



Corporate Social Responsibility and Corporate Disclosures: An Investigation of Investors' and Analysts' Perceptions

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Abstract

We conjecture that corporate social responsibility (CSR) can be indicative of managerial ethics and integrity and examine whether equity investors and financial analysts consider CSR performance when they assess firms' disclosures of actual and forecasted earnings. We find that only adverse CSR performance affects investors' assessments of these disclosures. In contrast, we find that both positive and adverse CSR performance affect analysts' forecast revisions in response to firms' disclosures. We also find that firms with adverse CSR performance exhibit lower disclosure quality and earnings persistence, but do not find that firms with positive CSR performance exhibit higher levels of both measures. This asymmetric result is consistent with investors', but not analysts', assessments of the effect of CSR performance on corporate disclosures. Our results are robust to using a three-stage least squares approach to address endogeneity concerns and to a battery of robustness and sensitivity analyses. Overall, our findings suggest that investors and analysts consider CSR when assessing the information in earnings-related corporate disclosures.

Keywords Corporate social responsibility (CSR) · Managerial ethics, managerial integrity, stock price changes · Analysts' reaction · Corporate disclosures

Introduction

We examine whether stakeholders, in particular equity investors and financial analysts, consider corporate social responsibility (CSR) in their assessment of corporate disclosures. There is no single authoritative definition of CSR. Business for Social Responsibility (BSR) defines CSR as business decision-making linked to ethical values, compliance with legal requirements, and respect for people, communities, and the environment worldwide.¹ Carroll (1991) defines CSR

as the formulation and implementation of social goals and programs and the integration of ethical sensitivity by firms into all decision-making, policies, and actions. In general, CSR can be viewed as a comprehensive set of policies and practices that are integrated into operations and decision-making processes throughout a company, including issues related to business ethics, community and environmental concerns, human rights, and employee and consumer rights.

We conjecture that CSR performance can be a signal of management ethics and integrity. To the extent that more (less) ethical managers are more (less) likely to be truthful in providing relevant and reliable information to stakeholders, CSR performance can be indicative of firms' disclosure quality and financial performance. Therefore, if stakeholders account for the effect of CSR performance on disclosure quality and financial performance, we expect to observe that their reaction to announcements of corporate disclosures is also affected by CSR performance. As positive and adverse CSR performance have been found to be distinct constructs (Kotchen and Moon 2012; Mattingly and Berman 2006), we

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¹ Business Social Responsibility is the largest organization in the US devoted to the promotion and development of corporate social responsibility among businesses and organizations.

examine two separate hypotheses on the effect of CSR performance on stakeholders' reaction to corporate disclosures. On the one hand, because of the uncertainty about whether positive CSR performance is indicative of higher managerial ethics and integrity, we examine a non-directional hypothesis on the effect of positive CSR performance on stakeholders' reaction to corporate disclosures. On the other hand, because prior studies indicate that adverse CSR performance is more likely to be indicative of lower managerial ethics and integrity, we hypothesize that stakeholders' reactions to corporate disclosures are negatively associated with adverse CSR performance.

In this study, we focus on two major types of stakeholders—equity investors and financial analysts.² Both types of stakeholder place much reliance on information in corporate disclosures, especially earnings-related disclosures, to assess firms' financial performance and to make equity investment decisions. In our empirical approach, we examine two types of earnings-related corporate disclosures to more comprehensively understand how CSR performance affects corporate disclosures. Specifically, we use announcements of earnings to capture mandatory corporate disclosures, and announcements of management earnings forecasts to capture voluntary corporate disclosures.

For investors' reaction, we investigate the stock price reaction surrounding announcements of earnings and management earnings forecasts. We find that although investors' reactions to announcements of earnings and management forecasts are muted for firms with poorer CSR performance, such reactions are not heightened for firms with better CSR performance. In contrast, when we examine analysts' reactions, we find that both positive and adverse CSR performance affect their forecast revisions surrounding announcements of earnings and management earnings forecasts. We also examine the underlying assumptions about the effect of CSR performance on disclosure quality and earnings persistence and find that both measures are lower for firms with adverse CSR performance but not higher for firms with positive CSR performance. This asymmetric result is consistent with the investors', but not with analysts', assessments of the effect of CSR performance on earnings-related corporate disclosures.

In addition, we provide descriptive evidence suggesting that investors consistently emphasize CSR concerns associated with consumers in their reactions to earnings and management forecast announcements, whereas analysts

assessing corporate disclosures focus on concerns associated with employees and the community but not with consumers and the environment. Using three-stage least squares (3SLS) specifications, we find that our results and inferences are robust to endogeneity concerns.

Our study primarily contributes to extant research into the economic consequences of CSR performance. With the gradual institutionalization of the business case for CSR, CSR is becoming more important. Anecdotal evidence suggests that equity investors and financial analysts are increasingly concerned about the costs and benefits of firms' CSR performance. For example, Ernst and Young have reported that environmental and social issues accounted for 56% of shareholder proposals in 2014, which represents a majority for the first time (Ernst and Young 2014). In a survey jointly conducted by CSR Europe, Deloitte, and Euronext, 79% of financial analysts and fund managers indicated that socially responsible activities create long-term value for firms, and approximately half of the surveyed analysts and managers take CSR performance into account (CSR Europe et al. 2003). In addition, 37% of financial analysts indicate that they would grant a stock price premium (discount) to firms with good (poor) CSR performance. Whereas prior studies on CSR tend to focus on the economic consequences of CSR relating to firm value, financial performance, cost of capital, corporate governance, audit fees, and financial reporting, there is limited research into CSR's effect on investors' and analysts' reaction to corporate disclosures.³ We contribute to this line of research by examining how CSR performance affects not only short-window stock price reaction and analysts' reaction to announcements of earnings, but also announcements of management earnings forecasts.⁴

We also contribute to recent studies that examine the association between CSR performance and analysts' stock recommendations (e.g., Ioannou and Serafeim 2015; Luo et al. 2015). Ioannou and Serafeim (2015) find that in the early 1990s, firms with better CSR performance were the subject of more pessimistic stock recommendations from analysts. This finding contrasts with their finding in the post-2003 period, in which analysts issued more optimistic stock recommendations for firms with better CSR performance.

³ Prior studies on the economic consequences of CSR include Waddock and Graves (1997), Roman et al. (1999), Orlitzky et al. (2003), Webb (2004), Kempf and Osthoff (2007), Surroca and Tribó (2008), Walls et al. (2012), Kim et al. (2012), Koh and Tong (2013), Servaes and Tamayo (2013), Khan et al. (2016), and Jeong et al. (2016).

⁴ In this regard, our study differs from prior studies (e.g., Roman et al. 1999; Waddock and Graves 1997) that examine the association between CSR performance and stock prices because our focus is on short-window price reactions to earnings-related disclosures and not on long-window stock price changes as a measure of firm performance.

² We use the terms "equity investors" and "investors" interchangeably to refer to investors who invest in firms' equity shares. We also use the term "financial analysts" and "analysts" interchangeably to refer to analysts who work for brokerages that provide research information on firms, including those listed on the stock exchanges.

Our study differs from prior studies by examining analysts' earnings *forecast revisions*, not stock recommendations. Earnings forecasts provide a more detailed measure of analysts' reaction to new information than stock recommendations.⁵ Consistent with the findings based on stock recommendations by Ioannou and Serafeim (2015), we use a supplementary analysis based on pre- and post-2003 data and find that the effect of positive CSR performance on analysts' forecast revisions is obtained only in the post-2003 period. Our study also contributes to the literature on the information set used by analysts to derive their earnings forecasts (see Ramnath et al. 2008; Schipper 1991).

Our study extends studies on the determinants of stock price reaction to announcements of earnings and management earnings forecasts (e.g., Billings 1999; Collins and Kothari 1989; Hutton et al. 2003; Kothari and Sloan 1992). In a related working paper, Bartov and Li (2015) use a net measure (i.e., CSR strengths minus concerns) and find that the earnings response coefficient increases and post-earnings announcement drift decreases for firms with better net CSR performance. Using an experimental setting, Guiral et al. (2014) find that CSR excellence affects both investors' assessments of firms' financial performance and their reliance on management-forecasted information. Our study extends both studies by documenting the effect of CSR performance on analysts' (not just investors') reaction to earnings announcements. Moreover, unlike Bartov and Li (2015), we examine positive and adverse CSR performance separately because prior research suggests that they are distinct constructs and that it is inappropriate to use a net measure to draw inferences on the effects of CSR performance (see Kotchen and Moon 2012; Mattingly and Berman 2006).

The rest of the paper is organized as follows. In "[Background and Hypothesis Development](#)" section, we develop our hypotheses. In "[Research Design](#)" section, we discuss our data and sample and outline our research design. In "[Main Analyses](#)" section, we provide sample descriptions and discuss our main results. In "[Testing Assumptions](#)" section, we examine the assumptions underlying our hypotheses. We discuss supplementary, robustness, and sensitivity analyses in "[Supplementary Analyses](#)" section and provide our conclusion in "[Conclusion](#)" section.

⁵ Stock recommendations are based on categorical measures, such as "Sell," "Hold," and "Buy," which are ordinal in nature. Earnings forecasts are based on analysts' estimates of earnings per share, usually forecasted to the nearest cent. Hence, earnings forecasts provide a more detailed or finer measure of analysts' reaction to new information. For example, a fine for environmental violations may decrease analysts' earnings forecasts for the firm by a cent, but may leave analysts' stock recommendation unchanged because the decrease of one cent is not significant enough to change the recommendation from, say, "Buy" to "Hold."

Background and Hypothesis Development

Previous studies propose that CSR performance provides a signal of management integrity and ethics. Drawing on stakeholder theory, Jones (1995) argues that unethical behavior violates the trust and cooperation between firms and stakeholders, potentially resulting in significant costs. Stakeholder theory that links CSR and firm behavior proposes that corporate social responsibility to stakeholders is an ethical obligation that requires the firm to do the right thing for all stakeholders (Donaldson and Preston 1995; Phillips et al. 2003). Thus, certain types of CSR activities indicate attempts to establish trust and cooperation between firms and their stakeholders, as well as reflect firms' ethical principles. For example, Valentine and Fleischman (2008) find evidence suggesting that managers' ethical attitudes are positively associated with corporate involvement in CSR activities. Similarly, Godos-Díez et al. (2011) find that CEOs who attach greater importance to ethics and social responsibility are more inclined to implement CSR practices in their firms. In particular, prior studies find accountants and auditors are affected by the signaling effects of CSR performance. Shafer (2015) find that professional accountants rationalize firms' earnings management decisions by adjusting their attitudes toward firms' CSR performance. In addition, Kim et al. (2012) find that firms with better CSR performance exhibit lower levels of earnings management. Such firms are also less likely to be investigated by the SEC for financial misreporting. Similarly, Koh and Tong (2013) find that auditors charge higher fees to clients with poorer CSR performance because such clients are more likely to engage in corporate misconduct, including earnings management. Hoi et al. (2013) find that firms with excessive adverse CSR activities have a higher likelihood of engaging in aggressive tax-avoidance activities and exhibit greater book-tax differences.⁶ Thus, evidence from these studies is consistent with CSR performance reflecting managerial integrity and ethics, which in turn affects firms' disclosure quality and misreporting risk.⁷

⁶ In contrast, Davis et al. (2015) examine a broader sample of firms and find that firms with positive CSR activities exhibit more tax-avoidance activities. Davis et al. (2015) conclude that on average, managers view positive CSR activities and tax payments as substitutes.

⁷ Our study differs from these studies that rely on accounting-based measures of earnings management to examine whether CSR performance is indicative of managerial integrity and ethics (e.g., Kim et al. 2012; Koh and Tong 2013; Hoi et al. 2013). These studies can only address how CSR performance affects the reported accounting numbers, not how stakeholders respond to these reported accounting numbers. Our study attempts to fill this void in the extant literature by directly examining the effect of CSR performance on stakeholders' reactions to the earnings numbers disclosed by firms.

Prior research also documents that CSR performance affects firms' financial performance.⁸ This line of research follows the premise of "doing well by doing good," which suggests that financial performance improves because of better CSR performance (McWilliams and Siegel 2000). For example, a survey by Lacy et al. (2010) shows that managers believe better CSR performance helps establish a positive corporate image of ethical and caring behavior toward society and that this image positively affects firms' future financial performance. Koh and Tong (2013) argue that adverse CSR performance reflects less ethical business decisions, which can lead to potential business risks such as strikes by employees, boycotts by customers, and sanctions by regulators. They find that firms with adverse CSR performance are more likely to suffer from adverse financial performance, and auditors are more likely to issue them a going-concern opinion. A recent study by Hong et al. (2016) also finds evidence that CSR is likely to be financially beneficial for firms and shareholders.⁹ Thus, positive (adverse) CSR performance can be indicative of more (less) ethical managers who are better (less) able to sustain or improve firms' future earnings performance.

Based on the above discussion, we conjecture that CSR performance serves as a signal of management integrity and ethics, which will also affect stakeholders' assessment of firms' disclosure quality and financial performance. This will in turn affect their assessment of earnings-related corporate disclosures because such disclosures provide information that changes stakeholders' assessment of firms' future earnings and value. We focus on two important stakeholders, equity investors and financial analysts, who rely on earnings-related corporate disclosures to make equity investment decisions. For example, some investors rely on the price-to-earnings ratio as an approach to determine firm value, and financial analysts also rely on earnings information to write up their research reports, which often include earnings forecasts and recommendations on trading of firms' shares (e.g., buy, sell, or hold).

