards, then we should observe attenuated or no results and perhaps see a reduction in discussion of ESG topics not identified in the focal firm's industry standard.

Table 6 reports the results. Controlling for firm and year-quarter fixed effects and time varying firm characteristics, we find no effect of *SASB Standards* on *ESG All Ind*, consistent with no changes in the discussion of broad ESG topics subsequent to SASB standards. We

also find a reduction in ESG disclosures of other ESG topics as indicated by a negative and significant coefficient estimate on *SASB Standards* in the third column of Table 6.[21] These results demonstrate that our earlier finding of an increase in earnings call ESG content is specific to ESG topics in SASB standards and does not reflect general ESG trends. Moreover, these results are consistent with the coordinating role of SASB standards: firms increase ESG disclosures deemed material by SASB for their industry, while reducing the discussion of other ESG topics.

IV.4. ESG content conditional on pre-standards disclosure

To provide further evidence on the impact of SASB standards on ESG disclosures in earnings calls, we examine whether firms' response to the standards' depends on their pre-standards ESG disclosure strategy. Specifically, we estimate a version of Eq. (2), where we introduce an interaction term between *SASB Standards* and *Low ESG Pre* (see Eq.(3)). *Low ESG Pre* is equal to 1 for firms that provided little or no ESG disclosure prior to the standards, and 0 otherwise. This specification allows us to estimate whether SASB standards had a larger or smaller effect on the ESG disclosures of firms that were largely silent on such matters prior to the standards.

In Table 7, we provide results of estimating different specifications of Eq.(3). Given that *Low ESG Pre* is a firm fixed effect, in the first three columns of Table 7, we include *Low ESG Pre*, *SASB Standards*, and their interaction, while controlling for industry and time fixed effects. We also include time-varying control variables in Columns (2) and (3). Consistent with the manner in which we constructed *Low ESG Pre*, we find a significant negative coefficient on *Low ESG Pre*, indicating that *Low ESG Pre* firms provide less ESG disclosure than their counterparts in the pre-SASB standards period. However, the interaction term between *Low ESG Pre* and *SASB Standards* is positive and strongly significant. In other words, those firms that tended to not report on ESG matters prior to SASB standards are

[21] For completeness, Column (2) of Table 6 reiterates our main results in Table 5 using the industry-specific ESG dictionary.

the firms where we see the stronger subsequent increase in ESG disclosures.

In Columns (4)-(6) of Table 7, we include firm and time fixed effects. This estimation removes the main effects of *Low ESG Pre* and *SASB Standards*, and we continue to observe a significant and positive coefficient estimate on *Low ESG Pre* × *SASB Standards*. In untabulated tests, we also estimate Eq. (2) on subsamples of *Low ESG Pre* and *High ESG Pre* firms. This method is an alternative to including an interaction term in Eq.(3). We find that the coefficient estimate on *SASB Standards* is 0.133 (significant at the 1% level and equivalent to a 57.6% increase relative to that subsample's median of 0.231) and 0.270 (significant at the 5% level and equivalent to a 7.9% increase of that subsample's median of 3.424) for *Low ESG Pre* and *High ESG Pre* firms, respectively.[22]

Taken together, results in this section are consistent with our earlier findings of a significant increase in industry-specific ESG disclosures associated with the development of SASB standards. Importantly, they go further in helping us to understand the increase we observe on average. Because the standards are voluntary, any change in disclosure associated with their development is, by definition, a market response, rather than a response to a mandate. As such, if low disclosure in the pre-period was due to market frictions preventing an "unraveling" effect among some firms, we would expect to see the largest increase in disclosure among the *Low ESG Pre* firms, which is, in fact, what we document.

IV.5. Combined analysis of trend and pre-standards strategy

One important concern with our difference-in-difference design is that the change in firms' ESG disclosures may be driven by some other unobservable events. While the evidence presented in Figure 4 and Table 7 each separately helps address this concern, in this section, we provide a more complete picture by bringing those two analyses together. To do so,

[22]Observing an increase in ESG disclosures for both groups of firms alleviates concerns of observing significant results due to the mean reversion of *ESG Own Ind* as the assignment of firms into *Low ESG Pre* and *High ESG Pre* groups was performed on the pre-SASB standards period. If mean reversion was driving our results, we would see a significant decrease (increase) in ESG disclosures among firms that were (were not) reporting on ESG prior to the SASB standards. However, we observe that both groups of firms increased their ESG disclosures, with *Low ESG Pre* firms increasing their disclosures the most.

we follow Bertrand and Mullainathan (2003) and replace our *SASB Standards* indicator variable in Eq. (2) with several time period indicators for each of the 11 industry sectors. Specifically, we replace our single *SASB Standards* dummy with six dummy variables, *SASB Standards*$^{=-2}$, *SASB Standards*$^{=-1}$, ..., and *SASB Standards*$^{\geq+3}$, that correspond to each year before and after SASB standards. We do this for the full sample and then conditional on the firms' pre-standards ESG disclosure strategy.

Table 8 provides the results of estimating Eq.(2) with the specifications described above. In all columns, the coefficients on *SASB Standards*$^{=-2}$ are not statistically significant, suggesting that there was no change in ESG disclosures two years prior to the SASB standards release. We begin to observe a meaningful increase in ESG disclosures in year '-1' for the full sample as well as for the subsample of *High ESG Pre* firms as suggested by positive and significant coefficient estimates on *SASB Standards*$^{=-1}$ in Columns (1) and (2). In Column (3), we do not observe significant changes in ESG disclosures of *Low ESG Pre* firms until year '0' which corresponds to the time period of the SASB standards release. For all firms, we find increases in ESG disclosures in the years that follow SASB standards, especially among *Low ESG Pre* firms.[23]

Overall, the results of this section provide further evidence that SASB's standard setting process was associated with increases in ESG disclosure in earnings conference calls. We find that the effect is particularly strong for firms that had low pre-standards ESG disclosure. However, we also find evidence that firms with high pre-standards ESG disclosure responded more quickly than did the low disclosure firms. This latter result could arise if firms with high pre-standards ESG disclosures were more aware of SASB's standard setting activities (e.g., through higher monitoring of or engagement with ESG standard setters).

[23]In untabulated tests, we randomly shift backward and forward the timing of *SASB Standards* and do not find consistent and meaningful trends. This further helps to reduce concerns that a general trend or other events might explain the average increase in ESG content that we observe.

IV.6. ESG Reporting uncertainty and firms' response to SASB standards

In this section, we examine a different cross-sectional variation in firms' response to SASB standards. If SASB standards help align management and investor expectations with regard to sustainability disclosures, then industries with more disagreement about relevant sustainability topics might be more affected by the development of standards than industries with higher levels of agreement on what ESG issues are likely to be material to investors. To test this prediction, we use data on disclosure topic agreement among corporate representatives of SASB's IWGs.[24] We code an industry as *Low Agreement* if corporate representatives' IWG agreement on ESG topics is below the median and as *High Agreement* if agreement is equal to or above the median. In this manner, we differentiate between industries with high and low uncertainty about sustainability reporting.

Table 9 reports the results of estimating Eq. (2) and (3) for subsamples of *Low Agreement* and *High Agreement* observations. We find that the coefficient estimate on *SASB Standards* is positive and statistically significant for *Low Agreement* observations and insignificant for *High Agreement* observations. Similarly, when we condition on firms' disclosure behavior prior to SASB standards, we observe a stronger effect of the standards among *Low Agreement* observations relative to the *High Agreement* observations.[25] Collectively, observing a stronger effect of SASB standards on disclosures among industries with high disagreement provides additional evidence that SASB standards help mitigate frictions associated with ESG reporting uncertainty.

