# Does CSR engender trust? Evidence from investor reactions to corporate disclosures*

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**Abstract**

We investigate whether a firm's corporate social responsibility activity (CSR) affects investor trust. Motivated by the observation that trust enhances disclosure credibility which will in turn lead to faster price discovery, we address our question by examining the relation between CSR and stock price discovery at earnings announcements. We find robust evidence that firms with more CSR enjoy faster incorporation of earnings news into stock prices. This faster price discovery exists only for positive earnings news, reinforcing the perspective that CSR leads investors to maintain a positive view of the firm. We strengthen our identification of the effect of CSR on investor trust using regression discontinuity analyses of shareholder CSR proposals and an experiment that provides evidence of the causal effects of a firm's CSR on investor perceptions of trust. We further show that high CSR firms experience lower investor uncertainty, more trading volume, and stronger earnings response coefficients.

**Keywords:** Corporate social responsibility activity (CSR), investor trust, informational price efficiency, price discovery
**JEL Classifications:** G24, M14, M41, Q56

# 1 Introduction

A growing literature documents the capital market benefits to firms of winning and maintaining investor trust (Chakravarthy et al., 2014; Elliott et al., 2018). CSR is a popular candidate tool for this purpose, but evidence on its efficacy is mixed. Proponents argue that CSR bolsters investor trust because it signals a firm's commitment to be a cooperative member of society (Guiso et al., 2011; Hartzmark and Sussman, 2019). However, other studies highlight the potential for CSR to reflect managerial rent extraction, incentive misalignment, and misreporting (Bartov et al., 2021; Demers et al., 2020). This view suggests CSR might indicate less trustworthiness, reigniting the debate about how investors perceive CSR. In the context of this debate, we investigate whether a firm's corporate social responsibility activity (CSR) increases investor trust.

Following Sapienza and Zingales (2012), we define trust as *the expectation that another person or institution will perform actions that are beneficial, or at least not detrimental, to us regardless of our capacity to monitor those actions.* In the investor-firm relationship, corporate disclosures comprise an important class of such actions. Because of information asymmetries and limited ability to monitor firms' disclosure decisions, investors face uncertainty about potential bias in such disclosures (Fischer and Verrecchia, 2000). Trust improves *investors' perceptions of the believability of a particular disclosure* (i.e., disclosure credibility) by improving perceptions of trustworthiness (Mercer, 2004). Heightened disclosure credibility allows investors to process corporate disclosures more quickly and thus leads to faster price discovery. Consistent with this reasoning, using country-level survey data, Pevzner et al. (2015) and Guan et al. (2020) find stronger investor reactions to earnings news and forecasts in countries with greater societal trust. Building on these findings, we use several measures of price discovery to examine whether firm-level CSR strengthens disclosure credibility and trust in firms' disclosures. We bolster these analyses with an experiment to identify the causal link between firm-level CSR and investor trust in corporate disclosures.

We conduct our analyses using a sample of 18,529 annual earnings announcements from 2,903 firms between 1996 and 2017. We focus on earnings announcements because they are a salient and recurring corporate disclosure to which both managers and investors pay close attention.

Thus, disclosure credibility of earnings announcements is particularly important to managers. In our main tests, we focus on two measures of price discovery: (1) intraperiod timeliness ($IPT$), which captures how quickly stock prices adjust to reflect earnings news during the five-day window after an earnings announcement, and (2) intraperiod efficiency ($IPE$), which revises $IPT$ to account for potential overreaction within the measurement window (Blankespoor et al., 2018). An important feature of these measures is that they focus on the *speed* of price discovery while holding constant the direction or magnitude of information revealed to investors. Thus, they provide an appealing tool for assessing the extent to which investors' perceptions of trustworthiness vary with CSR.

Following prior research, we measure firm-level CSR using Morgan Stanley Capital International (MSCI) annual ratings from the KLD STATS database (Borisov et al., 2016; Lins et al., 2017; Albuquerque et al., 2019). This is consistent with our interest in studying the link between CSR and investor trust, which is likely to be driven by investors' *perceptions* of firms' CSR. Firms' actual CSR is inherently unobservable, and there is currently no mandatory disclosure requirement related to them. Instead, investors mostly rely on intermediaries like MSCI to assess CSR. Thus, our research design effectively mirrors how investors themselves likely assess CSR. Using this approach, we find a robust positive association between a firm's CSR and both the intraperiod timeliness and intraperiod efficiency of prices with respect to annual earnings announced during the next calendar year. Our tests indicate that a one standard deviation increase in CSR is associated with a 1.29% (1.7%) increase in the average timeliness (efficiency) of prices with respect to reported earnings. These findings are robust to the inclusion of several controls for the quantity and quality of corporate disclosures: the number of management earnings forecasts issued each year, the magnitudes of errors in these forecasts, the Bonsall et al. (2017) BOG index of 10-K readability, and the amount of media attention during the earnings announcement period, and firm liquidity. Overall, our findings support the inference that investors respond faster to disclosures from firms with higher CSR because they trust these firms more and thus consider their disclosures more credible.

Recognizing that the level of a firm's CSR is an outcome of nonrandom choices made by firms, we include firm fixed effects throughout our analyses to absorb any time-invariant characteristics of firms that may relate to both firms' CSR adoption and the speed of price discovery.

Nonetheless, firms may still adjust their CSR over time as they change other corporate policies. Such a possibility could generate correlated omitted variables in our main analyses. In light of this, we conduct three tests to bolster our identification strategy in our tests of CSR and stock price discovery. First, we use a regression discontinuity design (RDD) to study plausibly random variation in firm-level CSR arising from CSR shareholder proposals that pass or fail by a small margin of votes. Narrow passage of CSR proposals improves investors' CSR perceptions but these proposals are plausibly unrelated to firm fundamentals or disclosure practices relative to firms with narrow failures of CSR proposals. We find that such narrow passage significantly increases the speed of price discovery, suggesting that investor perceptions of CSR do improve disclosure credibility. Second, we examine how the relation between CSR and price discovery varies with the valence of information disclosed. Because managers have asymmetric incentives to disclose good news, bad news is inherently more credible than good news. Given this ex-ante higher level of credibility of bad news, activities that enhance disclosure credibility will not be as relevant to the processing of bad news as they would be to the processing of good news. Our results confirm that CSR relates to the speed of price discovery because of changing perceptions of disclosure credibility, since we observe an asymmetric effect concentrated in enhanced responses to good news reports from the firm. Third, we disaggregate our main measure of CSR into strengths and weaknesses to study whether disclosure credibility is enhanced by CSR strengths or deteriorated CSR weaknesses (or both). We find that investors perceive disclosures to be more credible when firms have more CSR strengths, but do not perceive disclosures to be less credible when firms have more CSR weaknesses. Collectively, our findings reinforce the view that CSR is associated with faster price discovery because it strengthens investor trust.

To identify the causal link between CSR and investor trust, we conduct a $2 \times 2$ experiment manipulating CSR performance and earnings news. Following prior experiments studying investor judgments related to CSR (Elliott et al., 2014; Guiral et al., 2020; Hoang and Phang, 2023) and earnings news (Elliott et al., 2018), we design an experiment where participants assume the role of an investor considering an investment. All participants receive CSR and current earnings reports for a single firm, but the content of these reports differ across manipulated conditions. Specifically, each report can either be positive or negative. This creates four different conditions across which we randomly assign participants. Because of this random

assignment, we can identify causal effects as the only differences across the four groups pertain to the information that they receive from these reports. Our experiment reveals that positive CSR performance causes participants to perceive disclosures as being more credible and have higher trust in the firm.

In our main analyses, we focus on the speed of price discovery as our empirical proxy for disclosure credibility. To assuage concerns about measurement error in this proxy, we also examine how investor uncertainty, trading volume, and earnings response coefficients at earnings announcements change with CSR. Increases in disclosure credibility should lead to smaller increases in investor uncertainty prior to earnings announcements, a greater willingness of investors to trade in response to disclosures and thus more trading volume around earnings announcements, and stronger stock price reactions to earnings news. Our empirical analyses reveal these patterns in conjunction with greater CSR. First, we observe significantly smaller increases in investor uncertainty leading up to earnings announcements made by firms with higher CSR. In addition, these firms experience significantly lower rises in investor uncertainty during the entire earnings announcement period. Second, we observe increases in total and retail trading volume at earnings announcements made by firms with higher CSR. Third, we observe stronger earnings response coefficients for firms with higher CSR. Overall, the evolution of investor uncertainty, trading volume, and earnings response coefficients around earnings announcements for firms with higher levels of CSR reinforce the inference that investors trust these firms' disclosures more. To ensure that our findings are not an artifact of idiosyncratic research design choices, we also confirm that our inferences are unchanged under alternative fixed effect structures or absent fixed effects Breuer and deHaan (2023) or excluding the 2008-2009 global financial crisis period.

Our findings offer several important contributions to the literature on the capital markets consequences of CSR. First, we illuminate an important channel through which firm CSR affects capital markets. Despite overwhelming attention from the popular press and investors, CSR remains an opaque dimension of firm behavior. Academic literature provides mixed evidence on whether CSR reflects favorable managerial intentions toward societal welfare or unfavorable managerial intentions toward rent-extraction (Gao et al., 2014; Welch and Yoon, 2020; Raghunandan and Rajgopal, 2022; Barnea and Rubin, 2010; Demers et al., 2020). Because of this

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ambiguity, it is unclear how CSR shapes investor perceptions of the firm.

To help answer this question, a growing number of studies investigate links between CSR and capital market outcomes. Wang et al. (2021) reports that mandatory CSR-related disclosures in China are associated with stronger earnings responses because such disclosures help investors assess firms' growth opportunities and allocate their limited attention. However, evidence from U.S. investors is more conflicted on this point. Chen et al. (2021) reports that investors are more likely to perform Google searches or download EDGAR filings for firms with more CSR. However Cao et al. (2020) find that institutions with a CSR focus react less to accounting-based valuation signals. In the U.S. setting, several studies document an association between CSR and disclosure characteristics such as disclosure precision (Cui et al., 2018), discretionary accruals (Kim et al., 2012), and disclosure frequency (Bartov and Li, 2015; Holbrook, 2013). We extend this literature by examining how CSR affects investor trust in firms, independent of underlying changes in the information environment or firm-level disclosure practices. Our experimental analyses reveal a causal link between CSR and investor trust when holding constant the amount and quality of reported information. Our main analyses ensure the external validity of this causal link by studying a large sample of U.S. firms; through this analyses, we find that CSR is associated with faster investor incorporation of information in earnings announcements after controlling for disclosure and information environment features. This suggests that investors are more trusting of disclosures made by firms with more CSR, even when the information environment is otherwise unchanged.

Our findings extend prior literature by suggesting CSR as a means by which firms can bolster investor trust. Although theoretical and empirical studies provide clear evidence that investor trust can materially impact capital markets, less is known about actions firms can take to cultivate trust. Chakravarthy et al. (2014) offer early evidence on this question in a study of firms aiming to rebuild trust lost after a disclosure failure. Our study advances this literature by identifying CSR as a tool managers can use to increase investor trust before it has been lost.

Our study extends preliminary evidence from Ng and Rezaee (2020) that firms with high ESG experience stock prices with higher levels of idiosyncratic volatility. They interpret this as evidence that the stock prices of highly active ESG firms reflect more firm specific information. Our study complements Ng and Rezaee (2020) in two ways. First, we highlight trust as

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the channel that facilitates the faster price discovery among firms with high CSR. This is an important consequence of firms' CSR both for regulators who seek to better understand the potential outcome of advancing sustainability disclosure requirements and for managers who aim to foster and maintain investor trust. Second, we show that earnings information of firms with high CSR gets incorporated into stock prices more quickly, implying that investors are reacting to these firms' earnings news faster. Having faster price discovery is different from exhibiting higher levels of idiosyncratic volatility because the former implies that stock prices reflect earnings news on a timely manner while the latter does not. Li et al. (2014) document that higher idiosyncratic volatility often arises from noise rather than firm-specific information. They recommend triangulating relevant inferences using other measures of the information environment. Our study furthers this goal using established measures of price discovery such as earnings timeliness and efficiency, investor uncertainty, trading volume, and earnings response coefficients.

Finally, our findings inform the SEC and other regulators who are interested in improving the functioning of capital markets and understanding the role of CSR. The SEC has included an examination of climate and ESG-related risks among its 2021 examination priorities, underscoring a growing investor interest in these issues. At the same time, several studies argue that CSR may reflect agency problems inside the firm. Under this framework, CSR primarily benefits managers who, at the expense of shareholders, earn good reputations among other key stakeholders, including local politicians, nongovernmental organizations, or labor unions (Tirole, 2001; Bénabou and Tirole, 2010; Cheng et al., 2013; Krüger, 2015). By demonstrating that investor perceptions of disclosure are materially shaped by their perceptions of CSR, our study also highlights the importance of monitoring and regulating firms' CSR and related disclosures.

## 2 Related literature and empirical framework

### 2.1 CSR, investor trust, and disclosure credibility

The goal of this study is to examine whether CSR engenders investor trust in firms as reflected in increased disclosure credibility. Proponents of CSR cite less negative return reactions for firms with high levels of CSR during the 2008-2009 global financial crisis as proof that CSR

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strengthens investor trust (Khan et al., 2016; Lins et al., 2017; Welch and Yoon, 2020). More recently, Albuquerque et al. (2020) reports evidence of some stock price resiliency for firms with high levels of CSR during the 2020 COVID-19 crisis period. Moreover, Gao et al. (2014) show that executives of CSR-conscious firms profit significantly less from insider trades and are more likely to refrain from trading prior to future news than executives from other firms. Borisov et al. (2016) show that when lobbyist Jack Abramoff plead guilty to corruption, the lobbying-related loss of market value was significantly greater among firms with lower levels of CSR. This indicates that a firm's CSR can mitigate loss of value due to the revelation of illicit activities. Collectively, these studies support a view of CSR as inducing more investor trust in firms' disclosures.