Prior research shows that the sensitivity of investors' and analysts' response to earnings-related disclosures depends on the extent to which the earnings information is relevant and reliable (i.e., of better quality) to such users (e.g.,

Warfield et al. 1995; Lundholm and Myers 2002, Miao and Tong 2011). Prior studies also document that the sensitivity of investors' and analysts' response to earnings-related disclosures is affected by their assessment of firms' financial performance (Barth and Hutton 2004; Collins and Kothari 1989; Lev and Thiagarajan 1993; Ramnath et al. 2008). For example, Collins and Kothari (1989) and Lundholm and Myers (2002) show that investors react more to the earnings news of firms with higher earnings persistence (a proxy for financial performance), and more relevant and reliable disclosures, respectively. We expect that investors and analysts will assess more (less) ethical managers to be more (less) truthful in providing relevant information to stakeholders and are more (less) able to achieve better financial performance. Thus, if CSR performance signals managerial integrity and ethics, investors' and analysts' reactions to earnings-related corporate disclosure will be heightened (mitigated) when firms exhibit more positive (adverse) CSR performance.

However, we expect investors and analysts to place less weight on positive CSR performance (relative to adverse performance) as a signal about managerial integrity and ethics.¹⁰ Mishina et al. (2012) argue that for character judgment, negative cues (i.e., adverse CSR performance) are often viewed as more diagnostic and given greater weight than positive cues (i.e., positive CSR performance). This is because positive cues may merely indicate conformance with societal expectations and norms. Similarly, Carroll (1991) argues that positive CSR activities may have a self-serving purpose, and managers may use them to pursue their own interests at the expense of other stakeholders. Similarly, Hemingway and Maclagan (2004) and Godfrey (2005) make the argument that positive CSR performance can reflect managerial efforts to simply garner additional favor from stakeholders, or to conceal their own self-interested agendas and corporate misconduct. Thus, stakeholders actually associate positive CSR activities with potential negative reputational consequences for firms. Empirically, Surroca and Tribó (2008) find evidence that a firm's socially responsible activities can be part of a manager's entrenchment strategy, and Petrovits (2006) provides evidence that firms with better

⁸ For overviews of the major theoretical perspectives regarding CSR and financial performance, see McWilliams et al. (2006) and Gao and Bansal (2013).

⁹ Margolis and Walsh (2003) suggest that although most research evidence points to a positive association between CSR performance and financial performance, overall empirical evidence of this association is mixed. They examine 109 archival studies and find that 54 (7) report a positive (negative) effect of CSR performance on future firm performance, whereas 48 do not report a significant relation between the two factors.

¹⁰ Examining positive and adverse CSR performance separately is also consistent with the call by Mattingly and Berman (2006), who urge researchers to ensure that CSR strengths and weaknesses remain independent (i.e., are not combined) in a research design. Using factor analysis to identify latent constructs underpinning KLD ratings, Mattingly and Berman (2006) find that KLD's strength and concern ratings do not exhibit convergent validity as they do not converge and load together on a single factor. Thus, they caution that using a net composite indicator of CSR performance is not a valid research a negative CSR performance is not simply the converse of positive CSR performance, or vice versa.

CSR performance engage in more opportunistic earnings management.

Based on the above discussion, stakeholders may place less weight on positive CSR performance as positive signals about managerial integrity or ethics. Therefore, it is uncertain as to how positive CSR performance can influence investors' and analysts' perceptions of managerial ethics, which in turn affect their assessment of disclosure quality and financial performance during disclosures of earnings-related information. Therefore, we examine the following non-directional hypothesis:

H1 Investors' and analysts' reactions to earnings-related corporate disclosures are associated with firms' positive CSR performance.

Unlike the uncertain effects of positive CSR performance, adverse CSR performance is a stronger signal on the extent of managerial ethics and integrity. As argued by Mishina et al. (2012), negative cues are particularly salient as a deviation from the norm and thus are much more diagnostic of the true underlying corporate values being evaluated. Furthermore, recent literature suggests adverse CSR performance, compared to positive CSR performance, is likely to generate stronger reactions from stakeholders (e.g., Campbell 2007; Lange and Washburn 2012). Consistent with the notion that adverse CSR performance is more diagnostic of firms' ethical culture, Jayachandran et al. (2013) provide evidence that negative product and environmental CSR performance have stronger negative effects on firm performance compared to the positive effects from positive CSR performance. Thus, to the extent that adverse CSR performance is more likely to lower investors' and analysts' perceptions of managerial ethics, which will in turn lower their assessment of disclosure quality and financial performance, we expect their reactions to earnings-related disclosures to be mitigated for firms with poorer CSR performance. Therefore, we examine the following directional hypothesis:

H2 Investors' and analysts' reactions to earnings-related corporate disclosures are negatively associated with firms' adverse CSR performance.

To test H1 and H2, we examine how CSR performance is associated with both mandatory and voluntary earnings-related corporate disclosures. We use announcements of earnings to capture the former. Earnings information disclosed via earnings announcements is made mandatory by the Securities Exchange Commission (SEC) and is audited by an independent audit firm for conformity to Generally Accepted Accounting Principles (GAAP). The audit firm

also has to attest that the information is true and fair.¹¹ We use announcements of management earnings forecast to capture voluntary disclosures. In contrast to earnings announcements, management earnings forecasts are disclosed voluntarily by managers, usually to provide guidance to the capital markets on the expected financial performance of firms. As the earnings forecasts are provided voluntarily, no audit or attestation process is required to ensure that the earnings information is true and fair. Thus, the earnings information disclosed through management earnings forecasts is more prone to managerial biases. We examine both types of disclosures to understand more comprehensively how CSR performance affects earnings-related corporate disclosures.

Research Design

Data and Sample

We obtain data on stock returns from CRSP, accounting variables and earnings announcement dates from Compustat, analysts' earnings forecasts from IBES, institutional holdings from 13F filings, and management forecasts from First Call. We restrict our observations to firms with ordinary shares listed on the NYSE, AMEX, or NASDAQ (i.e., CRSP share codes 10 and 11 and CRSP exchange codes 1, 2, and 3). For management earnings forecasts, we exclude both forecasts made within 3 days of an earnings announcement and all forecasts of year t earnings made after fiscal year end t (i.e., forecasts that are preannouncements in nature). The former forecasts are excluded so that any market reaction is not confounded by earnings announcements made within the same time period. The latter forecasts are excluded because these are typically a preview of the actual earnings rather than real forecasts of earnings by management. We also exclude forecasts with confounding events that could lead to discontinuity in earnings per share (e.g., mergers and accounting changes) and forecasts that may have erroneous dates (e.g., forecast dates recorded after the data entry date).

We use the KLD dataset to measure CSR performance as it has been commonly used in prior studies (Chen and Delmas 2011; Waddock 2003).¹² KLD tracks the S&P 500

¹¹ GAAP are financial reporting standards issued by the Financial Accounting Standards Board (FASB), which is the organization responsible for financial reporting standards in the USA.

¹² Recently, the effectiveness of KLD ratings studies for measuring CSR performance has been questioned. However, Chatterji et al. (2009) confirm that KLD's environmental concern ratings capture past environmental performance and are useful in predicting future environmental violations. Nonetheless, they find that the environmental strength ratings are less useful in predicting future environmental performance. Sz wajkowski and Figlewicz (1999) find that KLD ratings are substantially valid measures of CSR performance. Mattingly

Table 1 Sample selection

Panel A: selection procedure for earnings announcement sample	
Unique firm-year annual earnings announcements of US firms with analyst forecast consensus available in IBES in 1995–2013	90,272
Eliminate firm-years with missing stock price data on CRSP	(20,874)
Eliminate firm-years with missing financial data on compustat	(7526)
Eliminate firm-years with missing institutional ownership data on 13f	(10,826)
Eliminate firm-years with missing CSR data on KLD	(27,589)
Eliminate firm-years with missing <i>CAR</i> and <i>SAR</i>	(10)
Final sample of firm-years 1995–2013	23,363
Panel B: selection procedure for management forecasts sample	
Annual Management Forecasts of US firms in the first call in 1995–2012 (after excluding earnings preannouncements)	60,490
Eliminate nonpoint and non-range forecasts	(6206)
Eliminate firm-years with missing cumulative factors for stock-split adjustments on CRSP	(53,56)
Eliminate firm-years with missing analyst forecast data on IBES	(25,253)
Eliminate firm-years with missing stock price data on CRSP	(1427)
Eliminate firm-years with missing <i>CAR</i> and <i>SAR</i>	(34)
Eliminate firm-years with missing financial data on compustat	(2332)
Eliminate firm-years with missing CSR data on KLD	(2829)
Final sample of firm-years 1995–2012	17,053

firms from 1991 to 2000 and the largest 1000 and 3000 US companies by market capitalization in 2001 and 2003, respectively. KLD's independent researchers use a variety of sources to develop their ratings by collecting information from public information sources such as firms, research partners, media, publicly available documents, governments, and non-governmental organizations.

We construct two samples based on the available data in the abovementioned datasets. Table 1 provides a description of the sample refinement procedures. Panel A reports the sample based on earnings announcements and consists of 23,363 observations from 1995 to 2013. The sample reported in Panel B is based on management forecasts and consists of 17,053 observations from 1995 to 2012. This sample stops in 2012 because data on management forecasts in First Call are only available up to that year.

KLD rates each firm's CSR activities in seven broad dimensions: community, diversity, employee relations, environment, product, human rights, and corporate governance. We exclude the corporate governance dimension from our main analysis because this dimension relates to shareholder issues and because the relation between corporate governance and corporate disclosures has been extensively examined (e.g., Klein 2002; Webb 2004). In addition, KLD's rating of corporate governance underwent a significant change in 2006 when factors related to accounting, transparency,

and political accountability were introduced. As we obtain a longer sample period by starting our sample in 1995, this change is likely to introduce measurement errors into KLD's corporate governance rating. Nonetheless, to mitigate concerns about omitted correlated variables, we include the corporate governance rating as a control variable in our empirical analyses.

For each dimension, KLD assigns a binary rating set equal to one (zero) to indicate the presence (absence) of *strengths* and *concerns* pertaining to CSR activities related to the dimension. See "Appendix 1" for details on the KLD ratings. To test both hypotheses, we separately measure the total number of CSR strengths and concerns by summing the binary ratings in each of the six dimensions. For example, a firm that has one concern (strength) rating in all six (only three) dimensions will have a CSR concern (strength) rating of six (three).

Our approach of combining the binary ratings for a dimension's strengths and concerns results in equal weighting of the activities in each dimension. For example, our approach suggests that, in the employee dimension, health and safety concerns are as important as those of retirement benefits. Conceivably, the different types of concern in each dimension do not have the same effect stakeholders' reaction to corporate disclosures. Although it would be ideal to examine the materiality and differential effects of the different strengths and concerns in each dimension, KLD's rating process remains proprietary and details on each of the dimension's ratings are limited. Therefore, our study is constrained by the KLD dataset, so we can only document

Footnote 12 (continued)

and Berman (2006) describe the KLD dataset as the standard quantitative measurement of CSR performance.

the average effect on investors' reaction to corporate disclosures in each broad CSR dimension.

Regression Specifications for Investors' Reaction

For investors' reaction, we use the following empirical specification to examine the effect of CSR performance on stock price reaction to earnings announcements:

$$\begin{aligned} CAR_{it}(SAR_{it}) = & \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} \\ & + \alpha_3 CSR_{C_{it}} \times ESURP_{it} \\ & + \sum_{k=6}^n \alpha_k X_{it}^k \times ESURP_{it} \\ & + IndDum + YearDum + \varepsilon_{it} \end{aligned} \quad (1)$$

CAR_{it} (SAR_{it}) is firm i 's 3-day value-weighted (size-adjusted) abnormal returns surrounding the annual earnings announcement.¹³ $CSR_{S_{it}}$ ($CSR_{C_{it}}$) is total strengths (concerns) in KLD's six rating categories: community, diversity, employee relations, the environment, human rights, and product. $ESURP_{it}$ is firm i 's earnings surprise measured as earnings in year t minus the mean consensus forecast before fiscal year end, scaled by the firm's stock price at the end of the fiscal year. The coefficient on $ESURP_{it}$ is the earnings response coefficient (ERC), and it captures the sensitivity of stock price changes to earnings surprises.

The separate effects of CSR strengths and concerns on ERC are indicated by the coefficients on $(CSR_{S_{it}} \times ESURP_{it})$ and $(CSR_{C_{it}} \times ESURP_{it})$, respectively. These coefficients measure the effect of CSR performance on the magnitude of the ERC, which is how CSR strength and concern separately affect the *sensitivity* of stock price changes to earning surprise. Consistent with H1, we do not have a directional prediction for the coefficient on $CSR_{S_{it}} \times ESURP_{it}$; consistent with H2, we expect a significantly negative coefficient on $CSR_{C_{it}} \times ESURP_{it}$.

As our focus is on the effect of CSR performance on the ERC, we control for variables that have been shown by prior studies to also affect the ERC. As in prior studies (e.g., Collins and Kothari 1989; Warfield et al. 1995; Lundholm and Myers 2002), we control for other known determinants

of ERC by interacting these determinants with $ESURP$ in Eq. (1). Specifically, X_{it}^k is a vector of control variables consisting of reported loss ($LOSS_{it}$), firm size ($LNSALES_{it}$), book-to-market ratio (BM_{it}), leverage (LEV_{it}), institutional holdings ($INST_{it}$), and corporate governance ($CGOV_{it}$). We expect negative coefficients on the interaction variables between $LOSS$, $LNSALES$, BM , LEV , and $ESURP$ and a positive coefficient on the interaction variable between $CGOV$ and $ESURP$. We have no directional prediction for the interaction variable between $INST$ and $ESURP$.