IV.7. Changes in the level of ESG disclosures

Even though our results show a significant increase in *ESG Own Ind*, it is still possible that the topical coverage of ESG information in earnings calls did not change following SASB

[24]We thank SASB for providing us these data.

[25]In untabulated tests, we repeat this analysis using the overall (among corporate representatives, investors, and others) IWG agreement on ESG topics and find similar results. This finding reflects high correlation in agreement across different IWG members.

standards. That is, firms keep discussing relevant ESG matters as they did prior to SASB standards, but now using SASB's terminology. In other words, there is a possibility that the coverage of ESG disclosures is the same before and after SASB standards, but the terms used to report on ESG have converged to SASB vocabulary. In this section, we examine the nature of documented changes in ESG disclosures - changes in the level of disclosure and/or changes in focus / terminology.

To isolate specific drivers of our results, we partition our sample into groups based on firms' ESG reporting behavior in the pre-SASB period. Following the same process as in Section III.4, we identify Low and High reporters of industry-specific ESG information (based on *ESG Own Ind*) and Low and High reporters of ESG topics covered in sustainability standards of other industries (based on *ESG Other Ind*). These partitions result in four mutually exclusive categories of firms:

- {Low, Low} group consists of firms with low industry-specific (as per SASB standards) and low other ESG disclosures prior to SASB standards,
- {Low, High} group consists of firms with low industry-specific and high other ESG disclosures prior to SASB standards,
- {High, Low} group consists of firms with high industry-specific and low other ESG disclosures prior to SASB standards,
- {High, High} group consists of firms with high industry-specific and high other ESG disclosures prior to SASB standards.

Using each of the sample partitions, we estimate Eq. (2) with *ESG Own Ind* and *ESG Other Ind* as dependent variables. Table 10 reports the results. We find that firms in the {Low, Low} category have a significant increase in *ESG Own Ind* following SASB standards, while there is no significant change in *ESG Other Ind*. We find similar results for firms in the {High, Low} category. Both of these results demonstrate the increase in the *level* of industry-specific ESG disclosure following SASB standards. That is, firms that historically provided limited discussion of ESG topics identified in any SASB standard prior to SASB standards increase their disclosure of ESG topics in their industry standard subsequent to

the standard release. Similarly, firms that were already reporting on industry ESG topics continue to increase the level of such disclosure after the release of SASB standards.

In contrast, we find that firms with historically high levels of ESG disclosure for both their own industry topics and for other industries prior to SASB standards (i.e., {High, High} group) do not significantly change their coverage of the ESG topics in their own industry standard, but do significantly *reduce* their other ESG disclosure. Moreover, for firms that had high levels of disclosure for ESG topics identified in other industry standards (i.e., {Low, High} group), we see both a significant decrease in *ESG Other Ind* and a significant increase in *ESG Own Ind* following SASB standards. These results are consistent with the coordination effect of SASB standards: firms increase their discussion of industry ESG matters as per SASB standards, while decreasing the discussion of other ESG information.

Taken together, results in Table 10 provide evidence of changes in the level of ESG disclosures in earnings calls following SASB standards. They also corroborate our earlier findings about the coordinating role of SASB standards: firms increase disclosures of relevant ESG matters (as per SASB standards), while reducing their discussion of other ESG topics.

IV.8. Supplemental Tests

IV.8.1. Management and analyst focus on ESG matters

In this section, we provide some insight into whether the observed increase in *ESG Own Ind* following SASB standards is driven by management ESG disclosures and/or analyst demand for ESG disclosures. In other words, we are interested in understanding how SASB standards changed management and analyst interactions on sustainability matters. To help answer this question, we split the content of the earnings call into the introductory remarks and Q&A sections as well as into executives' and analysts' parts. If we see the increase in disclosure only in the Q&A section and particularly among analysts, then that would suggest that analysts play a key intermediary role for ESG disclosure in earnings conference calls.

As shown in Table 11, we find that the coefficient estimates on *SASB Standards* and *Low*

ESG Pre × *SASB Standards* are positive and significant in every specification. We also find that the coefficient estimates on *SASB Standards* is positive and strongly significant for the executives' portion of the call, but only marginally significant for the analysts' portion of the call. In untabulated tests, we do not find evidence of increased management discussion of ESG for companies that had strong analyst interest in ESG initially. Collectivelly, these results suggest that SASB standards impact the ESG content of earnings calls more through what managers are prepared to say and how they respond to questions than just through the questions that analysts ask.

IV.8.2. Changes in ESG disclosures not related to climate change

As previously noted, an important caveat when interpreting our results is that they could be driven by other organizational, regulatory, and/or policy changes unrelated to SASB's standards development. For example, in recent years, there has been an increasing focus on climate issues, resulting in the establishment of various organizations to help mitigate the challenges associated with climate change. One such organization is the Task Force on Climate-Related Financial Disclosures (TCFD), which was established with a goal of developing high-level guidance to facilitate disclosure of climate-related financial risks and opportunities to investors in mainstream financial reports. The TCFD was established in December of 2015, and it released its disclosure recommendations in June 2017. Even though TCFD's disclosure recommendations were released more than a year after SASB's last provisional standard, the work of the TCFD could have contributed to some of the results we observe. Note that the concern here is less about understanding the role of the TCFD, *per se*, in helping overcome market frictions to voluntary disclosure, but rather the possibility that the market was responding to a shifting landscape of materiality *independent* of the activities of SASB and later the TCFD.

To address this concern, we examine whether our main findings extend to ESG topics other than those most directly related to climate. Specifically, we create a variable *ESG*

Call, excl. GHG that captures the amount of ESG disclosure in earnings calls that is less related to climate issues.[26] Then, we re-estimate Eq. (2) and (3) with *ESG Call, excl. GHG* as the dependent variable. Table 12 reports the results. Despite 'climate change' being the most commonly occurring topic in SASB's standards, we continue to find an increase in firms' ESG disclosures when looking at ESG issues less related to climate.[27] Overall, these results provide additional support for our earlier findings on the impact of SASB standards and mitigate concerns of climate change disclosures being the only driver of our inferences.

IV.8.3. Similarity between SASB standards and earnings conference calls

One important concern in our analyses of ESG content in earnings calls is the reliance on human coders to construct industry-specific dictionaries of ESG terms. To address this concern and to test the robustness of our findings to alternative textual analysis methods, we use a cosine similarity metric to measure similarities between texts of SASB industry standards and earnings call transcripts. This approach completely eliminates human judgment in selecting which words / phrases are representative of SASB industry topics, and instead measures the distance between vectors of words that occur in earnings calls and vectors of words that are present in SASB's industry topic descriptions.[28]

Table 13 reports the results of estimating Eq. (2) - (3) with the cosine similarity between

[26]For this test, we exclude words related to climate change, specifically: *climate change, climate risk, climate risks, climate exposure, climate-exposed, climate exposed, greenhouse gas emissions, gas emissions, air quality, GHG, GHGs, exhaust gas, environmental impact, environmental impacts, transportation fuel, greenhouse gas, GHG emissions, carbon emissions, contaminant, contaminants, carbon dioxide, effluent, acid rain, contamination, nitrogen, oxygen, energy efficient, emissions, fossil fuels, greenhouse gases, fuel management, fuel economy, energy efficiency, alternative fuels, combustion, fossil fuel, scope 1, alternative energy, air emissions, air pollutants, sulfur dioxide, nitrogen oxide, HAPs, sulfur dioxide, rising sea levels, environment protection, low carbon, carbon neutral, carbon-neutral, fuel efficiency, fuel-efficient, fuel efficient, emission, sulfur oxide, sulfur oxides, nitrogen oxides, heavy fuel, clean burning, clean-burning, leaner-burning fuel, global warming, fuel combustion, fleet fuel, environmentally friendly, methane, volatile organic compounds, volatile organic compound, VOCs, VOC, ecological impact, ecological impacts, carbon intensive, carbon-intensive.*

[27]In untabulated tests, we run our difference-in-difference analyses using TCFD's release date of disclosure recommendations as the focal date, and find no results for changes in *ESG Own Ind.* This null result is not particularly surprising as the high-level TCFD guidance is compatible with, but not a substitute for the detailed guidance in SASB standards on a broad range of ESG topics by industry.