On the other hand, a growing literature supports the view that CSR correlates with less trustworthy corporate behavior (Bebchuk and Tallarita, 2020; Guiso et al., 2015; Raghunandan and Rajgopal, 2022). Raghunandan and Rajgopal (2022) find that ESG funds' portfolio firms have significantly more violations of labor and environmental laws and pay more in fines for these violations, relative to non-ESG funds issued by the same financial institutions in the same year.[1] Barnea and Rubin (2010) document that a firm's managers and large shareholders over-invest in CSR for their private benefit to improve their reputations as good global citizens. These studies suggest CSR might reflect agency costs arising when managerial effort toward CSR is a personal reputation-building exercise at the expense of shareholders. Given this possibility, investors may perceive CSR to reflect less managerial trustworthiness and thus less disclosure credibility. Consistent with this view, Demers et al. (2020) find that high ESG firms did not experience equity price protection from market downturns during the 2020 COVID-19 crisis. In light of these competing views, how CSR relates to investor trust remains an open question. To address this question, we investigate the relation between firm CSR and stock price discovery using a broad sample of annual earnings announcements. We also conduct an experiment to identify the causal link between CSR and trust.

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[1]CSR and ESG (environmental, social, and governance activities) are closely related concepts. Following prior research, we use the terms interchangeably.

## 2.2 Measuring CSR

We obtain our primary measure of a firm's CSR from the MSCI ESG KLD STATS database, which contains yearly social ratings on roughly 3,000 of the largest U.S. companies and is used extensively to measure firm-level CSR (Hong and Kostovetsky, 2012; Deng et al., 2013; Krüger, 2015; Borisov et al., 2016; Lins et al., 2017; Albuquerque et al., 2019). The KLD STATS database defines 13 environmental, social, and governance (ESG) categories: community, diversity, employee relations, environment, human rights, product, alcohol, gambling, firearms, military, nuclear, tobacco, and corporate governance. Following Servaes and Tamayo (2013), we consider the first five categories (community, diversity, employee relations, environment, and human rights) to primarily relate to CSR. We exclude the product category, because it measures product quality and innovation, and thus more likely reflects a firm's investment and operating decisions than its CSR. We exclude the alcohol, gambling, firearms, military, nuclear, and tobacco categories, because they serve to penalize participation in six industries that are considered socially controversial. There is nothing firms operating in these industries can do to change their score except exit. We also exclude the corporate governance category as corporate governance is distinct from CSR (Flammer, 2015). Within each category, the KLD STATS database constructs the CSR score based, to a large extent, on publicly available resources such as public events and news sources. This information is used to assign a score according to a number of pre-determined criteria that capture good/poor CSR (Krüger, 2015). Following Servaes and Tamayo (2013), we construct a net measure of CSR that adds strengths and subtracts concerns. As the maximum number of strengths and concerns for any category varies over time (e.g., the maximum number of strengths for community is seven in 2005 but only four in 2010), we scale the strengths (concerns) for each category by dividing the number of strengths (concerns) for each firm-year by the maximum number of strengths (concerns) for that category in that year. This procedure yields strength and concern indices that range from zero to one for each category-year. The net CSR score in each category-year is then obtained by subtracting the scaled concerns from the scaled strengths, such that it ranges from –1 to +1. Since we sum the net CSR scores across the community, diversity, employee relations, environment, and human rights categories, our final measure of CSR ranges from –5 to +5.

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This measure of CSR varies substantially across firms and industries. For example, in 2006, in the apparel retail industry, The Gap has a score of 0.40, while Bath & Body Works has a score of –0.53. Bath & Body Works has employee, human rights, and diversity concerns that are only partially outweighed by diversity strengths; The Gap, in contrast, has strengths in diversity, human rights, and community, with some employee concerns. In the chemicals industry, the score for Air Products and Chemicals is 0.16, while the score for Celanese is –1.36.Celanese's score is due to environmental, employee, and diversity concerns; Air Products and Chemicals also has environmental and employee concerns, but its strengths in these areas outweigh the concerns.

Our use of MSCI ratings to measure a firm's CSR reflects our fundamental interest in understanding how CSR affects investor trust in firms. The theoretical link between CSR and investor trust originates from the potential for investor *perceptions* of CSR to generate positive sentiment toward the firm (Lins et al., 2017). An important observation in this theoretical development is that it is the perception of CSR, rather than actual CSR itself, that relates to investor trust. This is because firms' actual CSR is inherently unobservable and investors lack a straightforward way to assess these activities directly. While the SEC has issued preliminary calls for increased CSR disclosure, there is currently no mandatory disclosure requirement for CSR (U.S. Securities and Exchange Commission, 2022a,b). In the absence of more direct data sources, investors currently tend to rely on intermediaries like MSCI to assess CSR. We expect that MSCI ratings offer a reasonable approximation of investor perceptions of firm CSR, since MSCI is a leading provider of firm CSR data. Thus, our research design reflects how investors themselves likely assess CSR.

## 2.3 Measuring disclosure credibility through stock price discovery

If firm CSR increases investor trust as reflected in improved disclosure credibility, it should also affect investor reactions to firm disclosures and thus price discovery around corporate disclosures. Since investor trust and disclosure credibility are not directly observable, we examine how firm CSR affects these theoretical constructs by investigating how it relates to a key dimension of price discovery: the speed with which stock prices reflect earnings news. In additional analyses, we also investigate investor uncertainty before and during earnings announcements, trading

volume around earnings announcements, and short-window associations between earnings and stock returns during earnings announcements.

### 2.3.1 Intraperiod timeliness and intraperiod efficiency

Our primary measure of stock price discovery is the speed with which stock prices reflect newly disclosed earnings information, as captured by the intraperiod timeliness ($IPT$) over the five-day window beginning on the earnings announcement day. Conceptually, $IPT$ employs an area-under-the-curve approach to estimate the speed of price discovery. We estimate $IPT$ by first calculating the cumulative abnormal return for firm $i$ from day zero through day $j$, relative to the year $t$ annual earnings announcement ($CAR_{i,t}[0,j]$) as firm $i$'s raw return minus the value-weighted return for a portfolio of firms matched on 5×5 sorts of firm size and market-to-book ratio. We then scale each day $t$ cumulative return by the total cumulative return for the [0, 5]-day period. Plotting the scaled daily cumulative returns generates a curve that reflects the speed of price discovery. From this curve, $IPT$ is calculated as follows.

$$IPT_{i,t} = \sum_{j=0}^{4} \frac{CAR_{i,t}[0,j]}{CAR_{i,t}[0,5]} + 0.5$$

The $IPT$ metric assumes there is no overreaction and reversal during the return measurement window, recent empirical evidence challenges this assumption (Thomas and Zhang, 2008). Because the calculation of $IPT$ does not penalize for exceeding the overall cumulative return level, a scenario where returns peak before reversing to a lower long-run steady state would result in a higher $IPT$ value. However, one may argue that this price pattern does not necessarily reflect greater informational price efficiency, particularly relative to the alternative of correctly reaching the appropriate level without overreaction. To address this concern, Blankespoor et al. (2018) introduce the following intraperiod efficiency measure, $IPE$.

$$IPE_{i,t} = 1 - \sum_{j=0}^{5} \frac{|CAR_{i,t}[0,5] - CAR_{i,t}[0,j]|}{|CAR_{i,t}[0,5]|}$$

Unlike $IPT$, $IPE$ penalizes overreactions and reversals, such that only a price response that reaches its cumulative day 5 value on day 1 has $IPE = 1$.

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Higher values of $IPT$ and $IPE$ indicate that stock prices react more quickly to information disclosed during the measurement period. If a firm's CSR increases investor trust as reflected in improved disclosure credibility, it should lead investors to respond more quickly to disclosures made by the firm and thus to greater values of $IPT$ and $IPE$. We test this empirically by estimating several versions of the following equation.

$$IPX_{i,t} = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t} \tag{1}$$

In Equation (1), the dependent variable is $IPT_{i,t}$ ($IPE_{i,t}$), the intraperiod timeliness (efficiency) for firm $i$'s stock price during days [0, 5] relative to the announcement of fiscal year $t$ earnings. The main explanatory variable is $CSR_{i,t}$, our measure of firm $i$'s CSR during a calendar year that ends in fiscal year $t$. This structure ensures that investors can observe $CSR$ prior to the fiscal year $t$ earnings announcement. If greater CSR increases investor trust in firms, the coefficient $\beta_1$ in Equation (1) should be significantly positive. The $Controls_{i,t}$ vector includes several variables associated with characteristics of reported earnings, a firm's information environment, and the speed of stock price discovery (Barth et al., 2023; Israeli et al., 2017, 2021a,b). These include the absolute standardized unexpected earnings from the year $t$ earnings announcement ($AbsSUE_{i,t}$), profitability ($ROE_{i,t}$), an indicator variable for whether a firm reports a loss ($Loss_{i,t}$), operating accruals ($OAcc_{i,t}$), institutional ownership ($InstOwn_{i,t}$), analyst following ($Analyst_{i,t}$), natural logarithm of equity market value ($Size_{i,t}$), natural logarithm of equity book-to-market ratio ($BTM_{i,t}$), and firm momentum ($Mom_{i,t}$). All variable definitions appear in Appendix A. $\alpha_i$ denotes firm fixed effects that we include to capture any time-invariant firm characteristics that are associated with CSR and may lead to variation in the speed of price discovery at earnings announcements. We base our inferences on standard errors clustered by firm and year.

## 3   Sample and descriptive statistics

Our sample includes all firms with available ratings of annual firm CSR in the MSCI ESG KLD STATS database, accounting data from Compustat, and equity price and return data from

CRSP. We remove micro-cap stocks (those with a market capitalization below \$250 million) from our sample, because they tend to have low liquidity, high bid-ask spreads, and are subject to more price pressure effects of trading (Servaes and Tamayo, 2013). Following Breuer and deHaan (2023), we drop singleton firm observations from the sample. Following Blankespoor et al. (2018), we exclude observations with absolute $CAR_{i,t}[0,5]$ of less than 2% to reduce noise in the measurement of $IPT$ and $IPE$ due to a small denominator.

We identify annual earnings announcement dates by using the earlier of the IBES and Compustat earnings announcement dates pertaining to the last fiscal quarter. Following Barth and So (2014), we adjust the announcement date one trading day forward when the announcement occurs after the market close. If either database is missing the announcement date for a given firm-year, we use the date available. If both IBES and Compustat lack announcement dates, we eliminate the observation from the sample. This yields a final sample of 18,529 firm-year observations from 2,903 firms between 1996 and 2017.

Table 1 provides descriptive statistics for the main variables in our tests. Panel A reveals that the mean (median) value of CSR is 0.038 (0). This suggests that, across the five categories that comprise the net CSR score, an average firm in our sample has a roughly equal number of weaknesses and strengths that are related to CSR. The standard deviation of 0.582 implies that sample firms vary in their CSR. The mean $IPE$ of 0.603 suggests that the efficiency of investor reaction to average firm earnings announcements is about 60%. In addition, Panel A shows that an average firm in our sample is profitable (mean $ROE = 0.092$), is followed by more than 10 analysts (mean $Analyst = 2.213$), and has cumulative returns of 5.6% over the six months preceding an annual earnings announcement (mean $Mom = 0.056$).

Panel B of Table 1 presents Pearson (Spearman) correlation coefficients above (below) the diagonal. Consistent with the prediction that firm CSR engenders trust, the correlations between CSR and both $IPT$ and $IPE$ are positive (Pearson corr. $= 0.032$ and 0.051). These correlations suggest that firm CSR is associated with faster price discovery. The Pearson (Spearman) correlation of 0.371 (0.524) between $IPT$ and $IPE$ suggests that, while the two measures are strongly correlated, they still capture different dimensions of the speed of price discovery. Panel B of Table 1 also reveals that firms that engage in more CSR tend to be more profitable (Pearson and Spearman corr. with $ROE = 0.088$ and 0.096), followed by more

analysts (Pearson and Spearman corr. with $Analyst = 0.264$ and $0.256$), have higher equity market values (Pearson and Spearman corr. with $Size = 0.395$ and $0.347$), and lower equity book-to-market ratios (Pearson and Spearman corr. with $BTM = -0.091$ and $-0.102$).

## 4    Results

### 4.1    CSR and the speed of price discovery

Table 2 reports regression summary statistics from estimating several versions of Equation (1). Columns (1)-(3) of Table 2 present summary statistics with $IPT$ as the dependent variable. They show that firms with higher levels of $CSR$ enjoy higher levels of $IPT$. Hence, stock prices of firms with higher levels of $CSR$ react more quickly to information disclosed in annual earnings announcements. The relation between $CSR$ and $IPT$ is economically large: a one standard deviation increase in $CSR$ is associated with 1.6% increase in intraperiod earnings timeliness. One concern with the specification reported in column (1) is that the faster reaction to earnings information of high-CSR firms may be due to omitted variables that happen to be correlated with $CSR$ and $IPT$, rather than due to $CSR$ itself. To address this concern, in column (2), we control for reported earnings characteristics, and, in column (3), we also control for characteristics of the firm's information environment. As column (2) shows, controlling for the absolute magnitude of reported earnings surprises ($AbsSUE$), return on equity ($ROE$), whether the firm reports a loss ($Loss$), and the level of operating accruals in reported earnings ($OAcc$) does not subsume the significant relation between $CSR$ and $IPT$. Column (3) reveals that $IPT$ varies with characteristics of a firm's information environment, including $InstOwn$ and $Analyst$. Nonetheless, the coefficient on $CSR$ continues to be an important determinant of intraperiod earnings timeliness incremental to all controls. In column (3), a one standard deviation increase in $CSR$ is associated with 1.29% increase in intraperiod earnings timeliness.[2] Our analyses include institutional ownership as an explanatory variable, but they do not preclude the possibility that the perceptions of trustworthiness arise from a shift in investor composition, such as a redistribution toward investors who are more trusting of firms with more CSR.