Following Petersen (2009), we use firm-clustered standard errors in all our regression models to address potential firm-level correlations across time. To control for industry effects, we include industry dummies ($IndDum$) to control cross-correlations arising out of systematic differences across different industries. Finally, we include year dummies ($YearDum$) to address potential concerns of cross-sectional dependence across firms in the year (i.e., year effects). See "Appendix 2" for detailed definitions of all variables in Eq. (1).

We use the following empirical specification to examine the effect of CSR performance on investors' reaction to announcements of management earnings forecasts:

$$\begin{aligned} CAR_{it}(SAR_{it}) = & \alpha_0 + \alpha_1 MFSURP_{it} + \alpha_2 CSR_{S_{it}} \\ & \times MFSURP_{it} + \alpha_3 CSR_{C_{it}} \times MFSURP_{it} \\ & + \sum_{k=6}^n \alpha_k X_{it}^k \times MFSURP_{it} \\ & + IndDum + YearDum + \varepsilon_{it} \end{aligned} \quad (2)$$

CAR_{it} (SAR_{it}) is firm i 's 3-day value-weighted (size-adjusted) abnormal returns surrounding announcements of management earnings forecasts. $MFSURP_{it}$ is management forecast surprise measured as management's annual earnings forecast (point or midpoint of range forecasts only) for year t minus the most recent analysts' mean consensus forecast for firm i 's earnings for year t , scaled by the firm's stock price at 10 days before the forecast date.¹⁴ The coefficient on $MFSURP_{it}$ is the management earnings forecast response coefficient (MFRC), and it captures the sensitivity of stock

¹³ Value-weighted abnormal returns (CAR) are based on market risk adjustment, which uses the value-weighted market portfolio as the benchmark. Size-adjusted abnormal returns (SAR) are based on a firm characteristic risk adjustment, which uses the value-weighted portfolio returns of firms of the same size as the benchmark portfolio. These two risk adjustment approaches are widely used in prior studies examining stock price reactions (e.g., see Grullon et al. 2002; Gleason and Lee 2003; Richardson et al. 2005; Cheung 2011; Ng et al. 2013; deHann et al. 2015). We do not rely on the Fama–French three- or four-factor model for risk adjustment because Ahern (2009) shows that abnormal return estimation using such models can produce statistical biases if the sample exhibits non-normal returns.

¹⁴ Ideally, the stock price used as the scaler should not be affected by any information in the management forecasts. Prior studies have used stock prices that range from 2 days prior forecast date to the beginning of the quarter in which the forecast is made (e.g., see Ng et al. 2013; Li and Zhang 2015). We use stock price 10 days before forecast date because Agapova and Madura (2011) find that information in management forecasts is leaked prior to the forecast dates and that the bulk of the leaked information occurs during the 10 days prior to the forecast dates. As a robustness check, we use the stock price 2 days before the forecast dates as the scaler and find that our results remain robust and our inferences unchanged.

price changes to forecast surprises contained in management earnings forecasts.

The separate effects of CSR strengths and concerns on MFRC are indicated by the coefficients on $(CSR_{S_{it}} \times MFSURP_{it})$ and $(CSR_{C_{it}} \times MFSURP_{it})$, respectively. These coefficients measure the effect of CSR performance on the magnitude of the MFRC, that is, how CSR strengths and concerns separately affect the *sensitivity* of stock price changes to forecast surprises. Consistent with H1, we do not have a directional prediction for the coefficient on $CSR_{S_{it}} \times MFSURP_{it}$; consistent with H2, we expect a significantly negative coefficient on $CSR_{C_{it}} \times MFSURP_{it}$.

As in Eq. (1), the control variables (X_{it}^k) are interacted with $MFSURP$ to account for other factors that may affect the sensitivity of stock price changes to management forecast surprises (i.e., MFRC). We use the same set of control variables as in Eq. (1), including industry ($IndDum$) and year ($YearDum$) dummies, and calculate firm-clustered t -statistics.

Regression Specifications for Analysts' Reaction

We next examine analysts' reaction to announcements of earnings and management earnings forecasts. We use the following empirical specification to examine the effect of CSR performance on analysts' consensus forecast revisions in response to earnings announcements:

$$\begin{aligned} REV_EA_{it} = & \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} \\ & + \alpha_3 CSR_{C_{it}} \times ESURP_{it} + \sum_{k=7}^n \alpha_k X_{it}^k \times ESURP_{it} \\ & + IndDum + YearDum + \varepsilon_{it} \end{aligned} \quad (3)$$

REV_EA_{it} is the *change* in the mean consensus forecast of analysts after annual earnings announcements. Specifically, we use the first updated consensus forecast for year $t + 1$ earnings (calculated using the forecasts of individual analysts) that occurs within 90 days after the announcement of earnings for year t . We then subtract the last updated consensus forecast made within 90 days before the announcement of earnings for year t and scale the difference by the firm's stock price at the end of year t .¹⁵ The coefficient on

¹⁵ The number of days between quarterly earnings announcements, including announcements of annual earnings in the fourth fiscal quarter, is about 90 calendar days apart (i.e., a calendar quarter). Thus, we use a 90-day window on both sides of an annual earnings announcement date to calculate analysts' forecast revision (REV_EA). This will ensure that the prior consensus forecast is after the announcement of third fiscal quarter earnings, and the latter consensus forecast is before the announcement of first fiscal quarter earnings. On the one hand, using a window period longer than 90 days may not ensure that the calculated analysts' forecast revision reflects only the news contained in the annual earnings announcement made in the fourth fiscal quarter. On the other hand, using a smaller window period of less than 90 days may unnecessarily reduce sample size. In our sample, we find that the average number of days between the annual earnings

$ESURP_{it}$ captures the sensitivity of changes in analysts' consensus earnings forecasts to earnings surprises when firms announce their earnings.

The effects of CSR strengths and concerns on the sensitivity of changes in analysts' earnings forecasts to earnings surprises are captured by the coefficients on $(CSR_{S_{it}} \times ESURP_{it})$ and $(CSR_{C_{it}} \times ESURP_{it})$, respectively in Eq. (3). Consistent with H1, we do not have a directional prediction for the coefficient on $CSR_{S_{it}} \times ESURP_{it}$; consistent with H2, we expect a significantly negative coefficient on $CSR_{C_{it}} \times ESURP_{it}$. The other variables in Eq. (3) are the same as in Eq. (1), and the control variables (X_{it}^k) are interacted with $ESURP$ to account for other factors that may affect the sensitivity of changes in analysts' earnings forecasts to earnings surprises. In addition, to account for the number of analysts following each firm, we also include the natural log of one plus the number of analysts (ANA_{it}) as an additional control variable in the X_{it}^k vector of variables.

We use the following empirical specification to examine the effect of CSR performance on analysts' forecast revisions to announcements of management earnings forecasts:

$$\begin{aligned} REV_MF_{it} = & \alpha_0 + \alpha_1 MFSURP_{it} + \alpha_2 CSR_{S_{it}} \times MFSURP_{it} \\ & + \alpha_3 CSR_{C_{it}} \times MFSURP_{it} + \sum_{k=7}^n \alpha_k X_{it}^k \times MFSURP_{it} \quad (4) \\ & + IndDum + YearDum + \varepsilon_{it} \end{aligned}$$

REV_MF_{it} captures *changes* in the mean consensus forecasts of analysts after the announcements of management earnings forecasts. The analysts' consensus forecasts and the management forecasts must pertain to the same period earnings. We use the first updated consensus forecast (calculated using the forecasts of individual analysts) within 30 days after the management earnings forecast is announced. We then subtract the last updated consensus forecast made within 30 days before the management forecast and scale the difference by the firm's stock price 10 days before the management forecast.¹⁶ The coefficient on $MFSURP_{it}$ captures the sensitivity of changes in analysts' consensus earnings

Footnote 15 (continued)

announcement date and the first updated consensus earnings forecast is 42.66 days. The average number of days between the annual earnings announcement date and the last updated consensus earnings forecast is 44.51 days.

¹⁶ Unlike earnings announcements, which are made only once every quarter and about 90 days between each announcement, managers may announce earnings forecasts more than once in a single quarter. Thus, following prior research (e.g., Hutton et al. 2012), we use a 30-day window period to calculate REV_MF . In our sample, we find that the average number of days between the management forecast date and the first updated consensus earnings forecast is 5.88. The average number of days between the management forecast date and the last updated consensus earnings forecast is 15.62.

forecasts in response to forecast surprises contained in management earnings forecasts.

In Eq. (4), the effects of CSR strengths and concerns on the sensitivity of changes in analysts' earnings forecasts to management forecasts surprises are captured by the coefficients on $(CSR_{S_{it}} \times MFSURP_{it})$ and $(CSR_{C_{it}} \times MFSURP_{it})$, respectively. Consistent with H1, we do not have a directional prediction for the coefficient on $(CSR_{S_{it}} \times MFSURP_{it})$; consistent with H2, we expect a significantly negative coefficient on $(CSR_{C_{it}} \times MFSURP_{it})$. The other variables remain the same as in Eq. (3), including all the control variables (X_{it}^k) that are interacted with $MFSURP$ to account for other factors that may affect the sensitivity of changes in analysts' earnings forecasts to management forecast surprises.

Main Analyses

Sample Descriptives

In Panel A of Table 2, we report the descriptive statistics of the variables used in Eqs. (1)–(4). For each variable, we report the descriptive statistics based on the maximum number of observations available (i.e., 23,365 observations from the sample based on earnings announcements). Given the additional data requirements for analyst forecasts and management forecasts, the numbers of observations for REV_EA (18,261), $MFSURP$ (17,053), and REV_MF (9372) progressively decrease. On average, each firm is flagged with less than two strengths or concerns because the means of CSR_S and CSR_C are 1.284 and 1.427, respectively. The median of CSR_S is 0, and the median of CSR_C is 1, suggesting that more firms are identified as having adverse rather than positive CSR performance.

In Panels B and C, we report the cumulative binary ratings by the six CSR dimensions for strength and concern (i.e., community, diversity, employee, environment, human rights, and product), respectively. In Panel B, the third quartile is shown to be one for only the diversity dimension. Therefore, 75% of firms do not have a strength rating in any dimension other than diversity. Panel C shows that 75% of firms only have concern ratings in the diversity and employee dimensions. Thus, a majority of firms have neutral CSR performance, which indicates most firms do not exhibit adverse or positive CSR performance when measured by KLD's ratings. Panel D reports the correlation table for the variables used in Eqs. (1)–(4).

Investors' Reaction to Earnings-related Corporate Disclosures

Table 3 reports the results of estimating Eqs. (1) and (2), which examine investors' reaction to earnings-related corporate disclosures. In Panel A, based on both value-weighted abnormal returns (CAR) and size-adjusted abnormal returns (SAR), we find that the coefficients on the interaction term between CSR concerns and earnings surprises ($CSR_{C_{it}} \times ESURP_{it}$) are significantly negative (t -stat = -2.28 and -2.34). Therefore, the earnings response coefficients of firms with adverse CSR performance are lower. This finding suggests that CSR performance influences investors' assessment of the mandatory disclosure of earnings information in that investors react less to earnings announcements of firms that have poorer CSR performance.

We find that the coefficients on the interaction term between CSR strengths and earnings surprises ($CSR_{S_{it}} \times ESURP_{it}$) are not significant (t -stat = -0.64 and -0.77). The results indicate that the effect of CSR performance on investors' reaction to earnings announcements is asymmetric as investors' reaction is negatively affected by adverse CSR performance but not influenced by positive CSR performance.

In Panel B, we observe similar results for the effect of CSR performance on investors' reaction to announcements of management earnings forecasts. The coefficients on the interaction term between CSR concerns and earnings forecast surprises ($CSR_{C_{it}} \times MFSURP_{it}$) are significantly negative (t -stat = -2.43 and -2.65), whereas those between CSR strengths and earnings forecast surprises ($CSR_{S_{it}} \times MFSURP_{it}$) are not significant (t -stat = -1.47 and $-0.7 \sum_{k=7}^n \alpha_k X_{it}^k \times MFSURP_{it}$ are consistent with the prior literature.

In Panel B, we find that the coefficient on $(CSR_{S_{it}} \times MFSURP_{it})$ is significantly positive (t -stat = 15.34), whereas the coefficient on $(CSR_{C_{it}} \times MFSURP_{it})$ is significantly negative (t -stat = -6.60). These results mirror those in Panel A and show that the sensitivity of analysts' reaction to forecast surprises, as captured by changes to analyst's earnings forecasts, is affected by both CSR strengths and concerns.