[28]See https://nlp.stanford.edu/IR-book/html/htmledition/dot-products-1.html for more details about the cosine similarity metric.

earnings calls and SASB standards as the dependent variable. In all specifications, we find positive and significant coefficient estimates on *SASB Standards*, indicating an increase in similarity of earnings call content and SASB ESG topics following SASB standards. These results are consistent with our earlier findings and provide validity for our industry-specific dictionaries developed by human coders.

V. Conclusion

In this paper, we examine whether the coverage of sustainability issues in earnings calls has changed over the period during which the Sustainability Accounting Standards Board (SASB) developed a set of voluntary ESG disclosure standards. Using industry-specific dictionaries of sustainability terms contained in SASB standards and the difference-in-difference research design, we find a significant increase in ESG disclosures in earnings calls following the release of SASB standards. This trend begins around the time when SASB released a provisional disclosure standard for a given company's industry and continues in the years after. In addition, we find that the increase in ESG disclosures is particularly strong for firms that had little or no coverage of sustainability topics historically.

Further, we find a stronger impact of SASB standards on ESG disclosures of firms operating in industries with high disagreement around ESG reporting. This result is consistent with SASB standards helping to reduce market frictions to voluntary disclosure by resolving uncertainty around which ESG topics to discuss. We also find that our results are specific to material sustainability topics as identified by SASB, and are not the outcome of the increased interest in broad ESG issues or in climate issues in particular. Overall, in the light of increased interest in sustainability reporting around the world and continuous regulatory debates around whether to support sustainability reporting and, if so, how (through mandatory or voluntary reporting, using principles-based or detailed sustainability standards), our study provides timely evidence on the role of voluntary sustainability standards in shaping corporate communications with investors.

We believe our paper is the first large-scale linguistic analysis of industry-specific sustainability disclosures. Our dictionary of industry-specific ESG terms based on SASB standards opens new avenues for future research. Researchers interested in conducting analysis of textual ESG information could use our dictionary to examine the amount of ESG disclosure, the determinants and information content of those disclosures, and the consequences for firm financial an sustainability performance, capital markets, and broader society.

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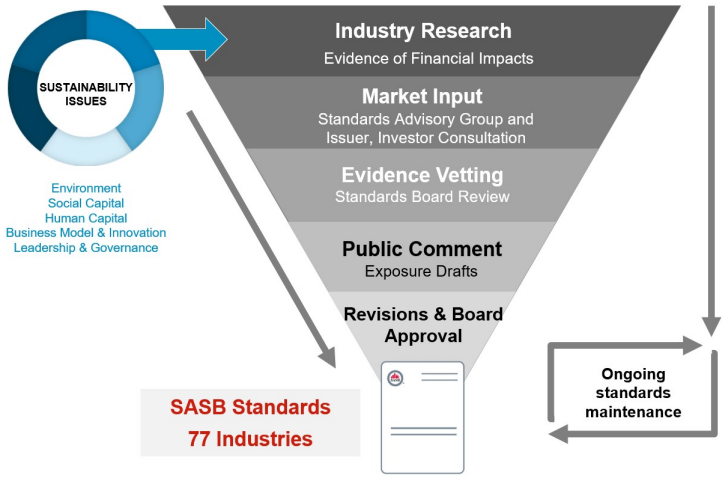
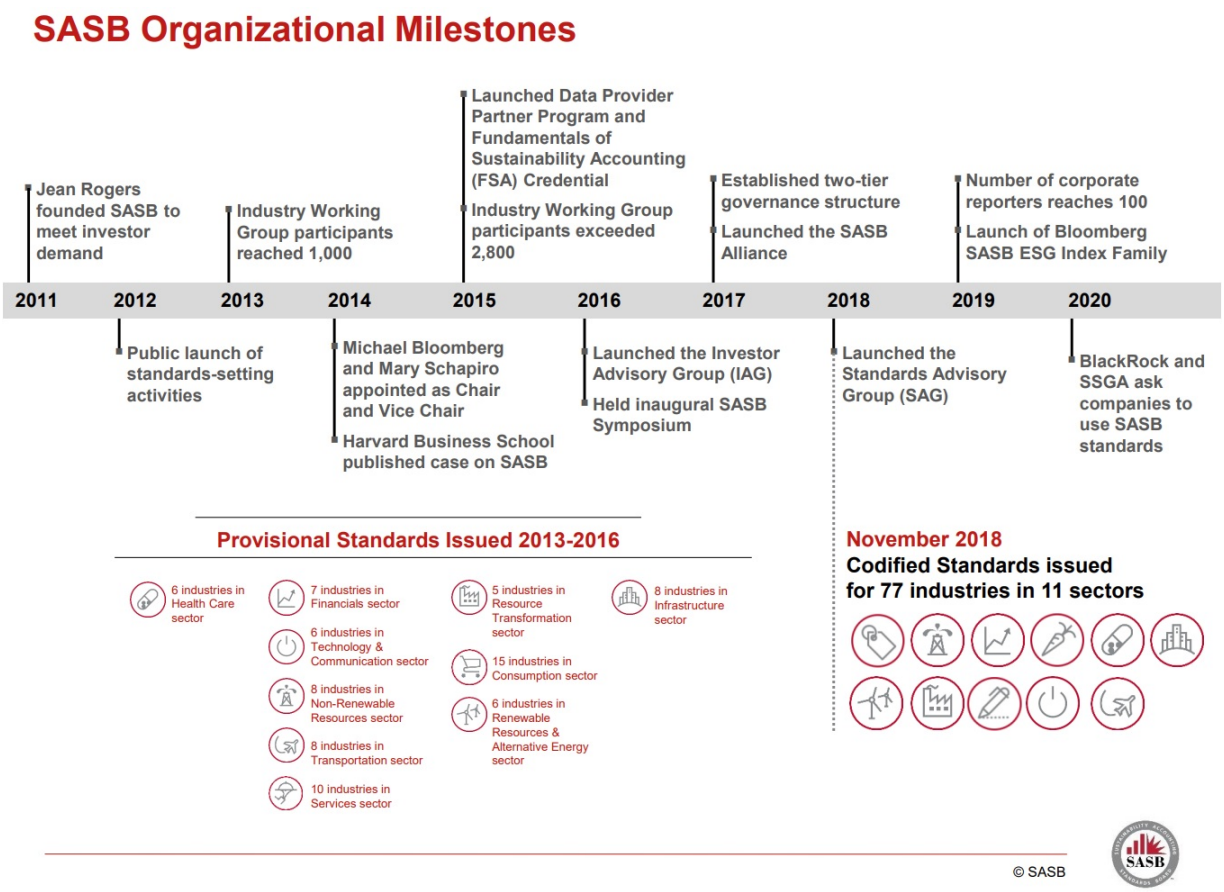
Figures and Tables