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[2]We obtain this magnitude by multiplying the coefficient estimate on CSR, 0.092, by the standard deviation of CSR, 0.582, and scaling the product by the average value of IPT, 4.153.

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Columns (4)-(6) of Table 2 report regression summary statistics from estimating the same versions of Equation (1) but with $IPE$ as the dependent variable. Employing $IPE$ as an alternative measure, we continue to find that stock prices of firms with higher levels of CSR react faster to information disclosed in annual earnings announcements. Column (4) reveals that a one standard deviation increase in $CSR$ increases the efficiency of stock price reactions to earnings announcements by 2.23%. Columns (5) and (6) show that controlling for characteristics of reported earnings and the information environment does not subsume the significant relation between $CSR$ and $IPE$. In column (6), a one standard deviation increase in $CSR$ increases the efficiency of stock price reactions to earnings announcements by 1.7%

Overall, Table 2 provides strong evidence that firms with higher levels of CSR experience significantly faster reactions to earnings announcements. Given that faster investor reactions to earnings announcements is associated with heightened disclosure credibility, Table 2 suggests that investors perceive firms' disclosures as more credible when the firms engage in more CSR.

## 4.2 CSR, speed of price discovery, and the quality of the information environment

The results in Table 2 offer preliminary evidence that a firm's CSR is associated with faster price discovery. We attribute this association to elevated investor trust leading to increased disclosure credibility. At the same time, it is likely that a firm's CSR is the result of nonrandom choices. The inclusion of firm fixed effects in all our estimations helps alleviate concerns that our results arise from relatively persistent firm characteristics, such as corporate culture and location, that might relate to its CSR. However, there may still be concerns that our results arise from characteristics of the information environment that evolve contemporaneously with a firm's CSR and are also associated with the speed of price discovery at earnings announcements. For example, Kim et al. (2012) document a negative association between a firm's CSR and the magnitude of discretionary accruals and interpret this as evidence that managers that choose to engage in more CSR are guided by more ethical disclosure principles.

To rule out this alternative explanation for our findings, we identify five measures of the quality of a firm's information environment and include them as additional controls in our main tests. First, we control for the number of management earnings forecasts issued each

year ($numMF$). Management earnings forecasts are a voluntary form of disclosure that reflect managers' interest in reducing their information asymmetry with investors (Nagar et al., 2019). To the extent that $numMF$ reflects a firm's culture of communicating forthrightly with investors, controlling for $numMF$ helps address the concern that the findings in Table 2 are due to the firm's communication efforts and not necessarily its CSR. Second, we measure the magnitude of error in these management forecasts ($MFE$), since the informativeness of management guidance is likely to increase with its accuracy (Zhang, 2012; Hutton and Stocken, 2021). Third, we use the Bonsall et al. (2017) BOG index of 10-K readability ($BOG$) to measure the transparency of a firm's reported financial statements. Fourth, we use RavenPack to measure the amount of media attention the firm receives during days [0,5] relative to its earnings announcement date ($Media$). Media outlets can help investors alleviate the information processing costs associated with earnings announcements (Blankespoor et al., 2019), but media may also be asymmetrically drawn towards firms with higher CSR. Finally, since there may be unobservable dimensions of disclosure quality that the aforementioned metrics do not reflect, we also measure the illiquidity of each firm during the year using the Amihud (2002) illiquidity ratio for the year ending 5 days prior to the earnings announcement date ($Amihud$). Given the well-established link between disclosure quality and liquidity, this measure should reflect variation in disclosure quality that is relevant to investors' incorporation of earnings news (Baiman and Verrecchia, 1996; Diamond and Verrecchia, 1991; Kyle, 1985; Rogers, 2008). We include each of these variables as additional controls in Equation (1) separately and together to capture variation in disclosure quality that may relate to both CSR and the speed of price discovery. For brevity, we focus our attention on $IPE$ as a dependent variable and note that untabulated analyses using $IPT$ in place of $IPE$ provide identical inferences.

Columns (1) - (5) of Table 3 present summary statistics from estimating Equation (1) with each of these individual information quality measures. We continue to observe a robust positive association between $IPE$ and levels of $CSR$. Of the five measures that we include, only the magnitude of managers' forecast errors ($MFE$) is incrementally significant to our original specification. This suggests that our initial estimation of Equation (1) includes the key dimensions of firms' disclosure quality. This is plausible, given that the initial estimation already includes controls for operating accruals ($OAcc$), institutional ownership ($InstOwn$),

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and the number of analysts following a firm (*Analyst*). Column (6) shows that including all measures of information quality simultaneously as additional controls does not affect the significant relation between $CSR$ and $IPE$. Consistent with theoretical predictions of illiquidity creating frictions in the price discovery process, we observe a significantly negative coefficient on *Amihud*. More importantly for our research question, we continue to observe a significantly positive association between $IPE$ and levels of $CSR$. Overall, the findings in Table 3 challenge the alternative explanation that our results in Table 2 might arise from variation in information quality that is correlated with firm-level CSR and the speed of price discovery. Rather, they reinforce the notion that investors react more quickly to disclosures of firms with better CSR because they trust these firms and view their disclosures as more credible.

## 4.3 Regression discontinuity analyses using CSR shareholder proposals

To further bolster our identification of the effect of a firm's CSR on investor trust as reflected in disclosure credibility, we use a firm's passage of CSR proposals as a source of plausibly exogenous variation in CSR. Specifically, following Cuñat et al. (2012), Flammer (2015), and Cao et al. (2019), we employ a regression discontinuity design (RDD) that uses vote shares of CSR shareholder proposals that passed or failed by a narrow margin of votes. This method strengthens our identification of the effect of CSR on the speed of price discovery, because variation in firm-level CSR around the proposal passage threshold is effectively random in an arbitrarily small interval around the majority vote threshold (50%). For example, whether a proposal passes by 55% or fails by 45% is arguably random.[3] Hence such close-call CSR proposals can be used to estimate the effect of passing a CSR proposal on firm-specific outcome variables. Furthermore, in the RDD context, the estimate of this effect is unaffected by potentially omitted variable bias, even if the variables are correlated with the vote, as long as the effects of the variables are continuous around the threshold.

Following Flammer (2015), we use the RiskMetrics and Factset's SharkRepellent databases to identify shareholder proposals that relate to CSR initiatives for firms in our sample between

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[3]Bach and Metzger (2019) show that shareholder proposals are disproportionately won by managers, raising concerns that close passage is nonrandom. Noting that close elections are still a "promising way to estimate causal effects," they offer several steps to address potential concerns about nonrandomness that we follow, First, they suggest excluding data prior to 2003, and our RDD sample comprises only observations after 2006. Second, they recommend using a McCrary (2008) test to identify potential threshold manipulation. In our sample, a McCrary (2008) test fails to reject the null of locally random voting results.

2006 and 2021.[4] Using both databases we create a full sample of 3,486 CSR proposals. However, the assumptions of the RDD method require us to focus our analyses on proposals that just barely pass or fail. Hence, depending on the passage cutoff relative to the majority vote threshold that we adopt, this sample ranges from 134 proposals (with a 10% cutoff) to 47 proposals (with a 5% cutoff).

We estimate the effect of new CSR initiatives arising from shareholder proposals on the speed of price discovery by estimating several versions of the following equation.

$$IPE_{i,t} = \beta_1 Pass_{i,t} + \beta_2 VotePct + \gamma Controls_{i,t} + \epsilon_{i,t} \tag{4}$$

In this equation, we measure $IPE$ around the first annual earnings announcement that occurs after a passage or failure of a CSR-related proposal. Our variable of interest in Equation (4) is $Pass$, which is a dummy variable that takes on the value of one if a shareholder CSR proposal was approved by more than 50% of votes and zero otherwise. If a firm's CSR affects investor trust as reflected in disclosure credibility and, thus, its price discovery, we predict $\beta_1$ to be positive. We include $VotePct$ because most of the shareholder proposals in our sample are non-binding, thus leading our analyses to constitute a "fuzzy" regression discontinuity (Roberts and Whited, 2013). As before, $Controls$ comprises all the control variables that we include in the base estimations of Equation (1).

Columns (1) and (2) of Table 4 present statistics from estimating Equation (4) without and with controls, respectively. In both of these estimations, we use the full sample of CSR proposals, which includes proposals that passed (failed) by wide margins as well as those that just crossed (missed) the approval threshold. Hence, the variable $Pass$ in the full sample does not identify the effect of *random* CSR proposal passage on measures of the speed of price discovery and we observe that it is not significantly associated with $IPE$. Columns (3) and (4) present the findings from the estimation of Equation (4), without and with controls, in a sample in which CSR proposals either fail or pass by 10% around the threshold of 50% (i.e., votes within the 40% to 60% range). As these columns show, the coefficient estimates on $Pass$

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[4]As Flammer (2015) notes, RiskMetrics tracks shareholder proposals for S&P 1500 companies and approximately 400–500 other large firms. SharkRepellent tracks shareholder proposals for constituent firms of the Russell 3000 index. We identify shareholder proposals that relate to CSR as those with resolution type "SRI" in RiskMetrics or proposal category "Social/Environmental Issues" in SharkRepellent.

are both significantly positive, indicating that the passage of CSR-related proposal affects the intraperiod efficiency of reported earnings. In columns (5) and (6), we restrict the estimations to samples in which the CSR proposals failed or passed by 5% (i.e., votes within the 45% to 55% range) and observe similar patterns. The effect is also economically significant. Following passage of a CSR proposal, firms whose CSR proposals passed by up to 5% experience around a 30% increase in intraperiod efficiency of reported earnings.[5] Our findings are also unaffected by the inclusion of controls. This result is consistent with the conceptual underpinnings of the RDD approach that, for narrow ranges, the effects of controls are continuous around the threshold and thus do not subsume the observed univariate relation between CSR passage and measures of the speed of price discovery.

In support of our regression discontinuity analyses, Figure 2 plots the speed of price discovery against the vote share in favor of CSR proposals in our sample. Because regression discontinuity analyses generate an estimate of the local average treatment effect, we focus the plot on proposals with vote shares within 5% of the 50% passage threshold. Panel A plots all CSR proposals individually, and Panel B plots proposals in bins with 1% width. Consistent with the findings in Table 4, we observe a discontinuous increase in intraperiod efficiency of earnings for firms whose CSR proposals exceed 50% vote share. Together with Table 4, Figure 2 corroborates the view that CSR induces heightened investor trust that enhances disclosure credibility and thus affects the speed with which stock prices incorporate earnings information.

## 4.4   Price discovery for good and bad news

To further investigate whether the relation between CSR and price discovery arises because of investor trust as reflected in heightened disclosure credibility, we also investigate how this relation varies with the nature of information being disclosed.

Because of their compensation structures, managers have incentives to accelerate the recognition of good news and delay the recognition of bad news. Therefore, bad news will be more credible to investors than good news. Since the credibility of bad news is *ex-ante* higher than that of good news, we do not expect improvements in disclosure credibility to be as relevant to

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[5]We caution that our inferences regarding the magnitude of the effect are limited by the narrow scope of the RDD estimation; the effect in other areas of the distribution may be different from what we estimate.

the processing of bad news as it would be to the processing of good news. In other words, we expect a diminishing marginal return to disclosure credibility. If CSR is related to the speed of price discovery because of changing perceptions of disclosure credibility, this convexity should result in an asymmetric effect when conditioning on the direction of earnings news. Specifically, we should observe a stronger effect when firms report good news, which is *ex-ante* less credible and thus more likely to benefit from CSR-based credibility enhancement.

We investigate this by studying whether the relation between CSR and the speed of price discovery changes when a firm discloses good versus bad news. We form subsamples based on the directional content of the firm's reported earnings: (1) when firms report net profits versus net losses, or (2) when firms report relatively large (i.e., positive) or relatively small (i.e., negative) unexpected earnings. We re-estimate Equation (1) in these subsamples using $IPE$ as a dependent variable. We again note that untabulated analyses using $IPT$ in place of $IPE$ yield the same inferences.

The results of these estimations appear in Table 5. Column (1) reports the estimation of Equation (1) in the subsample of firm-years with reported profits. Column (2) reports the estimation of Equation (1) in the subsample of firm-years with reported losses. Comparing the results across these two columns, we observe a significantly positive association between $CSR$ and $IPE$ when firms report profits, but not when they report losses. We note that the subsample of firm-years with reported losses is substantially smaller than the subsample of reported profits. To alleviate concerns that lack of association arises from lack of statistical power in the loss sample, we also construct equally-sized subsamples of good and bad news using standardized unexpected earnings (SUE). In columns (3) and (4), we report results from estimating Equation (1) in subsamples based on SUE. Specifically, we consider all firms with standardized unexpected earnings in the top (bottom) three deciles to be reporting good (bad) news. We then re-estimate Equation (1) separately in these good and bad news subsamples. The results yield identical inferences as those from columns (1) and (2) using profit and loss to indicate good or bad news. Overall, the results in Table 5 indicate that the observed positive relation between CSR and the speed of price discovery is concentrated in those periods when firms disclose good news. This is consistent with CSR enhancing investor trust as reflected in increased disclosure credibility.

## 4.5 Price discovery for CSR strengths and weaknesses

Our main findings reveal that $CSR$ is positively associated with the speed of price discovery, suggesting that $CSR$ enhances trust as reflected in disclosure credibility. However, because we measure $CSR$ as the difference between CSR strengths and weaknesses, our main tests cannot distinguish between investors being more trusting of firms with CSR strengths or more distrusting of firms with CSR weaknesses. To differentiate between these two possible explanations, we study whether the relation between $CSR$ and the speed of price discovery changes with the magnitude of their positive and negative $CSR$ components. Specifically we estimate Equation (1) after disaggregating $CSR$ into its strengths ($CSR\_Pos$) and weaknesses ($CSR\_Neg$).

