Who Uses Corporate Sustainability Reports?

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Abstract

Recent years have witnessed significant growth in corporate sustainability reporting. Yet existing research provides mixed and indirect evidence on the information content of such reports. We examine the stock market reaction to the release of corporate sustainability reports incorporating SASB metrics that are intended to provide financially material and decision useful information to investors. Using standard measures, we are unable to find compelling evidence that sustainability reports provide a significant amount of decision-useful information to investors. Further tests indicate that the information provided in the reports can be either financially immaterial or preempted by traditional financial disclosures. We conclude that firms target their sustainability reports at a broad set of stakeholders concerned with environmental and social impacts and that a narrow focus on financial materiality to investors is unnecessarily restrictive.

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"In (a free) economy, there is one and only one social responsibility of business—to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud"
-Milton Friedman, Capitalism and Freedom, 1962 (*Friedman, 1962*)

"Environmental governance depends on good, trustworthy information about stocks, flows, and processes within the resource systems being governed, as well as about the human-environment interactions affecting those systems"
-Thomas Dietz, Elinor Ostrom and Paul Stern, The Struggle to Govern the Commons, 2003 (*Dietz, Ostrom, and Stern, 2003*)

1 Introduction

Recent years have witnessed a surge in corporate sustainability reporting. Annual surveys released by The Governance and Accountability Institute indicate that 92% of S&P 500 companies issued sustainability reports in 2020, up from just 20% in 2011.[1] Yet the intended users of these reports and the objectives of these users are unclear. The original framework for sustainability reporting, developed by the Global Reporting Initiative (GRI) in response to the Exxon Valdez oil spill, was designed to make companies accountable to a broad group of stakeholders for their significant environmental and social impacts. More recently, however, new sustainability reporting frameworks have been developed to address perceived shortcomings of the traditional financial reporting process in providing financially material and decision useful information to investors. Such frameworks have been developed by the Sustainable Accounting Standards Board (SASB) and the Taskforce on Climate-Related Financial Disclosures (TCFD) and are currently under development by the International Sustainability Standards Board (ISSB).

This recent focus on providing financially material information to investors has been embraced

[1] https://www.ga-institute.com/research/ga-research-collection/sustainability-reporting-trends/2021-sustainability-reporting-in-focus.html

by large institutional investors. For example, in his 2020 annual letter to corporate CEOs, Blackrock CEO Larry Fink asked all investee companies to publish disclosures consistent with guidelines issued by the SASB and TCFD. Fink further noted that Blackrock would use these disclosures to ascertain whether companies are properly managing and overseeing their risks.[2] This new focus has been accompanied by a proliferation of ESG ratings, such as those produced by MSCI and Sustainalytics, that purport to measure companies' exposures to environmental, social and governance risks. The Securities and Exchange Commission (SEC) has also proposed rule changes that would require registrants to include certain climate-related disclosures in their registration statements and periodic reports, including information about climate-related risks that are reasonably likely to be financially material.[3] Meanwhile, SEC Commissioner Hester Peirce indicated that she could not support the proposal because the disclosure of financially material climate risks is already required by existing SEC rules.[4]

Despite the practical importance of this topic, academic research investigating whether sustainability reports provide investors with financially material information contains mixed and indirect results. Several studies document a link between sustainability reports and the cost of capital and/or firm value (e.g., Dhaliwal, Li, Tsang, and Yang (2011), Plumlee, Brown, Hayes, and Marshall (2015), Barth, Cahan, Chen, and Venter (2017)). Another line of research investigates whether good corporate performance on material sustainability issues leads to higher future stock returns, providing mixed results (e.g., Khan, Serafeim, and Yoon (2016), Berchicci and King (2021)). Most directly related to this paper is research examining the stock price reaction to sustainability-related news releases. This research finds some evidence that stock prices respond to good and bad news about sustainability issues reported by information intermediaries, such as the business press (e.g., Capelle-Blancard and Petit (2019); Serafeim and Yoon (2022)). On the other hand, this research finds mixed results on the information content of corporate sustainability news releases. For example, Griffin and Sun (2013) document a positive stock price response

[2] https://www.blackrock.com/corporate/investor-relations/2020-larry-fink-ceo-letter
[3] https://www.sec.gov/news/press-release/2022-46
[4] https://www.sec.gov/news/statement/peirce-climate-disclosure-20220321

to corporate press releases involving greenhouse gas omissions. In contrast, Capelle-Blancard and Petit (2019) find no evidence of stock price reactions and Moss, Naughton, and Wang (2020) find no evidence of changes in retail investor holdings around sustainability-related corporate press releases.

We contribute to previous research by providing a direct assessment of the information content of corporate sustainability reports. Our research design closely follows the approach pioneered by Beaver (1968) to assess the information content of earnings reports. In particular, we test for evidence of higher stock price volatility and higher trading volume around the release of corporate sustainability reports. Our research design also contains several features that are intended to improve test power and specification. First, we restrict our analysis to sustainability reports that incorporate SASB metrics. These metrics are designed to elicit industry-specific information that is both financially material and decision useful. Recent research suggests that they are successful in doing so (see, for example, Grewal, Hauptmann, and Serafeim (2021), Schiehll and Kolahgar (2021), and Spandel, Schiemann, and Hoepner (2020)). Second, we limit our sample to reports that are accompanied by a contemporaneous press release or similar company announcement. Third, we restrict our analysis to stand-alone sustainability reports, as opposed to integrated reports that combine the release of traditional financial statement metrics with sustainability metrics. Fourth, we restrict our analysis to release dates that do not overlap with the release of traditional financial reports. Together, these features of our research design isolate the financial information content of sustainability data.

Perhaps surprisingly, we are unable to find compelling evidence that sustainability reports provide a significant amount of decision-useful information to investors. The results for sustainability reports stand in stark contrast to the results for earnings reports. For example, we find that stock price volatility is insignificantly different from zero, with the point estimate only 8% higher than usual around sustainability announcements. In contrast, we find that stock price volatility is significantly different from zero around earnings announcements, with the point estimate over 200% higher than usual. We find qualitatively similar results using trading volume. Thus, we conclude

that corporate sustainability reports do not appear to provide investors with a significant amount of decision-useful information. Our findings stand in contrast to prior research using value relevance tests (e.g., Dhaliwal et al. (2011), Plumlee et al. (2015), Barth et al. (2017)). It is well established that value relevance tests provide mere associations that cannot be used to draw inferences regarding the usefulness of accounting standards (see Holthausen and Watts (2001) and Christensen, Hail, and Leuz (2021)).

In order to better understand our results, we conduct additional tests to discriminate between different explanations for the low information content of sustainability reports. We find no evidence of a delayed repose to information in sustainability reports. Instead, we find that the information contained in the reports is often financially immaterial. Moreover, in a limited number of cases where we find it is financially material, we find that it is preempted by other required disclosure documents, such as Form 8-K and Form 10-K. Finally, we find that most firms target their sustainability reports at a broad group of stakeholders, suggesting that their objectives extend beyond providing financially material information to investors.

It is important to emphasize that our focus is on whether sustainability reports provide financially material information to investors. This focus aligns with the stated objectives of numerous prominent organizations in the sustainability reporting ecosystem, including the SASB, the TCFD and the ISSB. In contrast, other prominent organizations, including the European Commission and the GRI, have adopted a double materiality perspective. The double materiality perspective incorporates the significant environmental and social impacts of the business. Under the double materiality perspective, companies should disclose their material environmental and social impacts even when they do not have financially material consequences for firm value. In the absence of significant financial penalties for negative environmental and social impacts, it is possible for a firm to have material environmental and social impacts without accompanying material financial impacts for investors. For example, a recent Bloomberg article cites McDonalds, which is assessed by MSCI to have low financial risks related to the environment despite the fact that it is one of the world's largest beef purchasers and thus has a supply chain with large and growing greenhouse

gas emissions.[5]

Establishing whether sustainability reports should have a narrow focus on financial materiality or whether they should broaden their scope to encompass environmental and social materiality is currently a contentious issue. The focus on financial materiality aligns with traditional financial reporting frameworks that seek to provide decision-useful information to investors. This focus, in turn, is reflected in the Friedman (1962) quote at the beginning of this section, which asserts that the social responsibility of business is to increase profits. Yet other stakeholders seek sustainability information to promote global sustainable development by holding businesses responsible for their negative environmental and social impacts. This alternative role of sustainability reports is reflected in the Dietz et al. (2003) quote at the beginning of this section that effective environmental governance depends on good, trustworthy information.

Our findings should be of broad interest to parties involved in the production and use of sustainability reports. First, our results should be of interest to sustainability standard setters in establishing their objectives. Several existing standard-setting frameworks, including those of the SASB and TCFD, and the proposal by ISSB, focus exclusively on providing financially material information to investors. We are unable to find compelling evidence that such frameworks provide a significant amount of financially material information to investors. Moreover, existing standard-setting frameworks already focus on providing financially material information to investors. Given that numerous other stakeholders demand sustainability information to assess firms' environmental and social impacts, a broader focus on standards that provide such information would seem to better meet the demands of users. Such a focus is adopted in the standards issued by the GRI and in the European Commission's Corporate Sustainability Reporting Directive (CSRD).