FIGURE 1
SASB Standards Development Process



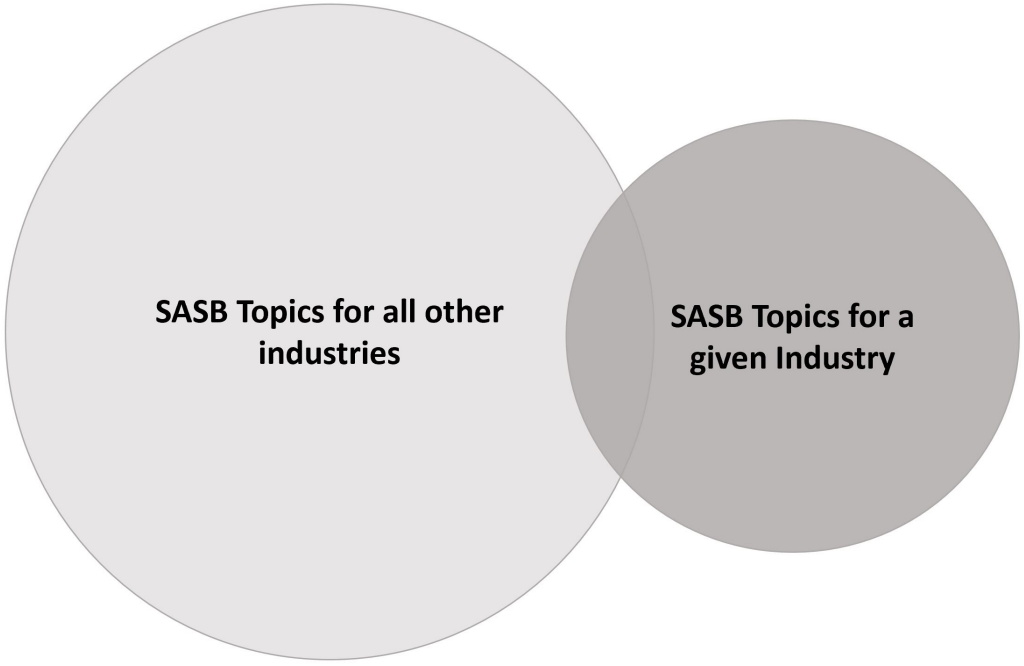
This figure outlines the process that SASB used to develop the provisional industry standards. Source: https://www.sasb.org/.

FIGURE 2
Timeline of Major SASB Events



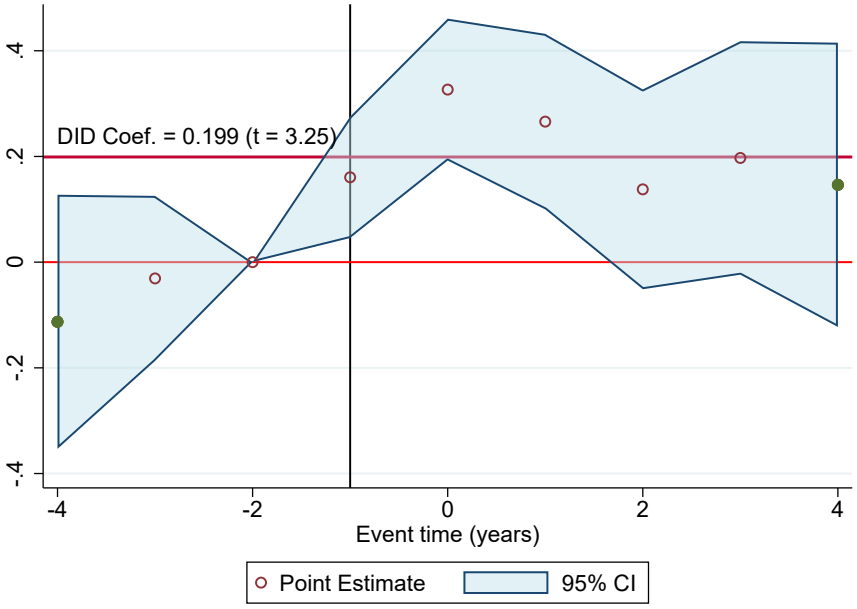
This figure outlines major events at SASB over the period 2011 - 2020.
Source: https://www.sec.gov/files/10152020-sasb-sec-amac-esg-subcommittee.pdf.

FIGURE 3
Split of SASB Topics

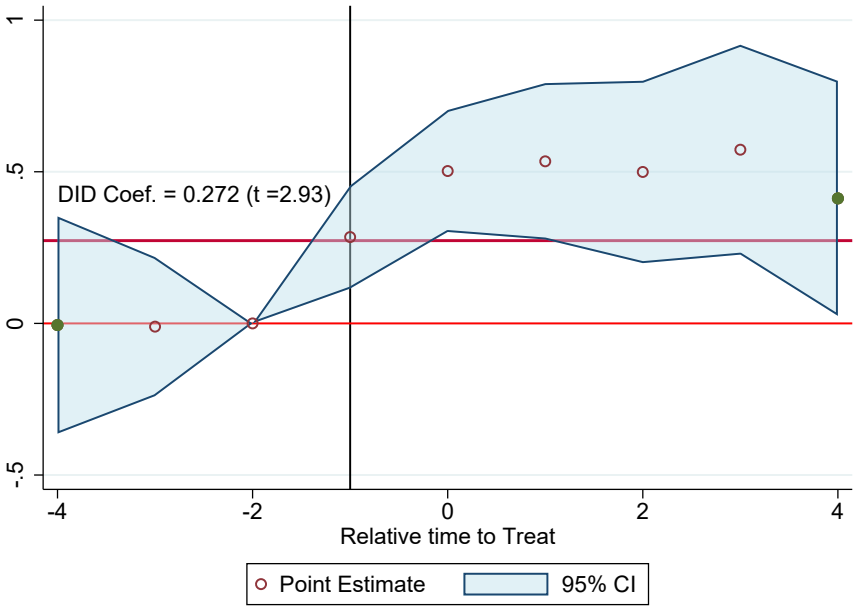


This figure illustrates the collection of ESG topics in SASB standards across all industries, where topics are divided into those that are identified as relevant for a given industry and those that are identified as relevant for other industries (but not the given industry).

FIGURE 4
The effect of SASB industry-specific sustainability standards on ESG disclosures in earnings conference calls



(a) Entire Earnings Conference Call



(b) Introductory Remarks Section of Earnings Call

This figure plots event-study estimates from a two-way fixed effects regression of the effect of SASB industry-specific sustainability standards on ESG statements in the (a) entire earnings conference call and (b) introductory remarks of the earnings call. The specification includes firm and year-quarter fixed effects. The 95% confidence interval is shaded around the coefficients. Standard errors are robust to clustering at the firm level.