The results of this estimations appear in column (5) of Table 5. It reports a significantly positive coefficient $CSR\_Pos$ and a coefficient on $CSR\_Neg$ that is indistinguishable from zero. The juxtaposition of these findings suggests that investors are more trusting of firms that have CSR strengths, but they are not more distrusting of firms that have CSR weaknesses. From this evidence, we infer that CSR strengths can help improve investor trust as reflected in disclosure credibility but CSR weaknesses do not jeopardize investor trust.

## 4.6 Experimental evidence of CSR engendering investor trust

While the mosaic of evidence across our analyses supports the inference of CSR bolstering investor trust, it remains possible that an unobservable factor could drive those findings and thus challenge our identification of CSR as the source of increased investor trust. In order to test whether CSR has a causal impact on investor perceptions of trust and credibility, we conduct an experiment. Specifically, we run a $2 \times 2$ between-subjects experiment manipulating *CSR Performance* (positive versus negative) and *Earnings Surprise* (positive versus negative). All experiment variables appear in Appendix A.

### 4.6.1 Experiment procedures and participants

Participants assume the role of an investor considering an investment in a fictitious retail company, XYZ Stores, Inc. They review background information on the industry and company,

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as well as financial information for the prior fiscal year.[6] Next, they review CSR information in the form of a report produced by an independent research firm, followed by the current year earnings press release. Participants then respond to the main dependent measures, including a free response question, followed by post-experimental and demographic questions.

We recruit participants via the Prolific platform and 237 qualified participants completed the experiment.[7] To qualify, we require participants live in the US, be native English speakers, and have experience investing in the stock market. We also require participants to have an approval rate of at least 95 and have at least 10 previous submissions on the Prolific platform.[8] Participants receive payment of $4.50. Our sample is 36% female and has an average age of 41.4 years. Participants have taken 3.17 accounting or finance courses on average and more than half (58%) have taken at least one.[9]

### 4.6.2 Experiment independent variables

Following prior experimental work on investor judgments related to CSR (Elliott et al., 2014; Guiral et al., 2020; Hoang and Phang, 2023), we manipulate *CSR Performance* as positive or negative relative to the industry average. To align with our main analyses, we include the following five components of CSR: Community, Diversity, Employee Relations, Environment, and Human Rights. Refer to Appendix B for the full manipulations. To check our manipulation, participants respond to the following question, on an 11-point scale anchored by -5 (Below the industry average) and 5 (Above the industry average): "Compared to the industry average, XYZ's corporate social responsibility (CSR) performance is:". Participants in the positive versus negative *CSR Performance* condition provide significantly higher responses (M = 3.43 versus M = -3.26; $t_{235} = 26.62$; p < 0.01), indicating a successful manipulation.

We also manipulate *Earnings Surprise* as positive or negative as compared to the prior year

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[6]Background information was adapted from other experimental studies of investor judgments in the context of CSR (Elliott et al., 2014; Guiral et al., 2020; Hoang and Phang, 2023).

[7]We obtained the necessary institutional approval to perform human subjects research prior to collecting data. We use the online survey tool Qualtrics and participants are randomly assigned to conditions.

[8]We screen for these qualifications using the Prolific prescreening filters and participants' self-reported demographic information collected at the end of the experiment.

[9]Our sample demographics are similar to other studies on investor judgments that use the Prolific and similar platforms (Hoang and Phang, 2023; Barcellos and Kadous, 2022). Untabulated statistics indicate that there are no significant differences in demographics across conditions and results are robust to controlling for these factors. We also measure participants' general propensity to trust using the eight-item scale from Mayer and Davis (1999). Untabulated statistics suggest there are no significant differences across conditions and results are robust to controlling for this measure.

via a press release about current year earnings. We design our manipulation following prior experimental manipulations of earnings surprises (Elliott et al., 2018). In the positive (negative) earnings surprise condition, the company reports an 11% increase (decrease) in earnings as compared to the prior year. Refer to Appendix B for the full manipulations. To check our manipulation, participants respond to the following question, on an 11-point scale anchored by -5 (Much more negative than expected) and 5 (Much more positive than expected): "Compared to 2022, XYZ's financial performance is:". Participants in the positive versus negative *Earnings Surprise* condition provide significantly higher responses (M = 2.52 versus M = -1.65; $t_{235}$ = 17.31; p < 0.01), indicating a successful manipulation.[10]

### 4.6.3 Experiment dependent variables

We collect three sets of dependent measures to capture investor perceptions of credibility and trust. Our first measure, *Disclosure Credibility*, consists of six questions from Mercer (2005); three relate to management's competence in financial reporting and three capture management's trustworthiness in financial reporting. Our second measure, *Trust*, consists of three questions from Mayer and Davis (1999). Our third measure, *Integrity*, consists of three questions used in Hoang and Phang (2023).[11] For each measure, we use the average of participant responses to the relevant questions; refer to Appendix A for the specific questions. After responding to the first measure, we also ask participants to: "Briefly describe the factors that influenced the ratings you provided on the previous screen."

### 4.6.4 Experimental results

We expect positive versus negative *CSR Performance* will increase investor perceptions of credibility and trust. To test this expectation, we conduct a $2 \times 2$ ANOVA with *CSR Performance* and *Earnings Surprise* as the independent variables for each dependent measure: *Disclosure Credibility*, *Trust*, and *Integrity*. Table 6 provides the descriptive statistics (panel A), ANOVA results (panel B), and simple effects (panel C). Results for all three dependent measures are

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[10]Forty-four participants provided responses to one or both of the manipulation check questions inconsistent with their assigned condition (i.e., provided a response above (below) the midpoint of the scale in the negative (positive) condition). Our results are robust to the exclusion of these participants.

[11]Each measure has acceptable reliability: Cronbach's alpha = 0.79, 0.57, and 0.96 for *Disclosure Credibility*, *Trust*, and *Integrity*, respectively. These values are similar to those reported in each of the source papers.

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consistent with our expectation. There is a significant main effect of *CSR Performance*, where participant responses are higher in the positive versus negative condition, for each dependent measure. These results hold across the positive and negative *Earnings Surprise* conditions. There is no significant main effect of *Earnings Surprise* for *Trust* or *Integrity*, however for *Disclosure Credibility*, there is a significant main effect where participant responses are higher in the positive versus negative *Earnings Surprise* conditions. To better understand this difference, in untabulated analyses, we split *Disclosure Credibility* into two components based on the questions included in this measure: competence and trustworthiness (questions 1-3 and questions 4-6, respectively, as listed in Appendix A). The main effect of *Earnings Surprise* on *Disclosure Credibility* appears to be driven by the competence component: the effect remains significant for this component, but is not significant for the trustworthiness component (consistent with the results for *Trust* and *Integrity*). That is, participants view XYZ's management as more competent when the company experiences a positive versus negative *Earnings Surprise*, but do not find them more trustworthy.

Results for *Trust* and *Integrity* are robust to controlling for the competence component of *Disclosure Credibility* (untabulated), with two exceptions: (1) when *CSR Performance* is negative, *Trust* and *Integrity* are marginally significantly higher in the negative versus positive *Earnings Surprise* condition (p < 0.10), and (2) when *Earnings Surprise* is negative, the difference between positive and negative *CSR Performance* conditions for *Trust* is no longer significant (p > 0.10). These results are consistent with the analyses above where the positive association between CSR and IPE is significant when firms report profits, but not losses and the idea that bad versus good news can be inherently more trustworthy to investors.

Our tests for *Disclosure Credibility*, *Trust*, and *Integrity* provide strong support for the causal influence of CSR on investor perceptions of credibility and trust. To provide additional insight, we review participant responses regarding the factors they consider when providing their ratings of *Disclosure Credibility*. We find further support for our claim that a firm's CSR impacts perceptions of trust and credibility of financial disclosures. We include a selection of responses in panel D of Table 6, listed by assigned conditions. Overall, our experiment corroborates our findings and provides evidence that strong CSR performance causes investors to perceive firms' disclosures as more trustworthy and credible. It also provides reassurance

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that our inferences are not unique to our measurement of CSR using MCSI KLD scores, as the experiment reveals similar patterns using an alternative means of conveying CSR performance.

# 5    Additional measures of price discovery

In our main analyses, we focus on two key dimensions of price discovery: intraperiod timeliness and intraperiod efficiency of reported earnings, i.e., $IPT$ and $IPE$, the speed with which stock prices reflect earnings information. As Section 4 describes, using both measures, we find robust evidence in support of the prediction that a firm's CSR enhances investor trust and increases the informational efficiency of its stock price. To alleviate the potential concern that our inferences are limited to the $IPT$ and $IPE$ measures of price discovery, we also examine the relation between a firm's CSR and three other dimensions of stock price discovery: investor uncertainty before and during earnings announcements ($\Delta IV_{i,t}^{Pre}$ and $\Delta IV_{i,t}^{Entire}$), total and retail trading volume ($ATVol$ and $RVol$), and earnings response coefficients.

## 5.1    CSR and investor uncertainty

Research suggests that security prices are more informationally efficient when investors have less uncertainty about firm value (Patell and Wolfson, 1979; Sridharan, 2015). Based on this intuition, the second dimension of price discovery we consider is investor uncertainty around earnings announcements. It is well documented that investor uncertainty increases before earnings announcements (Patell and Wolfson, 1979; Barth and So, 2014; Gallo et al., 2021). If CSR bolsters investor trust as is reflected in an enhanced credibility about upcoming earnings news, we expect that the anticipatory rise in investor uncertainty prior to earnings announcements will be smaller for firms with more CSR. Additionally, heightened investor trust stemming from CSR should lead to reduction in investor uncertainty during the entire earnings announcement period. We test these predictions by estimating several versions of the following equation.

$$\Delta IV_{i,t}^{x} = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t} \tag{2}$$

The dependent variable in Equation 2) is investor uncertainty measured using change in option-implied volatilities. Because options offer a forward-looking investor perspective, implied volatility better measures investor uncertainty about future stock prices than historical price volatility. Additionally, option markets are not subject to short sale constraints that can cause distortions in stock prices (Johnson and So, 2012). This helps option prices to better reflect current investor perceptions. Moreover, because implied volatility is measured daily, it is a useful tool for examining changes in uncertainty around earnings announcements.

We obtain implied volatilities from the OptionMetrics Standardized Options dataset, which provides daily interpolated put and call implied volatilities for at-the-money options for a variety of durations. We measure implied volatility on a given date by averaging the implied volatilities of put and call options with durations of 30 days (Sridharan, 2015).[12] For each firm $i$, we calculate the change in daily implied volatility due to the year $t$ annual earnings announcement over two windows: during the anticipatory period preceding the earnings announcement (days [-2, 0]) and over the entire earnings announcement period (days [-5, 5]).

$$\Delta IV_{i,t}^{Pre} = \frac{logIV_{i,t}}{logIV_{i,t-2}} \qquad\qquad \Delta IV_{i,t}^{Entire} = \frac{logIV_{i,t+5}}{logIV_{i,t-5}}$$

We use $\Delta IV_{i,t}^{Pre}$ for the anticipatory period or $\Delta IV_{i,t}^{Entire}$ for the entire announcement period as dependent variables in Equation (2). If CSR increases investor trust in firms, it should lead to smaller increases in investor uncertainty in anticipation and during the period of earnings announcements. In this case, the coefficient $\beta_1$ in Equation (2) will be significantly negative. The $Controls_{i,t}$ vector encompasses all variables previously discussed as controls in Equation (1) as well as two additional measures: the contemporaneous change in market volatility ($\Delta VIX_{i,t}$) and baseline implied volatility ($IV\_BASE_{i,t}$), measured on day -3 (when $\Delta IV_{i,t}^{Pre}$ is the dependent variable) or day -6 (when $\Delta IV_{i,t}^{Entire}$ is the dependent variable), relative to the earnings announcement date. As with $IPT$ and $IPE$, we include firm fixed effects to absorb the effects of unobservable and time-invariant characteristics that relate to firm CSR and investor uncertainty. As before, we base our inferences on standard errors clustered by firm and year.

Table 7 presents regression summary statistics from estimating several versions of Equation

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[12]We use 30-day options for our main analyses because liquidity in the options market is a decreasing function of option horizon and therefore the most reliable data are available for 30-day options.

(2). Columns (1) - (3) present statistics from regression estimations with $\Delta IV_{i,t}^{Pre}$ as the dependent variable. Column (1) presents results without control variables. Consistent with investors being more trusting of firms with high levels of CSR, these results reveal that investors of firms with high levels of CSR exhibit less uncertainty during the anticipatory period of earnings announcements, i.e., the [-2, 0] trading day window prior to a firm's earnings announcement. Columns (2) and (3) demonstrate that the negative relation between CSR and investor uncertainty is robust to the inclusion of control variables for upcoming earnings characteristics, firm information environment, firm-level implied volatility on trading day -3 relative to the upcoming earnings announcement ($IV\_BASE$), and the market-wide level of uncertainty during the anticipatory period ($\Delta VIX$). A one standard deviation increase in CSR is associated with 17.28% reduction in the average investor uncertainty during the anticipatory period.

Columns (4) - (6) of Table 7 present regression summary statistics from estimating Equation (2) with $\Delta IV_{i,t}^{Entire}$ as the dependent variable. They provide strong evidence that the reduction in investor uncertainty about a firm's earnings announcement is not limited to the anticipatory period but persists after the earnings announcement is made. This inference is true in a setting without any control variables (column (4)) and also after controlling for the characteristics of reported earnings, a firm's information environment, the level of investor uncertainty, and market-wide uncertainty (columns (5) and (6)). In column (6), a one standard deviation increase in CSR is associated with a 16.78% reduction in the average investor uncertainty during the entire earnings announcement period. Taken together, the findings in Table 7 support the prediction that a firm's CSR enhances investor trust, which also manifests itself in reduction in investor uncertainty around earnings announcements.