In summary, the results in Table 4 suggest that both adverse and positive CSR performance influence how analysts react to the information in management earnings forecasts, which is consistent with H1 and H2. This finding is also consistent with the survey by CSR Europe, Deloitte, and Euronext, which reported that 37% of financial analysts indicate that they would grant a stock price premium (discount) to firms with good (bad) CSR performance (CSR Europe et al. 2003). However, these results contrast with the asymmetric reaction of investors as captured by stock price

Table 2 Descriptive statistics

	<i>N</i>	Mean	Median	First quartile	Third quartile	SD									
Panel A: key variables															
<i>CSR_s</i>	23,363	1.284	0.000	0.000	2.000	2.159									
<i>CSR_c</i>	23,363	1.427	1.000	0.000	2.000	1.599									
<i>LOSS</i>	23,363	0.196	0.000	0.000	0.000	0.397									
<i>LNSALES</i>	23,363	6.700	6.667	5.499	7.932	1.858									
<i>BM</i>	23,363	0.519	0.453	0.270	0.687	0.723									
<i>LEV</i>	23,363	0.193	0.141	0.017	0.300	0.210									
<i>INST</i>	23,363	0.670	0.698	0.503	0.851	0.270									
<i>CGOV</i>	23,363	- 0.238	0.000	- 1.000	0.000	0.716									
<i>ESURP</i>	23,363	- 0.003	0.000	- 0.001	0.002	0.022									
<i>CAR_e</i> (- 1,1)	23,363	0.001	0.000	- 0.034	0.037	0.073									
<i>SAR_e</i> (- 1,1)	23,363	0.002	0.001	- 0.032	0.036	0.072									
<i>MFSURP</i>	17,053	- 0.001	- 0.000	- 0.002	0.001	0.039									
<i>REV_EA</i>	18,261	- 0.006	- 0.001	- 0.007	0.002	0.042									
<i>ANA</i>	18,261	1.764	1.609	0.693	2.772	1.116									
<i>REV_MF</i>	9372	- 0.001	0.0001	- 0.001	0.001	0.046									
Dimension		Mean	Median	First quartile	Third quartile	SD									
Panel B: strength ratings by dimension (<i>N</i> = 23,363)															
Community		0.156	0	0	0	0.490									
Diversity		0.530	0	0	1	1.007									
Employee		0.302	0	0	0	0.701									
Environment		0.206	0	0	0	0.604									
Human rights		0.009	0	0	0	0.105									
Product		0.079	0	0	0	0.284									
Panel C: concern ratings by dimension (<i>N</i> = 23,363)															
Community		0.078	0	0	0	0.287									
Diversity		0.509	0	0	1	0.655									
Employee		0.353	0	0	1	0.609									
Environment		0.227	0	0	0	0.673									
Human rights		0.043	0	0	0	0.227									
Product		0.217	0	0	0	0.559									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Panel D correlations: pearson below and spearman above diagonal															
1. <i>CSR_s</i>		0.29	- 0.07	0.60	- 0.16	0.06	- 0.12	- 0.11	- 0.01	- 0.01	- 0.02	- 0.01	0.00	0.48	- 0.01
2. <i>CSR_c</i>	0.44		- 0.02	0.50	0.04	0.19	- 0.16	- 0.10	- 0.01	0.00	- 0.01	- 0.01	0.01	0.21	- 0.01
3. <i>LOSS</i>	- 0.08	- 0.02		- 0.11	0.14	0.00	0.06	- 0.01	- 0.06	- 0.06	- 0.06	- 0.07	- 0.11	- 0.08	- 0.06
4. <i>LNSALES</i>	0.59	0.54	- 0.12		0.04	0.21	- 0.15	- 0.23	- 0.04	- 0.01	- 0.02	- 0.03	0.00	0.56	- 0.03
5. <i>BM</i>	- 0.04	0.00	0.03	0.01		0.06	0.00	0.01	0.02	0.03	0.02	0.02	0.01	- 0.23	0.01
6. <i>LEV</i>	0.03	0.13	0.03	0.11	0.00		- 0.01	- 0.02	0.02	0.00	0.01	0.03	0.01	- 0.01	0.04
7. <i>INST</i>	- 0.09	- 0.09	0.05	- 0.08	- 0.03	0.03		- 0.13	- 0.01	0.02	0.01	- 0.01	0.02	0.01	- 0.01
8. <i>CGOV</i>	0.00	- 0.13	0.00	- 0.24	- 0.02	0.00	- 0.10		0.02	- 0.03	- 0.02	0.02	0.01	- 0.25	0.02
9. <i>ESURP</i>	- 0.01	- 0.03	- 0.07	- 0.04	0.05	0.03	0.00	0.03		0.36	0.36	0.98	0.60	- 0.02	0.93
10. <i>CSR_e</i> (- 1,1)	- 0.01	0.00	- 0.08	- 0.01	0.02	0.00	0.00	- 0.02	0.26		0.96	0.36	0.39	- 0.02	0.33
11. <i>SAR_e</i> (- 1,1)	- 0.01	0.00	- 0.07	- 0.02	0.02	0.01	0.00	- 0.02	0.26	0.98		0.36	0.40	- 0.02	0.34
12. <i>MFSURP</i>	0.01	0.01	- 0.10	- 0.01	0.01	- 0.03	0.00	0.00	0.50	0.18	0.18		0.61	- 0.02	0.96
13. <i>REV_EA</i>	0.02	0.01	- 0.11	0.01	0.00	- 0.03	0.00	0.01	0.32	0.17	0.17	0.85		- 0.02	0.57
14. <i>ANA</i>	0.40	0.22	- 0.08	0.54	- 0.07	- 0.04	0.05	- 0.24	- 0.02	- 0.01	- 0.01	0.02	0.02		- 0.02
15. <i>REV_MF</i>	0.00	0.01	- 0.03	0.00	0.79	- 0.01	- 0.01	- 0.02	0.14	0.03	0.03	0.38	0.29	- 0.01	

CSR_s is measured as total strengths in KLD’s six social rating categories: community, diversity, human rights, employee relations, environment, and product; *CSR_c* is measured as total concerns in KLD’s six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in “Appendix 2.” In the correlation matrix, correlations in bold are statistically significant at *p* value ≤ 0.10

changes—investors are affected only by adverse and not positive CSR performance in their reactions to announcements of earnings and management forecasts.

Testing Assumptions

In developing our hypotheses on the relation between CSR performance and the reactions of investors and analysts to corporate disclosures, we rely on the assumption that CSR performance is likely to be indicative of managerial integrity and ethics, and thus provide signals about firms' disclosure quality and financial performance. These signals in turn affect the sensitivity of investors' and analysts' responses to earnings-related disclosures. We expect their responses to earnings-related corporate disclosure to be heightened (mitigated) when firms exhibit more positive (adverse) CSR performance. To examine whether this assumption holds in our sample, we investigate the associations between CSR performance and both disclosure quality and earnings performance.¹⁷

CSR Performance and Disclosure Quality

Prior studies argue that managers at firms with better CSR performance are likely to be more ethical, which translates to managerial corporate disclosures that are more truthful and representative of the underlying fundamentals of the firms. Similar to prior studies (e.g., Kim et al. 2012), we expect firms with positive (adverse) CSR performance to exhibit better (worse) reporting and disclosure quality. To examine whether this association also holds in our sample, we use a measure of disclosure quality (DQ) created by Chen et al. (2015). DQ is a parsimonious measure of disclosure quality that captures the level of disaggregation of accounting data through a count of non-missing Compustat line items. This measure reflects the extent of details in annual reports and conceptually captures the “fineness” of firms through the disclosure of accounting line items in their balance sheets

¹⁷ Our study's primary focus is whether CSR performance per se is indicative of managerial integrity and ethics, which in turn is indicative of disclosure quality and financial performance. Thus, the examination of our underlying assumptions about disclosure quality and earnings persistence is secondary. We note that if the assumptions hold, then including proxies of disclosure quality and earnings persistence in our empirical specifications will mechanically diminish the explanatory power of CSR performance for investors' and analyst' reactions. However, such an outcome does not invalidate the inference that CSR performance can be indicative of managerial integrity and ethics, which are factors that can influence disclosure quality and earnings persistence.

and income statements.¹⁸ The main reason for using DQ is that, unlike other measures of disclosure quality such as management forecasts, conference calls, and discretionary accruals, DQ is available for a large sample of Compustat firms and does not depend on a specified empirical model.

To examine the association between CSR performance and disclosure quality, we estimate the following equation:

$$\begin{aligned}
 DQ_{it} = & \alpha_0 + \alpha_1 CSR_{s_{it}} + \alpha_2 CSR_{c_{it}} + \alpha_3 INTAN_{it} \\
 & + \alpha_4 SPECIAL_{it} + \alpha_5 LOSS_{it} + \alpha_6 SIZE_{it} \\
 & + \alpha_7 BM_{it} + \alpha_8 LEV_{it} + \alpha_9 INST_{it} \\
 & + \alpha_{10} CGOV_{it} + \alpha_{11} ANA_{it} + \alpha_{12} SEGMT_{it} \\
 & + \alpha_{13} ROE_{it} + \alpha_{14} ROE_{STD_{it}} + \alpha_{15} ISSUE_{it} \\
 & + \alpha_{16} BIGN_{it} + IndDum + YearDum + \varepsilon_{it}
 \end{aligned} \quad (5)$$

DQ_{it} is the dependent variable in Eq. (5) and is measured as a count of non-missing data items in Compustat for firm i in year t . The count includes both balance sheet and income statement items. A higher value of DQ implies a higher disclosure quality. Our variables of interest are $CSR_{s_{it}}$ and $CSR_{c_{it}}$. Together with the control variables in Eq. (3), we include the following variables used by Chen et al. (2015): intangible assets ($INTAN_{it}$), special items ($SPECIAL_{it}$), firm size ($SIZE_{it}$), number of business segments ($SEGMT_{it}$), return on equity (ROE_{it}), standard deviation of return on equity ($ROESTD_{it}$), issuance of equity ($ISSUE_{it}$), and big N auditor ($BIGN_{it}$). We also include industry ($IndDum$) and year ($YearDum$) dummies and calculate firm-clustered t -statistics.

We report the results of estimating Eq. (5) in Table 5. For comparison, we estimate two specifications of Eq. (5): without and with the control variables. In both specifications, we find the coefficient on $CSR_{s_{it}}$ is insignificant (t -stat = -1.28 and -0.54), whereas the coefficient on $CSR_{c_{it}}$ is significantly negative (t -stat = -4.37 and -2.89). The coefficients on the control variables are mostly consistent with those reported by Chen et al. (2015).

Our findings suggest that firms with adverse CSR performance are associated with poorer disclosure quality as measured by the fineness of the line items disclosed on their balance sheet and income statements. However, firms with positive CSR performance do not exhibit any incrementally higher disclosure quality.

CSR Performance and Earnings Persistence

Prior research documents that CSR performance affects firms' financial performance. For example, Orlitzky et al.

¹⁸ In their validation test, Chen et al. (2015) find that DQ is negatively (positively) associated with analysts' forecast dispersion (accuracy), negatively associated with the information asymmetry component of bid-ask spreads, and negatively associated with the cost of capital.

Table 3 Effect of CSR performance on investors' reaction to earnings-related corporate disclosures

$$CAR_{it}(SAR_{it}) = \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} + \alpha_3 CSR_{C_{it}} \times ESURP_{it} + \sum_{k=6}^n \alpha_k X_{it}^k \times ESURP_{it} + IndDum + YearDum + \varepsilon_{it}$$

	Value-weighted abnormal returns (CAR)		Size-adjusted abnormal returns (SAR)	
	CAR (-1,1)		SAR (-1,1)	
	Coeff	(t-stat)	Coeff	(t-stat)
Panel A: earnings announcements				
Intercept	-0.051	(-0.99)	0.128	(2.54)**
ESURP	0.449	(4.31)***	0.382	(3.74)***
CSR_s * ESURP	-0.009	(-0.64)	-0.010	(-0.77)
CSR_c * ESURP	-0.025	(-2.28)**	-0.036	(-2.34)**
LOSS * ESURP	-0.642	(-10.44)***	-0.621	(-10.32)***
LNSALES * ESURP	0.063	(3.78)***	0.057	(3.47)***
BM * ESURP	-0.095	(-1.66)	-0.106	(-1.90)
LEV * ESURP	-0.579	(-3.51)***	-0.369	(-2.29)**
INST * ESURP	0.506	(3.75)***	0.605	(4.55)***
CGOV * ESURP	-0.068	(-1.00)	-0.089	(-1.34)
IndDum and YearDum	Yes		Yes	
N	23,363		23,363	
Adjusted R ²	0.025		0.024	

$$CAR_{it}(SAR_{it}) = \alpha_0 + \alpha_1 MFSURP_{it} + \alpha_2 CSR_{S_{it}} \times MFSURP_{it} + \alpha_3 CSR_{C_{it}} \times MFSURP_{it} + \sum_{k=6}^n \alpha_k X_{it}^k \times MFSURP_{it} + IndDum + YearDum + \varepsilon_{it}$$

	Value-weighted abnormal returns (CAR)		Size-adjusted abnormal returns (SAR)	
	CAR (-1,1)		SAR (-1,1)	
	Coeff	(t-stat)	Coeff	(t-stat)
Panel B: management forecasts announcements				
Intercept	0.042	(0.55)	0.023	(0.55)
MFSURP	0.535	(1.97)**	0.779	(2.76)***
CSR_s * MFSURP	-0.070	(-1.47)	-0.026	(-0.73)
CSR_c * MFSURP	-0.073	(-2.43)**	-0.078	(-2.65)***
LOSS * MFSURP	-1.520	(-14.43)***	-1.553	(-14.83)***
LNSALES * MFSURP	0.378	(9.80)***	0.338	(8.91)***
BM * MFSURP	0.005	(0.38)	0.007	(0.53)
LEV * MFSURP	-3.428	(-19.04)***	-3.325	(-18.86)***
INST * MFSURP	1.052	(8.73)***	1.015	(8.54)***
CGOV * MFSURP	0.187	(3.88)***	0.189	(4.04)***
IndDum and YearDum	Yes		Yes	
N	17,053		17,053	
Adjusted R ²	0.090		0.091	