Tables

TABLE 1
Timeline of SASB Provisional Publication Dates

Sector	Public Release Date	Press Release Link
Health Care	July 31, 2013	Link to PR Newswire
Financials	February 25, 2014	Link to PR Newswire
Technology & Communications	April 2, 2014	Link to PR Newswire
Extractives & Minerals Processing	June 25, 2014	Link to PR Newswire
Transportation	September 24, 2014	Link to PR Newswire
Services	December 17, 2015	Link to PR Newswire
Resource Transformation	March 25, 2015	Link to PR Newswire
Food & Beverage	June 30, 2015	Link to PR Newswire
Consumer Goods	September 23, 2015	Link to PR Newswire
Renewable Resources & Alternative Energy	December 16, 2015	Link to PR Newswire
Infrastructure	March 30, 2016	Link to PR Newswire

TABLE 2
Examples of ESG disclosure topic keywords based on SASB's Codified Industry Standards

Sector	Industry	Disclosure Topic	Disclosure Topic Description	Disclosure Topic Keywords
Food & Beverage	**Food Retailers & Distributors**	Labor Practices	The Food Retailers & Distributors industry employs many hourly workers. Low average wages in the industry, which help companies maintain low prices for products, may result in labor-related risks. Worker dissatisfaction with wages and benefits, combined with high unionization rates, have led to employee strikes at major food retail companies, resulting in business disruption and reputational damage. Additionally, companies in the industry have been involved in gender and racial discrimination cases, sometimes resulting in costly financial settlements. Companies may benefit from taking a long-term perspective on managing workers, including their pay and benefits, in a way that protects the rights of workers and enhances their productivity while strengthening the company's reputation and brand value.	worker, workers, average wage, worker dissatisfaction, employee strikes, employee strike, discrimination, labor-related, wages, unionization rates, pay and benefits, worker productivity
Technology & Communications	**Internet Media & Services**	Data Privacy, Advertising Standards & Freedom of Expression	Companies in the Internet & Media Services industry rely on customer data to innovate new tools and services, generate revenues through advertising sales, and track and prevent criminal activities, such as hacking and online predators targeting children. However, the use and storage of a wide range of customer data, such as personal, demographic, content, and behavioral data, raises privacy concerns, leading to increased regulatory scrutiny in many countries around the world. Companies face reputational risks from providing access to user data to governments, which raises concerns that the data may be used to limit the freedoms of citizens. Companies may also face increased costs of compliance associated with the varying local laws or government demands related to censorship of culturally or politically sensitive material on websites. This issue has impacts on company profitability through the loss of users and can influence decisions to enter or operate in certain markets.	hacking, privacy concerns, customer data, online predators, targeting children, user data, freedom of citizens, sensitive materials, sensitive material
Health Care	**Health Care Distributors**	Product Safety	Health care distributors play an integral role in the delivery of health care products to consumers. The industry therefore has a shared responsibility with manufacturers to ensure product safety and address concerns related to toxicity. Further, health care distributors face additional risks related to controlled substances and the potential for mislabeled products. Companies that limit the incidences of safety or other product concerns may be better positioned to protect shareholder value.	product delivery, toxicity, product safety, mislabeled products, controlled substances, incidences of safety

TABLE 3
Variable definitions and data sources

Variable	Definition	Source
SASB Standards	Equals to 1 for firm-quarters after the SASB's standards release in a specific industry sector, and 0 otherwise.	Standards release dates are from SASB's press releases
ESG Own Ind	Number of ESG-focused sentences in the entire earnings call, divided by the number of all sentences in the call, multiplied by 100. ESG focus is determined using own industry dictionary of ESG terms based on SASB standards (see Section III.3).	Earnings calls are from: www.seekingalpha.com
ESG All Ind	Number of ESG-focused sentences in the entire earnings call, divided by the number of all sentences in the call, multiplied by 100. ESG focus is determined using *all* ESG terms in the combined ESG dictionary across all industries (see Section III.3).	Earnings calls are from: www.seekingalpha.com
ESG Other Ind	Number of other industries' ESG sentences in the entire earnings call, divided by the number of all sentences in the call, multiplied by 100. Other industries' ESG sentences are determined using a dictionary of ESG terms of all industries other than the given industry as per SASB standards (see Section III.3).	Earnings calls are from: www.seekingalpha.com
ESG Intro	Number of ESG-focused sentences in the introductory remarks section of the earnings call, divided by the number of all sentences in the section, multiplied by 100. ESG focus is determined using own industry dictionary of ESG terms based on SASB standards.	Earnings calls are from: www.seekingalpha.com
ESG Q&A	Number of ESG-focused sentences in the Q&A section of the earnings call, divided by the number of all sentences in the section, multiplied by 100. ESG focus is determined using own industry dictionary of ESG terms based on SASB standards.	Earnings calls are from: www.seekingalpha.com
ESG Exec	Number of ESG-focused sentences in the management portion of the earnings call, divided by the number of all management sentences, multiplied by 100. ESG focus is determined using own industry dictionary of ESG terms based on SASB standards.	Earnings calls are from: www.seekingalpha.com
ESG Ana	Number of ESG-focused sentences in the analyst portion of the earnings call, divided by the number of all analyst sentences, multiplied by 100. ESG focus is determined using own industry dictionary of ESG terms based on SASB standards.	Earnings calls are from: www.seekingalpha.com
Low ESG Pre	Equals to 1 for firms that prior to the SASB's standards have more than 50% of earnings calls with *ESG Intro* lower than the sample median in the pre-standards period, and 0 otherwise.	
High ESG Pre	Equals to 1 for firms that prior to the SASB's standards have more than 50% of earnings calls with *ESG Intro* higher than the sample median in the pre-standards period, and 0 otherwise.	

Table 3, continued

Variable	Definition	Source
ESG Call, excl. GHG	Number of ESG-focused sentences in the entire earnings call, divided by the number of all sentences in the call, multiplied by 100. ESG focus is determined using industry-specific dictionaries of ESG terms based on SASB standards, excluding terms related to climate change (see Section IV.8.2).	Earnings calls are from: www.seekingalpha.com
Low Agreement	Equals to 1 to one when SASB Industry Working Group (IWG) agreement among corporate representatives is lower than the industry sample median, and 0 otherwise.	IWG's survey agreement measures are from SASB
High Agreement	Equals to 1 to one when SASB IWG agreement among corporate representatives is equal to or higher than the industry sample median, and 0 otherwise.	IWG's survey agreement measures are from SASB
AbsUE	Absolute value of the actual earnings per share (EPS) minus analyst consensus forecast of one- or two-quarters-ahead earnings issued or reviewed in the last 60 days before earnings announcement divided by stock price at the end of quarter, winsorized at 1% and 99%.	IBES
AbsROA	Absolute value of earnings before extraordinary items scaled by total assets, winsorized at 1% and 99%.	COMPUSTAT
AbsReturn	Absolute value of the annual buy-and-hold stock return over the past year.	CRSP
Size	Natural logarithm of the market value of equity at the end of the previous quarter.	COMPUSTAT
MTB	Market value of equity, divided by common equity at the end of the previous quarter, winsorized at 1% and 99%.	COMPUSTAT
Leverage	Long-term debt to total assets ratio, winsorized at 1% and 99%.	COMPUSTAT
ZScore	Altman's Z-Score, winsorized at 1% and 99%.	COMPUSTAT
EarnVol	Standard deviation of earnings, calculated using earnings scaled by total assets in the last twenty quarters, with a minimum of eight quarters required.	COMPUSTAT
RetVol	Standard deviation of monthly returns, calculated using returns in the last twelve month, with a minimum of six months required.	CRSP
NumAnalysts	Natural logarithm of the number of analysts that issue an earnings forecast for a given firm.	IBES
FirmAge	Natural logarithm of the number of years since a company appears in the CRSP's monthly file.	CRSP
CallLength	Natural logarithm of the number of words in the earnings call.	Earnings calls are from: www.seekingalpha.com
ESG Rating	Annual Morgan Stanley Capital International (MSCI) ESG rating of a company. Letter ratings are converted to numerical scores as follows: "AAA" $\mapsto$ 7, "AA" $\mapsto$ 6, "A" $\mapsto$ 5, "BBB" $\mapsto$ 4, "BB" $\mapsto$ 3, "B" $\mapsto$ 2, "CCC" $\mapsto$ 1.	MSCI, see https://www.msci.com/esg-ratings