## 5.2 CSR and trading volume

One of the earliest proxies for information processing in capital markets is trading volume (Beaver, 1968). Despite theoretical predictions of no-trade price equilibria (Milgrom and Stokey, 1982), Cochrane (2013) notes that "the fact staring us in the face is that 'price discovery'....uses a lot of trading volume." Based on this observation, we use trading volume as a third measure

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of price discovery. Specifically, we define abnormal trading volume as follows:

$$ATVol_{i,t} = \ln\left(1 + \frac{\frac{1}{2}\sum_{j=0}^{1} TR_{i,t+j}}{\frac{1}{50}\sum_{j=5}^{54} TR_{i,t-j}}\right)$$

In the equation above, $ATVol_{i,t}$ is the natural logarithm of one plus the average share turnover ratio for firm $i$ across days [-1, 1], scaled by the average daily turnover ratio over days [-54, -5] relative to announcement day $t$. $TR_{i,t+j}$ denotes share turnover ratio of firm $i$ on day $t + j$, relative to announcement day $t$. We study the association between this measure of abnormal trading volume and CSR activity by estimating the following equation:

$$ATVol_{i,t}, = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t} \tag{3a}$$

If CSR increases investor trust in firms' disclosures, it should lead to more trading volume around earnings announcements. In this case, the coefficient $\beta_1$ in Equation (2) will be significantly positive. The $Controls_{i,t}$ vector encompasses all variables previously discussed as controls in Equation (1). We continue to include firm fixed effects to absorb the effects of unobservable and time-invariant characteristics that relate to firm CSR and trading volume. As before, we base our inferences on standard errors clustered by firm and year.

A benefit of examining price discovery through the lens of trading volume is that we can measure trading volume, and thus price discovery responses, specifically for retail investors. By studying how CSR influences retail investor responses to earnings news, our study complements concurrent work by Li et al. (2023) that studies retail investor responses to ESG news. To estimate retail trading volume at earnings announcements, we adopt the methodology outlined by Boehmer et al. (2021) and Blankespoor et al. (2018) to distinguish trades involving retail investors in the NYSE Trade and Quote (TAQ) database.

We measure retail trading volume ($RVol_{i,t}$) as the natural logarithm of one plus the average retail shares traded over days [-1, 1] relative to day $t$. Using $RVol$, we estimate the equation below:

$$RVol_{i,t} = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t} \tag{3b}$$

If CSR increases retail investor trust in firms' disclosures, it should lead to more retail trading

volume at earnings announcements. In this case, the coefficient $\beta_1$ in Equation (2) will be significantly positive. All other variables remain as previously defined.

Table 8 presents regression summary statistics from estimating Equations (3a) and (3b) to examine whether firm-level CSR activities are associated with improvement in trading volume responses to corporate earnings. Columns (1) - (3) of Table 8 indicate that the coefficient on $CSR$ is significantly positive when estimating Equation (3a). This suggests that elevated disclosure credibility generated through firm-level CSR contributes to higher overall trading volume at firms' earnings announcements. The effect is economically significant. A one standard deviation increase in firm CSR increases abnormal trading volume by 0.88%. Similarly, columns (4) - (6) of Table 8 reveal a significantly positive coefficient on $CSR$ when estimating Equation (3b). From this, we infer that retail investors in particular adjust their perceptions of disclosure credibility according to a firm's CSR. That CSR is associated with more trading volume at earnings announcements is consistent with our findings when using other measures of price discovery (e.g., $IPT$, $IPE$, $\Delta IV_{i,t}^{Pre}$, $\Delta IV_{i,t}^{Entire}$). Overall, Table 8 provides additional support to the conclusion that CSR enhances disclosure credibility.

### 5.3 CSR and earnings response coefficients

Our last measure of price discovery is the association between earnings news and stock returns, which represents the amount of earnings information that is reflected in stock prices. This quantity increases with investor trust in disclosures because investors will react more strongly to earnings news and incorporate earnings information into stock prices when they trust the earnings disclosure more. Therefore, if CSR increases investor trust as it is reflected in disclosure credibility, we expect earnings-returns associations to increase with firm CSR. We test this prediction by estimating the following equation:

$$CAR[-1,1]_{i,t} = \beta_1 CSR_{i,t} + \beta_2 SUE_{i,t} + \beta_3 CSR_{i,t} \times SUE_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t} \qquad (4)$$

In Equation (4), the dependent variable $CAR[-1,1]_{i,t}$ is firm $i$'s cumulative abnormal stock return during days [-1,1] relative to year $t$ annual earnings announcement. $SUE_{i,t}$ is firm $i$'s standardized unexpected earnings from the year $t$ earnings announcement. The coefficient $\beta_2$

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measures the conventional earnings response coefficient (ERC). The coefficient $\beta_3$ measures the extent to which the ERC varies with the level of CSR. If investor trust increases with firm CSR and thus leads to more rapid incorporation of earnings information, the coefficient on the interaction of $CSR_{i,t}$ with $SUE_{i,t}$ ($\beta_3$) will be significantly positive. The $Controls_{i,t}$ vector remains as previously defined, except for the exclusion of $AbsSUE$ as a control given our inclusion of $SUE$ in this test. We continue to employ firm fixed effects and cluster standard errors by firm and year.

Table 9 presents regression summary statistics from estimating Equation (4) to examine whether firm-level CSR improves the association between earnings news and contemporaneous stock returns. In Equation (4), the coefficient on $CSR \times SUE$ measures whether the associations between firm-level earnings news and stock returns change with a firm's CSR.

Column (1) indicates that the coefficient on $CSR \times SUE$ is significantly positive. This suggests that elevated disclosure credibility generated through CSR contributes to a better reflection of earnings news in stock returns. The effect is economically significant. A one standard deviation increase in firm CSR increases the strength of the relation between firm earnings news and contemporaneous stock returns by 27.46%. This inference is true in a setting without any control variables (column (4)) and also after controlling for the characteristics of reported earnings and the firm's information environment. The positive association between CSR and earnings response coefficients is consistent with our findings when using other measures of price discovery and thus reinforces our inference that CSR enhances disclosure credibility.

# 6 Robustness checks

To ensure that our inferences are not unique to the specific features of our main research design, we re-estimate Equation 1 as follows: (1) using several alternative fixed effects structures, and (2) using samples that exclude the financial crisis period. For ease of exposition, we tabulate the findings using $IPE$ as our dependent variable. However, our inferences are the same if we use $IPT$ as the dependent variable instead.

## 6.1 Alternative fixed effects structures

In our main analyses, we include firm fixed effects to absorb any time-invariant characteristics of firms that may relate to CSR and stock price discovery. To ensure that our findings are not limited to a particular fixed effects structure, in Table 10, we estimate Equation (1) using five alternative fixed effects structures and $IPE$ as the dependent variable.

First, following Breuer and deHaan (2023), we estimate the equations without any fixed effects (column (1)). Next, we replace the firm fixed effects with year fixed effects (column (2)); industry fixed effects, using the Fama and French (1997) 48 industries classification (column (3)); the combination of 48 Fama and French (1997) industries and year fixed effects (column (4)); industry-by-year fixed effects (column (5)); and the combination of firm and year fixed effects (column (6)).

As Table 10 reveals, the relation between CSR and $IPE$ remains significantly positive regardless of the fixed effects structure. Overall, Table 10 provides additional support to the prediction that a firm's CSR increases investor trust as reflected in disclosure credibility.

## 6.2 The 2008-2009 global financial crisis

Using a restricted sample during the 2008-2009 financial crisis period, Lins et al. (2017) conclude that CSR makes investors more trusting of firms and thus immunizes firms from sharp declines in their market values. However, alternative evidence from more recent crisis periods challenges this inference (Demers et al., 2020). One of the advantages of our study is that our analyses are not limited to periods of crises. Nonetheless, to ensure that our inferences do not arise solely from the effects of CSR during the 2008-2009 global financial crisis, we re-estimate Equation (1) after excluding this financial crisis period from our main sample. Following Lins et al. (2017) we define the financial crisis period as the period between August 1, 2008, to March 31, 2009; after excluding this period we obtain a sample of 17,433 observations from 2,897 firms. The untabulated results of these estimations reveal that the exclusion of the financial crisis period from our sample does not affect our inference that a firm's CSR strengthens investor trust and disclosure credibility, and, thus, enhances the speed with which stock prices reflect earnings information.

# 7  Conclusion

We examine whether a firm's CSR strengthens investor trust in a firm by investigating the relation between a firm's CSR and stock price discovery at earnings announcements. We focus on price discovery at earnings announcements because investor trust should lead to heightened disclosure credibility, which allows investors to process corporate disclosures more quickly. In our analyses, we investigate the association of CSR with four dimensions of a firm's stock price discovery: (1) the speed with which stock prices reflect information in earnings announcements (i.e., intraperiod timeliness and intraperiod efficiency of reported earnings), (2) investor uncertainty before and during the earnings announcement period, (3) trading volume reactions to earnings announcements, (4) earnings response coefficients.

We conduct our analyses using a sample of 18,529 annual earnings announcements from 2,903 firms between 1996 and 2017. Following the literature, in our main analyses, we measure a firm's CSR using MSCI ESG KLD STATS database. This reflects our interest in understanding how investor trust is shaped by their perceptions of a firm's CSR. After controlling for reported earnings characteristics and the quality of firms' information environments, we find a strong positive association between a firm's CSR and measures of price discovery. A one standard deviation increase in CSR is associated with a 1.29% (1.7%) increase in the average timeliness (efficiency) of reported earnings, a 16.78% reduction in average investor uncertainty during the earnings announcement period, a 0.88% increase in trading volume, and a 27.46% increase in earnings response coefficients.

Using a regression discontinuity design (RDD) approach, we find that the narrow passage of CSR proposals significantly increases the speed of price discovery. Firms that pass a CSR-related proposal by a margin of up to 5% experience around 30% increase in the subsequent intraperiod efficiency of earnings, relative to firms that fail to pass a CSR-related proposal by a similarly narrow margin. This finding helps sharpen our identification of the effects of CSR on investor trust. We also conduct an experiment to provide evidence of the causal effect of a firm's CSR on investor perceptions of trust and credibility of disclosures.

In support of our inference that the relation between a firm's CSR and price discovery arises from heightened investor trust as reflected in disclosure credibility, we document that the pos-

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itive and significant association between CSR and price discovery is evident when firms report profits or large unexpected earnings, but not when they report losses or negative unexpected earnings. The asymmetric relation between CSR and price discovery highlights the positive sentiment inherent in investor trust that leads them to rely more (less) on positive (negative) disclosures of trusted firms. We further show that investor trust responds favorably to CSR strengths but not unfavorably to CSR weaknesses. Our findings persist if we use alternative fixed effects structures or exclude from our sample the 2008-2009 financial crisis period.

Overall, our study supports the view that a firms' CSR engenders investor trust and that this trust increases the informational efficiency of stock prices. Our findings reveal an increasingly important way firms can develop and maintain investor trust. In addition, our study highlights stock price discovery as a desirable capital market consequence of a firms' CSR.

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Figure 1: Sample construction

This figure provides a timeline of CSR performance and stock price discovery measures in a given firm-year. For each firm $i$, we measure year $t$ CSR performance ($CSR_{i,t}$) for the most recent year ending prior to the release of year $t$ earnings. We define the year $t$ earnings announcement date ($EA_{i,t}$) as day 0. Relative to that date, we measure intraperiod timeliness and efficiency ($IPT_{i,t}$ and $IPE_{i,t}$) over days 0 to 5. We measure the change in implied volatility over days -5 to 5 ($\Delta IV_{i,t}^{Entire}$) and days -2 to 0 ($\Delta IV_{i,t}^{Pre}$). We measure cumulative abnormal equity returns ($CAR[-1,1]_{i,t}$), abnormal trading volume ($ATVol_{i,t}$), and retail volume ($RVol_{i,t}$) over days -1 to 1. Via this process, we generate a sample of 18,529 firm-year observations.
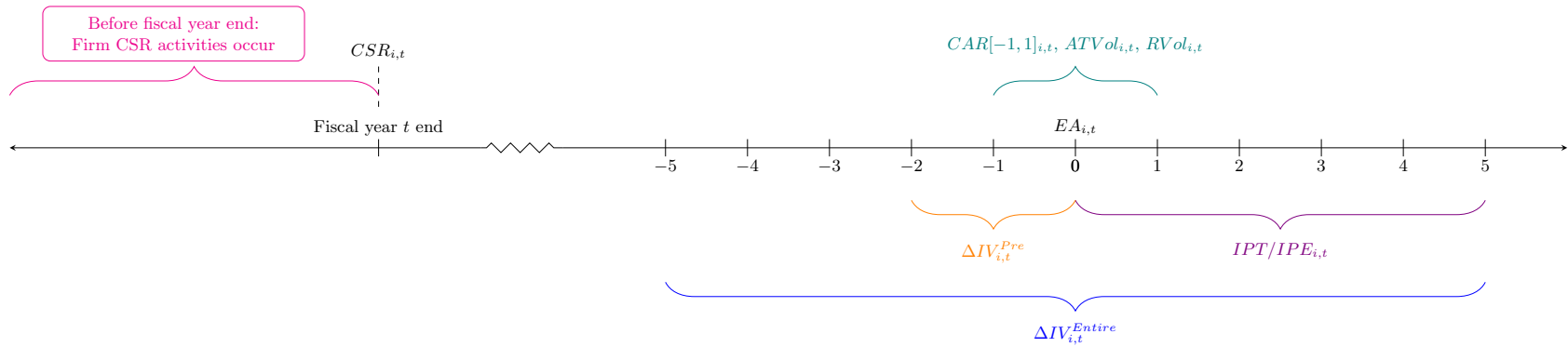
Figure 2: Speed of price discovery around passage of CSR-related shareholder proposals

This figure plots the intraperiod efficiency of returns ($IPE$) against vote share for CSR-related proposals. Panel A plots all observations in our sample and Panel B plots observations aggregated at a 1% bin width.