Second, our findings should be of interest to corporate reporters who incur costs in preparing and disseminating sustainability reports. By providing evidence on their usefulness to investors, our results should assist in determining the nature and amount of such disclosure. Third, our results should be of interest to users, including investors and creditors, who stand to benefit from

[5] https://www.bloomberg.com/graphics/2021-what-is-esg-investing-msci-ratings-focus-on-corporate-bottom-line

the disclosure of information that is incrementally value relevant. Finally, our results should be of interest to regulators such as the SEC that oversee the disclosure of financially material information to capital market participants.

The remainder of the paper proceeds as follows. The next section reviews prior research and develops our hypotheses. Section 3 describes our research design, including data sources, sample construction, variable measurement and empirical tests. Section 4 presents our results and Section 5 concludes.

2 Background, Prior Literature and Hypothesis Development

Recent years have seen rapid growth in the academic literature focused on corporate sustainability reporting (see Christensen et al. (2021) for a recent review of this literature). Yet despite the practical importance of this topic, findings on whether such disclosures are useful to investors in determining company value are mixed and indirect. Several studies find a link between sustainability reports and the cost of capital and/or firm value. For example, Dhaliwal et al. (2011) finds that firms initiating voluntary disclosure of corporate social responsibility activities and having superior social responsibility performance experience a subsequent reduction in the cost of equity capital, an increase in dedicated institutional investors, an increase in analyst coverage and an increase in analyst forecast accuracy. Subsequent research by Plumlee et al. (2015) and Barth et al. (2017) also finds evidence of a relationship between the quality of sustainability disclosures and firm value.

Another line of research investigates whether good corporate performance on material sustainability is associated with higher future stock returns. Early research was unable to find a robust relation (e.g., Renneboog, Ter Horst, and Zhang (2008)). More recently, Khan et al. (2016) find a positive relation between performance on material sustainability issues and future stock returns. They key innovation in Khan et al. (2016) is to identify material sustainability issues using the SASB's materiality map. However, a recent paper by Berchicci and King (2021) finds that the results in Khan et al. (2016) are not robust to other reasonable empirical assumptions and model

specifications. They conclude that the results in Khan et al. (2016) are probably a statistical artifact.

Most directly related to this paper is research examining the stock price reaction to sustainability-related news releases. This research finds mixed results on the stock price responses to news about sustainability issues reported by companies, the business press and other information intermediaries. Griffin and Sun (2013) and Griffin, Lont, and Sun (2017) find that the stock market responds to voluntary corporate disclosures relating to greenhouse gas emissions. Naughton, Wang, and Yeung (2019) find that firms' announcements of CSR activities generate positive abnormal returns during periods when investors place a valuation premium on CSR performance. Giorgino, Supino, and Barnabè (2017) find that the release of integrated reports following the International Integrated Reporting Committee (IIRC) framework has a significant impact on stock prices. Note that since such reports also contain traditional financial statement information, the results cannot be uniquely attributed to sustainability disclosures. Capelle-Blancard and Petit (2019) classify sustainability news releases into good news and bad news. They find evidence of a negative reaction to bad news releases by the media, but they do not find evidence of systematic stock price reaction to good and bad news releases by firms or NGOs. Moss et al. (2020) also examine investor responses to ESG-related corporate press releases, finding no evidence of significant changes in retail investor holdings. Krüger (2015) also finds evidence of a negative reaction to bad sustainability news released by the media and additionally finds a weak negative response to good news. More recently, Serafeim and Yoon (2022) examine the stock price response to sustainability news issued by the media. They further classify news releases into financially material and financially immaterial using the SASB's materiality map. They find evidence of significant positive stock price reactions for good news that is financially material.

Finally, a number of papers have either directly or indirectly analyzed the SASB reporting framework. For example, Busco, Consolandi, Eccles, and Sofra (2020) analyze a sample of companies reporting using SASB standards and find the quality of the reporting to be "good to very good." Several studies also find that the SASB's financial materiality mapping can be used to im-

prove the assessment of sustainability performance. Examples include Khan et al. (2016), Spandel et al. (2020) and Madison and Schiehll (2021). Finally studies by Grewal et al. (2021) and Schiehll and Kolahgar (2021) find that the disclosure of SASB-classified financially material sustainability metrics is associated with increased stock price informativeness. Thus, this research generally corroborates the value relevance and decision usefulness of SASB metrics.

In summary, evidence on the value relevance of sustainability disclosures is mixed, with some evidence suggesting that metrics identified as material by the SASB are more value relevant. To our knowledge, we are the first to directly examine the stock price impact around the announcement of standalone corporate sustainability reports containing SASB metrics.

2.1 Hypothesis Development

Our primary purpose is to determine whether corporate sustainability reports convey incrementally value relevant information to investors. We emphasize at the outset that corporate sustainability reporting also seeks to fulfill other objectives. This is reflected in the double materiality perspective adopted by the European Commission in its Non Financial Reporting Directive, whereby disclosure choices should be influenced by both financial materiality and environmental and social materiality (European Commission (2019), p.4).

Financial materiality encompasses sustainability metrics that are useful in determining firm value and is the primary focus of numerous organizations providing sustainability disclosure guidance, including the SASB, the TCFD and the ISSB. For example, the SASB's three objectives are to identify information that is (i) financially material, (ii) decision useful and (iii) cost effective. The SASB defines information to be financially material if omitting, misstating, or obscuring it could reasonably be expected to influence investment or lending decisions (SASB (2020), p.7). In order to focus on sustainability reports that have the potential to provide financially material information, we restrict our analysis to reports incorporating SASB metrics.

Environmental and social materiality encompasses how corporations contribute to the improvement or deterioration of environmental and social conditions. Such information is of interest to cit-

izens, consumers, employees, business partners, communities and civil society organisations (European Commission (2019), p.4). Material environmental and social impacts do not necessarily translate into material financial impacts. Thus, our evidence does not speak to the environmental and social materiality of sustainability reports. We note that while the SASB and the TCFD focus on financial materiality, other organizations providing sustainability disclosure guidance also incorporate environmental and social materiality. For example, the GRI defines material topics as those that represent the reporting organization's most significant impacts on the economy, environment and people, including impacts on their human rights. (Global Reporting Initiative, 2022).

Given our focus on financial materiality, we employ the standard procedure for assessing the information content of financial reports pioneered by Beaver (1968). This procedure involves testing for a stock price impact when the information is released to the market:

Prediction 1: *The release of a corporate sustainability report containing SASB metrics is associated with a significant stock price reaction.*

Note that following Beaver (1968), we are agnostic as to the direction of the stock price reaction. That is, we do not seek to classify reports into 'good news' and 'bad news' in the vein of Ball and Brown (1968). Instead, we seek to determine whether the stock price volatility on report release days is higher than on other days.

Even if information in a report does not have a significant impact on firm value, it could provide information on the characteristics of a security that affect its investor clientele. For example, a report identifying a reduction in a firm's risk profile could make it more attractive to risk averse investors and less attractive to risk seeking investors. This would lead to an increase in trading volume, as risk seeking investors trade with risk averse investors. Thus, following Beaver (1968), we also test for abnormal trading volume around report release dates.

Prediction 2: *The release of a corporate sustainability report containing SASB metrics is associated with abnormally high trading volume.*

Finally, in order to calibrate our findings, we compare the magnitudes of the price and vol-

ume impacts of sustainability reports to the corresponding impacts of quarterly earnings reports.[6] Following Beaver (1968), a long literature shows that earnings announcements have significant price and volume impacts. Moreover, recent research shows that these impacts have significantly increased in recent years (Beaver, McNichols, and Wang, 2018). Given that financial reports are specifically designed to provide financially material and decision useful information to investors, we do not necessarily expect the supplemental information in corporate sustainability reports to be as informative. Nevertheless, standard financial reports are issued every quarter, while sustainability reports are typically released only annually. This allows more time for the accumulation of any financially material sustainability information. By comparing the price and volume reactions of the two sets of reports, we can calibrate the relative information content of sustainability reports.

Prediction 3: *When compared to quarterly earnings reports, the release of corporate sustainability reports containing SASB metrics is associated with a relatively smaller stock price impact.*

Prediction 4: *When compared to quarterly earnings reports, the release of corporate sustainability reports containing SASB metrics is associated with relatively lower abnormal trading volume.*

3 Empirical Design

3.1 Sample Construction and Variable Measurement

Our research design requires us to construct a sample of corporate sustainability reports incorporating SASB metrics. We must also locate a concurrent press release or similar company announcement identifying the date of the report and ensure that this announcement date does not

[6] Earnings announcements are voluntary corporate information releases that summarize the highlights of firms' periodic financial reports on Forms 10-Q and 10-K. Research shows that the associated Form 10-Q filings only have information content when they are filed on the same date as the announcement, while Form 10-K filings have incremental content when filed after the announcement (Li and Ramesh (2009)). We focus on a sample of sustainability reports that are released on the same date as the announcement so as to avoid the possibility that information in the report is preempted by the announcement.

overlap with announcement dates for traditional financial statement information.

The SASB provides a regularly updated list of reports prepared using SASB standards on its website.[7] This list contains links to the associated reports and provides additional information, including the country in which the company is domiciled, the type of report and the year in which the report was issued. As of September 2, 2021 the list contained links to 1,695 reports issued between 2015 and 2021. We start with this list and further restrict our analysis to companies domiciled in the United States. We make this choice for two reasons. First, the SEC currently requires little in the way of formal sustainability disclosures in the mandatory financial filings of US registrants. This allows us to cleanly separate the information content of sustainability reports from the information content of traditional financial filings. Second, the stock market data required for our empirical tests is readily available for US companies and has been widely studied in previous research.

