



# Corporate Social Responsibility and Earnings Quality in the Context of Changing Regulatory Regimes and the Financial Crisis

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## ABSTRACT

The objective of this paper is to examine the relationship between corporate social responsibility (CSR) and earnings management in the context of changing regulatory regimes and the financial crisis. Using a sample of 18,472 U.S. firm-year observations that represents more than 2,500 individual firms over the period of 1993 to 2018, we employ several panel-data regression models and find that firms with higher CSR engagement have higher discretionary accruals before the Sarbanes Oxley Act of 2002 (SOX) and lower thereafter. Moreover, the relationship between CSR and discretionary accruals is moderated by the managerial equity incentives. Firms practicing CSR with low incentive alignment are more likely to have high discretionary accruals and receive more regulatory scrutiny from SOX. In contrast, we find high-CSR firms engage less in costly real earnings management in both pre- and post-SOX periods. Using the 2008-2009 financial crisis as an external shock via the difference-in-difference method (DiD), our results show that high-CSR firms engage less in earnings management during the financial crisis. The implications of our findings suggest that when facing the trade-off between different types of earnings management, high-CSR firms tend to engage in less costly earnings management. Our study contributes to the burgeoning literature on the influence of CSR on financial reporting practices by examining the relationship under various contexts and highlighting the importance of the recent regulatory framework for financial reporting quality.

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## La responsabilidad social de las empresas y la calidad de los beneficios en el contexto de cambios en los regímenes normativos y crisis financiera

### RESUMEN

El objetivo de este trabajo es examinar la relación entre la responsabilidad social corporativa (RSC) y la gestión de los beneficios en el contexto de cambios en los regímenes regulatorios y la crisis financiera. Utilizando una muestra de 18.472 observaciones de empresas estadounidenses que representan más de 2.500 empresas individuales durante el período de 1993 a 2018, empleamos varios modelos de regresión de datos de panel y encontramos que las empresas con mayor compromiso de RSC tienen mayores devengos discrecionales antes de la Ley Sarbanes Oxley de 2002 (SOX) y menores después. Además, la relación entre la RSC y la acumulación discrecional está moderada por los incentivos de los directivos. Las empresas que practican la RSC con una baja alineación de los incentivos tienen más probabilidades de tener unos devengos discrecionales elevados y de recibir un mayor escrutinio normativo de la SOX. Por el contrario, encontramos que las empresas con un alto nivel de RSC se involucran menos en la costosa gestión de los beneficios reales, tanto en los períodos anteriores como posteriores a la SOX. Utilizando la crisis financiera de 2008-2009 como un shock externo a través del método de diferencia en diferencia (DiD), nuestros resultados muestran que las empresas de alta RSC participan menos en la gestión de beneficios durante la crisis financiera. Las implicaciones de nuestros resultados sugieren que cuando las empresas se enfrentan a diferentes tipos de gestión de beneficios, las que tienen un alto nivel de RSC tienden a realizar una gestión de beneficios menos costosa. Nuestro estudio contribuye a la floreciente literatura sobre la influencia de la RSC en las prácticas de información financiera, examinando la relación en varios contextos y destacando la importancia del reciente marco normativo para la calidad de la información financiera.

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## 1. Introduction

Earnings are a key metric considered by capital market participants and are one of the most important measures at the forefront of executives' thinking. Yet, they are not a straightforward measure. In [Graham et al. \(2005\)](#) survey of more than 400 executives, many CFOs suggest that "you have to start with the premise that every company manages earnings" (p. 29). Prior research attributes earnings management to economic incentives for capital market and contractual motivations. Prior studies show that earnings can be managed either through discretionary accruals ([Dechow & Dichev, 2002](#); [Dechow et al., 1995](#); [Jones, 1991](#); [Kothari et al., 2005](#)) or by altering the timing of real transactions ([Cohen et al., 2008](#); [Roychowdhury, 2006](#)).