Panel A: All observations
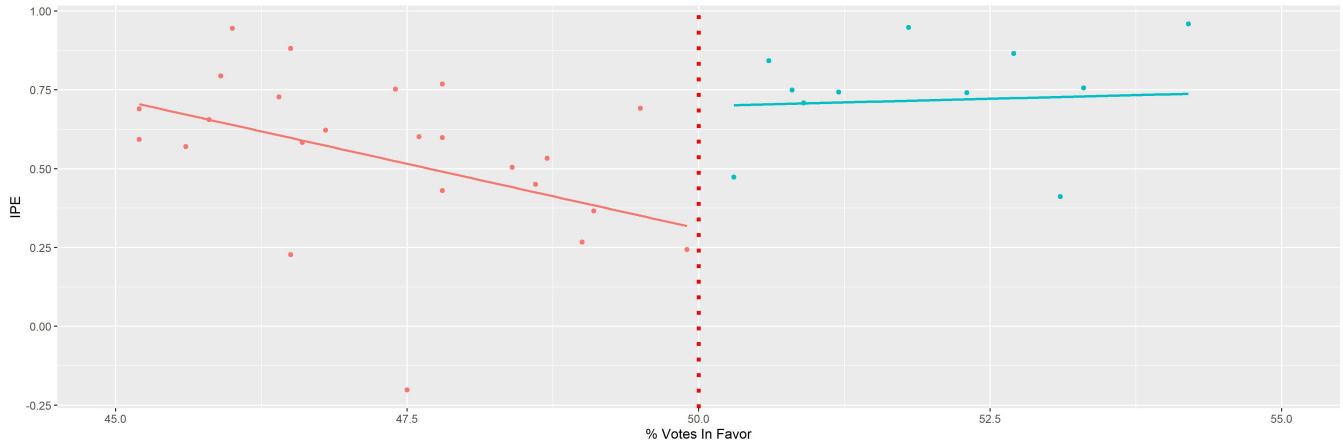


Panel B: Aggregated observations, 1% bin width



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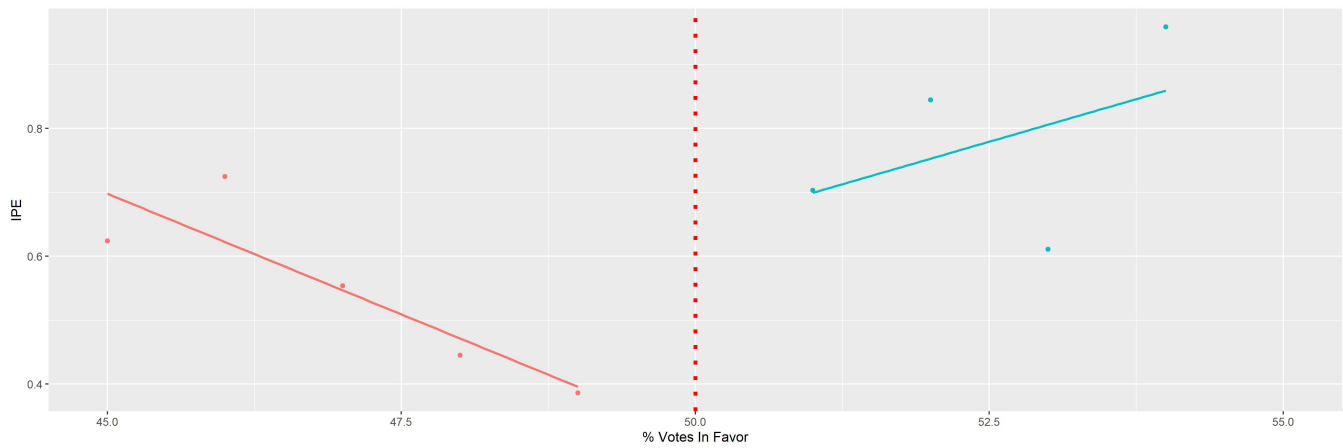
Table 1: Descriptive statistics and correlation matrix

Panels A and B provide descriptive statistics and a correlation matrix, respectively, for the main variables in our main analysis. In Panel B, Pearson (Spearman) correlations are reported above (below) the diagonal. All variable definitions appear in Appendix A.

### Panel A: Descriptive statistics

| Statistic | N | Mean | St. Dev. | Pctl(25) | Median | Pctl(75) |
|---|---|---|---|---|---|---|
| $CSR$ | 18,529 | 0.038 | 0.582 | $-0.3$ | 0 | 0.2 |
| $IPT$ | 18,529 | 4.153 | 2.195 | 3.144 | 4.186 | 5.175 |
| $IPE$ | 18,529 | 0.603 | 0.277 | 0.513 | 0.673 | 0.773 |
| $SUE$ | 18,529 | $-0.001$ | 0.076 | $-0.006$ | 0.001 | 0.006 |
| $ROE$ | 18,529 | 0.092 | 0.209 | 0.045 | 0.105 | 0.174 |
| $Loss$ | 18,529 | 0.158 | 0.365 | 0 | 0 | 0 |
| $OAcc$ | 18,529 | $-0.054$ | 0.067 | $-0.082$ | $-0.046$ | $-0.015$ |
| $InstOwn$ | 18,529 | 0.748 | 0.218 | 0.637 | 0.799 | 0.913 |
| $Analyst$ | 18,529 | 2.213 | 0.719 | 1.792 | 2.303 | 2.708 |
| $Size$ | 18,529 | 7.741 | 1.440 | 6.611 | 7.516 | 8.604 |
| $BTM$ | 18,529 | $-0.867$ | 0.728 | $-1.300$ | $-0.800$ | $-0.349$ |
| $Mom$ | 18,529 | 0.056 | 0.269 | $-0.101$ | 0.049 | 0.198 |

### Panel B: Correlation matrix

| | $CSR$ | $IPT$ | $IPE$ | $SUE$ | $ROE$ | $Loss$ | $OAcc$ | $InstOwn$ | $Analyst$ | $Size$ | $BTM$ | $Mom$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CSR | | 0.032 | 0.051 | -0.005 | 0.088 | -0.045 | 0.003 | 0.018 | 0.264 | 0.395 | -0.091 | 0.007 |
| IPT | 0.033 | | 0.371 | 0.017 | 0.033 | -0.018 | 0.006 | 0.070 | 0.039 | 0.001 | -0.020 | 0 |
| IPE | 0.050 | 0.524 | | 0.032 | 0.081 | -0.065 | 0.036 | 0.062 | 0.045 | 0.053 | -0.034 | 0.041 |
| SUE | -0.023 | 0.019 | 0.025 | | 0.171 | -0.148 | 0.160 | 0 | -0.011 | 0.013 | -0.056 | 0.183 |
| ROE | 0.096 | 0.044 | 0.081 | 0.175 | | -0.675 | 0.389 | 0.024 | 0.057 | 0.248 | -0.171 | 0.065 |
| Loss | -0.041 | -0.024 | -0.064 | -0.142 | -0.632 | | -0.387 | 0.008 | -0.001 | -0.181 | 0.008 | -0.081 |
| OAcc | 0.002 | 0.001 | 0.018 | 0.122 | 0.264 | -0.330 | | -0.071 | -0.109 | 0.042 | 0.129 | -0.003 |
| InstOwn | 0.011 | 0.085 | 0.078 | 0.028 | -0.015 | 0.026 | -0.105 | | 0.227 | 0.023 | -0.060 | 0.006 |
| Analyst | 0.256 | 0.039 | 0.053 | 0.001 | 0.137 | -0.011 | -0.115 | 0.169 | | 0.631 | -0.190 | -0.060 |
| Size | 0.347 | 0.014 | 0.065 | 0.017 | 0.302 | -0.187 | 0.023 | 0.020 | 0.673 | | -0.246 | 0.063 |
| BTM | -0.102 | -0.033 | -0.039 | -0.047 | -0.429 | 0.034 | 0.140 | -0.055 | -0.203 | -0.245 | | -0.253 |
| Mom | 0.016 | -0.001 | 0.019 | 0.199 | 0.101 | -0.098 | 0 | 0.005 | -0.056 | 0.085 | -0.240 | |

## Table 2: Speed of price discovery and CSR

This table presents regression summary statistics from estimating several versions of the following equation:

$$IPX_{i,t} = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t}$$

In columns (1)-(3), the dependent variable is intraperiod timeliness, $IPT$, and in columns (4)-(6) the dependent variable is intraperiod efficiency, $IPE$. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | IPT | | | IPE | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| CSR | 0.114*** | 0.114*** | 0.092** | 0.023*** | 0.023*** | 0.017*** |
| | (0.036) | (0.036) | (0.034) | (0.007) | (0.006) | (0.005) |
| AbsSUE | | −0.055 | −0.033 | | −0.165*** | −0.129*** |
| | | (0.454) | (0.464) | | (0.050) | (0.046) |
| ROE | | 0.309* | 0.304* | | 0.027 | 0.018 |
| | | (0.164) | (0.176) | | (0.026) | (0.028) |
| Loss | | 0.098 | 0.103 | | 0.002 | 0.006 |
| | | (0.087) | (0.088) | | (0.010) | (0.010) |
| OAcc | | −0.517 | −0.497 | | −0.004 | 0.013 |
| | | (0.483) | (0.489) | | (0.041) | (0.042) |
| InstOwn | | | 0.396** | | | 0.055** |
| | | | (0.161) | | | (0.025) |
| Analyst | | | 0.162*** | | | 0.019** |
| | | | (0.054) | | | (0.007) |
| Size | | | −0.012 | | | 0.011 |
| | | | (0.050) | | | (0.007) |
| BTM | | | 0.012 | | | 0.004 |
| | | | (0.043) | | | (0.008) |
| Mom | | | 0.020 | | | 0.043*** |
| | | | (0.076) | | | (0.013) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 18,529 | 18,529 | 18,529 | 18,529 | 18,529 | 18,529 |
| Adjusted $R^2$ | 0.044 | 0.044 | 0.045 | 0.056 | 0.058 | 0.062 |

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Table 3: Speed of price discovery, CSR, and disclosure quality

This table presents regression summary statistics from estimating the following equations

$$IPE_{i,t} = \beta CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t}$$

with the addition of several measures of firm-level disclosure quality. Panel A provides estimation results for the levels specification and Panel B provides estimation results for the changes specification. Column (1) adds $numMF$, the number of management forecasts during the year as a control variable. Column (2) add $MFE$, the management forecast error as a control variable. Column (3) adds $Amihud$, the Illiquidity measure based on Amihud (2002), column (4) adds $BOG$, a measure of the clarity of language in the 10-K of a firm as a control variable, column (5) adds $Media$, a measurement of media following of the firm during the year, and column (6) repeats the analyses adding all five control variables. Additional controls included in all estimations but suppressed from the table are $SUE$, $ROE$, $Loss$, $OAcc$, $InstOwn$, $Analyst$, $Size$, $BTM$, and $Mom$. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | IPE | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| CSR | 0.017*** | 0.017*** | 0.016*** | 0.016*** | 0.024*** | 0.024*** |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.006) | (0.007) |
| numMF | −0.001 | | | | | −0.002 |
| | (0.001) | | | | | (0.002) |
| MFE | | 0.001** | | | | 0.001** |
| | | (0.0003) | | | | (0.0004) |
| Amihud | | | −0.012 | | | −0.013** |
| | | | (0.021) | | | (0.005) |
| BOG | | | | −0.001 | | −0.002 |
| | | | | (0.001) | | (0.001) |
| Media | | | | | −0.006 | −0.006 |
| | | | | | (0.005) | (0.006) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 18,529 | 18,529 | 18,183 | 17,928 | 7,691 | 7,359 |
| Adjusted R² | 0.062 | 0.062 | 0.059 | 0.063 | 0.053 | 0.053 |

Table 4: Analyses of close CSR shareholder proposals

This table presents regression summary statistics from estimating several versions of the following equation

$$IPE_{i,t} = \beta_1 Pass_{i,t} + \gamma Controls_{i,t} + \epsilon_{i,t}$$

using a sample of shareholder votes on CSR-related proposals. In column (1) results for the full sample of shareholder votes is reported. Column (2) and (4) provide results for a +/-10% and +/-5% band respectively, and columns (3) and (4) repeat the analyses including control variables. The controls included but suppressed from the table are $AbsSUE$, $ROE$, $Loss$, $OAcc$, $InstOwn$, $Analyst$, $Size$, $BTM$, and $Mom$. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | *IPE* | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| Sample: | All votes | | +/- 10% | | +/- 5% | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Pass* | −0.163 | −0.149 | 0.255*** | 0.316*** | 0.303*** | 0.350*** |
| | (0.168) | (0.148) | (0.084) | (0.089) | (0.090) | (0.128) |
| | | | | | | |
| *VotePct* | 0.001 | 0.001 | −0.020*** | −0.020*** | −0.030 | −0.044* |
| | (0.001) | (0.001) | (0.008) | (0.007) | (0.019) | (0.024) |
| | | | | | | |
| Controls | No | Yes | No | Yes | No | Yes |
| Observations | 3,486 | 3,486 | 134 | 134 | 47 | 47 |
| Adjusted R² | 0.004 | 0.057 | 0.079 | 0.116 | 0.122 | 0.262 |

Table 5: CSR and investor reactions to positive and negative earnings

This table presents regression summary statistics from estimating several versions of the following equations:

$$IPE_{i,t} = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t}$$

This table presents regression summary statistics from estimating equation(1) and (**??**) after partitioning the sample based on the direction of reported earnings. Columns (1) - (4) split the sample to firms reporting Profit and Loss respectively. Columns (5) and (8) split the sample based on high and low $SUE$ respectively. Additional controls included in all estimations but suppressed from the table are $AbsSUE$, $ROE$, $Loss$, $OAcc$, $InstOwn$, $Analyst$, $Size$, $BTM$, and $Mom$. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. \*\*\*, \*\*, \* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | IPE | | | | |
| --- | --- | --- | --- | --- | --- |
| Sample: | Profit | Loss | High SUE | Low SUE | Full Sample |
| | (1) | (2) | (3) | (4) | (5) |
| $CSR$ | 0.017\*\*\* | 0.014 | 0.020\*\* | 0.015 | |
| | (0.005) | (0.021) | (0.008) | (0.013) | |
| $CSR\_Pos$ | | | | | 0.019\*\*\* |
| | | | | | (0.005) |
| $CSR\_Neg$ | | | | | 0.013 |
| | | | | | (0.009) |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| Observations | 16,030 | 2,963 | 5,690 | 5,723 | 18,993 |
| Adjusted R$^2$ | 0.078 | 0.060 | 0.080 | 0.046 | 0.068 |