We next manually search for the following information on each report:

- We search for a dated press release or similar announcement made by the company announcing the release of the report identified by the SASB link. Our default method is to use a Google search of the company name and the name and year of the report identified from the SASB link. We then scan the first page of search results for an announcement related to the report. For many cases, we are unable to locate an announcement. It is possible that an announcement was made, but was not uncovered by our search. Next, we carefully examine the wording in the announcements and only retain cases where the wording indicates that the announcement was issued concurrently with the report. For example, in most cases, the announcement will indicate that the report was issued 'today,' in which case we use the date of the announcement as the announcement date for the report.

- We next eliminate any cases in which the report also incorporates the release of traditional financial statement information. For example, some firms provide SASB metrics in their Form 10-K filings or annual reports and we omit these reports from our analysis.

[7] https://www.sasb.org/company-use/sasb-reporters/

- We next search the company's website and the SEC's EDGAR database to eliminate any observations with concurrent announcements of traditional financial statement data. We use a three day window centered on the announcement date to define the announcement period. Thus, any announcement made within two days of another announcement date will have an overlapping announcement window. We therefore eliminate any observation where a company issues a quarterly earnings announcement within a five day window centered on the report release date. We also eliminate observations where the company files a Form 10-K, a Form 10-Q or a Form 8-K provided pursuant to Item 2.02 (Results of Operations and Financial Condition) in this five day window. Note that we do not eliminate observations with announcements that do not pertain to traditional financial statement information. This could include new product announcements, proxy statements, management changes, etc. Our reasoning is that such announcements are equally likely on any trading day, and so eliminating observations with such announcements will bias against finding information content. Thus, each trading day is classified into one of three categories: (i) a trading day that is in the 3-day window surrounding the announcement of a quarterly earnings report; (ii) a trading day that is in the 3-day window surrounding the announcement of a sustainability report and that has no overlapping announcements of traditional financial statement data in a 5-day window centered on the announcement; and (iii) all other trading days.

- Finally, we eliminate any observations that do not have the required stock return and trading volume data available on the CRSP daily files or quarterly earnings announcement data available from Compustat files.

Table 1 summarizes sample construction. Recall that we begin with a list of 1,695 reports identified by the SASB. From this list, we identify 846 unique reports issued by US companies. We are unable to view 90 of these reports, either due to no link being provided or due to the link being broken (i.e. the file was moved or removed). For an additional 244 reports, we are unable locate an associated press releases or related company announcement. Another 182 reports do have an identifiable release, but the language in the release suggests ambiguity as to when the report was

first made available (e.g., the report was 'recently released' or the report 'has been released'). Since it is critical that we identify the date that the report was released to the public, we only retain cases where the language indicates that the report was released on the same day as the associated announcement. We also lose a further 44 observations due to concurrent financial announcements and 11 observations due to insufficient CRSP data. This provides us with the final sample of 275 announcements.

Table 2 lists the final sample composition by the type of announcement that accompanies the release of the report. We are able to link 250 of the 275 announcements to a press release concurrently distributed via a newswire service (3 on Accesswire, 119 on Business Wire, 1 on CSR Newswire, 52 on Globe Newswire and 74 on PR Newswire). Of the remaining 26, 15 are identified as dated news releases on the company website, 11 are identified as other types of dated announcements on the company website (e.g., a blog) and 1 is only identified in a Form 8-K filing.

The difficulties we face in identifying press releases that are concurrent with the publication of the reports highlights that companies treat sustainability reports differently from traditional disclosures of financially material information. Regulation FD requires that the release of material nonpublic information be made via a broad non-exclusionary distribution of the information to the public. This is typically accomplished though a concurrent press release that is carried by a major newswire service and/or a Form 8-K filing. Such methods of distribution are routine for earnings announcements. Yet for our sample of sustainability reports, there are many cases where we are unable to locate a press release or we can only locate a press release that is issued several days after the publication of the report on the company website. Moreover, we determine that only 15 of our final 275 observations file a Form 8-K disclosing the publication of the sustainability report. This pattern of behavior suggests that many managers do not consider the information in sustainability reports to be financially material to investors.

Table 3 provides summary statistics on key financial characteristics of our final sample vs. the corresponding Compustat universe, respectively, along with t-tests for differences in means. The Compustat universe consists of all observations from the Compustat Fundamentals Annual file

with fiscal year-ends between January 31, 2016 and October 31, 2021, for which Total Assets, Total Revenue, Total Equity, and Net Income are available. The companies in the SASB reporters sample are larger, more profitable and more highly levered. There are two likely reasons for these differences. First, the greater size of these companies provides them with economies of scale in the provision of sustainability reports. Second, the size and profitability of these companies means that they likely have both greater environmental and social impacts and greater visibility to a broad group of stakeholders.

Table 4 provides a comparison of the industry composition of our final sample of 275 observations relative to the broader Compustat population using the 48 Fama-French industry classifications. There are some obvious differences in the sample compositions. First, our sample of sustainability reporters is more heavily weighted to industries with material environmental and social impacts, such as Petroleum and Natural Gas, Utilities, Transportation, Machinery and Tobacco Products. Second, our sample is more heavily weighted to companies with high visibility to retail consumers including Food Products and Retail. Third, Trading is the most heavily represented industry in our sample. This industry includes investment managers, many of whom are in the business of providing ESG investment products. By publishing their own ESG reports, firms in this industry can signal their own commitment to sustainability.[8]

3.2 Variable Construction

Our primary predictions relate to stock price impact and abnormal trading volume around the announcement of corporate sustainability reports. We examine three market outcomes around these announcements. We describe these variables and their construction below:

1. $CAR_{t-1,t+1}$: The 3-day, market-model cumulative abnormal return around the report announcement date. Daily abnormal returns are calculated as the residual from regressing the firm's

[8] A good example of this behavior is Blackrock, which was discussed in the introduction in relation to Larry Fink's letter to corporate CEOs requesting SASB-aligned disclosures. In making this request, Fink notes that Blacrock's SASB-aligned disclsures are available on its website. See https://www.blackrock.com/corporate/investor-relations/2020-larry-fink-ceo-letter.

returns on the S&P500's returns from the 30 most recent trading days, inclusive, and are cumulated from $t-1$ to $t+1$.

2. $Abnormal\ Volatility$: The squared value of $CAR_{t-1,t+1}$ around the report announcement date divided by the average value for non announcement dates. This variable is defined so that its average value on non-announcement dates is 1. In computing the average value, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver, McNichols, and Wang (2020).

3. $Abnormal\ Volume$: The mean of the trading volume (scaled by total shares outstanding) on each of the three days centered on the report announcement date, minus the mean scaled trading volume during the non-announcement period, divided by the standard deviation of the same. In computing the mean and standard deviation for this measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020).

3.3 Hypothesis Testing

Our first prediction is that the release of a corporate sustainability report containing SASB metrics is associated with a significant stock price reaction. Following Beaver et al. (2020), we examine this prediction by testing whether $Abnormal\ Volatility$ during the announcement window is significantly greater than one. Our second prediction is that the release of a corporate sustainability report containing SASB metrics is associated with abnormally high trading volume. Following Beaver et al. (2020), we examine this prediction by testing whether $Abnormal\ Volume$ during the announcement window is significantly greater than zero.

Our third and fourth predictions seek to compare the price and volume reactions around sustainability report announcement dates to the corresponding reactions around quarterly earnings report announcement dates. We examine these predictions by first replicating Predictions 1 and 2 using quarterly earnings announcement dates in place of sustainability report announcement dates. Next, we test whether the two sets of results are significantly different by conducting a t-

test for difference in means between $Abnormal\ Volatility$ and $Abnormal\ Volume$ across the two samples.

4 Results

4.1 Information Content Tests

We begin by reporting the mean cumulative abnormal return during the three-day announcement window ($CAR_{t-1,t+1}$). We do not have a formal prediction for this variable, but since previous research has investigated the mean stock price response to corporate sustainability announcements, we report this variable for completeness.

Column (1) of Table 5 reports the mean value of $CAR_{t-1,t+1}$ along with its 95% confidence interval and p-value for a two-sided test against a null hypothesis of zero. The average $CAR_{t-1,t+1}$ during the announcement period is 0.2% and insignificantly different from zero ($p = .523$). This result indicates that, on average, the announcement of a sustainability report containing SASB metrics has neither a positive nor a negative impact on firm value. This result contrasts with previous research by Griffin and Sun (2013) showing that voluntary corporate sustainability disclosures generate positive returns for shareholders. Griffin and Sun (2013) interpret their result to be consistent with companies disclosing information voluntarily when it is value enhancing for shareholders, net of related costs.

One difference between the two studies is that we focus on annual sustainability reports while Griffin and Sun (2013) focus on corporate news releases relating to greenhouse gas emissions. Many of the companies in our sample have routinely issued annual sustainability reports in previous years. For these firms, it is arguable whether the voluntary disclosure explanation applies, because they have already established a reputation for making such disclosures on an annual basis. Nevertheless, Griffin and Sun (2013) also report that their sample contains firms with multiple announcements and that their results are consistent across both single and multiple releases and first-time versus subsequent releases. Another difference is that their sample covers the period

from 2000 to 2010, while our sample period spans from 2016 to 2021. Their sample is therefore more heavily weighted to 'early disclosers,' while our sample is more heavily weighted to later disclosures, who are more likely to be disclosing in response to peer and stakeholder pressure.