Given financial reporting quality can have a significant impact on investors' decision-making, capital market participants expect firms to provide transparent and reliable financial information. Therefore, understanding whether and when firms act more responsibly in their financial reporting is important. We offer insights into these questions by looking at the role of corporate social responsibility (hereafter CSR) in earnings quality. A firm's CSR engagement is argued to show the firm's aim to meet the ethical expectations of stakeholders in its business activities. Recent studies have found that firms practicing CSR behave differently from other firms in financial reporting. However, the empirical evidence on the relationship between CSR and firms' earnings quality is mixed ([Chih et al., 2008](#); [Kim et al., 2012](#); [Prior et al., 2008](#)). Whether firms practicing CSR tend to engage more or less in earnings manipulation depends on whether CSR engagement represents a sincere consideration of fostering long-term relationships with stakeholders or a manifestation of the agency problem. On the one hand, prior literature shows that the agency problem between principals and agents is aggravated when managers attempt to serve stakeholders instead of pursuing the single objective of value maximization ([Jensen, 2002](#)). In the absence of clear performance criteria, managers may engage in CSR to pursue self-serving goals and there may be a positive relationship between CSR and earnings management. On the other hand, if managers engage in CSR as a moral imperative, then high-CSR firms are expected to have more responsible operating decisions including transparent and reliable financial reporting. In this case, high CSR engagement is expected to constrain earnings management, indicating a negative relation between CSR and earnings management. This paper provides an empirical analysis of the relation between CSR and earnings management.

In particular, we examine whether firms practicing CSR respond to increased regulatory scrutiny differently in their financial reporting by using the Sarbanes-Oxley Act of 2002 (hereafter SOX) as the empirical setting. SOX is an interesting setting as it contains various accounting-related reforms aimed at improving the corporate governance of U.S. public firms. Previous studies have identified a trade-off between discretionary accruals and real earnings management and show that firms prefer to shift from accrual-based earnings management to real earnings management after SOX ([Graham et al., 2005](#)). Investigating CSR firms' financial reporting practices in the context of SOX allows us not only to examine the relationship between CSR and earnings management before the passage of SOX but also to observe whether this relationship alters in the post-SOX period. Using a sample of 18,472 firm-year observations from 1993 to 2018, we perform a pooled ordinary least squares (OLS) estimation by using several panel-data regression models and find that

firms with higher CSR engagement are more likely to engage in accrual-based earnings management before the passage of SOX and lower thereafter. We also find that the relationship between CSR and accrual-based earnings management is moderated by manager-shareholder incentive alignment. Specifically, we find that firms practicing CSR with low manager-shareholder incentive alignment exhibit more opportunistic financial reporting behavior before the passage of SOX. Accordingly, the effect of SOX in curbing accrual-based earnings management is more significant for those firms, which suggests that the regulatory scrutiny imposed by SOX has been effective in reducing the accrual-based earnings management of firms practicing CSR.

In addition, we find that firms practicing CSR are less likely to engage in real earnings management prior to the passage of SOX. While previous studies have identified that there is a general increase in real earnings management in the post-SOX period ([Cohen et al., 2008](#); [Lobo & Zhou, 2006](#)), we find no significant evidence showing that firms practicing CSR switch from accrual-based earnings management to real earnings management after SOX. Given that real earnings management depart from normal operational practices and therefore can have more severe consequences than accrual-based earnings management on firms' performance ([Cohen et al., 2008](#); [Graham et al., 2005](#); [Gunny, 2010](#); [Zang, 2011](#)), our results indicate that when facing the trade-off between accrual-based earnings management and real earnings management, socially responsible firms are more likely to engage in less costly earnings management. Hence, our results indicate that firms with higher CSR engagement are generally more responsible in their financial reporting in the post-SOX period.

Finally, we use the 2008-2009 financial crisis as an exogenous shock and apply the difference-in-difference (DID) method to investigate the relationship between CSR and earnings quality in the financial crisis context. Our results show that high-CSR firms are less likely to engage in aggressive accrual-based earnings management in the financial crisis period and also do not exhibit the pattern of shifting from discretionary accruals to real earnings management in both the crisis and post-crisis periods.

Our study contributes to the ongoing debate about the impact of CSR on corporate financial reporting in several ways. First, this paper extends the literature regarding the impact of CSR on financial reporting by reinvestigating the relationship between CSR and earnings quality in the context of enhanced corporate governance regulatory scrutiny and the recent financial crisis (e.g., [Bozzolan et al., 2015](#); [Hong & Andersen, 2011](#); [Kim et al., 2012](#); [López-González et al., 2019](#); [Martínez-Ferrero et al., 2013](#); [Tomas Siueia & Wang, 2019](#)). Some prior studies explore the relationship between CSR and earnings quality for specific firm characteristics (e.g., [López-González et al., 2019](#)) and industries ([Tomas Siueia & Wang, 2019](#); [Yip et al., 2011](#)). For instance, [López-González et al. \(2019\)](#) investigate the influence of CSR on earnings management and examine the moderating role of family ownership on the association. [Tomas Siueia & Wang \(2019\)](#) particularly investigate the Mozambican extractive industry for the relation between CSR disclosure and earnings quality. In light of these prior studies, our study is relevant but different from them by investigating the role of the external environment changes (i.e., regulatory environment changes and negative economic shock) in the relationship between CSR and corporate financial reporting.