Numbers in bold are the coefficient estimates for the main variables of interest

ESURP is earnings surprise measured as earnings in year t minus the mean consensus forecast (from IBES) for firm i 's earnings before fiscal year end, scaled by the firm's stock price at the end of the fiscal year. CSR_s is measured as total strengths in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product; CSR_c is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered t -statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

MFSURP is management forecast surprise measured as management annual earnings forecast (point or midpoint of range forecasts only) for year t minus the mean analysts' consensus forecast for firm i 's earnings for year t , scaled by the firm's stock price at 10 days before forecast date; CSR_s is measured as total strengths in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product; CSR_c is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered t -statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

Table 4 Effect of CSR performance on analysts' reaction to earnings-related corporate disclosures

$$REV_EA_{it} = \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} + \alpha_3 CSR_{C_{it}} \times ESURP_{it} + \sum_{k=7}^n \alpha_k X_{it}^k \times ESURP_{it} + IndDum + YearDum + \varepsilon_{it}$$

Variable	SURP = ESURP	
	Coeff	(t-stat)
Panel A: earnings announcements		
Intercept	- 0.004	(- 15.18)***
ESURP	0.109	(1.94)*
CSR_s * ESURP	0.069	(7.26)***
CSR_c * ESURP	- 0.045	(- 4.58)***
LOSS * ESURP	0.298	(7.87)***
LNSALES * ESURP	0.032	(2.73)**
BM * ESURP	- 0.200	(- 5.29)***
LEV * ESURP	- 0.057	(- 0.55)
INST * ESURP	0.390	(4.51)***
CGOV * ESURP	0.126	(3.01)**
ANA * ESURP	0.040	(31.81)***
IndDum and YearDum	Yes	
N	18,261	
Adjusted R ²	0.177	
<hr/>		
$REV_MF_{it} = \alpha_0 + \alpha_1 MFSURP_{it} + \alpha_2 CSR_{S_{it}} \times MFSURP_{it} + \alpha_3 CSR_{C_{it}} \times MFSURP_{it} + \sum_{k=7}^n \alpha_k X_{it}^k \times MFSURP_{it} + IndDum + YearDum + \varepsilon_{it}$		
<hr/>		
Variable	SURP = MFSURP	
	Coeff	(t-stat)
Panel B: management forecasts announcements		
Intercept	- 0.001	(- 0.33)
MFSURP	0.935	(61.95)***
CSR_s * MFSURP	0.064	(15.34)***
CSR_c * MFSURP	- 0.029	(- 6.60)***
LOSS * MFSURP	0.293	(20.70)***
LNSALES * MFSURP	- 0.094	(- 23.26)***
BM * MFSURP	- 0.007	(- 5.11)***
LEV * MFSURP	0.269	(10.26)***
INST * MFSURP	- 0.156	(- 7.73)***
CGOV * MFSURP	- 0.209	(- 21.86)***
ANA * MFSURP	0.108	(7.94)***
IndDum and YearDum	Yes	
N	9372	
Adjusted R ²	0.454	

Numbers in bold are the coefficient estimates for the main variables of interest

ESURP is earnings surprise measured as earnings in year *t* minus the mean consensus forecast (from IBES) for firm *i*'s earnings before fiscal year end, scaled by the firm's stock price at the end of the fiscal year; CSR_s is measured as total strengths in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product; CSR_c is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

MFSURP is management forecast surprise measured as management annual earnings forecast (point or midpoint of range forecasts only) for year *t* minus the mean analysts' consensus forecast for firm *i*'s earnings for year *t*, scaled by the firm's stock price 10 days before forecast date; CSR_s is measured as total strengths in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product; CSR_c is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

Table 5 Effect of CSR performance on disclosure quality
$$DQ_{it} = \alpha_0 + \alpha_1 CSR_{S_{it}} + \alpha_2 CSR_{C_{it}} + \alpha_3 INTAN_{it} + \alpha_4 SPECIAL_{it} + \alpha_5 LOSS_{it} + \alpha_6 SIZE_{it} + \alpha_7 BM_{it} + \alpha_8 LEV_{it} + \alpha_9 INST_{it} + \alpha_{10} CGOV_{it} + \alpha_{11} ANA_{it} + \alpha_{12} SEGMT_{it} + \alpha_{13} ROE_{it} + \alpha_{14} ROE_{STD_{it}} + \alpha_{15} ISSUE_{it} + \alpha_{16} BIGN_{it} + IndDum + YearDum + \varepsilon_{it}$$

Variable	DQ		DQ	
	Coeff	(t-stat)	Coeff	(t-stat)
Intercept	0.392	(14.23)***	0.550	(25.75)***
<i>CSR_S</i>	- 0.000	(- 1.28)	- 0.000	(- 0.54)
<i>CSR_C</i>	- 0.001	(- 4.37)***	- 0.001	(- 2.89)***
<i>INTAN</i>			0.026	(9.52)***
<i>SPECIAL</i>			- 0.018	(- 2.87)***
<i>LOSS</i>			0.003	(2.42)**
<i>SIZE</i>			- 0.018	(- 7.69)***
<i>BM</i>			- 0.006	(- 3.72)***
<i>LEV</i>			- 0.075	(- 23.16)***
<i>INST</i>			0.008	(3.44)***
<i>GGOV</i>			- 0.004	(- 5.93)***
<i>ANA</i>			0.001	(3.02)***
<i>SEGMT</i>			- 0.000	(- 1.55)
<i>ROE</i>			- 0.000	(- 0.86)
<i>ROESTD</i>			- 0.000	(- 0.42)
<i>ISSUE</i>			- 0.008	(- 8.27)***
<i>BIGN</i>			0.004	(1.91)*
<i>IndDum and Year-Dum</i>	Yes		Yes	
<i>N</i>	11,085		11,085	
Adjusted <i>R</i> ²	0.605		0.636	

Numbers in bold are the coefficient estimates for the main variables of interest

The dependent variable, *DQ*, disclosure quality score is obtained from Chen et al. (2015) and based on a count of non-missing Compustat line items on both the balance sheet and income statements; *CSR_S* is measured as total strengths in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product; *CSR_C* is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

(2003) conduct a meta-analysis on CSR and financial performance and conclude that there is overall evidence consistent with a positive association between CSR performance and accounting measures of financial performance. To see whether this documented association also holds in our sample, we examine earnings persistence. Earnings persistence has been extensively used by prior accounting research as a proxy for earnings performance and quality (e.g., Collins and Kothari 1989; Skinner and Soltes 2011). Higher (lower) earnings persistence indicates that current period earnings

are more (less) likely to be sustained in the future. In particular, Collins and Kothari (1989) show that the higher the earnings persistence, which indicates better financial performance, the greater the investors' reaction to earnings announcements.

Following prior studies, we estimate the following regression of future earnings on current earnings to examine the association between CSR performance and earnings persistence:

$$EARN_{it+f} = \alpha_0 + \alpha_1 EARN_{it} + \alpha_2 CSR_{S_{it}} + \alpha_3 CSR_{S_{it}} \times EARN_{it} + \alpha_4 CSR_{C_{it}} + \alpha_5 CSR_{S_{it}} \times EARN_{it} + \sum_{k=6}^n \alpha_k X_{it}^k \times EARN_{it} + IndDum + YearDum + \varepsilon_{it} \quad (6)$$

EARN is income before extraordinary items scaled by total assets. The dependent variable in Eq. (6) is future period earnings (*EARN_{it+f}*), and we separately regress both one-period (*EARN_{it+1}*) and two-period (*EARN_{it+2}*) ahead earnings on current earnings (*EARN_{it}*). The coefficient on current earnings (α_2) is the measure of earnings persistence. A higher (lower) α_2 means that more (less) of current period earnings will persist or be sustained into future period earnings, reflecting better (worse) future financial performance.

Our variables of interest are *CSR_{S_{it}}* and *CSR_{C_{it}}*, which are interacted with the current earnings variable. A positive (negative) coefficient on *CSR_{S_{it}}* \times *EARN_{it}* suggests that positive CSR performance increases (decreases) earnings persistence. Similarly, a positive (negative) coefficient on *CSR_{C_{it}}* \times *EARN_{it}* suggests that adverse CSR performance increases (decreases) earnings persistence. Following Skinner and Soltes (2011), we include the following control variables, which are also interact with the current earnings variable: firm size (*SIZE_{it}*), reported loss (*LOSS_{it}*), book-to-market ratio (*BM_{it}*), leverage (*LEV_{it}*), special items (*SPECIAL_{it}*), and dividend payout (*DIV_{it}*). We also include industry (*IndDum*) and year (*YearDum*) dummies and calculate firm-clustered *t*-statistics.¹⁹

As reported in Table 6, we find that the coefficients on current earnings (*EARN_{it}*) are less than one in both specifications (0.800 and 0.674 in column 1 and 2, respectively)

¹⁹ The use of lagged earnings in Eq. (6) may raise concerns about bias and inefficient ordinary least squares (OLS) coefficient estimates for dynamic panel model. However, Nickell (1981) and Baltagi (2008) note that OLS coefficient estimates of a lagged dependent variable are biased mostly because of the correlations between firm fixed effects and the lagged dependent variable. In Eq. (6), we do not use firm fixed effects, only industry and year fixed effects. Moreover, we also adjust for inefficient estimates by calculating firm-clustered standard errors to account for firm-level serial correlations. Nonetheless, to address concerns about dynamic panel model, we employ the Arellano and Bond's (1991) approach to estimate Eq. (6) as a robustness check. The results (untabulated) remain qualitatively similar to those reported in Table 6, and our inferences remain unchanged.

Table 6 Effect of CSR performance on earnings persistence

$$EARN_{it+f} = \alpha_0 + \alpha_1 EARN_{it} + \alpha_2 CSR_{S_{it}} + \alpha_3 CSR_{S_{it}} \times EARN_{it} + \alpha_4 CSR_{C_{it}} + \alpha_5 CSR_{S_{it}} \times EARN_{it} + \sum_{k=6}^n \alpha_k X_{it}^k \times EARN_{it} + IndDum + YearDum + \epsilon_{it}$$

Variable	$Earn_{it+1}$		$Earn_{it+2}$	
	Coeff	(t-stat)	Coeff	(t-stat)
Intercept	-0.021	(-3.90)***	-0.023	(-4.32)***
<i>EARN</i>	0.800	(15.49)***	0.674	(24.03)***
<i>CSR_S</i>	0.000	(0.91)	0.001	(1.88)
<i>CSR_S * EARN</i>	0.001	(0.24)	0.003	(0.81)
<i>CSR_C</i>	0.000	(0.74)	-0.001	(-1.11)
<i>CSR_C * EARN</i>	-0.026	(-2.07)*	-0.012	(-1.98)*
<i>SIZE</i>	0.003	(4.85)***	0.005	(7.40)***
<i>LOSS</i>	-0.016	(-1.93)*	-0.030	(-6.75)***
<i>BM</i>	-0.007	(-2.77)**	0.001	(0.29)
<i>LEV</i>	0.016	(0.47)	0.030	(1.57)
<i>SPECIAL</i>	-0.002	(-1.26)	-0.002	(-1.96)*
<i>DIV</i>	0.081	(3.26)**	0.123	(8.41)***
<i>SIZE * EARN</i>	0.002	(0.60)	0.006	(1.54)
<i>LOSS * EARN</i>	-0.011	(-0.36)	-0.008	(-0.42)
<i>BM * EARN</i>	-0.460	(-14.96)***	-0.402	(-21.28)***
<i>LEV * EARN</i>	-0.375	(-4.01)***	-0.308	(-6.80)***
<i>SPECIAL * EARN</i>	0.008	(3.95)***	0.009	(5.00)***
<i>DIV * EARN</i>	-0.023	(-1.52)	-0.000	(-0.02)
<i>IndDum and YearDum</i>	Yes		Yes	
<i>N</i>	21,773		21,773	
Adjusted <i>R</i> ²	0.555		0.381	

Numbers in bold are the coefficient estimates for the main variables of interest

EARN is income before extraordinary items (IB) scaled by total assets; *CSR_S* is measured as total strengths in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product; *CSR_C* is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

and are significantly positive (*t*-stat = 15.49 and 24.03 respectively). The coefficients on *CSR_S* × *EARN_{it}* are insignificant (*t*-stat = 0.91 and 1.88), whereas the coefficients on *CSR_C* × *EARN_{it}* are significantly negative (*t*-stat = -2.07 and -1.98). In other words, whereas firms with positive CSR performance do not exhibit incrementally higher persistent earnings, firms with adverse CSR performance do exhibit decreasing earnings persistence. This asymmetric result is not only consistent with the results based on disclosure quality in Table 5, but also in line with our findings

on the effect of CSR performance on investors' reaction to earnings-related corporate disclosures. However, the result in Table 6 is inconsistent with analysts' symmetric incorporation of both positive and negative CSR performance in their earnings forecast revisions.²⁰

Overall, the results reported in Tables 5 and 6 suggest that firms with adverse CSR performance have lower disclosure quality and earnings persistence, but firms with positive CSR performance do not exhibit higher levels of both measures. This asymmetric result for adverse CSR performance is consistent with the result between CSR performance and investors' reaction to earnings and forecast surprises reported in Table 3. However, it is inconsistent with the symmetric effect that adverse and positive CSR performance have on analysts' reaction to similar corporate disclosures reported in Table 4.