Column (2) of Table 5 reports the mean value of *Abnormal Volatility* along with its 95% confidence interval and the p-value for a two-sided test against a null hypothesis of one. The average *Abnormal Volatility* during sustainability report announcement periods is 1.088 and insignificantly different from one. Recall that our first prediction was that this variable would be significantly greater than 1. This would be indicative of a significant stock price impact in response to the announcement of corporate sustainability reports. Instead, the point estimate indicates that there is only a slight increase in volatility of 8.2%. Moreover, the 95% confidence interval spans the range of 0.74 to 1.42, indicating that we cannot reject the null of no increase in volatility, while it is very unlikely that any increase in volatility exceeds 43%.

Column (3) of Table 5 reports the mean value of $Abnormal\ Volume$ along with its 95% confidence interval and the p-value for a two-sided test against a null hypothesis of zero. The average $Abnormal\ Volume$ is 0.045 and insignificantly different from zero. Recall that our second prediction was that this variable would be significantly greater than 0. This would be indicative of a significant trading volume impact in response to the announcement of corporate sustainability reports. Instead, the point estimate indicates that there is only a slight increase in trading volume of 4.5%. Moreover, the 95% confidence interval spans the range of -0.10 to 0.19, indicating that we cannot reject the null of no increase in volume, while it is very unlikely that any increase in volume exceeds 19%.

Taken together, the results in columns (2) and (3) of Table 5 provide no compelling evidence that annual corporate sustainability reports containing SASB metrics provide a significant amount of new and value relevant information to investors. One potential explanation for the results in Table 5 is that our tests lack power. In order to calibrate the price and volume impacts of financially material information, Table 6 replicates the results in Table 5 using quarterly earnings announcements. In order to match the sample size and period, we use the first quarterly earnings announce-

ment immediately preceding each sustainability report announcement. These results corroborate earlier research findings of strong price and volume impacts for earnings announcements. The point estimate of $Abnormal\ Volatility$ for earnings-release dates is 3.133 and highly statistically significant. The 95% confidence interval indicates that stock return volatility increases by at least 139% during earnings announcements. Similarly, the point estimate of $Abnormal\ Volume$ is 0.993 and highly statistically significant. The 95% confidence interval indicates that trading volume increases by at least 83% during earnings announcements.

Table 7 reports formal two-sample t-tests for difference in means between the responses to the two sets of announcements. We assume unequal variances for these t-tests. The results show that the $Abnormal\ Volatility$ and $Abnormal\ Volume$ are higher on earnings release dates than on sustainability report dates, and that these differences are highly economically and statistically significant. In other words, we can infer with a high degree of confidence that annual sustainability reports containing SASB metrics have significantly less information content than quarterly earnings reports. This is despite the fact that earnings reports are updated on a quarterly basis, while the sustainability reports are generally updated on an annual basis. Thus, compared to traditional financial metrics, sustainability metrics appear to contain relatively little financially material information.

Finally, we consider three factors that may drive heterogeneity in the market reaction to SASB reports. First, we test whether the market reaction is greater for a firm's inaugural report. There are two reasons to expect a stronger response for inaugural reports: (i) subsequent reports provide annual updates to sustainability metrics, many of which are likely to be highly persistent, and (ii) following Griffin and Sun (2013), voluntary disclosure theory predicts that firms are more likely to initiate sustainability disclosures when they provide good news to investors. Second, we test whether the market reaction is greater for firms that accompany the publication of the report with a Form 8-K filing. The filing of a Form 8-K with the SEC suggests that the firm considers the report to contain material non-public information and potentially subjects the report to SEC scrutiny. Third, we test whether the market reaction is greater for reports containing some form of

external assurance for any of the sustainability metrics. External assurance should increase investor confidence in the reliability of the disclosures.

Table 8 reports the results of these tests. We construct three indicator variables to implement the tests. $I(\textit{Inaugural SASB Report})$ evaluates to 1 for the 46 observations in our sample for which the announcement indicates that it is an inaugural sustainability report, and 0 for all other observations.[9] $I(\textit{Related 8-K Filed})$ evaluates to 1 for the 15 observations in our sample for which the firm filed a related Form 8-K, and 0 for all other observations. $I(\textit{External Assurance})$ evaluates to 1 for the 107 observations in our sample for which we are able to find some form of external assurance accompanying the sustainability metrics, and 0 for all other observations.[10] These tests use the same sample of 275 sustainability reports and the same dependent variables as Table 5, but include the three indicators as explanatory variables in ordinary least squares regressions. The regression intercepts represent the mean values of the dependent variables across observations for which the indicator variables are all zero.

Column 1 provides no evidence of a statistically significant difference in $CAR_{t-1,t+1}$ for any of the indicator variables. The point estimate of $I(\textit{Inaugural SASB Report})$, however, is 1.0%, which while statistically insignificant, is directionally consistent with the voluntary disclosure of good news. Similarly, Column 2 provides no evidence of a statistically significant difference in *Abnormal Volatility* for any of the indicators. However, the signs of all indicators are positive, which is directionally consistent with greater volatility. Finally, Column 3 provides evidence of a significantly negative coefficient on $I(\textit{Inaugural SASB Report})$ and a significantly positive coefficient on $I(\textit{Related 8-K Filed})$. The negative coefficient on $I(\textit{Inaugural SASB Report})$ indicates that trading volume is lower around the release of inaugural reports, which is inconsistent with inaugural reports providing decision-useful information to investors. The positive coefficient on $I(\textit{Related 8-K Filed})$ indicates that trading volume is higher for SASB reports accompanied by an 8-K filing, which is consistent with managers choosing to file an 8-K when the report contains financially material

[9] 42 cases self-identify as inaugural sustainability reports while 4 self-identify as inaugural SASB-aligned reports.

[10] A common form of external assurance is the limited review of greenhouse gas emissions metrics. In many cases, these appear to be related to third party verifications conducted for company submissions to the Carbon Disclosure Project.

information. We note, however, that only 15 firms file a Form 8-K, so such disclosures are rare.

In summary, the results in Table 8 again fail to provide compelling evidence of significant information content. The only consistent and significant result is for Form 8-K filings, and this result is restricted to trading volume and applies to only 15 (5%) of our sample firms.

4.2 Additional Tests Evaluating Competing Explanations

The results thus far provide no compelling evidence of a significant stock market reaction to the release of corporate sustainability reports incorporating SASB metrics. These results are open to several potential explanations. One explanation is that the reports contain financially material information, but that stock prices do not fully incorporate this information on a timely basis. While a large body of research finds that stock prices respond to new and material information in a timely manner (e.g., Fama (1991)), there is also evidence of a partially delayed response to information in earnings announcements (e.g., Bernard and Thomas (1989)). Another explanation is that the information provided in the reports is not sufficiently material to warrant significant revisions to firm value. This could be because the information is financially immaterial. For example, a common set of SASB metrics relate to monetary losses associated with legal proceedings, but recent research suggests that such losses are generally financially immaterial (see Raghunandan and Rajgopal (2022)). Alternatively, while some of the reported metrics may be financially material, they may be preempted by more timely disclosures in traditional financial reports. Christensen et al. (2021) emphasize that existing SEC reporting requirements prohibit firms from omitting financially material information from regulatory filings. For example, the SEC requires the filing of Form 8-K upon the occurrence of material corporate events and research finds that such disclosures have significant information content (see Carter and Soo (1999); Lerman and Livnat (2010)). A final explanation is that the primary purpose of the sustainability reports is not to provide new and financially material information to investors, but instead to provide a broad set of stakeholders with information regarding firms' significant impacts on the environment and society. This subsection provides further tests to distinguish between these competing explanations.

4.2.1 Tests for Delayed Price Response

We begin by testing whether there is a partially delayed price response to information in corporate sustainability reports containing SASB metrics. A challenge in conducting these tests is the difficulty in determining whether information in sustainability reports provides good or bad news about firm value. To overcome this challenge, we assume that there is a partial response during the initial announcement period to any good or bad news in the releases. Thus, we classify observations with positive cumulative abnormal returns in the three day announcement period as 'good news' announcements and observations with negative cumulative abnormal returns in the three day announcement period as 'bad news' announcements. Next, we track the average cumulative abnormal returns for each set of firms over the next 60 trading days. This 60 trading day period should incorporate the next quarterly earnings announcement, allowing for the possibility that financially immaterial information is not priced by investors until it is disseminated via the next earnings announcement. The results are presented in Figure 1 and Table 9. Figure 1 shows announcement returns of about 2% for the positive announcement return portfolio and -2% for the negative announcement return portfolio. There is, however, no visible evidence of a drift in these initial announcement returns over the next 60 days. Table 9 provides formal statistical tests for a post-announcement drift in returns. The results confirm that there is no significant drift. Thus, there is no evidence to support the delayed price response explanation.

4.2.2 Tests for Financial Materiality

We next test the financial immateriality explanation. In order to test this explanation, we seek to identify frequently reported SASB metrics and analyze their financial materiality. The SASB standards are industry-specific and specify a total of 993 sustainability metrics across 77 industries. While many metrics are applicable to just one industry, there are some common themes. For example, 68 of the metrics relate to the "total amount of monetary losses as a result of legal proceedings..." and are further broken down by nature of legal proceeding (e.g., product safety, environmental regulations). A further 29 metrics relate to "total energy consumed" and are fur-

ther broken down by source of energy (e.g., grid, renewable). We choose to focus on monetary losses from legal proceedings for two reasons. First, such metrics appear most frequently across all industries. Second such monetary losses, if sufficiently large, have high potential for financial materiality.