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Table 6: Experimental results

This table presents the results of our experiment. Panel A presents descriptive statistics for our three outcome variables (*Disclosure Credibility*, *Integrity*, and *Trust*) separately for each of the four experimental conditions. Each cell of Panel A contains three summary statistics: the mean, the standard deviation (in parentheses), and the number of observations (italicized). Panel B presents ANOVA results. Panel C presents simple effects tests. Panel D presents select participant responses by condition. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

### Panel A: Descriptive Statistics: Mean, (Standard Deviation), *number of observations*

| | | *Disclosure Credibility* | | | *Trust* | | | *Integrity* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | *CSR Performance* | | | *CSR Performance* | | | *CSR Performance* | | |
| | | Negative | Positive | | Negative | Positive | | Negative | Positive | |
| *Earnings Surprise* | Negative | 0.32 | 1.76 | 1.02 | -0.65 | 0.59 | -0.05 | -1.05 | 1.84 | 0.37 |
| | | (1.71) | (1.41) | (1.72) | (1.86) | (1.79) | (1.92) | (2.48) | (1.88) | (2.63) |
| | | *62* | *59* | *121* | *62* | *59* | *121* | *61* | *59* | *120* |
| | Positive | 0.97 | 2.29 | 1.61 | -0.59 | 0.81 | 0.09 | -1.11 | 2.17 | 0.47 |
| | | (1.53) | (1.15) | (1.50) | (2.02) | (1.65) | (1.97) | (2.51) | (1.48) | (2.64) |
| | | *59* | *56* | *115* | *60* | *56* | *116* | *60* | *56* | *116* |
| | | 0.64 | 2.02 | | -0.62 | 0.70 | | -1.08 | 2.00 | |
| | | (1.65) | (1.31) | | (1.93) | (1.72) | | (2.49) | (1.70) | |
| | | *121* | *115* | | *122* | *115* | | *121* | *115* | |

### Panel B: Analysis of Variance (ANOVA)

| | *Disclosure Credibility* | | | *Trust* | | | *Integrity* | | |
|---|---|---|---|---|---|---|---|---|---|
| Source | df | MS | F | df | MS | F | df | MS | F |
| *CSR Performance* | 1 | 111.74 | 51.60*** | 1 | 103.01 | 30.55*** | 1 | 560.00 | 121.69*** |
| *Earnings Surprise* | 1 | 20.15 | 9.30*** | 1 | 1.23 | 0.36 | 1 | 1.03 | 0.22 |
| *CSR Performance × Earnings Surprise* | 1 | 0.20 | 0.09 | 1 | 0.38 | 0.11 | 1 | 2.30 | 0.50 |
| Error | 232 | 2.17 | | 233 | 3.37 | | 232 | 4.60 | |

### Panel C: Simple effects

| | *Disclosure Credibility* $t_{232}$ | *Trust* $t_{233}$ | *Integrity* $t_{232}$ |
|---|---|---|---|
| Positive versus Negative *CSR Performance*, *Earnings Surprise* Positive | 4.80*** | 4.10*** | 8.23*** |
| Positive versus Negative *CSR Performance*, *Earnings Surprise* Negative | 5.36*** | 3.71*** | 7.36*** |
| Positive versus Negative *Earnings Surprise*, *CSR Performance* Positive | 1.92* | 0.65 | 0.82 |
| Positive versus Negative *Earnings Surprise*, *CSR Performance* Negative | 2.40** | 0.19 | −0.17 |

Table 6: Experimental Results (cont.)

Panel D: Select participant responses by condition

| *CSR Performance*: Positive | *Earnings Surprise*: Positive |
| --- | --- |

"I think overall, XYZ has shown growth in their profits and revenue so they show they are competent and know how to excel in the retail industry. Additionally, they have shown above average CSR, so it shows they are [somewhat] honest and aware of their impact on the environment and the community."

| *CSR Performance*: Positive | *Earnings Surprise*: Negative |
| --- | --- |

"They seem very open and transparent. They scored very well on their CSR report in almost every area, so that makes me trust them as a company. That they disclosed the 11% decrease in income makes them more trustworthy in my eyes."

| *CSR Performance*: Negative | *Earnings Surprise*: Positive |
| --- | --- |

"Their corporate social responsibility scores are terrible, which to me suggests a willingness to cut corners for the sake of profits. All of their financial metrics are great, with steady growth and healthy balance sheet in a very [competitive] market. I automatically trust their financial disclosures just slightly less than neutral given [what] their CSR scores suggest of their ethics."

| *CSR Performance*: Negative | *Earnings Surprise*: Negative |
| --- | --- |

"I feel they aren't trustworthy because of how they treat employees and the community, and that likely spills over into competence areas."

"The company is reporting a loss so there is some transparency there. However, the company is not run ethically so I question the morals of management."

## Table 7: Investor uncertainty and CSR

This table presents regression summary statistics from estimating several versions of the following equation:

$$\Delta IV_{i,t}^{x} = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t}$$

In Columns (1) - (3) the dependent variable is anticipatory investor uncertainty, $\Delta IV_{i,t}^{Pre}$, and in Columns (4) - (6) the dependent variable is investor uncertainty during the entire earnings announcement period, $\Delta IV_{i,t}^{Entire}$. In these regressions, $Controls$ includes the $VIX$ and $IV\_Base$ variables measured separately for the anticipatory and full earnings announcements periods. Additional controls suppressed from the table are $AbsSUE$, $ROE$, $Loss$, $OAcc$, $InstOwn$, $Analyst$, $Size$, $BTM$, and $Mom$. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | $\Delta IV_{i,t}^{Pre}$ | | | $\Delta IV_{i,t}^{Entire}$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $CSR$ | −0.014*** | −0.014*** | −0.010*** | −0.014** | −0.014** | −0.013*** |
| | (0.004) | (0.004) | (0.003) | (0.005) | (0.005) | (0.004) |
| $AbsSUE$ | | 0.027 | 0.020 | | 0.020 | 0.024 |
| | | (0.016) | (0.019) | | (0.032) | (0.023) |
| $ROE$ | | −0.018** | −0.012 | | −0.011 | −0.008 |
| | | (0.008) | (0.007) | | (0.012) | (0.010) |
| $Loss$ | | 0.004 | 0.002 | | 0.005 | 0.005 |
| | | (0.004) | (0.004) | | (0.005) | (0.005) |
| $OAcc$ | | 0.009 | 0.006 | | 0.013 | 0.016 |
| | | (0.017) | (0.017) | | (0.024) | (0.022) |
| $InstOwn$ | | | −0.028*** | | | −0.031** |
| | | | (0.008) | | | (0.012) |
| $Analyst$ | | | −0.001 | | | −0.004 |
| | | | (0.004) | | | (0.004) |
| $Size$ | | | −0.021*** | | | −0.023*** |
| | | | (0.003) | | | (0.005) |
| $BTM$ | | | −0.006** | | | −0.010*** |
| | | | (0.002) | | | (0.003) |
| $Mom$ | | | −0.0001 | | | −0.006 |
| | | | (0.004) | | | (0.006) |
| $\Delta VIX$ | | | 0.171*** | | | 0.209*** |
| | | | (0.017) | | | (0.021) |
| $IV\_Base$ | | | −0.036*** | | | −0.066* |
| | | | (0.012) | | | (0.037) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 16,983 | 16,983 | 16,983 | 16,983 | 16,983 | 16,983 |
| Adjusted $R^2$ | 0.116 | 0.117 | 0.155 | 0.095 | 0.095 | 0.205 |

Table 8: Trading volume and CSR

This table presents regression summary statistics from estimating several versions of the following equations:

$$ATVol = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t}$$

$$RVol = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t}$$

In Columns (1) - (3) the dependent variable is abnormal overall trading volume, $ATVol$, and in Columns (4) - (6) the dependent variable is retail trading volume, $RVol$. Both dependent variables are measured over days [-1,1] relative to the firm's annual earnings announcement date. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | $ATVol$ | | | $RVol$ | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| $CSR$ | 0.032*** | 0.031*** | 0.021*** | 0.006* | 0.006* | 0.006** |
| | (0.008) | (0.008) | (0.005) | (0.003) | (0.003) | (0.002) |
| $AbsSUE$ | | −0.021 | 0.047 | | 0.018** | 0.018** |
| | | (0.067) | (0.055) | | (0.008) | (0.007) |
| $ROE$ | | 0.038 | 0.006 | | 0.003 | 0.006 |
| | | (0.025) | (0.029) | | (0.003) | (0.004) |
| $Loss$ | | 0.005 | 0.010 | | 0.004** | 0.004** |
| | | (0.012) | (0.013) | | (0.001) | (0.001) |
| $OAcc$ | | 0.096* | 0.143*** | | 0.012 | 0.013 |
| | | (0.049) | (0.048) | | (0.009) | (0.009) |
| $InstOwn$ | | | 0.111*** | | | −0.025*** |
| | | | (0.033) | | | (0.003) |
| $Analyst$ | | | 0.056*** | | | 0.007*** |
| | | | (0.012) | | | (0.002) |
| $Size$ | | | 0.008 | | | −0.004* |
| | | | (0.009) | | | (0.002) |
| $BTM$ | | | −0.020* | | | 0.003 |
| | | | (0.010) | | | (0.002) |
| $Mom$ | | | 0.063*** | | | 0.011** |
| | | | (0.014) | | | (0.004) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 18,031 | 18,031 | 18,031 | 12,885 | 12,885 | 12,885 |
| Adjusted R$^2$ | 0.252 | 0.252 | 0.263 | 0.391 | 0.393 | 0.410 |

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Table 9: Earnings response coefficients and CSR

This table presents regression summary statistics from estimating several versions of the following equation:

$$CAR[-1, 1]_{i,t} = \beta_1 CSR_{i,t} + \gamma Controls_{i,t} + \alpha_i + \epsilon_{i,t}$$

The dependent variable is the cumulative abnormal return in firm $i$'s equity, measured over days [-1,1] relative to the firm's annual earnings announcement date. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | $CAR[-1, 1]$ | | |
| | (1) | (2) | (3) |
|---|---|---|---|
| $CSR$ | −0.492*** | −0.482*** | −0.196 |
| | (0.114) | (0.113) | (0.125) |
| $SUE$ | 7.716*** | 8.158*** | 8.028*** |
| | (2.472) | (2.514) | (2.554) |
| $CSR \times SUE$ | 3.640** | 3.799** | 3.674** |
| | (1.737) | (1.700) | (1.642) |
| $ROE$ | | 0.913 | 1.839* |
| | | (0.822) | (0.895) |
| $Loss$ | | −0.585** | −0.811*** |
| | | (0.271) | (0.271) |
| $OAcc$ | | −9.049*** | −9.262*** |
| | | (2.196) | (2.316) |
| $InstOwn$ | | | 0.536 |
| | | | (0.564) |
| $Analyst$ | | | −0.376 |
| | | | (0.335) |
| $Size$ | | | −1.198*** |
| | | | (0.182) |
| $BTM$ | | | 0.139 |
| | | | (0.192) |
| $Mom$ | | | 0.171 |
| | | | (0.485) |
| Firm FE | Yes | Yes | Yes |
| Observations | 18,529 | 18,529 | 18,529 |
| Adjusted $R^2$ | 0.054 | 0.056 | 0.062 |

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Table 10: Intraperiod timeliness and investor trust with alternative fixed-effect structures

This table presents regression summary statistics from estimating Equation (1) with alternative fixed effect specifications. Additional controls included in all estimations but suppressed from the table are *SUE*, *ROE*, *Loss*, *OAcc*, *InstOwn*, *Analyst*, *Size*, *BTM*, and *Mom*. Two-way firm and year cluster robust standard errors are in parentheses. All variable definitions appear in Appendix A. ***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

| | | | | *IPE* | | |
| | No FEs | Year FEs | Industry FEs | Industry and Year FEs | Industry-Year FEs | Firm and Year FEs |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *CSR* | 0.017*** | 0.014*** | 0.014*** | 0.009*** | 0.013*** | 0.009** |
| | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) | (0.003) |
| Controls | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* | *Yes* |
| Observations | 18,529 | 18,529 | 18,529 | 18,529 | 18,529 | 18,529 |
| Adjusted R$^2$ | 0.014 | 0.024 | 0.020 | 0.030 | 0.036 | 0.071 |