TABLE 4
Descriptive statistics

Variable	N	Mean	Median	SD	Q1	Q3
Main Variables of Interest						
SASB Standards	50,535	0.5457	1.0000	0.4979	0.0000	1.0000
ESG Own Ind	50,535	2.9826	0.9311	4.9098	0.1764	3.5985
ESG Call, excl. GHG	50,535	2.8834	0.8721	4.8602	0.0000	3.4483
ESG Intro	50,535	4.0999	1.1834	6.7378	0.0000	4.9587
ESG Q&A	50,535	2.2407	0.6186	4.0999	0.0000	2.5773
ESG Exec	50,535	10.2711	3.0000	18.0804	0.0000	12.0000
ESG Ana	50,535	1.7723	0.0000	3.9056	0.0000	2.0000
ESG All Ind	50,535	17.4979	16.6172	6.0213	13.2075	20.8995
ESG Other Ind	50,535	14.5153	14.1876	5.3704	11.0727	17.6471
Control Variables						
AbsUE	50,535	0.0045	0.0014	0.0090	0.0005	0.0040
Size	50,535	7.8848	7.8736	1.7445	6.6913	9.0485
AbsROA	50,535	0.0281	0.0164	0.0413	0.0081	0.0303
AbsReturn	50,535	0.3586	0.2486	0.5307	0.1156	0.4478
MTB	50,535	3.7471	2.5568	5.1092	1.5401	4.4037
Leverage	50,535	0.2382	0.2122	0.2262	0.0617	0.3424
EarnVol	50,535	0.0396	0.0138	0.3816	0.0072	0.0315
RetVol	50,535	0.1105	0.0937	0.0711	0.0651	0.1359
ZScore	50,535	3.4427	2.0873	5.7659	1.0201	3.8610
NumAnalysts	50,535	1.5490	1.3863	0.7182	1.0986	2.0794
FirmAge	50,535	2.4251	2.5928	1.1771	1.5420	3.3982
Call Length	50,535	8.8942	8.9591	0.3241	8.7151	9.1161
ESGRating	40,965	3.5072	3.0000	1.3436	2.5600	4.0000

This table reports descriptive statistics for main dependent and independent variables in the study. All variables are defined in Table 3.

TABLE 5
ESG disclosures in earnings calls following SASB standards

	ESG Own Ind		
	(1)	(2)	(3)
SASB Standards	0.199***	0.183***	0.183***
	(3.25)	(2.98)	(2.74)
AbsUE		−2.299	−2.292
		(−1.38)	(−1.04)
Size		−0.051	−0.041
		(−0.98)	(−0.65)
AbsROA		−2.071***	−2.241***
		(−4.19)	(−3.58)
AbsReturn		−0.003	−0.012
		(−0.15)	(−0.35)
MTB		0.003	0.002
		(1.02)	(0.54)
Leverage		−0.229	−0.321
		(−1.20)	(−1.56)
EarnVol		−0.011	0.042
		(−0.27)	(1.18)
RetVol		−0.620*	−0.758*
		(−1.67)	(−1.95)
ZScore		0.003	0.003
		(0.69)	(0.45)
NumAnalysts		−0.074***	−0.082***
		(−2.97)	(−3.00)
FirmAge		−0.227**	−0.310***
		(−2.50)	(−3.21)
Call Length		−0.079	−0.140
		(−0.84)	(−1.27)
ESGRating			0.023
			(1.06)
Firm FE	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes
Observations	50,535	50,535	40,965
Adj. R^2	0.871	0.871	0.869

This table reports the results of estimating a difference-in-difference model in Eq. (2) with the proportion of ESG sentences in earnings call, *ESG Own Ind*, as the dependent variable. Firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 6
Industry-specific vs. general ESG disclosures in earnings calls following SASB standards

	ESG All Ind	***ESG Own Ind***	***ESG Other Ind***
SASB Standards	−0.043	0.183***	−0.226**
	(−0.35)	(2.98)	(−2.05)
AbsUE	−2.765	−2.299	−0.466
	(−0.90)	(−1.38)	(−0.16)
Size	−0.295***	−0.051	−0.245***
	(−3.73)	(−0.98)	(−3.42)
AbsROA	−1.175	−2.071***	0.896
	(−1.51)	(−4.19)	(1.29)
AbsReturn	−0.003	−0.003	0.000
	(−0.08)	(−0.15)	(0.01)
MTB	−0.002	0.003	−0.005
	(−0.42)	(1.02)	(−1.00)
Leverage	−0.940***	−0.229	−0.710***
	(−3.64)	(−1.20)	(−3.02)
EarnVol	−0.047	−0.011	−0.035
	(−1.41)	(−0.27)	(−1.29)
RetVol	−0.636	−0.620*	−0.016
	(−1.19)	(−1.67)	(−0.04)
ZScore	0.001	0.003	−0.002
	(0.10)	(0.69)	(−0.29)
NumAnalysts	−0.009	−0.074***	0.065
	(−0.18)	(−2.97)	(1.47)
FirmAge	−0.234*	−0.227**	−0.008
	(−1.88)	(−2.50)	(−0.08)
Call Length	0.284**	−0.079	0.363***
	(2.06)	(−0.84)	(3.08)
Firm FE	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes
Observations	50,535	50,535	50,535
Adj. R^2	0.623	0.871	0.605

This table reports the results of estimating a difference-in-difference model in Eq. (2) with the proportion of ESG disclosures in earnings calls based on a combined dictionary of ESG terms across all industries (i.e., own and other industries' ESG terms), *ESG All Ind*, own industry dictionary based on SASB standards, *ESG Own Ind*, and a dictionary of ESG terms for other industries as per SASB standards, *ESG Other Ind*, as dependent variables. Firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 7
ESG disclosures in earnings calls following SASB standards, conditional on the level of pre-standards disclosures

	ESG Own Ind					
	(1)	(2)	(3)	(4)	(5)	(6)
Low ESG Pre	−1.162***	−1.257***	−1.176***			
	(−11.03)	(−12.55)	(−11.14)			
SASB Standards	−0.188*	−0.156	−0.129			
	(−1.81)	(−1.52)	(−1.26)			
Low ESG Pre	0.738***	0.672***	0.545***	0.612***	0.607***	0.528***
× *SASB Standards*	(7.14)	(6.47)	(5.14)	(7.91)	(7.98)	(6.60)
AbsUE		−4.465	−4.353		−2.227	−2.163
		(−1.62)	(−1.34)		(−1.34)	(−0.98)
Size		−0.121***	−0.119**		−0.062	−0.059
		(−2.82)	(−2.34)		(−1.23)	(−0.96)
AbsROA		3.386***	4.156***		−2.076***	−2.225***
		(4.70)	(4.34)		(−4.23)	(−3.59)
AbsReturn		−0.035	−0.029		−0.003	−0.010
		(−1.01)	(−0.66)		(−0.16)	(−0.29)
MTB		0.005	0.008		0.003	0.001
		(1.10)	(1.48)		(0.98)	(0.51)
Leverage		−0.277	−0.394**		−0.267	−0.379*
		(−1.55)	(−2.00)		(−1.43)	(−1.87)
EarnVol		0.073***	0.095***		−0.009	0.042
		(2.59)	(2.81)		(−0.23)	(1.17)
RetVol		0.922*	1.022		−0.584	−0.727*
		(1.81)	(1.62)		(−1.59)	(−1.91)
ZScore		0.012**	0.012*		0.004	0.003
		(1.98)	(1.79)		(0.78)	(0.51)
NumAnalysts		−0.035	−0.017		−0.057**	−0.065**
		(−0.69)	(−0.29)		(−2.37)	(−2.47)
FirmAge		−0.086**	−0.107**		−0.228***	−0.315***
		(−2.24)	(−2.51)		(−2.59)	(−3.37)
Call Length		0.019	−0.008		−0.078	−0.135
		(0.16)	(−0.06)		(−0.84)	(−1.23)
ESGRating			−0.003			0.029
			(−0.11)			(1.32)
Industry FE	Yes	Yes	Yes	No	No	No
Firm FE	No	No	No	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50,535	50,535	40,965	50,535	50,535	40,965
Adj. R^2	0.739	0.743	0.744	0.871	0.872	0.870