In order to conduct our tests, we follow Raghunandan and Rajgopal (2022) in using data from the Violation Tracker database. This database is produced by the Corporate Research Project of Good Jobs First. It is a comprehensive database on corporate misconduct including banking, consumer protection, false claims, environmental, wage & hour, safety, discrimination, price-fixing and other cases resolved by the Justice Department and state and federal regulatory agencies. It includes 512,000 civil and criminal cases since 2000 from more than 400 agencies with penalties totalling $786 billion. Merging this database with our universe yields a sample of 6,618 violations from 2016 to 2021. Table 10 breaks down this sample by violation type. 3,253 of the violations relate to workplace safety and health, followed by environmental with 1,317 violations and employment with 432 violations.

Table 11 provides summary statistics on the magnitude of the penalties associated with the violations. It reports both the dollar amount of the penalty and the amount of the penalty expressed as a percentage of market capitalization. For all non-zero penalties in our universe, shown in Panel A, the mean penalty is $11.672 million or 0.101% of market capitalization. The penalties, however, are highly skewed and the corresponding medians are only $0.016 million or 0.000% of market capitalization. Thus, as previously pointed out by Raghunandan and Rajgopal (2022), such violations are typically financially immaterial. Panel B summarizes the subset of penalties related to firm-years with a sustainability report incorporating SASB metrics. The mean penalty is slightly smaller, amounting to $7.230 million or 0.021% of market capitalization. Thus, such penalties are generally financially immaterial for our sample of sustainability reports. Panel C presents descriptive statistics for major penalties in our sample universe. We limit this panel to penalties exceeding 1% of market capitalization and firms with market capitalizations exceeding $1 billion. This results in a sample of only 43 violations. Despite the small sample size, the penalties are clearly financially

material, averaging $1,138.348 million or 4.468% of market capitalization. Thus, while the typical violation is financially immaterial, there exist a small number of financially material violations.

To determine whether sustainability reports convey new information about financially material violations, we examine whether these violations are preempted by other more timely disclosures. We do this by conducting a manual search of company disclosures relating to the 43 major penalties identified in Panel C of Table 11. The disclosures that we search include (i) any company press release coincident with the announcement of the penalty, (ii) any Form 8-K coincident with the announcement of the penalty, (iii) the Form 10-K issued before the penalty and (iv) Form 10-K issued after the penalty. For (i) and (ii), we determine whether such disclosures exist and, if so, whether they identify the nature and amount of the penalty.[11] For (iii), we determine whether the existence and nature of the violation is identified in the Form 10-K (since the amount has not yet been announced). For (iv), we determine whether the nature and amount of the penalty is identified in the Form 10-K. The results are presented in Table 12. There are two notable results. First, 100% of the violations are identified in either a contemporaneous press release, a contemporaneous Form 8-K or the previous Form 10-K. Thus, by the time the penalty has been announced, investors should be aware of the nature of the violation. Second, the nature and penalty amount of 100% of the violations are identified in the Form 10-K following the violation. Thus, disclosure of these penalty amounts in sustainability reports simply duplicates the corresponding disclosures from the Form 10-Ks. In summary, as anticipated by Christensen et al. (2021), information about financially material violations is widely reported in existing financial disclosures.

Another potential source of information about legal penalties is the announcements made by the government agencies imposing the penalties. The Violation Tracker database records these announcement dates, allowing us to test whether they have information content. We test for information content using the same procedures that we previously used for sustainability report announcement dates and earnings announcement dates. The results are reported in Table 13. Panel A reports results for the 6,618 violations in our sample universe. Stock market data availability limits

[11] In some cases, the penalty was announced through a preliminary judgement and subsequently approved. In these cases, we include disclosures relating to the preliminary announcement.

the sample to 6,404 observations. The average announcement CAR is insignificant, but abnormal volatility and volume are both significantly positive. These results indicate that the announcements do not provide systematically bad news, but they do provide new information to investors. Thus, it seems that investors have unbiased expectations about the magnitude of the penalty, but that the announcements resolve uncertainty about the final amount of the penalty. Panel B reports results for the sample of 383 violations that overlap with our sample of SASB reports.Stock market data availability limits the sample to 372 observations. Recall from Table 11 that these violations were small. Thus, perhaps not surprisingly, there is no evidence of information content. Finally, Panel C reports results for the sample of 43 major penalties. There is again no evidence of information content. The mean CAR is close to zero and abnormal volatility and volume are both slightly elevated but insignificantly different from zero. Thus, it appears that these penalties are largely anticipated by investors. We note, however, that the tests in Panel C lack power due to the small sample size.

4.2.3 Tests for Primary Targeted Report Users

Why does sustainability reporting continue to proliferate despite its apparent lack of useful information about firm value? An alternative explanation is that managers seek to provide a broad set of stakeholders with information about their firms' impacts on the environment and society. This dual role for sustainability reporting aligns with the objectives of the reporting frameworks developed by the GRI and the European Commission. It is also consistent with the recent corporate movement away from shareholder primacy and toward a commitment to all stakeholders.[12] Under this explanation, the objective of sustainability reporting is to provide all stakeholders with information regarding the firm's significant impacts on the environment and society, regardless of whether these impacts have financially material consequences for the firm. Such information is useful to a broad group of socially conscious stakeholders who seek to promote sustainable development.

In order to provide evidence on this explanation, we analyze firms' websites to determine the

[12]See, for example, the recent release of a new statement of purpose of a corporation by The Business Roundtable at https://opportunity.businessroundtable.org/ourcommitment/.

target audience for sustainability reports. If the primary intended users are investors who seek to make financial decisions, we expect the reports to be provided within the investor section of the website, along with traditional financial reports. Alternatively, if the primary intended users are a broad group of stakeholders who seek to promote sustainable development, we expect the reports to provided in a separate section of the website devoted to sustainability.

In order to conduct this analysis, we begin with our original sample of 275 sustainability reports containing SASB metrics. Since we do not have access to cached versions of the associated corporate websites, we analyze the structure of each firm's website as of the date that this analysis was conducted, which spanned the month of May 2022. Panel A of Table 14 provides details regarding the final sample of firms analyzed. We lose 37 observations from our original sample due to some firms having multiple reports covering different years. A further 8 firms were acquired since issuing their reports and their websites were discontinued, resulting in a final sample of 230 websites analyzed.

We begin the analysis by first locating each firm's homepage. Next, we look for a navigation link on the homepage that relates to the firm's commitment to sustainability. While 'sustainability' is a common term, we also look for related terms including 'responsibility' and 'esg'. If we do not find such a link, we check for links providing access to general corporate information, such as 'about us' and 'company' and open the pages provided by these links to look for a navigation link related to sustainability. Upon locating a webpage dedicated to sustainability, we confirm that the page provides a link to the most recent sustainability report. We also check the page's URL to make sure that it is not a subpage of the firm's investor page. If both of these conditions are satisfied, we classify the firm as positioning its report on a main 'sustainability page' that is distinct from its 'investor' page. We interpret this positioning to indicate that the target audience for the firm's sustainability report comprises a broad group of stakeholders who seek to promote sustainable development. Panel B of Table 14 shows that we locate the report on a man sustainability page for 214 of the 230 firms in our sample, representing 93% of the sample.

Next, we locate the firm's investor page. We are able to locate an investor page for all 230 of

our sample firms. This page typically provide links to the firm's financial reports and SEC filings. We search the investor page for links related to sustainability reporting. We ignore links in static headers and footers that appear on all webpages. If we are unable to locate such a link, we check links to any subpages that we think might link to sustainability reporting, such as links related to 'financial reports' and 'governance.'[13] As indicated in Panel B of Table 14, we locate such links for 189 firms, representing 82% of the sample. Importantly, however, 173 of these firms also provide a link to the report on a main sustainability page. Only 16 firms, representing 7% of the sample, provide a link to their sustainability reports exclusively through their investor page. Thus, our analysis of corporate websites indicates that the vast majority of firms target their sustainability reports at a broad group of stakeholders by positioning it on a main sustainability page. This is in contrast to traditional financial reports, which are typically confined to the investor page.

In summary, these additional tests suggest that the most likely explanation for the lack of information content in sustainability reports is that the disclosures therein are either financially immaterial or are preempted by other required disclosure documents, such as Form 8-K and Form 10-K. Moreover, our analysis of corporate websites indicates that firms target these reports at a broad group of stakeholders via a dedicated webpage that emphasizes the firm's commitment to sustainable development rather than focusing on financial impacts on the firm.

5 Conclusion

This paper examines the stock market reaction to the release of corporate sustainability reports incorporating SASB standards that are designed to provide financially material and decision-useful information to investors. We are unable to find compelling evidence of a significant stock market reaction to the reports. Further tests indicate that the information contained in the reports is typically not financially material. Moreover, in cases where it is financially material, it is preempted

[13] We ignore subpages related to press releases. Recall that we require our sample to provide announcements contemporaneous with the issue of their sustainability reports. Thus, we could search through archived lists of press release to locate these announcements, which typically contain links to the underlying reports. Such a process, however, is very time consuming. Instead we only consider the direct provision of a link on a page or subpage of the investor site.

by other required financial disclosures, such as Form 8-K and Form 10-K.