Supplementary Analyses

Endogeneity Concerns: Three-Stage Least Squares (3SLS)

Our results can be affected by endogeneity concerns resulting from potential selection bias and omitted correlated variables. For example, our inferences may be attributable to an inadequate control for differences between firms with differing CSR performance. That is, our measures of CSR strengths and concerns are endogenous in Eqs. (1)–(4) as they may be correlated with the error terms in these equations. To mitigate these endogeneity concerns and to check the robustness of our results, we use 3SLS approach to estimate Eqs. (1)–(4).

Specifically, with respect to Eq. (1), we estimate the following system of regression equations using 3SLS:

$$CAR_{it}(SAR_{it}) = \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} + \alpha_3 CSR_{C_{it}} \times ESURP_{it} + \sum_{k=6}^n \alpha_k X_{it}^k \times ESURP_{it} + IndDum + YearDum + \epsilon_{it} \tag{7}$$

$$CSR_{S_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \epsilon_{it} \tag{7.1}$$

²⁰ The results reported in Tables 5 and 6 are based on the largest sample in our study (based on the samples used in Table 3). When we restrict our analyses to the smaller samples that have analysts' forecasts (based on the samples used in Table 4), we find similar results to those reported in Tables 5 and 6. Therefore, the asymmetric effect of CSR performance on firms' actual disclosure quality and earnings persistence is not dependent on the specific samples used in our analyses.

$$\begin{aligned}
CSR_{C_{it}} = & \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} \\
& + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} \\
& + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \epsilon_{it}
\end{aligned} \tag{7.2}$$

$CSR_{S_{it}}$ and $CSR_{C_{it}}$ in Eq. (1) are the endogenous variables in the above system of equations. Equations (7.1) and (7.2) are used to determine $CSR_{S_{it}}$ and $CSR_{C_{it}}$ based on a set of identifying exogenous variables. The exogenous variables in Eqs. (7.1) and (7.2) are included based on prior studies that have documented determinants of CSR performance (e.g., Koh and Tong 2013). “Appendix 2” lists and defines all the variables in the above equations. Using the system of equations, we re-estimate Eq. (1). We then replace Eq. (1) with Eqs. (2), (3), and (4), which results in the estimation of four separate systems of equations using 3SLS.

We report the results of using 3SLS in Tables 7 and 8. The sample sizes in both tables are smaller than those reported in Tables 3 and 4 because of the additional data requirements on the exogenous variables required in Eqs. (7.1) and (7.2). For brevity, we do not report the coefficient estimates obtained from Eqs. (7.1) and (7.2) in Tables 7 and 8 and we do not report the coefficients on the control variables in Eqs. (1)–(4). In Panels A and B of Table 7, we find that the coefficients on the interaction term between CSR strengths and earnings surprises ($CSR_{S_{it}} \times ESURP_{it}$) and the coefficients on the interaction term between CSR strengths and management earnings forecast surprises ($CSR_{S_{it}} \times MFSURP_{it}$) are all insignificant. We find that the coefficients on the interaction term between CSR concerns and earnings surprises ($CSR_{C_{it}} \times ESURP_{it}$) and the coefficients on the interaction term between CSR concerns and management earnings forecast surprises ($CSR_{C_{it}} \times MFSURP_{it}$) are all significantly negative. Thus, the results in Table 7 are consistent with the main results on investors’ reaction reported in Table 3.

In Panels A and B of Table 8, we examine analysts’ reaction. We find that the coefficient on the interaction term between CSR strengths and earnings surprises ($CSR_{S_{it}} \times ESURP_{it}$) and the coefficient on the interaction term between CSR strengths and management earnings forecast surprises ($CSR_{S_{it}} \times MFSURP_{it}$) are all significantly positive. We also find that the coefficient on the interaction term between CSR concerns and earnings surprises ($CSR_{C_{it}} \times ESURP_{it}$) and the coefficient on the interaction term between CSR concerns and management earnings forecast surprises ($CSR_{C_{it}} \times MFSURP_{it}$) are all significantly negative. Thus, the results in Table 8 are also consistent with the main results on analysts’ reaction reported in Table 4.

Overall, the results in Tables 7 and 8 are qualitatively similar to those reported in Tables 3 and 4, and hence our overall inferences on the effect of CSR performance on

investors’ and analysts’ reactions are robust to concerns about endogeneity.

Robustness and Sensitivity Checks

To ensure our findings are not sensitive to research design choice, we perform several robustness tests. We include utilities and financial firms in our main samples to maintain sample size. However, these firms are subject to regulatory requirements that can differ from firms in other industries. When excluding utilities and financial firms from our sample, we find similar results for all empirical analyses.

KLD revised the CSR performance rating criteria in 2010. As a robustness check, we re-estimate Eqs. (1)–(4) using observations only from 1995 to 2009. We find that the results using these pre-2010 subsamples are qualitatively similar to those reported in Tables 3 and 4 (which are based on the full sample period). Therefore, the change in KLD rating criteria in 2010 does not affect our overall results and inferences. In addition, because there is a marked increase in the number of firms tracked by KLD post-2003, we re-estimate Eqs. (1)–(4) based only on a restricted sample period from 2003 to 2013. Again, the results remain qualitatively similar to those using the full sample period, and our inferences remain unchanged.

In estimating Eqs. (1) and (2), we use a 3-day window period $[-1, 1]$ to calculate the value-weighted (CAR) and size-adjusted (SAR) abnormal returns surrounding announcements of earnings and management earnings forecast. As a sensitivity check, we also use 2-day $[-1, 0]$ and 5-day $[-2, 2]$ window periods to calculate the abnormal returns. Using these abnormal returns, we find qualitatively similar results (untabulated) to those reported in Table 3. Thus, our inferences are robust to the use of such alternative window periods.

In Eqs. (1)–(4), our focus is on the effect of CSR performance on the *sensitivity* of stock price changes and changes in analysts’ consensus earnings forecasts to both earnings surprises and management earnings forecast surprises (i.e., the coefficients on $CSR_S \times ESURP$, $CSR_C \times ESURP$, $CSR_S \times MFSURP$, and $CSR_C \times MFSURP$). Following prior studies, we thus include control variables by interacting them with $ESURP$ and $MFSURP$. As a robustness check, we also include the control variables both on their own and interacted with $ESURP$ and $MFSURP$ [e.g., we include both $LNSALES$ and $LNSALES \times ESURP$ in Eqs. (1) and (3)]. Using this alternative specification, we re-estimate

Table 7 Three-stage least squares: effect of CSR performance on investors' reaction to earnings-related corporate disclosures

System of equations:

$$CAR_{it}(SAR_{it}) = \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} + \alpha_3 CSR_{C_{it}} \times ESURP_{it} + \sum_{k=6}^n \alpha_k X_{it}^k \times ESURP_{it} + IndDum + YearDum + \epsilon_{it}$$

$$CSR_{S_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \epsilon_{it}$$

$$CSR_{C_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \epsilon_{it}$$

	Value-weighted abnormal returns (CAR)		Size-adjusted abnormal returns (SAR)	
	CAR (-1,1)		SAR (-1,1)	
	Coeff	(t-stat)	Coeff	(t-stat)
Panel A: earnings announcements (partial results)				
Intercept	0.002	(3.84)***	0.003	(6.18)***
ESURP	0.448	(4.31)***	0.388	(3.81)***
CSR_S * ESURP	- 0.015	(- 1.09)	- 0.017	(- 1.24)
CSR_C * ESURP	- 0.020	(- 2.30)**	- 0.034	(- 2.21)**
Control variables, <i>IndDum and YearDum</i>	Yes		Yes	
N	23,447		23,447	
Adjusted R ²	0.021		0.026	

System of equations:

$$CAR_{it}(SAR_{it}) = \alpha_0 + \alpha_1 MFSURP_{it} + \alpha_2 CSR_{S_{it}} \times MFSURP_{it} + \alpha_3 CSR_{C_{it}} \times MFSURP_{it} + \sum_{k=6}^n \alpha_k X_{it}^k \times MFSURP_{it} + IndDum + YearDum + \epsilon_{it}$$

$$CSR_{S_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \epsilon_{it}$$

$$CSR_{C_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \epsilon_{it}$$

	Value-weighted abnormal returns (CAR)		Size-adjusted abnormal returns (SAR)	
	CAR (-1,1)		SAR (-1,1)	
	Coeff	(t-stat)	Coeff	(t-stat)
Panel B: management forecast announcements (partial results)				
Intercept	0.002	(3.34)***	0.003	(5.67)***
MFSURP	0.530	(1.85)	0.658	(2.33)**
CSR_S * MFSURP	- 0.063	(- 1.70)	- 0.075	(- 1.05)
CSR_C * MFSURP	- 0.069	(- 2.29)**	- 0.062	(- 2.11)**
Control variables, <i>IndDum and YearDum</i>	Yes		Yes	
N	17,053		17,053	
Adjusted R ²	0.087		0.089	

Numbers in bold are the coefficient estimates for the main variables of interest

ESURP is earnings surprise measured as earnings in year *t* minus the mean consensus forecast (from IBES) for firm *i*'s earnings before fiscal year end, scaled by the firm's stock price at the end of the fiscal year. MFSURP is management forecast surprise measured as management annual earnings forecast (point or midpoint of range forecasts only) for year *t* minus the mean analysts' consensus forecast for firm *i*'s earnings for year *t*, scaled by the firm's stock price 10 days before forecast date. CSR_c is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2". Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

Table 8 Three-stage least squares: effect of CSR performance on analysts' reaction to earnings-related corporate disclosures

System of equations:

$$REV_EA_{it} = \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} + \alpha_3 CSR_{C_{it}} \times ESURP_{it} \\ + \sum_{k=7}^n \alpha_k X_{it}^k \times ESURP_{it} + IndDum + YearDum + \varepsilon_{it}$$

$$CSR_{S_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} \\ + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} \\ + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \varepsilon_{it}$$

$$CSR_{C_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} \\ + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} \\ + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \varepsilon_{it}$$

Variable	<i>SURP = ESURP</i>	
	Coeff	(<i>t</i> -stat)
Panel A: earnings announcements (partial results)		
Intercept	- 0.004	(- 15.31)***
<i>ESURP</i>	0.828	(8.23)***
<i>CSR_S * ESURP</i>	0.048	(4.90)***
<i>CSR_C * ESURP</i>	- 0.043	(- 4.41)***
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes	
<i>N</i>	28,251	
Adjusted <i>R</i> ²	0.177	

System of equations:

$$REV_MF_{it} = \alpha_0 + \alpha_1 MFSURP_{it} + \alpha_2 CSR_{S_{it}} \times MFSURP_{it} + \alpha_3 CSR_{C_{it}} \times MFSURP_{it} \\ + \sum_{k=7}^n \alpha_k X_{it}^k \times MFSURP_{it} + IndDum + YearDum + \varepsilon_{it}$$

$$CSR_{S_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} \\ + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} \\ + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \varepsilon_{it}$$

$$CSR_{C_{it}} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 BM_{it} + \alpha_3 SEGMT_{it} + \alpha_4 ROE_{it} + \alpha_5 LEV_{it} + \alpha_6 LOSS_{it} \\ + \alpha_7 DSPECIAL_{it} + \alpha_8 CGOV_{it} + \alpha_9 ISSUE_{it} + \alpha_{10} DFOREIGN_{it} + \alpha_{11} INVREC_{it} \\ + \alpha_{12} DMERGER_{it} + IndDum + YearDum + \varepsilon_{it}$$

Variable	<i>SURP = MFSURP</i>	
	Coeff	(<i>t</i> -stat)
Panel B: management forecast announcements (partial results)		
Intercept	0.001	(0.28)
<i>MFSURP</i>	0.947	(63.38)***
<i>CSR_C * MFSURP</i>	0.065	(15.48)***
<i>CSR_S * MFSURP</i>	- 0.030	(- 6.78)***
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes	
<i>N</i>	9372	
Adjusted <i>R</i> ²	0.451	

Numbers in bold are the coefficient estimates for the main variables of interest

ESURP is earnings surprise measured as earnings in year *t* minus the mean consensus forecast (from IBES) for firm *i*'s earnings before fiscal year end, scaled by the firm's stock price at the end of the fiscal year; *MFSURP* is management forecast surprise measured as management annual earnings forecast (point or midpoint of range forecasts only) for year *t* minus the mean analysts' consensus forecast for firm *i*'s earnings for year *t*, scaled by the firm's stock price at 10 days before forecast date; *CSR_C* is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

Eqs. (1)–(4) and find qualitatively similar results (untabulated) to those reported in Tables 3 and 4.²¹

For each firm-year observation, we measure CSR strengths and concerns by summing the binary ratings in each of KLD's six CSR rating dimensions. As a robustness check, we use two alternative measures of CSR performance. First, we use two indicator variables to separately identify whether a firm has at least one CSR strength rating (i.e., indicator variable set equal to one if at least one CSR strength rating exists for the firm in any of the six CSR dimensions, and zero otherwise) and at least one CSR concern rating in each year (i.e., indicator variable set equal to one if at least one CSR concern rating exists for the firm in any of the six CSR dimensions, and zero otherwise). Second, we use scaled strengths and concerns. In KLD, the number of total CSR strengths is 40 while the number of total concerns is 30. We scale a firm's total CSR strength counts by 40 and total CSR concern counts by 30 in each year. We re-estimate the Eqs. (1)–(4) using both alternative measures of CSR strengths and concerns and find qualitatively similar results to those reported in Tables 3 and 4. Thus, our results and inferences are robust to using both alternative measures of CSR performance.