This table reports the results of estimating a difference-in-difference model in Eq. (3) with the proportion of ESG sentences in earnings call, *ESG Own Ind*, as the dependent variable. Industry fixed effects (as per Sustainable Industry Classification System, SICS®) or firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 8
ESG disclosures in earnings conference calls following releases of SASB standards, trend tests

	Full Sample (1)	***High ESG Pre*** (2)	***Low ESG Pre*** (3)
SASB Standards$^{=-2}$	0.035	−0.060	−0.051
	(0.34)	(−0.35)	(−1.46)
SASB Standards$^{=-1}$	0.239**	0.416**	−0.003
	(2.49)	(2.39)	(−0.07)
SASB Standards$^{=0}$	0.445***	0.780***	0.104**
	(4.18)	(3.85)	(2.09)
SASB Standards$^{=+1}$	0.376***	0.668***	0.123**
	(3.33)	(3.07)	(2.30)
SASB Standards$^{=+2}$	0.252**	0.362	0.094*
	(2.11)	(1.59)	(1.68)
SASB Standards$^{\geq+3}$	0.298**	0.364	0.183***
	(2.29)	(1.46)	(2.84)
Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes
Observations	50,535	22,696	27,839
Adj. R^2	0.871	0.835	0.871

This table reports the results of estimating a difference-in-difference model in Eq. (2) with the proportion of ESG sentences in earnings call, *ESG Own Ind*, as the dependent variable and yearly indicators for *SASB Standards* as independent variables. Control variables, firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. Column (1) reports the results for the full sample. Columns (2) and (3) report results for *High ESG Pre* and *Low ESG Pre* subsamples, respectively. *SASB Standards*$^{=-n}$ equals to 1 for observations n years prior to SASB standards release, and 0 otherwise. *SASB Standards*$^{=0}$ equals to 1 for observations in the year of SASB standards release, and 0 otherwise. *SASB Standards*$^{=+n}$ equals to 1 for observations n years after SASB standards release, and 0 otherwise. *SASB Standards*$^{\geq+n}$ equals to 1 for observations n or more years after SASB standards release, and 0 otherwise. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 9
Effects of SASB standards on ESG disclosures in earnings calls for industries with Low and High ESG topic agreement

	Low Agreement		***High Agreement***	
SASB Standards	0.339***		0.068	
	(3.09)		(1.04)	
Low ESG Pre × SASB Standards		0.896***		0.327***
		(7.27)		(4.08)
AbsUE	−3.391	−3.221	−0.710	−0.668
	(−1.38)	(−1.33)	(−0.38)	(−0.36)
Size	−0.057	−0.069	−0.066*	−0.072**
	(−0.63)	(−0.77)	(−1.93)	(−2.13)
AbsROA	−2.875***	−2.906***	−0.547*	−0.538*
	(−3.89)	(−3.97)	(−1.71)	(−1.68)
AbsReturn	−0.001	0.002	−0.014	−0.015
	(−0.01)	(0.06)	(−0.62)	(−0.70)
MTB	0.004	0.003	−0.000	−0.000
	(0.96)	(0.86)	(−0.06)	(−0.03)
Leverage	−0.211	−0.225	−0.208	−0.257*
	(−0.75)	(−0.81)	(−1.30)	(−1.65)
EarnVol	−0.018	−0.016	0.006	0.014
	(−0.40)	(−0.36)	(0.06)	(0.15)
RetVol	−0.691	−0.631	−0.528*	−0.498*
	(−1.23)	(−1.14)	(−1.76)	(−1.67)
ZScore	0.006	0.006	0.004	0.004
	(0.67)	(0.67)	(1.01)	(1.04)
NumAnalysts	−0.123***	−0.089**	−0.021	−0.018
	(−2.71)	(−2.02)	(−0.93)	(−0.77)
FirmAge	−0.297**	−0.303**	−0.145	−0.143*
	(−2.00)	(−2.08)	(−1.61)	(−1.66)
Call Length	0.002	0.006	−0.161	−0.162
	(0.02)	(0.04)	(−1.61)	(−1.62)
Firm FE	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes
Observations	25,289	25,289	25,246	25,246
Adj. R^2	0.877	0.878	0.824	0.824

This table reports the results of estimating difference-in-difference models in Eq. (2) - (3) with the proportion of ESG sentences in earnings call, *ESG Own Ind*, as the dependent variable. *Low Agreement* columns report results for a subsample of observations with Corporate representatives' IWG agreement equal to or below the industry-level median, while *High Agreement* columns report results for a subsample of observations with Corporate representatives' IWG agreement above the industry-level median. Firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 10
ESG disclosures in earnings calls following SASB Standards, conditional on pre-standards levels of industry-specific and non-industry-specific ESG disclosures

		ESG Other Ind Pre	
		Low	**High**
ESG Own Ind Pre	**Low**	*ESG Own Ind:* $\alpha_1 = 0.126^{**}$ (2.16) *ESG Other Ind:* $\beta_1 = 0.148$ (0.76) N = 15,941	*ESG Own Ind:* $\alpha_1 = 0.124^{***}$ (2.92) *ESG Other Ind:* $\beta_1 = -0.618^{***}$ (-2.79) N = 11,898
	High	*ESG Own Ind:* $\alpha_1 = 0.518^{***}$ (2.69) *ESG Other Ind:* $\beta_1 = 0.301$ (1.53) N = 12,027	*ESG Own Ind:* $\alpha_1 = -0.060$ (-0.44) *ESG Other Ind:* $\beta_1 = -0.538^{**}$ (-2.11) N = 10,669

This table reports coefficient estimates for *SASB Standards* after estimating the following models:

$$ESG\ Own\ Ind_{ijt} = \alpha_0 + \alpha_1 SASB\ Standards_{jt} + \gamma_i + \theta_t + Controls_{ijt} + \epsilon_{ijt},$$

$$ESG\ Other\ Ind_{ijt} = \beta_0 + \beta_1 SASB\ Standards_{jt} + \gamma_i + \theta_t + Controls_{ijt} + \epsilon_{ijt}$$

on four mutually exclusive sub-samples of observations based on firms' ESG disclosure strategy prior to SASB standards. {Low, Low} group consists of firms with low own industry and low other (as per SASB standards) ESG disclosures prior to SASB standards. {Low, High} group consists of firms with low own industry and high other ESG disclosures prior to SASB standards. {High, Low} group consists of firms with high own industry and low other ESG disclosures prior to SASB standards. {High, High} group consists of firms with high own industry and high other ESG disclosures prior to SASB standards. Firms are assigned into Low and High groups in respective categories based on *ESG Own Ind* and *ESG Other Ind* values in the pre-standards period (see Section III.4). Control variables (as in Table 5), firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 11
ESG Disclosures following SASB Standards, Split by Different Parts of the Earnings Call