Second, our study also contributes to the literature regarding the impact of the regulatory framework as a determinant

of accounting quality. While there are numerous prior studies on the relationship between CSR and earnings quality (e.g., [Hong & Andersen, 2011](#); [Kim et al., 2012](#)), there is a lack of attention paid to investigating how the relationship interacts with regulatory changes and macroeconomic economic climate. Therefore, from the regulatory perspective, our study also provides policy implications that SOX as an accounting-related reform is effective in curbing opportunistic financial reporting behaviors. Hence, from a broad sense, our results speak to the literature on CSR, accounting quality, corporate governance, and relevant legislation.

Finally, our results offer useful practical insights for investors, and other capital market participants by showing that firms with higher CSR engagement prefer to engage in less costly earnings management when facing the trade-off between different types of earnings management.

## 2. Literature review and hypothesis development

### 2.1. CSR and earnings management

CSR engagement can represent a firm's sincere considerations of the interests of a wide variety of stakeholders or it can merely be a manifestation of the agency problem. From the opportunistic perspective, previous studies have identified the opportunistic use of CSR from agency theory and optimal contracting theory and suggest that CSR engagement can exacerbate the agency problem. [McWilliams et al. \(2006\)](#) find that managers choose to engage in CSR activities to pave their career paths and pursue self-serving interests. The principal-agent conflict can be magnified if managers act on behalf of non-shareholder stakeholders because stakeholder orientation usually involves the participation of various stakeholders in the decision-making process, thus resulting in a multiplicity of objectives in corporate decisions. Departing from the single objective of value maximization makes it difficult to evaluate managers' performance in a principled way and enables managers to pursue self-interest at the expense of the interests of shareholders. If managers please stakeholders to pursue their benefits (e.g. greater career development, job security, etc), CSR engagement can be considered a manifestation of agency problems. In line with this argument, [Pagano & Volpin \(2005\)](#) find that managers offer generous long-term contracts to suppliers and long-term commitments to environmental or philanthropic institutions as an antitakeover device to obtain support from stakeholders for the incumbent management. In addition, [Krüger \(2015\)](#) finds that managers gain good reputations among key stakeholders at the expense of shareholders' interests, reflecting the fact that the agency problem between principals and agents is aggravated when managers tend to serve stakeholders. Therefore, managers can use CSR to satisfy stakeholders and self-entrenched managers may seek connivance from stakeholders to validate opportunistic behaviors such as earnings manipulation. Consistent with this view, [Prior et al. \(2008\)](#) find that opportunistic managers who manage earnings to pursue self-serving goals have incentives to engage in CSR and find a positive association between CSR and earnings management. Also, [Tomas Siueia & Wang \(2019\)](#) find a significant and negative relationship between CSR disclosure and earnings quality in the Mozambican extractive industry, suggesting that managers use CSR as a strategic device to pursue their interests.

Conversely, various theories suggest that firms with high CSR tend to provide transparent financial reporting. First, ethical theories suggest that firms should accept social re-

sponsibility as an ethical obligation which requires firms practicing CSR to pay simultaneous attention to the legitimate interests of various stakeholders ([Carroll, 1979](#); [Donaldson & Preston, 1995](#); [Phillips et al., 2003](#)). Second, political theories on the relationship between firms and society highlight that corporate citizenship requires firms to consider the interests of the community in which they operate ([Donaldson & Dunfee, 1994](#); [Matten & Crane, 2005](#)). Third, studies anchored on integrative theory argue that firms practicing CSR need to incorporate social demands into their decision-making ([Agle et al., 1999](#); [Carroll, 1979](#); [Swanson, 1995](#)). Several previous studies also emphasize the ethical view of CSR and suggest that there is a moral imperative for managers to 'do the right thing'. In line with the theories above, several studies identify a negative relationship between CSR and earnings management. For instance, [Choi & Pae \(2011\)](#) find firms with higher levels of ethical commitment exhibit lower levels of earnings management and higher levels of conservatism in financial reporting. [Hong and Andersen \(2011\)](#) find that socially responsible firms have higher quality accruals and lower levels of real earnings management. Another notable study is that of [Kim et al. \(2012\)](#) which finds that socially responsible firms are less likely to manage earnings through discretionary accruals, to manage earnings via real activities manipulation, and to be the subject of SEC investigation as evidenced by Accounting and Auditing Enforcement Releases (AAER) against top executives. Based on cross-country evidence, some prior studies ([Bozzolan et al., 2015](#); [Martínez-Ferrero et al., 2013](#)) also find that high-CSR firms are less likely to engage in earnings management. In addition, [Gao & Zhang \(2015\)](#) find the reported earnings of high-CSR firms are more related to their permanent earnings and are more value-relevant. Finally, [Ferrell et al. \(2016\)](#) find that well-governed firms with fewer agency problems engage more in CSR. They argue that CSR may not be a manifestation of the agency problem as articulated in agency theory but rather a complementary function to mitigate agency problems.