Positive CSR Performance and Analysts' Earnings Forecast Revisions

The results in "Testing Assumptions" section suggest that only adverse CSR performance affects firms' actual disclosure quality and earnings persistence. These results are consistent with the effect of CSR performance on investors' reaction, but not on analysts' reaction to earnings-related corporate disclosures. Thus, our findings suggest that analysts may be too optimistic in their assessment of positive CSR performance as a signal of management ethics and integrity.²²

²¹ In addition, we check the variance inflation factor (VIF) for estimated Eqs. (1)–(4). The VIFs for our test variables (i.e., $CSRS \times ESURP$, $CSRC \times ESURP$, $CSRS \times MFSURP$, and $CSRC \times MFSURP$) and the control variables are all below ten, except for the interacted terms of control variables $LNSALES$ and $INST$ with both $ESURP$ and $MFSURP$. As such, we perform a robustness check by dropping $LNSALES$ and $INST$ completely from Eqs. (1)–(4) and re-estimate these equations. We find that the results remain qualitatively similar to those reported in Tables 3 and 4 of the paper, and we believe multicollinearity does not affect our overall results and inferences.

²² We caveat that our findings can neither speak to why investors and analysts view positive CSR performance differently, nor to the appropriateness of their differential reactions to earnings-related corporate disclosures. However, one possible explanation is that some analysts may issue optimistic earnings forecasts and stock recommendations to please managers so that they can gain better access to firm information and can build better relationship with the firms (e.g., see Ke and Yu 2006; Chen and Matsumoto 2006). Thus, it is possible that

A plausible explanation for the asymmetric results is the change in analysts' perception about CSR performance documented by Ioannou and Serafeim (2015). They find that firms with better CSR performance received more pessimistic stock recommendations in the 1990s because analysts perceived CSR activities as self-serving mechanisms of managers. However, post-2003, analysts began to view CSR activities as serving stakeholders' interests and contributing to firms' profitability and started to issue more optimistic stock recommendations for firms with better CSR performance. To explore this explanation, we partition our sample into pre- and post-2003 and separately estimate Eqs. (3) and (4) using two distinct sample periods: 1995–2002 and 2003–2013. Results in Panels A and B of Table 9 suggest that analysts only react to CSR strengths from 2003 onward. These results are consistent with Ioannou and Serafeim's (2015) findings that analysts view positive CSR activities as beneficial to firms' financial performance only after 2003.

As a further analysis, we also examine investors' reaction in the two distinct sample periods (i.e., 1995–2002 and 2003–2013). We separately estimate Eqs. (1) and (2) in the two time-period subsamples and continue to find investors are affected by adverse but not positive CSR performance in their reactions to announcements of earnings and management earnings forecasts. Thus, unlike analysts, investors do not seem to have changed their view on positive CSR performance over time although there are a gradual emergence and institutionalization of the business case for CSR post-2003.

We caveat that our findings can neither speak to why investors and analysts view positive CSR performance differently, nor to the appropriateness of their differential reactions to earnings-related corporate disclosures. However, one possible explanation is that some analysts may have changed their view on positive CSR performance to justify their issuance of more optimistic earnings forecasts and stock recommendations. Such optimism can help please managers so that analyst can gain better access to firm-specific information and can build mutually beneficial relations with managers (e.g., see Ke and Yu 2006; Chen and Matsumoto 2006). Thus, it is possible that financial analysts may view and react to positive CSR performance differently from equity investors because they have a slightly different set of incentives and decision-making outcomes.

Footnote 22 (continued)

financial analysts may view and react to positive CSR performance differently from equity investors because they have a slightly different set of incentives and decision-making outcomes.

Table 9 Analysts' optimism over positive CSR performance
$$REV_EA_{it} = \alpha_0 + \alpha_1 ESURP_{it} + \alpha_2 CSR_{S_{it}} \times ESURP_{it} + \alpha_3 CSR_{C_{it}} \times ESURP_{it} + \sum_{k=7}^n \alpha_k X_{it}^k \times ESURP_{it} + IndDum + YearDum + \varepsilon_{it}$$

	(1)		(2)	
	1998–2002		2003–2013	
	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)
Panel A: earnings announcements (partial results)				
Intercept	0.001	(0.09)	0.048	(3.75) ^{***}
<i>ESURP</i>	− 3.014	(− 11.81) ^{***}	0.200	(2.83) ^{***}
<i>CSR_s</i> * <i>ESURP</i>	0.005	(0.15)	0.098	(8.49)^{***}
<i>CSR_c</i> * <i>ESURP</i>	− 0.038	(− 3.31) ^{***}	− 0.055	(− 5.35) ^{***}
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes		Yes	
<i>N</i>	2105		16,156	
Adjusted <i>R</i> ²	0.266		0.201	
$REV_MF_{it} = \alpha_0 + \alpha_1 MFSURP_{it} + \alpha_2 CSR_{S_{it}} \times MFSURP_{it} + \alpha_3 CSR_{C_{it}} \times MFSURP_{it} + \sum_{k=7}^n \alpha_k X_{it}^k \times MFSURP_{it} + IndDum + YearDum + \varepsilon_{it}$				
	(1)		(2)	
	1998–2002		2003–2012	
	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)
Panel B: management forecasts announcements (partial results)				
Intercept	− 0.000	(− 0.03)	0.005	(0.76)
<i>MFSURP</i>	0.459	(4.46) ^{***}	0.938	(59.69) ^{***}
<i>CSR_s</i> * <i>MFSURP</i>	− 0.010	(− 1.13)	0.069	(15.26)^{***}
<i>CSR_c</i> * <i>MFSURP</i>	− 0.042	(− 3.72) ^{***}	− 0.030	(− 6.15) ^{***}
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes		Yes	
<i>N</i>	783		8589	
Adjusted <i>R</i> ²	0.794		0.856	

Numbers in bold are the coefficient estimates for the main variables of interest

ESURP is earnings surprise measured as earnings in year *t* minus the mean consensus forecast (from IBES) for firm *i*'s earnings before fiscal year end, scaled by the firm's stock price at the end of the fiscal year

MFSURP is management forecast surprise measured as management annual earnings forecast (point or midpoint of range forecasts only) for year *t* minus the mean analysts' consensus forecast for firm *i*'s earnings for year *t*, scaled by the firm's stock price at 10 days before forecast date; *CSR_s* is measured as total strengths in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product; *CSR_c* is measured as total concerns in KLD's six social rating categories: community, diversity, human rights, employee relations, environment, and product. Other variables are as defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

Disaggregated CSR Dimensions

Our results indicate that investors' key focus is on adverse CSR performance and that only adverse CSR performance is associated with our proxies for disclosure quality and financial performance. Recent studies have focused on the stronger impact of adverse compared to positive CSR performance (e.g., Koh and Tong 2013; Jayachandran et al. 2013)

and have also explore the economic consequences of the different CSR dimensions captured in the KLD dataset (Mishra and Modi 2016). Although not the focus of our study, we provide an exploratory analysis on whether investors and analysts are concerned about adverse CSR performance in specific CSR dimensions.

Following Koh and Tong (2013), we disaggregate CSR performance into four dimensions to provide descriptive

evidence on which specific CSR concerns are more important to investors and analysts. The four dimensions are: consumer, employee, community, and environment.²³ We capture adverse CSR performance in each dimension by cumulating the binary ratings for the given dimension's CSR concerns ($TConsumer$, $TEmployee$, $TCommunity$, and $TEnvironment$). For example, in the consumer dimension, $TConsumer$ can take values from zero to four. We replace the variable capturing total CSR concerns (CSR_C) in Eqs. (1)–(4) with these four CSR dimension variables.

Table 10 reports the results for CSR concerns and investors' reaction. We estimate regression specifications that include the four dimensions of CSR concerns both separately and collectively, and for brevity we do not report the estimated coefficients on the control variables. We find similar results for all specifications, so we discuss results based on the collective regression in column 5. In Panel A, we find significantly negative coefficients on the interaction terms between earnings surprises and CSR concerns associated with consumers ($TConsumer$ t -stat = -1.96), the community ($TCommunity$ t -stat = -2.30), and the environment ($TEnvironment$ t -stat = -1.94), but not with employees ($TEmployee$ t -stat = 0.03). In Panel B, the results based on management earnings forecasts show that the coefficients on the interaction terms between forecast surprises and CSR concerns associated with consumers ($TConsumer$ t -stat = -2.28) and employee ($TEmployee$ t -stat = -4.13) are significantly negative, but are insignificant for those associated with the community ($TCommunity$ t -stat = -0.88) and the environment ($TEnvironment$ t -stat = 1.56). The overall results in Table 10 suggest that investors consistently emphasize CSR concerns associated with consumers in their reaction to earnings and management forecast announcements, whereas their focus on CSR concerns associated with employees, the community, and the environment is not consistent across these two types of corporate disclosures.

Table 11 reports the results for CSR concerns and the analysts' reaction. We find similar results for all regression specifications, and we thus discuss only those results based on collective regression in column 5. In Panel A, we find significantly negative coefficients on the interaction terms between earnings surprises and CSR concerns associated with employees ($TEmployee$ t -stat = -5.59) and the community ($TCommunity$ t -stat = -3.92), but not with

consumers ($TConsumer$ t -stat = 0.59) or the environment ($TEnvironment$ t -stat = 1.34). In Panel B, we find significantly negative coefficients on the interaction terms between management forecast surprises and CSR concerns associated with consumers ($TConsumer$ t -stat = -6.32), employees ($TEmployee$ t -stat = -18.07), and the community ($TCommunity$ t -stat = -1.91), but not with the environment ($TEnvironment$ t -stat = -0.60). The overall results reported in Table 11 suggest that analysts placed more consistent emphasis on CSR concerns associated with employees and the community, but they placed less emphasis on CSR concerns associated with consumers and none with the environment in their assessment of earnings-related corporate disclosures.²⁴

Conclusion

We investigate whether stakeholders, in particular equity investors and financial analysts, consider CSR performance in their assessment of earnings-related corporate disclosures. We hypothesize that CSR performance affects investors' and analysts' reactions to these corporate disclosures because it can be a signal of management integrity and ethics and thus also indicative of firms' disclosure quality and financial performance.

When we examine stock price reactions surrounding announcements of earnings and management earnings forecasts, we find that only adverse CSR performance affects investors' assessments of these corporate disclosures. However, both positive and adverse CSR performance affect analysts' earnings forecast revisions in response to announcements of earnings and management earnings forecasts. We find that firms with adverse CSR performance exhibit lower disclosure quality and earnings persistence. However, we do not find that firms with positive CSR performance exhibit higher levels of both measures. This asymmetric result is consistent with investors', but not with analysts', assessment of the effect of positive CSR performance on earnings-related corporate disclosures. We further document that analysts' optimistic view of positive CSR performance manifests only in their post-2003 earnings forecast revisions, but not in their pre-2003 forecast revisions. Our results are robust to using a 3SLS approach to address endogeneity concerns, and to a battery of robustness and sensitivity analyses. In an exploratory analysis, we find that investors placed consistent emphasis on adverse CSR activities associated with consumers, whereas analysts focus more on those associated

²³ We combine the KLD's employee and diversity dimensions and the community and human rights dimensions into two single stakeholder categories (employee and community). This is for the sake of brevity as the diversity dimension corresponds to CSR activities that primarily affect employees, whereas the human rights dimension corresponds to CSR activities that are associated with international labor rights and with relations between companies and indigenous people.

²⁴ Untabulated results show that the results on CSR concern variables reported in Tables 10 and 11 are qualitatively similar when we include the CSR strength variable in the regression specifications.

Table 10 Effect of CSR concern dimensions on investors' reaction to earnings-related corporate disclosures

Variable	(1) Consumer		(2) Employee		(3) Community		(4) Environment		(5) All categories	
	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)
Panel A: earnings announcements (partial results)										
Intercept	0.128	(2.54)**	0.128	(2.54)**	0.128	(2.54)**	0.128	(2.54)**	0.120	(2.13)**
<i>ESURP</i>	0.485	(4.05)***	0.517	(4.24)***	0.467	(3.90)***	0.475	(3.98)***	0.513	(3.70)***
<i>TConsumer</i> * <i>ESURP</i>	- 0.102	(- 2.03)**							- 0.186	(- 1.96)**
<i>TEmployee</i> * <i>ESURP</i>			- 0.030	(- 1.27)					0.001	(0.03)
<i>TCommunity</i> * <i>ESURP</i>					- 0.091	(- 2.25)**			- 0.117	(- 2.30)**
<i>TEnvironment</i> * <i>ESURP</i>							- 0.106	(- 2.23)**	- 0.098	(- 1.94)*
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes		Yes		Yes		Yes		Yes	
<i>N</i>	23,363		23,363		23,363		23,363		23,363	
Adjusted <i>R</i> ²	0.024		0.024		0.024		0.024		0.025	
Panel B: management forecast announcements (partial results)										
Intercept	0.033	(0.37)	0.034	(0.38)	0.024	(0.52)	0.034	(0.37)	0.023	(0.51)
<i>MFSURP</i>	0.763	(2.62)***	1.288	(4.65)***	0.914	(3.31)***	1.269	(4.53)***	1.173	(3.77)***
<i>TConsumer</i> * <i>MFSURP</i>	- 0.248	(- 2.65)***							- 0.220	(- 2.28)**
<i>TEmployee</i> * <i>MFSURP</i>			- 0.180	(- 4.09)***					- 0.189	(- 4.13)***
<i>TCommunity</i> * <i>MFSURP</i>					0.036	(0.24)			- 0.159	(- 0.88)
<i>TEnvironment</i> * <i>MFSURP</i>							0.310	(1.52)	0.404	(1.56)
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes		Yes		Yes		Yes		Yes	
<i>N</i>	17,053		17,053		17,053		17,053		17,053	
Adjusted <i>R</i> ²	0.092		0.092		0.091		0.092		0.092	

Numbers in bold are the coefficient estimates for the main variables of interest

Dependent variable *SAR*, size-adjusted returns are computed as the difference between the return for the firm and the return on a firm's size decile portfolio cumulated over (- 1, 1) 3 days surrounding management forecast announcement. Size portfolios are determined based on decile assignment for all NYSE/AMEX/NASDAQ firms. Other variables are as defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

with employees and the community (and to a lesser extent, consumers) in their assessment of earnings-related corporate disclosures.