We conclude that the demand for sustainability reports extends beyond the demand for financially material information by investors. The focus of the SASB, the TCFD and the ISSB on providing value-relevant information to investors arises as a convenient adaption of the traditional financial reporting framework. Yet while the demand for traditional financial reports derives primarily from investors concerned with assessing enterprise value, the demand for sustainability information derives from a broader set of stakeholders who are also concerned with environmental and social impacts. As such, the focus on providing value-relevant information to investors is unnecessarily narrow. Moreover, while traditional financial information serves primarily to inform investors about firm value, sustainability information can also have a direct impact on firm value. This is because stakeholders use this information to establish the terms on which they transact with the enterprise. For example, potential investors, customers and employees may choose not to engage with an enterprise that is perceived to have large negative environmental and social impacts. Thus, the profit maximizing strategy of the enterprise may be to mitigate these potential negative impacts and use sustainability reporting to communicate these mitigation actions to stakeholders.

Our findings have important implications for two ongoing initiatives to create sustainability reporting frameworks and standards. First, the ISSB is currently developing a global baseline of sustainability disclosure standards using the existing SASB standards as a starting point.[14] Following the SASB, the ISSB has the stated objective of meeting the needs of investors and creditors in determining firm value. Since we are unable to provide compelling evidence that SASB sustainability disclosures provide a significant amount of new information to investors, we question whether such a set of standards will achieve their stated objective. Second, the European Commission's CSRD has charged the European Financial Reporting Advisory Advisory Group (EFRAG) with drafting a set of European Sustainability Reporting Standards. Unlike the ISSB, the EFRAG has adopted a double materiality perspective that includes providing a broad set of stakeholders with

[14] https://www.ifrs.org/content/dam/ifrs/project/general-sustainability-related-disclosures/exposure-draft-ifrs-s1-general-requirements-for-disclosure-of-sustainability-related-financial-information.pdf.

information about the firms' significant impacts on the environment and people. Moreover, the EFRAG's draft general principles state that information about financial impacts on the firm should only be considered material to the extent that it is not yet fully captured by financial reporting.[15] Given our findings, we believe that this approach is more promising, as it will enable companies to communicate their significant environmental impacts to a broad group of stakeholders while eliminating the need to provide redundant information about financial impacts.

Finally, our paper highlights the important distinction between *financial materiality* and *environmental and social materiality*. Financial materiality aligns with Friedman (1962)'s perspective that the goal of the corporation should be profit maximization. Existing ESG ratings, such as those produced by MSCI and Sustainalytics, are based on financial materiality and specifically on how effectively the company manages ESG risks and opportunities. Similarly, ESG investment products based on these ratings aim to invest in companies that are maximizing firm value with respect to ESG risks and opportunities. Yet while the goal of profit maximization has created much financial wealth, it has also been a primary cause of the environmental damages and global inequalities that have led the United Nations to seek a common commitment for sustainable development. Achieving the goal of global sustainable development is very different from achieving the goal of firm profit maximization. It requires a set of institutional arrangements to govern global common resources. Dietz et al. (2003) find that such arrangements require good and trustworthy information about the stocks, flows, and processes within the resource systems being governed. Environmental and social materiality aligns with Dietz et al. (2003)'s perspective by providing the information required for sustaining global common resources. It is important that the ESG investors appreciate the distinction between these two types of materiality so that they understand whether they are investing in firms that are effectively managing ESG financial risks versus firms that are minimizing their negative environmental and social impacts.

[15] See https://efrag.org/Assets/Download?assetUrl=/sites/webpublishing/SiteAssets/ED_ESRS_1.pdf. The discussion of double materiality is contained in paragraphs 46 through 56.

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Fig. 1.
Cumulative Abnormal Returns Following the Announcement of Sustainability Reports containing SASB Metrics

Figure 1 displays equal-weighted market-adjusted abnormal returns for our sample of firms on each day following their SASB report release date. Daily abnormal returns are calculated as the residual from regressing the firm's returns on the S&P500's returns from the 30 most recent trading days, inclusive, and are cumulated from $t-1$ to $t+30$. $CAR_{t-1,t+1}$ is the 3-day, market-model cumulative abnormal return around the SASB report release date. We use this announcement return to sort the sample into two portfolios. The first portfolio consists of all observations with positive announcement returns and the second portfolio consists of all observations with negative announcement returns. The dashed lines represent the level of cumulative announcement period abnormal returns for each group.

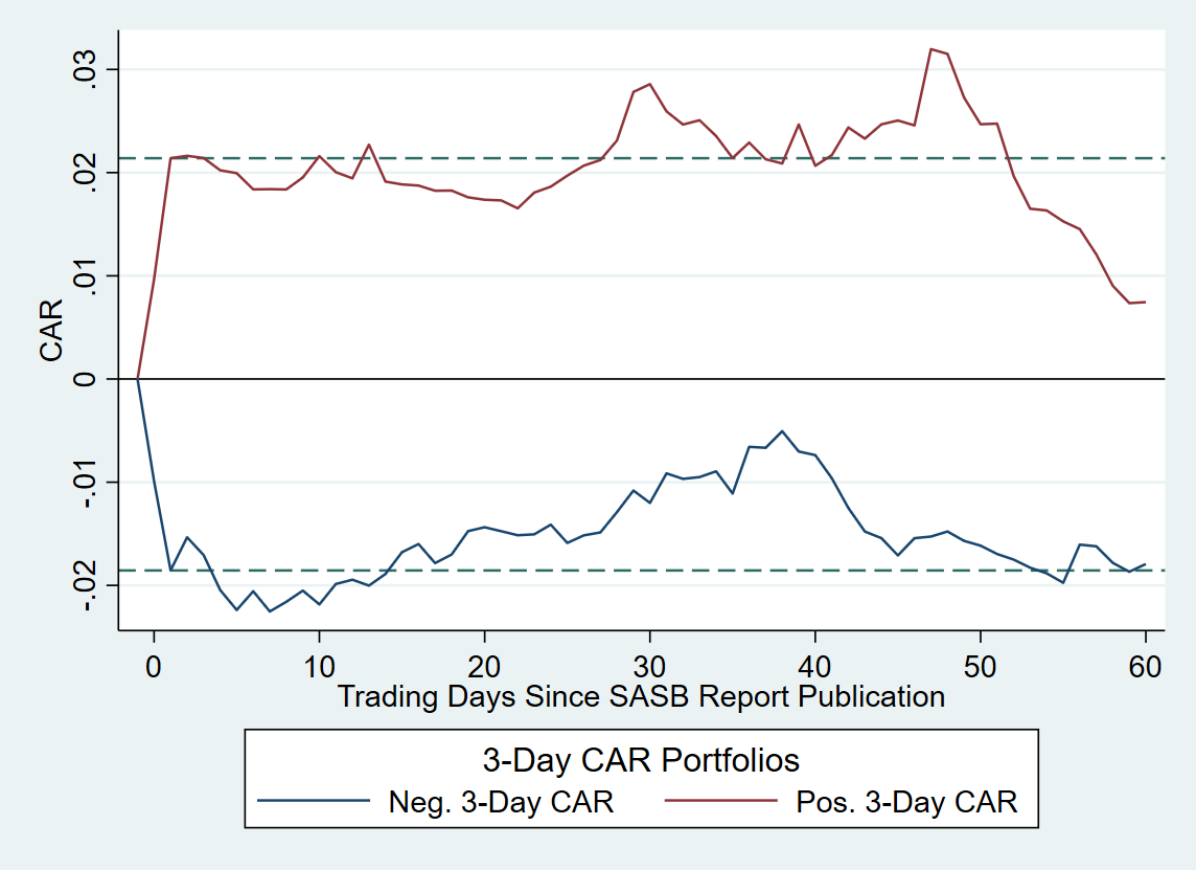

Table 1.
Sample Construction

Table 1 lists steps of attrition in our sample selection beginning with all reports identified by the SASB.

Unique U.S. SASB Reports, 2016—September 2021	846
Less reports that cannot be viewed	(90)
Less reports with no identifiable announcement	(244)
Less reports with an announcement that is ambiguous as to the report publication date	(182)
Less observations with a concurrent financial announcement within a 5-day window	(44)
Less firm-SASB-report-dates that cannot be merged to CRSP	(9)
Less obs w/ insufficient data to construct DVs for SASB ann. date or nearest previous earnings release date	(2)
Main Analysis Sample Observations:	**275**

Table 2.
Sample Composition: Announcement Types

Table 2 lists the newswire service or other method used to announce the release of the report.