In addition to the opposing views above, some studies find mixed results regarding the association between CSR and earnings quality. For instance, [López-González et al. \(2019\)](#) find that firms with better social responsibility performance show a higher discretionary behavior by engaging in activities that distort the real financial and economic conditions of the firm whereas they find the relationship can be moderated in family-owned firms. [Yip et al. \(2011\)](#) find a negative relationship between CSR and earnings management in the oil and gas industry but a positive association in the food industry. Therefore, they argue that the relationship between CSR and earnings management is context-specific. [Choi et al. \(2013\)](#) find that CSR is negatively related to earnings management but the relationship is weaker for firms with high business group affiliation and concentrated ownership.

### 2.2. Research hypotheses

In addition to accrual-based earnings management, recent accounting literature increasingly pays attention to the prominent role of real earnings management ([Cohen et al., 2008](#); [Graham et al., 2005](#); [Gunny, 2010](#); [Roychowdhury, 2006](#); [Zang, 2011](#)). To meet or beat certain earnings thresholds, firms can manipulate their operating activities by temporarily boosting their sales volumes, overproduction, and deliberately reducing their discretionary expenses. [Graham et al. \(2005\)](#) show that managers are more willing to use real activities manipulation than accrual-based earnings management

because accrual-based earnings management is more likely to be scrutinized by auditors and regulators. Moreover, in response to accounting scandals, more rigorous accounting rules and regulations are set up, which increases the litigation risks and inclines managers to shift from accrual-based earnings management to real earnings management. Prior studies (Cohen et al., 2008; Graham et al., 2005; Zang, 2011) show that there is a trade-off between accrual-based earnings management and real earnings management. Cohen et al. (2008) also find that the levels of accrual-based earnings management increased steadily until the passage of SOX in 2002 but the levels of real earnings management decreased before SOX and increased thereafter.

In response to the wave of accounting scandals at the beginning of this century, Congress passed the SOX with President George W. Bush commenting that this act is 'the most far-reaching reforms of American business practices since the time of Franklin Delano Roosevelt<sup>1</sup>.' The act contains various accounting-related reforms aimed at restoring investor confidence by improving the corporate governance of U.S. public firms. Therefore, in addition to the ambiguous relation between CSR and earnings management, the passage of SOX also provides an interesting regulatory setting to examine how this enhanced regulatory scrutiny affects the relationship between CSR and earnings management. If high-CSR firms are opportunistic financial reporters and have a larger magnitude of accrual-based earnings management in the pre-SOX period, we expect the passage of SOX to constrain accrual-based earnings management owing to increased regulatory scrutiny. Conversely, if high-CSR firms are transparent financial reporters and CSR engagement is negatively related to accrual-based earnings management in the pre-SOX period, the financial reporting behavior of CSR firms will not be considerably influenced by the SOX passage. In terms of real earnings management, if firms practicing CSR are opportunistic financial reporters, we hypothesize that high-CSR firms tend to actively engage in real activities manipulation in the post-SOX period. However, if high-CSR firms are transparent reporters, there is no significant shift from accrual-based earnings management to real activities manipulation in the post-SOX period.