We provide several caveats for this study. First, we use the KLD dataset, which is restricted to the largest 3000 US companies by market capitalization. Therefore, our results might not be generalizable to all firms. Second, while we use a comprehensive set of control variables in our empirical specifications, rely on 3SLS estimation to mitigate endogeneity concerns, and employ a battery of robustness analyses, we cannot completely rule out the possibility that our results and inferences may be subject to unknown alternative explanations. Third, we only examine announcements of earnings and management earnings forecasts, and our results cannot be generalized to other forms of earnings-related corporate disclosures, such as conference calls. Fourth, our analysis of specific CSR dimensions is exploratory in nature, and we leave to future research to examine in detail the differential effects that various CSR dimensions may have on stakeholders' reactions to corporate disclosures.

In conclusion, we find empirical evidence that investors and analysts do consider CSR performance in their assessment of corporate disclosures, and our study contributes to research on the economic consequences of CSR. Our study shows that both equity investors and financial analysts are consistent in their assessment of the negative effect of adverse CSR performance on firm value. Coupled with evidence that there is a growing emergence and institutionalization of the business case for CSR (e.g., CSR Europe et al. 2003; Ioannou and Serafeim 2015), a practical implication of our study is that it is imperative for senior management and boards of directors to consider CSR activities as part of their overall business strategy. In particular, firms should refrain from negative CSR activities because even in the presence of positive CSR performance, adverse CSR performance can have a greater influence on stakeholders' judgments of firms' ethical culture and values.

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Table 11 Effect of CSR concern dimensions on analysts' reaction to earnings-related corporate disclosures

Variable	(1) Consumer		(2) Employee		(3) Community		(4) Environment		(5) All categories	
	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)	Coeff	(<i>t</i> -stat)
Panel A: Earnings Announcements (partial results)										
Intercept	-0.004	(-15.07)***	-0.004	(-15.14)***	-0.004	(-15.08)***	-0.004	(-15.07)***	0.001	(0.00)
<i>ESURP</i>	-0.067	(-0.82)	0.025	(0.29)	-0.095	(-1.14)	-0.067	(-0.81)	0.021	(0.24)
<i>TConsumer * ESURP</i>	0.007	(0.23)	-0.084	(-5.26)***					0.018	(0.59)
<i>TEmployee * ESURP</i>									-0.091	(-5.59)***
<i>TCommunity * ESURP</i>									-0.218	(-3.92)***
<i>TEnvironment * ESURP</i>					-0.166	(-3.22)***	0.008	(0.32)	0.064	(1.34)
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes		Yes		Yes		Yes		Yes	
<i>N</i>	18,261		18,261		18,261		18,261		18,261	
Adjusted <i>R</i> ²	0.173		0.173		0.173		0.173		0.173	
Panel B: management forecast announcements (partial results)										
Intercept	0.000	(0.30)	0.000	(0.26)	0.000	(0.36)	0.000	(0.55)	0.000	(0.66)
<i>MFSURP</i>	0.951	(63.12)***	0.832	(49.97)***	0.954	(63.32)***	0.962	(64.12)***	0.820	(48.97)***
<i>TConsumer * MFSURP</i>	-0.004	(-0.34)	-0.104	(-15.62)***					-0.078	(-6.32)***
<i>TEmployee * MFSURP</i>					-0.081	(-4.06)***			-0.124	(-18.07)***
<i>TCommunity * MFSURP</i>									-0.039	(-1.91)*
<i>TEnvironment * MFSURP</i>									-0.145	(-0.60)
<i>ANA * MFSURP</i>	0.113	(8.33)***	0.156	(11.38)***	0.108	(7.88)***	0.106	(7.80)***	0.158	(11.53)***
Control variables, <i>IndDum</i> and <i>YearDum</i>	Yes		Yes		Yes		Yes		Yes	
<i>N</i>	9372		9372		9372		9372		9372	
Adjusted <i>R</i> ²	0.417		0.426		0.414		0.415		0.523	

Numbers in bold are the coefficient estimates for the main variables of interest

Dependent variable *REV_MF* is the analyst's mean consensus earnings forecast for year *t* + 1 immediately after the management forecast announcement minus the mean consensus earnings forecast immediately before the management forecast announcement, scaled by the firm's stock price at 10 days before management forecast announcement date. Variables are defined in "Appendix 2." Firm-clustered *t*-statistics are given in parentheses. ***, **, and * indicate 1, 5, and 10% levels of confidence

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Compliance with Ethical Standards

Conflict of interest Kevin Koh has received a research grant from ASEAN CSR Network (ASEAN CSR Vision 2020 Small Grant Fund). Audrey Hsu declares that she has no conflict of interest. Sophia Liu declares that she has no conflict of interest. Yen H. Tong declares that he has no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Appendix 1: KLD’s rating definitions

Dimension	Strengths	Concerns
Community	Charitable giving	Investment controversies
	Innovative giving	Negative economic impact
	Non-US charitable giving	Indigenous peoples relations
	Support for housing	Tax disputes
	Support for education	Other concerns
	Indigenous peoples relations	
	Volunteer programs	
Diversity	Other strengths	
	CEO	Controversies
	Promotion	Non-representation
	Board of directors	Other concerns
	Work/life benefits	
	Women and minority contracting	
	Employment of the disabled	
	Gay and lesbian policies	
Other strengths		

Dimension	Strengths	Concerns	
Employee relations	Union relations	Union relations	
	No-layoff policy	Health and safety concerns	
	Cash profit sharing	Workforce reductions	
	Employee Involvement	Retirement benefits concerns	
	Retirement benefits strengths	Other concerns	
	Health and safety strengths		
	Other strengths		
	Environment	Beneficial products and services	Hazardous waste
		Pollution prevention	Regulatory problems
		Recycling	Ozone-depleting chemicals
Clean energy		Substantial emissions	
Communications		Agricultural chemicals	
Property, plant, and equipment		Climate change	
Management systems		Other concerns	
Other strengths			
Human rights		Positive record in South Africa	South Africa
		Indigenous peoples relations strengths	Northern Ireland
	Labor rights strengths	Burma concerns	
	Other strengths	Labor rights concerns	
		Indigenous peoples relations concerns	
Product	Quality	Product safety	
	R&D/innovation	Marketing/contracting concerns	
	Benefits to the economically disadvantaged	Antitrust	
	Other strengths	Other concerns	

Appendix 2: variable definitions

Variables from KLD dataset	
CSR_S	Total strengths in KLD’s six social rating categories: community, diversity, human rights, employee relations, environment, and product
CSR_C	Total concerns in KLD’s six social rating categories: community, diversity, human rights, employee relations, environment, and product

<i>CGOV</i>	Total strengths minus total concerns in KLD's corporate governance rating category in year t	<i>ANA</i>	Natural logarithm of one plus the number of analysts following the firm over the year t
<i>TConsumer</i>	Total number of concerns in consumers dimension	Variables from compustat and other sources	
<i>TEmployee</i>	Total number of concerns in employees dimension	<i>CAR</i>	Value-weighted cumulative abnormal (market-adjusted) returns, computed as the difference between the return for the firm and the return on the market portfolio cumulated over 3 days ($-1, 1$) surrounding annual earnings announcement or management forecast announcement
<i>TCommunity</i>	Total number of concerns in community dimension		
<i>TEnvironment</i>	Total number of concerns in environment dimension		
<i>DConsumer</i>	Indicator variable set equal to 1 if at least one concern in the consumer dimension	<i>SAR</i>	Size-adjusted cumulative abnormal returns, computed as the difference between the return for the firm and the return on a firm's size decile portfolio cumulated over 3 days ($-1, 1$) surrounding annual earnings announcement (management forecast announcement). Size portfolios are determined based on the decile assignment for all NYSE/AMEX/NASDAQ firms
<i>DEmployee</i>	Indicator variable set equal to 1 if at least one concern in the employee dimension		
<i>DCommunity</i>	Indicator variable set equal to 1 if at least one concern in the community dimension		
<i>DEnvironment</i>	Indicator variable set equal to 1 if at least one concern in the environment dimension		
Variables from first Call/IBES		<i>DQ</i>	Disclosure quality score obtained from Chen et al. (2015) and based on a count of non-missing Compustat line items on both the balance sheet and income statements
<i>ESURP</i>	Earnings surprise measured as earnings in year t minus the mean consensus forecast (from IBES) for firm i 's earnings before fiscal year end, scaled by the firm's stock price at the end of the fiscal year	<i>LOSS</i>	Indicator variable that equals 1 if net income (NI) in year t is less than 0, and 0 otherwise
<i>MFSURP</i>	Management forecast surprise measured as management annual earnings forecast (point or midpoint of range forecasts only) for year t minus the mean analysts' consensus forecast for firm i 's earnings for year t , scaled by the firm's stock price at 10 days before forecast date	<i>LNSALES</i>	Natural logarithm of firm i 's total sales (SALE)
<i>REV_EA</i>	Analysts' mean consensus earnings forecast for year $t + 1$ immediately after announcement of year t earnings minus the mean consensus earnings forecast for year $t + 1$ immediately before the earnings announcement of year t , scaled by the firm's stock price at the end of the fiscal year t	<i>BM</i>	The ratio of book to market value of equity calculated as book value of equity (CEQ) scaled by market value of equity (CSHO \times PRCC_F)
<i>REV_MF</i>	Analysts' mean consensus earnings forecast immediately after the management forecast announcement minus the mean consensus earnings forecast immediately before the management forecast announcement, scaled by the firm's stock price at 10 days before management forecast announcement date	<i>LEV</i>	Proportion of long-term debt (DLTT) to total assets (AT)
		<i>INST</i>	Percent of firm i 's shares held by institutions in year $t-1$. If the data are missing, then set as 0
		<i>INTAN</i>	Intangible intensity, ratio of intangible assets (INTAN) over total assets (AT)
		<i>SPECIAL</i>	Magnitude of special items (SPI) scaled by total assets (AT)
		<i>SIZE</i>	Natural logarithm of firm i 's total assets (AT)
		<i>SEGMT</i>	Number of business segments
		<i>ROE</i>	Pretax income (PI) scales by lagged equity (CEQ)
		<i>ROESTD</i>	Standard deviation of <i>ROE</i> over the current and previous 4 years

<i>ISSUE</i>	Indicator variable that equals 1 if firm issued common shares exceeding 20% of market value within previous 4 years and 0 otherwise
<i>BIGN</i>	Indicator that equals 1 if a firm engages a Big N audit firm and 0 otherwise
<i>EARN</i>	Income before extraordinary items (IB) in scaled by total assets (AT)
$\sigma EARN$	Standard deviation of <i>EARN</i> over the current and previous 2 years
<i>DIV</i>	Indicator variable that equals 1 if a firm has paid out dividends in year <i>t</i> and 0 otherwise ($DVT > 0$)
<i>CHGEARN</i>	Changes in earnings measured as current income before extraordinary items minus lagged income before extraordinary items, scaled by total assets
<i>CHGCFO</i>	Changes in cash flows from operations measured as current cash flows from operations (as per SFAS 95 adjusted for extraordinary items) minus lagged cash flows from operations, scaled by total assets
<i>CFO</i>	Cash flows from operations (as per SFAS 95) adjusted for extraordinary items and scaled by total assets
$\sigma EARN$	Standard deviation of <i>EARN</i> over the current and previous 2 years
σCFO	Standard deviation of <i>CFO</i> over the current and previous 2 years
<i>DSPECIAL</i>	Indicator set to 1 if magnitude of special items (SPI) is greater than zero, 0 otherwise
<i>DFOREIGN</i>	Indicator variable set to 1 if the firm engages in foreign operations based on nonzero pretax foreign income (PIFO—pretax income foreign), 0 otherwise
<i>INVREC</i>	Sum of inventory (INVT) and accounts receivable (RECT) at the beginning of the year, scaled by total assets
<i>DMERGER</i>	Indicator variable set to 1 if the firm is engaged in a merger or acquisition in the current year as denoted in Compustat footnote data (SALE_FN) and 0 otherwise
<i>IndDum</i>	Industry dummies based on SIC classification
<i>YearDum</i>	Calendar-year dummies

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