	Frequency	%	Cum.
Accesswire	3	1.09	1.09
Business Wire	119	43.27	44.36
CSR Newswire	1	0.36	44.72
Company Only-News Release	15	5.45	50.17
Company Only-Other	10	3.63	53.80
Form 8-K	1	0.36	54.16
Globe Newswire	52	18.91	73.07
PR Newswire	74	26.91	100.00
Total	275	100.00	

Table 3.
Summary Statistics for Financial Characteristics

Panel A: Fundamentals for our Analysis Sample, for the FY Prior to SASB Disclosure Date (Winsorized at 1%)

	Mean	Median	S.D.	Min	Max
Total Assets	38,173	13,379	62,234	141	281,000
Total Revenue	13,670	6,276	19,062	0	69,233
ROE (NI)	0.065	0.089	0.395	-3.563	1.094
ROA (NI)	0.018	0.029	0.131	-1.486	0.244
Gross Profit Margin	0.067	0.357	4.236	-66.739	0.972
Leverage	4.168	2.907	3.799	1.102	24.722
Observations	271				

Panel B: Fundamentals for Compustat Universe, FY2016-2021 (Winsorized at 1%)

	Mean	Median	S.D.	Min	Max
Total Assets	9,529	506	35,684	0	281,000
Total Revenue	3,101	165	9,71	0	69233
ROE (NI)	-0.314	0.030	1.291	-9.360	1.094
ROA (NI)	-0.509	0.003	2.286	-19.000	0.434
Leverage	3.642	2.144	3.956	1.009	24.722
Observations	31,574				

Panel C: T-tests for Differences in Means

	Mean(Sample)	Mean(Compustat)	Diff.	Std. Error	P-value
Total Assets	38,173	9,530	28,891***	3,787	0.0000
Total Revenue	13,670	3,101	10,660***	1,168	0.0000
ROE (NI)	0.0649	-0.3140	0.3825***	0.0258	0.0000
ROA (NI)	0.0175	-0.5089	0.5310***	0.0154	0.0000
Gross Profit Margin	0.0671	-0.8302	0.9064***	0.2637	0.0007
Leverage	4.1675	3.6415	0.5311**	0.2359	0.0252

Table 4.
Fama-French 48 Industries

Table 4 lists the Fama-French 48 Industry Classifications and the proportion of the Analysis Sample and Compustat Universe that fall under each classification.

Fama-French Industry	Analysis Sample (%)	Compustat Universe (%)
Agriculture	0.00	0.25
Food Products	4.80	1.05
Candy & Soda	0.00	0.27
Beer & Liquor	0.37	0.31
Tobacco Products	1.11	0.05
Recreation	0.00	0.46
Entertainment	0.74	1.07
Printing and Publishing	0.00	0.34
Consumer Goods	1.48	0.84
Apparel	1.85	0.57
Healthcare	0.37	1.13
Medical Equipment	1.85	2.69
Pharmaceutical Products	3.32	12.26
Chemicals	5.90	1.40
Rubber and Plastic Products	0.74	0.36
Textiles	0.00	0.10
Construction Materials	2.21	1.24
Construction	1.11	0.79
Steel Works Etc	1.11	0.73
Fabricated Products	0.37	0.14
Machinery	4.43	1.92
Electrical Equipment	1.48	0.98
Automobiles and Trucks	2.21	1.13
Aircraft	0.74	0.34
Shipbuilding, Railroad Equipment	0.37	0.16
Defense	0.00	0.11
Precious Metals	1.11	3.69
Non-Metallic and Industrial Metal Mining	0.00	5.11
Coal	0.37	0.27
Petroleum and Natural Gas	6.27	4.85
Utilities	7.75	3.36
Communication	0.37	2.04
Personal Services	0.00	0.95
Business Services	7.75	10.65
Computers	1.11	1.33
Electronic Equipment	3.32	3.25
Measuring and Control Equipment	0.37	1.10
Business Supplies	1.48	0.55
Shipping Containers	0.74	0.15
Transportation	5.17	2.56
Wholesale	2.95	2.14
Retail	4.43	2.93
Restaurants, Hotels, Motels	1.11	1.21
Banking	4.43	9.74
Insurance	3.32	2.20
Real Estate	0.37	1.18
Trading	10.33	6.56
Almost Nothing	0.74	3.46
Total	100	100

Table 5.
Stock Market Reaction to the Announcement of Corporate Sustainability Reports Containing SASB Metrics

$CAR_{t-1,t+1}$ is the 3-day, market-model cumulative abnormal return around the SASB report announcement date. Daily abnormal returns are calculated as the residual from regressing the firm's returns on the S&P500's returns from the 30 most recent trading days, inclusive, and are cumulated from $t-1$ to $t+1$. $Abnormal\ Volatility$ is the squared value of $CAR_{t-1,t+1}$ for the report announcement date divided by the average value for non announcement dates. This variable is defined so that its average value on non-announcement dates is 1. To seed the average volatility measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020). $Abnormal\ Volume$ is the mean of the trading volume (scaled by total shares outstanding) on each of the three days centered on the report announcement date, minus the mean scaled trading volume during the non-announcement period, divided by the standard deviation of the same. To seed the mean and standard deviation for this measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020). 95% confidence intervals are indicated in brackets below each parameter estimate. P-values for a two-sided t-test of the null hypothesis for each respective dependent variable are reported.

	(1) $CAR_{t-1,t+1}$	(2) *Abnormal Volatility*	(3) *Abnormal Volume*
	0.002	1.082	0.045
	[-0.0036,0.0071]	[0.7426,1.4213]	[-0.0978,0.1872]
Null Hypothesis	$\beta = 0$	$\beta = 1$	$\beta = 0$
P-Value	0.523	0.635	0.537
Observations	275	275	275

Table 6.
Stock Market Reaction to the Announcement of Nearest-Previous Earnings Report

$CAR_{t-1,t+1}$ is the 3-day, market-model cumulative abnormal return around the nearest-previous earnings report announcement date. Daily abnormal returns are calculated as the residual from regressing the firm's returns on the S&P500's returns from the 30 most recent trading days, inclusive, and are cumulated from $t-1$ to $t+1$. $Abnormal\ Volatility$ is the squared value of $CAR_{t-1,t+1}$ for the report announcement date divided by the average value for non announcement dates. This variable is defined so that its average value on non-announcement dates is 1. To seed the average volatility measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020). $Abnormal\ Volume$ is the mean of the trading volume (scaled by total shares outstanding) on each of the three days centered on the report announcement date, minus the mean scaled trading volume during the non-announcement period, divided by the standard deviation of the same. To seed the mean and standard deviation for this measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020). 95% confidence intervals are indicated in brackets below each parameter estimate. P-values for a two-sided t-test of the null hypothesis for each respective dependent variable are reported.

	(1)	(2)	(3)
	$CAR_{t-1,t+1}$	*Abnormal Volatility*	*Abnormal Volume*
	0.003	3.133	0.993
	[-0.0049,0.0106]	[2.3879,3.8778]	[0.8285,1.1573]
Null Hypothesis	$\beta = 0$	$\beta = 1$	$\beta = 0$
P-Value	0.473	0.000	0.000
Observations	275	275	275

Table 7.
Comparison of the Stock Market Reaction to Corporate Sustainability Reports Containing SASB Metrics versus Nearest-Previous Quarterly Earnings Report

The table below reports formal t-tests for differences in means between the market-reaction variables for SASB report announcements versus the nearest previous earnings report announcement. We report mean values for each group, the difference, the standard error of the difference, and the p-value for a test of zero difference in means. (Equal variances for the groups are not assumed.) $CAR_{t-1,t+1}$ is the 3-day, market-model cumulative abnormal return around the report announcement date. Daily abnormal returns are calculated as the residual from regressing the firm's returns on the S&P500's returns from the 30 most recent trading days, inclusive, and are cumulated from $t-1$ to $t+1$. $Abnormal\ Volatility$ is the squared value of $CAR_{t-1,t+1}$ for the report announcement date divided by the average value for non announcement dates. This variable is defined so that its average value on non-announcement dates is 1. To seed the average volatility measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020). $Abnormal\ Volume$ is the mean of the trading volume (scaled by total shares outstanding) on each of the three days centered on the report announcement date, minus the mean scaled trading volume during the non-announcement period, divided by the standard deviation of the same. To seed the mean and standard deviation for this measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020).

	Mean(Earnings Report)	Mean(SASB Report)	Diff.	Std. Error	P-value
$CAR_{t-1,t+1}$	0.003	0.0017	0.0011	0.0048	0.8199
Abnormal Volatility	3.133	1.082	2.051***	0.4158	0.0000
Abnormal Volume	0.993	0.045	0.948***	0.1105	0.0000

Table 8.
Regression Tests Evaluating Potential Determinants of the Stock Market Reactions to Sustainability Reports Containing SASB Metrics

This table reports the results of regression analyses evaluating potential determinants of the stock market reactions reported in Table 5. We use the same analysis sample of 275 sustainability reports and include three indicator variables: I(*Inaugural SASB Report*) an indicator variable that evaluates to 1 if the press release indicates that the SASB report is the firm's first such report, I(*Related 8-K Filing*) an indicator variable that evaluates to 1 if the firm filed an 8-K referencing the SASB filing (i.e., an indicator that the firm considered the report financially material), and I(*External Assurance*) an indicator variable that evaluates to 1 if the sustainability metrics in the report have received some for of external assurance. The dependent variables, $CAR_{t-1,t+1}$, $Abnormal\ Volatility$, and $Abnormal\ Volume$ are all the same, as defined in Table 5. 95% confidence intervals are indicated in brackets below each parameter estimate. Significance levels for p-values for a two-sided t-test of the null are indicated by *, **, *** for 10%, 5%, and 1%. For the interaction terms, the null hypothesis is that the parameter estimate is zero. For the intercept, the null hypothesis is that the intercept is 0 for $CAR_{t-1,t+1}$ and $Abnormal\ Volume$, and 1 for $Abnormal\ Volatility$, as in the tables above.