Based on the mixed results regarding the relationship between CSR and both accrual-based and real earnings management, to investigate the relation between CSR and earnings quality and how this relation is affected by the increased regulatory scrutiny of SOX, we propose our first two hypotheses (in null form) with no directional prediction as follows:

**H1:** *There is no association between CSR and accrual-based/real earnings management.*

**H2:** *The SOX passage has no impact on the association between CSR and accrual-based/real earnings management.*

In addition, we also examine the impact of managerial equity incentives on the relationship between CSR and financial reporting behaviors. On the one hand, managers whose wealth is more sensitive to changes in stock price can benefit more from opportunistic financial reporting behaviors. Prior studies test the relation between the sensitivity of a manager's wealth to changes in stock price and opportunistic financial reporting. In general, numerous previous studies suggest that pay-for-performance sensitivity provides managers

with incentives to engage in opportunistic financial reporting. Consistently, these studies find a positive relationship between the two (Bergstresser & Philippon, 2006; Burns & Kedia, 2006; Cheng & Warfield, 2005). If this positive relation between pay-for-performance sensitivity and opportunistic financial reporting also holds for CSR firms, we expect that CSR firms with high managerial equity incentives tend to engage in more earnings management. In turn, we should expect the opportunistic financial reporting behavior of these CSR firms can be considerably curbed by the increased regulatory scrutiny of SOX.

On the other hand, even though many previous studies find a positive relation between pay-for-performance sensitivity and opportunistic financial reporting, the empirical results are mixed. Armstrong et al. (2013) show that managerial pay-for-performance sensitivity can have two countervailing impacts on opportunistic financial reporting. Apart from the 'reward effect' that a manager benefit from an increase in stock price via misreporting, the manager's pay-for-performance sensitivity can also discourage opportunistic financial reporting due to the impact of equity risk associated with opportunistic financial reporting on the manager's wealth (Armstrong et al., 2013; Armstrong & Vashishtha, 2012). In addition, the sensitivity of the managers' wealth to changes in stock price also represents the extent to which shareholder-manager interests are aligned (Bhandari & Javakhadze, 2017). A high interest alignment between shareholders and managers can alleviate the agency problem, and managers may be less likely to engage in opportunistic financial reporting. Therefore, there is also a possibility that pay-for-performance sensitivity can be negatively associated with opportunistic financial reporting.

Given the opposite effects of managerial equity incentives on financial reporting behavior, it is not clear how the managerial equity incentive can moderate the relation between CSR and earnings quality. Hence, the influence of managerial equity incentives on the relationship between CSR and earnings quality merits investigation. Accordingly, we postulate the following hypothesis (in null form) with no directional prediction:

**H3:** *There is no significant difference in the relationship between CSR and earnings management for firms with high managerial equity incentives and firms with low managerial equity incentives.*

### 3. Research design

#### 3.1. Data and sample selection

For sample selection, we begin with all KLD firm-year from 1991 to 2018. The sample is limited to these years because the CSR data in KLD are not available prior to 1991 and beyond 2018. We then merge our data with COMPUSTAT for financial data and exclude firms in the financial industry (firms with primary two-digit SIC codes between 60-69) and the utility industry (firms with primary two-digit SIC codes 49) because firms in these sectors have different characteristics of accruals and face other regulation. We exclude firms with negative values of sales, assets, common value of equity or market capitalization. Following that, we further exclude observations with insufficient data to construct our earnings quality measures and all the control variables in our baseline regression. When measuring accrual-based and real earnings management, we require at least 15 observations in each 2-

<sup>1</sup>"Year of Reform Puts Corporations on Notice; from Courts to the Boardroom, Conduct of CEOs Faces New Scrutiny since Enron," The Christian Science Monitor, August 13, 2003.

digit SIC grouping per year.<sup>2</sup> We also require an extra one year to generate lagged control variables. These selection criteria yield a final sample that consists of an unbalanced panel of 18,472 firm-year observations from more than 2,500 U.S. firms from 1993 to 2018.

### 3.2. Measures of CSR

To measure a firm's CSR performance, we use data from MSCI ESG Research, which is the successor of Kinder, Lydenberg, Domini & Co. (KLD). For simplicity, we refer to this database as KLD. Since 1991, KLD compiles ratings of firms' CSR performance and it has expanded its coverage and included CSR strengths and weaknesses for a large number of firms that comprise the Standard & Poor's (S&P) 500 and the Domini 400 Social Index until 2000. In 2001, KLD further extended its coverage to firms in the Russell 1,000 Index. In terms of the validity of the database, the KLD database has been extensively employed by many prior CSR studies and it evaluates a firm's CSR performance based on a wide range of sources (e.g., media sources, government data, company filings, etc). The database contains firms' social ratings along seven CSR dimensions, including environment, employee relations, community, diversity, human rights, product quality, and corporate governance. For each dimension, positive indicators represent a firm's strength, and negative indicators representing a firm's weaknesses in certain social performance areas.