	Introductory Remarks		***Q&A***		***Executives' Part***		***Analysts' Part***	
SASB Standards	0.252***		0.118**		0.204***		0.130*	
	(2.71)		(2.07)		(2.87)		(1.81)	
Low ESG Pre		0.628***		0.552***		0.573***		0.580***
× *SASB Standards*		(5.52)		(8.63)		(6.44)		(8.22)
AbsUE	−3.366	−3.304	−1.206	−1.131	−3.335*	−3.273*	−3.138	−3.061
	(−1.32)	(−1.30)	(−0.68)	(−0.64)	(−1.71)	(−1.69)	(−1.20)	(−1.18)
Size	−0.128*	−0.141**	0.009	−0.000	−0.087	−0.098*	0.011	0.001
	(−1.83)	(−2.06)	(0.18)	(−0.01)	(−1.52)	(−1.75)	(0.20)	(0.03)
AbsROA	−2.335***	−2.344***	−1.517***	−1.518***	−2.123***	−2.130***	−1.619***	−1.620***
	(−3.20)	(−3.23)	(−3.18)	(−3.20)	(−3.70)	(−3.73)	(−2.67)	(−2.68)
AbsReturn	0.005	0.005	0.011	0.011	0.008	0.008	−0.030	−0.030
	(0.14)	(0.15)	(0.54)	(0.52)	(0.30)	(0.30)	(−0.95)	(−0.95)
MTB	0.006	0.005	0.003	0.003	0.003	0.003	0.003	0.003
	(1.36)	(1.32)	(1.04)	(1.01)	(1.05)	(1.01)	(0.85)	(0.83)
Leverage	−0.194	−0.235	−0.212	−0.246	−0.191	−0.228	−0.306	−0.342
	(−0.71)	(−0.86)	(−1.09)	(−1.29)	(−0.85)	(−1.03)	(−1.44)	(−1.64)
EarnVol	−0.014	−0.012	−0.020	−0.018	0.005	0.006	−0.025	−0.023
	(−0.27)	(−0.23)	(−0.59)	(−0.54)	(0.09)	(0.13)	(−0.60)	(−0.57)
RetVol	−0.147	−0.113	−0.903**	−0.867**	−0.484	−0.452	−0.831	−0.794
	(−0.31)	(−0.24)	(−2.35)	(−2.28)	(−1.13)	(−1.07)	(−1.38)	(−1.33)
ZScore	0.007	0.008	−0.000	0.000	0.006	0.006	−0.006	−0.006
	(0.91)	(0.96)	(−0.01)	(0.07)	(1.02)	(1.08)	(−1.23)	(−1.17)
NumAnalysts	−0.073*	−0.056	−0.019	−0.004	−0.083***	−0.067**	−0.021	−0.006
	(−1.95)	(−1.51)	(−0.82)	(−0.17)	(−2.85)	(−2.37)	(−0.79)	(−0.22)
FirmAge	−0.259**	−0.262***	−0.148	−0.148*	−0.261***	−0.262***	−0.131	−0.131
	(−2.49)	(−2.58)	(−1.63)	(−1.67)	(−2.62)	(−2.70)	(−1.28)	(−1.30)
Call Length	0.501***	0.502***	0.372***	0.372***	−0.052	−0.051	−0.204**	−0.204**
	(3.88)	(3.88)	(4.48)	(4.51)	(−0.46)	(−0.46)	(−2.32)	(−2.33)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50,535	50,535	50,535	50,535	50,535	50,535	50,535	50,535
Adj. R^2	0.854	0.854	0.795	0.796	0.872	0.872	0.615	0.616

This table reports the results of estimating difference-in-difference models in Eq. (2) - (3) with the proportion of ESG sentences in the introductory remarks and questions and answers (Q&A) sections of the earnings call as well as in the executives' and analysts' parts, *ESG Intro*, *ESG Q&A*, *ESG Exec*, and *ESG Ana*, as dependent variables. Firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 12
Non-GHG Disclosures and SASB Standards.

	ESG Call, excl. GHG	
	(1)	(2)
SASB Standards	0.173***	
	(2.82)	
Low ESG Pre × SASB Standards		0.615***
		(5.98)
AbsUE	−2.127	−5.037*
	(−1.28)	(−1.84)
Size	−0.047	−0.123***
	(−0.92)	(−2.86)
AbsROA	−2.023***	3.330***
	(−4.11)	(4.64)
AbsReturn	−0.005	−0.040
	(−0.24)	(−1.19)
MTB	0.002	0.006
	(0.85)	(1.22)
Leverage	−0.205	−0.222
	(−1.08)	(−1.25)
EarnVol	−0.010	0.076***
	(−0.25)	(2.69)
RetVol	−0.597	0.786
	(−1.54)	(1.62)
ZScore	0.004	0.012**
	(0.75)	(2.04)
NumAnalysts	−0.065***	−0.036
	(−2.61)	(−0.71)
FirmAge	−0.224**	−0.079**
	(−2.53)	(−2.06)
Call Length	−0.084	0.011
	(−0.89)	(0.09)
Firm FE	Yes	Yes
Year-Qtr FE	Yes	Yes
Observations	50,535	50,535
Adj. R^2	0.871	0.743

This table reports the results of estimating difference-in-difference models in Eq. (2) - (3) with the proportion of ESG disclosures not related to climate change, *ESG Call, excl. GHG* as the dependent variable. Firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.

TABLE 13
Similarity between SASB Standards and Earnings Conference Calls

	Similarity (Earnings Call, SASB Standards)					
SASB Standards	0.335***	0.287***	0.384***			
	(3.48)	(2.98)	(3.59)			
Low ESG Pre × *SASB Standards*				0.426***	0.441***	0.504***
				(3.57)	(3.75)	(3.93)
AbsUE		3.635	5.410*		3.657	5.487*
		(1.63)	(1.78)		(1.64)	(1.80)
Size		−0.372***	−0.380***		−0.384***	−0.403***
		(−5.79)	(−5.01)		(−6.00)	(−5.38)
AbsROA		0.230	0.087		0.216	0.084
		(0.45)	(0.13)		(0.42)	(0.13)
AbsReturn		0.004	0.029		0.004	0.032
		(0.13)	(0.67)		(0.15)	(0.75)
MTB		−0.008*	−0.011*		−0.009*	−0.011**
		(−1.74)	(−1.93)		(−1.77)	(−1.97)
Leverage		−0.490**	−0.797***		−0.520**	−0.855***
		(−2.17)	(−3.09)		(−2.30)	(−3.30)
EarnVol		0.069*	0.094**		0.070*	0.094**
		(1.80)	(2.22)		(1.82)	(2.20)
RetVol		0.700*	0.994**		0.718*	1.006**
		(1.84)	(2.07)		(1.89)	(2.08)
ZScore		−0.002	−0.009		−0.001	−0.009
		(−0.25)	(−1.25)		(−0.21)	(−1.18)
NumAnalysts		−0.059	−0.041		−0.047	−0.025
		(−1.64)	(−1.05)		(−1.30)	(−0.64)
FirmAge		−0.156	−0.233*		−0.160	−0.243*
		(−1.38)	(−1.84)		(−1.43)	(−1.94)
Call Length		0.759***	0.841***		0.760***	0.846***
		(6.93)	(6.55)		(6.92)	(6.57)
ESGRating			0.054			0.060*
			(1.48)			(1.66)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Qtr FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	50,535	50,535	40,965	50,535	50,535	40,965
Adj. R^2	0.757	0.759	0.762	0.758	0.760	0.762

This table reports the results of estimating difference-in-difference models in Eq. (2) - (3) with *Similarity* as the dependent variable. *Similarity* measures the cosine similarity between a company's earnings conference call and SASB's descriptions of material ESG topics for the company's industry. Firm fixed effects, year-quarter fixed effects and the constant are included in each regression, but are not reported. All variables are defined in Table 3. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed t-test. Reported T-statistics (in parentheses) are based on a clustering of standard errors at the firm level.