	(1)	(2)	(3)
	$CAR_{t-1,t+1}$	*Abnormal Volatility*	*Abnormal Volume*
I(*Inaugural SASB Report*)	0.010	0.622	-0.304***
	[-0.0094,0.0303]	[-0.7496,1.9932]	[-0.5043,-0.1029]
I(*Related 8-k Filed*)	-0.006	0.444	0.818*
	[-0.0393,0.0274]	[-1.0179,1.9064]	[-0.0842,1.7196]
I(*External Assurance*)	0.001	0.016	0.062
	[-0.0091,0.0110]	[-0.6070,0.6394]	[-0.2704,0.3941]
Constant	-0.000	0.950	0.026
	[-0.0076,0.0076]	[0.6200,1.2793]	[-0.1266,0.1781]
Observations	275	275	275
R^2	-0.0033	-0.0030	0.0214

Table 9.
Tests for Delayed Information Content

This table reports the results of tests of whether there is an incomplete response to good or bad news at the SASB report announcement date. We report formal t-tests for differences in means between the cumulative abnormal returns for the equal-weighted portfolios of firms with positive and negative 3-day announcement CARs over various time frames. We report mean values for each group, the difference, the standard error of the difference, and the p-value for a test of zero difference in means. (Equal variances for the groups are not assumed.) Daily abnormal returns are calculated as the residual from regressing the firm's returns on the S&P500's returns from the 30 most recent trading days, inclusive, and are cumulated over various periods. $CAR_{t-1,t+1}$ is the 3-day, market-model cumulative abnormal return around the SASB report announcement date, and we use this measure to sort the sample into two portfolios (positive and negative).

	Mean(Pos 3-Day CAR)	Mean(Neg. 3-Day CAR)	Diff.	Std. Error	P-value
$CAR_{t-1,t+1}$	0.021	-0.019	0.040^{***}	0.0037	0.0000
$CAR_{t+2,t+30}$	0.008	0.003	0.005	0.0101	0.6486
$CAR_{t+2,t+60}$	-0.013	-0.003	-0.010	0.0093	0.2696

Table 10.
Types of Violations

We obtain a comprehensive data set of corporate violations from the Violation Tracker database of Good Jobs First's Corporate Research Project. Of this set, 6,618 violations occur within the time frame of our study and are committed by firms which can be matched to sufficient CRSP and Compustat data for our analyses. The majority of these violations relate to workplace safety and health violations, which are relevant to our analyses, because Workforce Health and Safety is a SASB disclosure topic. The second most common violation type is Environmental, followed by Employment, Discrimination, and Safety. The category *Other* contains violations from over 40 remaining categories, including violations relating to fraud, other financial violations, violations relating to corruption, and more.

	Violations
Workplace Safety & Health	3,253
Environmental	1,317
Employment*	432
Discrimination	215
Safety**	193
Other***	1,208
Total	6,618

* Other than those violations relating to employment discrimination
** Other than those violations relating to workplace safety & health
*** Contains violations from 40 remaining categories

Table 11.
Summary Statistics for Penalties Associated with Violations

For our analyses on the market reaction to violations, we use three samples. First, the overall sample of Violations obtained from Good Jobs First's Violation Tracker database. Second, we match the violations data to our SASB report sample. We find 382 violations that occurred in the year covered by one of our 275 SASB reports. These violations are our subsample of SASB report-year violations. Finally, we construct a subsample of financially material violations. This subsample consists of violations where the implicated firm has at least $1B market cap, and the value of the penalty is greater than 1% of the firm's market capitalization. This is the major penalties subsample.

Panel A: All Violations

	Mean	Median	S.D.	Min	Max
Market Cap ($B)	50.876	12.265	120.339	0.013	2,006.723
Penalty Amount ($M)	11.672	0.016	194.852	0.000	8,001.000
Penalty as a % of Mkt Cap	0.101	0.000	1.678	0.000	65.586
Observations	6,618				

Panel B: SASB Report-Year Violations

	Mean	Median	S.D.	Min	Max
Market Cap ($B)	49.099	27.924	69.204	0.276	431.079
Penalty Amount ($M)	7.230	0.021	56.790	0.005	955.200
Penalty as a % of Mkt Cap	0.018	0.000	0.082	0.000	0.722
Observations	382				

Panel C: Major Penalties
Within the sample of firms with $1B or greater market cap, penalties greater than 1% of market cap.

	Mean	Median	S.D.	Min	Max
Market Cap ($B)	41.748	6.400	102.712	1.146	492.355
Penalty Amount ($M)	1,138.348	126.300	2,064.833	15.079	8,001.000
Penalty as a % of Mkt Cap	4.468	1.824	7.611	1.001	38.165
Observations	43				

Table 12.
Analysis of Related Disclosures for Firms with Major Penalties

For the subsample of major penalties, we analyze additional disclosures relating to the violation. We check whether the alleged violation and (potential) penalty is disclosed in a standalone company press release, a Form 8-K, the previous Form 10-K (relating to the period prior to that in which the penalty is announced), and the concurrent Form 10-K (relating to the period in which the penalty is announced).

	Press Release	Form 8-K	Previous Form 10-K	One of Prior 3	Concurrent Form 10-K
Yes	27	30	39	43	43
Yes %	63%	70%	95%	100%	100%
No	16	13	2	0	0
No %	37%	30%	5%	0%	0%
Total	43	43	41*	43	43

*One firm committed the violation after filing the previous Form 10-K and one firm acquired a private firm that had committed a violation, with the acquisition closing after the filing of the previous Form 10-K.

Table 13.
Stock Market Reaction to the Announcement of Violations in the Violations Tracker Database

The following table reports results of event-study tests of market reaction to announcement of violations in the Violation Tracker database. $CAR_{t-1,t+1}$ is the 3-day, market-model cumulative abnormal return around the announcement date identified in the violation tracker database. Daily abnormal returns are calculated as the residual from regressing the firm's returns on the S&P500's returns from the 30 most recent trading days, inclusive, and are cumulated from $t-1$ to $t+1$. $Abnormal\ Volatility$ is the squared value of $CAR_{t-1,t+1}$ for the violation announcement date divided by the average value for non announcement dates. This variable is defined so that its average value on non-announcement dates is 1. To seed the average volatility measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020). $Abnormal\ Volume$ is the mean of the trading volume (scaled by total shares outstanding) on each of the three days centered on the violation announcement date, minus the mean scaled trading volume during the non-announcement period, divided by the standard deviation of the same. To seed the mean and standard deviation for this measure, we exclude the three-day trading windows around both SASB-report release dates and earnings release dates, and use a +/- 130-day window, following Beaver et al. (2020). 95% confidence intervals are indicated in brackets below each parameter estimate. P-values for a two-sided t-test of the null hypothesis for each respective dependent variable are reported.

Panel A: All Violations

	(1) $CAR_{t-1,t+1}$	(2) *Abnormal Volatility*	(3) *Abnormal Volume*
	-0.001	1.125	0.068
	[-0.0022,0.0007]	[1.0565,1.1940]	[0.0468,0.0902]
Null Hypothesis	$\beta = 0$	$\beta = 1$	$\beta = 0$
P-Value	0.307	0.000	0.000
Observations	6,404	6,404	6,419

Panel B: SASB Report-Year Violations

	(1) $CAR_{t-1,t+1}$	(2) *Abnormal Volatility*	(3) *Abnormal Volume*
	-0.000	1.028	-0.000
	[-0.0037,0.0028]	[0.7616,1.2940]	[-0.0752,0.0746]
Null Hypothesis	$\beta = 0$	$\beta = 1$	$\beta = 0$
P-Value	0.782	0.837	0.994
Observations	372	372	372

Panel C: Major Penalties
Within the sample of firms with $1B or greater market cap, penalties greater than 1% of market cap.

	(1) $CAR_{t-1,t+1}$	(2) *Abnormal Volatility*	(3) *Abnormal Volume*
	0.007	1.059	0.042
	[-0.0062,0.0195]	[0.6257,1.4923]	[-0.2363,0.3213]
Null Hypothesis	$\beta = 0$	$\beta = 1$	$\beta = 0$
P-Value	0.300	0.785	0.760
Observations	43	43	43

Table 14.
Analysis of Sustainability Report Positioning on Firm Websites

This table summarizes our analysis of the positioning of sustainability reports on firm websites for 231 unique firms from the sustainability report sample. Starting from each firm's homepage, we first determine whether there is a main sustainability page that provides a link to the sustainability report. Next, we analyze the firm's investor page to determine whether that page provides a link to the sustainability report. The results of this analysis are provided in Panel B. All websites were analyzed during May 2022.

Panel A: Website Sample Formation

Initial Sample of Sustainability Reports	275
Less Multiple Reports for the Same Firm*	(37)
Less Firms Acquired Since Report**	(8)
Final Sample of Firm Websites Analyzed	230

*For firms with multiple years of reports, we can only observe the positioning of the most recent report
**A number of firms in the sample have been acquired in the time since their report was published, and the positioning of the report on the acquired company's pre-acquisition website cannot be determined.

Panel B: Positioning of Sustainability Report

		Main Sustainability Page					
		Yes		**No**		**Total**	
		N	%	N	%	N	%
Investor Page	**Yes**	173	75%	16	7%	189	82%
	No	41	18%	0	0%	41	18%
	Total	214	93%	16	7%	230	100%