*Note:* *p<0.1; **p<0.05; ***p<0.01

# Appendix A   Variable definitions

| Variable | Description |
|---|---|
| $AbsSUE_{i,t}$ | Absolute magnitude of standardized unexpected earnings of firm $i$ at the end of fiscal year $t$ |
| $Amihud_{i,t}$ | The ratio of average daily absolute returns to average daily dollar volume for firm $i$ over year $t$. This measure of the price impact of trades is based on Amihud (2002) |
| $Analyst_{i,t}$ | The natural logarithm of one plus the number of analysts providing an earnings forecast for firm $i$ at the end of fiscal year $t$ |
| $ARVol_{i,t}$ | Abnormal retail volume of firm $i$ calculated as the natural logarithm of one plus the proportion of retail trading volume over the $[-1, 1]$ day period relative to the earnings announcement of year $t$ and the proportion of retail trading volume over the $[-54, -5]$ day period. |
| $ATVol_{i,t}$ | Abnormal trading volume of firm $i$ calculated as the natural logarithm of one plus the share turnover ratio across days $[-1, 1]$, scaled by the average daily turnover ratio across days $[-54, -5]$ relative to the earnings announcement of year $t$. Defined as $ATVol = ln(1 + \frac{\frac{1}{3}\sum_{j=-1}^{1} TR_{i,k+j}}{\frac{1}{50}\sum_{j=5}^{54} TR_{i,k-j}})$. $TR$ is the ratio between the number of shares traded and the number of shares outstanding, $j$ represents the trading day relative to the earnings announcement. |
| $BOG_{i,t}$ | Bog Index for firm $i$ at time $t$, measuring the extent to which a writing style can "bog down" written communication. Based on text analysis against a graded 200,000-word dictionary and assessing style faults such as redundant phrases, passive verbs, and hidden verbs. Higher values indicate less readable text. |
| $BTM_{i,t}$ | Natural logarithm of the equity book-to-market ratio for firm $i$ at the end of fiscal year $t$ |
| $CAR[a,b]_{i,t}$ | Cumulative abnormal stock return for firm $i$ from day $a$ through day $b$ relative to the fiscal year $t$ earnings announcement. Computed as firm $i$'s raw return minus the value-weighted return for a portfolio of firms matched on 5×5 sorts of firm size and market-to-book ratio. |
| $CSR_{i,t}$ | CSR score constructed from MSCI ESG KLD STATS database, indicating the net of CSR strengths and concerns for firm $i$ in year $t$. The CSR values range from -5 to +5. |
| $InstOwn_{i,t}$ | Percentage of firm $i$'s shares owned by institutions at the most recent quarter-end relative to fiscal year $t$. |
| $IPE_{i,t}$ | Intraperiod efficiency of reported earnings, defined as: $$IPE_{i,t} = 1 - \sum_{j=0}^{5} \frac{|CAR_{i,t}[0,5] - CAR_{i,t}[0,j]|}{|CAR_{i,t}[0,5]|}$$ |
| $IPT_{i,t}$ | Intraperiod timeliness of reported earnings, defined as: $$IPT_{i,t} = \sum_{j=0}^{4} \frac{CAR_{i,t}[0,j]}{CAR_{i,t}[0,5]} + 0.5$$ |
| $IV\_Base_{i,t}$ | Baseline implied volatility, measured on day -3 or day -6 relative to the earnings announcement date. |
| $\Delta VIX_{i,t}$ | A change in market volatility index (CBOE Volatility index). |
| $IV_{i,t}^{x}$ | Implied volatility, measured on a given date by averaging the implied volatilities of put and call options with durations of 30 days. $x$ denotes either $Pre$ or $Entire$. $\Delta IV_{i,t}^{Pre}$ ($\Delta IV_{i,t}^{Post}$) denotes a change in firm $i$'s implied volatility during the anticipatory, i.e., days $[-2, 0]$, (entire, i.e., days $[-5, 5]$) period of fiscal year $t$ earnings announcement. |
| $Loss_{i,t}$ | Indicator variable for whether firm $i$ reports a loss at time $t$. |
| $Media_{i,t}$ | Natural logarithm of one + the number of news articles related to firm $i$ in the RavenPack database over days $[0,5]$ relative to the year $t$ earnings announcement |
| $MFE_{i,t}$ | Management forecast error calculated as the difference between the earnings per share forecasted by management and the actual earnings per share of firm $i$ in year $t$. |
| $Mom_{i,t}$ | Six-month cumulative stock return for firm $i$ ending one month prior to the period $t$ end date. |

| | |
|---|---|
| $NumMF_{i,t}$ | Number of management earnings forecasts issued by firm $i$ during year $t$. |
| $OAcc_{i,t}$ | Operating accruals for firm $i$ at time $t$, calculated as the difference between net income before extraordinary items and cash flows from operating activities, divided by average total assets at the end of fiscal year $t$. |
| $Pass_{i,t}$ | Indicator variable that takes on the value of one if a shareholder CSR proposal for firm $i$ at time $t$ was approved by more than 50% of votes and zero otherwise |
| $ROE_{i,t}$ | Return on book value of equity of firm $i$ during fiscal year $t$, measured as the ratio between firm $i$'s net income before extraordinary items and average total assets from fiscal years $t$ and $t-1$. |
| $Size_{i,t}$ | Natural logarithm of market value of equity for firm $i$ at the end of fiscal year $t$. |
| $SUE_{i,t}$ | Standardized unexpected earnings of firm $i$ at the end of fiscal year $t$, measured as the difference between net income before extraordinary items of the last quarter of fiscal year $t$ and the net income before extraordinary items from four quarters ago, scaled by a firm $i$'s stock price at the end of fiscal year $t$. |

**Experimental Variables**

| Variable | Description |
|---|---|
| *CSR Performance* | Manipulated between-participants as positive or negative; see Appendix B for full manipulations |
| *Disclosure Credibility* | Average of participant ratings of the following six statements, rated on 11-point scales anchored by -5 (Strongly disagree) and 5 (Strongly agree): |

1. I believe XYZ's management is very competent at providing financial disclosures.
2. I believe XYZ's management has little knowledge of the factors involved in providing useful disclosures. [reverse coded]
3. I believe few people are as qualified as XYZ's management to provide useful financial disclosure about XYZ.
4. I believe XYZ's management is very trustworthy.
5. I believe XYZ's management is very honest.
6. I believe XYZ's management may not be truthful in their financial disclosures. [reverse coded]

| Variable | Description |
|---|---|
| *Earnings Surprise* | Manipulated between-participants as positive or negative; see Appendix B for full manipulations |
| *Integrity* | Average of participant ratings of the following three statements, rated on 11-point scales anchored by -5 (Strongly disagree) and 5 (Strongly agree): |

1. I like XYZ management's values.
2. Sound principles seem to guide XYZ management's behavior.
3. XYZ's management has a great deal of integrity.

| Variable | Description |
|---|---|
| *Trust* | Average of participant ratings of the following three statements, rated on 11-point scales anchored by -5 (Strongly disagree) and 5 (Strongly agree): |

1. I really wish I had a good way to keep an eye on XYZ's management. [reverse coded]
2. I would be comfortable giving XYZ's management a task or problem which was critical to me, even if I could not monitor their actions.
3. I wouldn't let XYZ's management have any influence over issues that are important to me. [reverse coded]

# Appendix B  Experimental manipulations

<table>
<tr><td>

*CSR Performance*: **positive condition**

</td><td>

*CSR Performance*: **negative condition**

</td></tr>
</table>

The report below was produced by an independent research firm that specializes in measuring corporate social responsibility (CSR) performance.

CORPORATE SOCIAL RESPONSIBILITY REPORT

**OVERALL SCORE**
(Industry average 56.23)

# XYZ Stores

**86.73**

INDUSTRY: Retail   TICKER: XYZS   EXCHANGE: NYSE

**INDUSTRY RANK**
(out of 56 companies)

XYZ Stores sells discounted retail apparel, footwear, home decorations, jewelry, and other accessories through its XYZ retail stores.

**3**

| COMMUNITY | XYZ Stores | 88.38 |
|---|---|---|
| | Industry average | 59.17 |

How the company compares with its industry: a measure of firm impact on community and societal issues. Individual measures scored 1 to 5; 5 is best.

Charitable giving............................. ●●●●●
Support for education...................... ●●●●○
Support for housing......................... ●●●●○
Volunteer programs......................... ●●●●○

**INDUSTRY COMPARISON**

| DIVERSITY | XYZ Stores | 75.01 |
|---|---|---|
| | Industry average | 53.20 |

How the company compares with its industry: all diversity and inclusion policies, initiatives, and controversies. Individual measures scored 1 to 5; 5 is best.

Board of directors........................... ●●●●●
Firm leadership............................... ●●●○○
LBTQI+ policies............................... ●●●●○
Work/life benefits........................... ●●●●●

| EMPLOYEE RELATIONS | XYZ Stores | 83.47 |
|---|---|---|
| | Industry average | 52.10 |

How the company compares with its industry: all employee-related policies, initiatives, and controversies. Individual measures scored 1 to 5; 5 is best.

Labor-management relations.............. ●●●●○
Employee safety.............................. ●●●●●
Retirement policies.......................... ●●●○○
Profit sharing................................. ●●●●○

**SELECTED COMPETITORS**

How the company's overall Social Responsibility Rating compares with primary competitors.

| ENVIRONMENT | XYZ Stores | 90.25 |
|---|---|---|
| | Industry average | 49.91 |

How the company compares with its industry: all environmental policies, programs, initiatives, and controversies. Individual measures scored 1 to 5; 5 is best.

Climate change............................... ●●●●●
Pollution policies............................ ●●●●●
Environmental stewardship.............. ●●●●○
Management of environmental issues...... ●●●●●

| XYZ Stores | .................. 86.73 |
|---|---|
| TJX | .................. 86.90 |
| Kohls | .................. 79.42 |
| Ross Stores | .................. 59.38 |
| ABC Stores | .................. 24.62 |

| HUMAN RIGHTS | XYZ Stores | 80.92 |
|---|---|---|
| | Industry average | 48.59 |

How the company compares with its industry: a measure of firm impact on human rights issues. Individual measures scored 1 to 5; 5 is best.

Civil human rights........................... ●●●●○
Political human rights....................... ●●●●○
Labor rights................................... ●●●●○
Relations with indigenous people........... ●●●●○

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The report below was produced by an independent research firm that specializes in measuring corporate social responsibility (CSR) performance.

CORPORATE SOCIAL RESPONSIBILITY REPORT

**OVERALL SCORE**
(Industry average 56.23)

# XYZ Stores

**25.73**

INDUSTRY: Retail   TICKER: XYZS   EXCHANGE: NYSE

**INDUSTRY RANK**
(out of 56 companies)

XYZ Stores sells discounted retail apparel, footwear, home decorations, jewelry, and other accessories through its XYZ retail stores.

**54**

| COMMUNITY | XYZ Stores | 29.96 |
|---|---|---|
| | Industry average | 59.17 |

How the company compares with its industry: a measure of firm impact on community and societal issues. Individual measures scored 1 to 5; 5 is best.

Charitable giving............................. ●●○○○
Support for education...................... ●●○○○
Support for housing......................... ●○○○○
Volunteer programs......................... ●●○○○

**INDUSTRY COMPARISON**

| DIVERSITY | XYZ Stores | 31.39 |
|---|---|---|
| | Industry average | 53.20 |

How the company compares with its industry: all diversity and inclusion policies, initiatives, and controversies. Individual measures scored 1 to 5; 5 is best.

Board of directors........................... ●●○○○
Firm leadership............................... ●●○○○
LBTQI+ policies............................... ●○○○○
Work/life benefits........................... ●●●○○

| EMPLOYEE RELATIONS | XYZ Stores | 20.73 |
|---|---|---|
| | Industry average | 52.10 |

How the company compares with its industry: all employee-related policies, initiatives, and controversies. Individual measures scored 1 to 5; 5 is best.

Labor-management relations.............. ●●○○○
Employee safety.............................. ●●○○○
Retirement policies.......................... ●●○○○
Profit sharing................................. ●○○○○

**SELECTED COMPETITORS**

How the company's overall Social Responsibility Rating compares with primary competitors.

| ENVIRONMENT | XYZ Stores | 9.57 |
|---|---|---|
| | Industry average | 49.91 |

How the company compares with its industry: all environmental policies, programs, initiatives, and controversies. Individual measures scored 1 to 5; 5 is best.

Climate change............................... ●○○○○
Pollution policies............................ ●○○○○
Environmental stewardship.............. ●●○○○
Management of environmental issues...... ●○○○○

| XYZ Stores | .................. 25.73 |
|---|---|
| TJX | .................. 86.90 |
| Kohls | .................. 79.42 |
| Ross Stores | .................. 59.38 |
| ABC Stores | .................. 24.62 |

| HUMAN RIGHTS | XYZ Stores | 16.26 |
|---|---|---|
| | Industry average | 48.59 |

How the company compares with its industry: a measure of firm impact on human rights issues. Individual measures scored 1 to 5; 5 is best.

Civil human rights........................... ●●○○○
Political human rights....................... ●○○○○
Labor rights................................... ●●○○○
Relations with indigenous people........... ●○○○○

*Earnings Surprise*: **positive condition**

**Assume that it is early 2023, and you have received the following press release:**

**XYZ REPORTS 2023 RESULTS**

(BUSINESS WIRE) – XYZ released earnings today for the year ended January 31, 2023. The Company reported revenues of $859.3 million, an 11% increase from the previous year, and net income of $103.8 million, also an 11% increase from 2022. XYZ's 2023 reported results exceeded management's guidance and analysts' recently revised forecasts.

XYZ included the following performance highlights:

**FINANCIAL HIGHLIGHTS**
(in thousands of dollars)

|                  | 2023    | 2022    | 2021    |
|------------------|---------|---------|---------|
| Revenues         | 859,282 | 774,128 | 711,849 |
| Operating income | 180,433 | 162,553 | 136,437 |
| Net income       | 103,842 | 93,552  | 75,518  |

*Earnings Surprise*: **negative condition**

**Assume that it is early 2023, and you have received the following press release:**

**XYZ REPORTS 2023 RESULTS**

(BUSINESS WIRE) – XYZ released earnings today for the year ended January 31, 2023. The Company reported revenues of $688.9 million, an 11% decrease from the previous year, and net income of $83.2 million, also an 11% decrease from 2022. XYZ's 2023 reported results fell short of management's guidance and analysts' recently revised forecasts.

XYZ included the following performance highlights:

**FINANCIAL HIGHLIGHTS**
(in thousands of dollars)

|                  | 2023    | 2022    | 2021    |
|------------------|---------|---------|---------|
| Revenues         | 688,943 | 774,128 | 711,849 |
| Operating income | 144,672 | 162,553 | 136,437 |
| Net income       | 83,241  | 93,552  | 75,518  |