We construct our CSR scores by using CSR strengths and weaknesses in six dimensions: community, employee relations, diversity, environment, product quality, and human rights, with higher net CSR scores demonstrating better social performance<sup>3</sup>. We exclude the exclusionary categories because these dimensions do not pertain to firms' discretionary activities. We follow previous studies (Kim et al., 2012; Lins et al., 2017; Servaes & Tamayo, 2013) and exclude the corporate governance dimension because it is controversial to consider corporate governance as part of CSR. Our primary measure of CSR, RAW\_CSR, is estimated as total strengths minus total concerns from the six aforementioned CSR dimensions.

Despite the simple summation approach to calculate a firm's overall CSR score enjoys prevalence in extant studies, Manescu (2009) finds that the comparison between scores across years and dimensions can be spurious as the number of strengths and concern indicators for most dimensions varies as the KLD database develops over time. Deng et al. (2013) tackle this issue by constructing the adjusted KLD CSR score which is calculated by dividing the strengths and weaknesses for each dimension by the number of strength and weakness scores for the specific dimension and summing up the adjusted total strength score and adjusted total weaknesses score. By employing the adjusted CSR score, each included dimension shares equal weight, thus mitigating any bias caused by any indicators on the social performance of firms in relatively irrelevant industries. Similarly, Lins et al. (2017) also use this adjusted KLD CSR measure to overcome the variation in the maximum number of strengths and concerns across time. We, therefore, employ this adjusted CSR score (AD\_CSR) adopted in Deng et al. (2013) and Lins et al. (2017) as our

<sup>2</sup>Our results are robust if we require at least 10 or 20 observations in each 2-digit SIC grouping per year for the calculation of accrual-based and real earnings management.

<sup>3</sup>As a robustness check, we also follow Kim et al. (2012) and use CSR scores that exclude the human rights category. The results (untabulated) continue to hold.

alternative measure of a firm's CSR performance in the robustness tests.

### 3.3. Measures of earnings management

#### 3.3.1. Accrual-based earnings management measures

Accrual-based accounting provides managers with discretion in financial reporting and managers can report their preferred levels of earnings by circumventing accounting rules in various approaches, such as accelerating the recognition of revenues, deferring the recognition of costs, or shifting income from future periods to the present. While managers can manipulate earnings without break any accounting rules, earnings manipulation distorts the true financial position of a firm and the managed earnings are less informative, therefore making it more difficult for investors to evaluate a firm (Marquardt & Wiedman, 2004). Previous studies (Dechow et al., 1995; DeFond & Subramanyam, 1998; Jones, 1991; Kothari et al., 2005; Minutti-Meza, 2013) have extensively adopted discretionary accruals as the measure for earnings management. Given the less restrictive data requirements of the cross-sectional version of the modified Jones model, we estimate discretionary accrual by using the performance-adjusted modified Jones model suggested in Kothari et al. (2005). For each year, we estimate the model for every industry classified by two-digit SIC code. Given that firms may have different incentives for earnings manipulation that involves either income-increasing or income-decreasing accruals, we follow previous studies and use the absolute value of discretionary accrual to capture the magnitude of earnings management for our main analyses (Kim et al., 2012; Klein, 2002; Minutti-Meza, 2013). Our primary expectations model for estimating non-discretionary accruals is as follows:

$$\frac{TAAC_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{\Delta Sales_{it} - \Delta Receivable_{it}}{Asset_{i,t-1}} + k_3 \frac{PPE_{it}}{Asset_{i,t-1}} + k_4 ROA_{i,t-1} + \varepsilon_{it}$$

where, for fiscal year  $t$  and firm  $i$ , TAAC stands for the total accruals defined as  $TAAC = EBXI - OCF$ , the difference between earnings before extraordinary items (EBXI) and cash flow from operations (OCF). The cash-flow statement approach advocated in Hribar and Collins (2002) is deemed to be superior to the balance-sheet approach to estimate total accruals because the error in the latter approach is correlated with firm's economic characteristics, which lowers the discretionary accrual model's power to detect earnings management (Kothari et al., 2005). Sales and Receivable stand for changes in sales and receivables, respectively. PPE is the gross property, plant and equipment, and Asset represents the total book value of assets. All variables are scaled by lagged total assets to mitigate heteroscedasticity in residuals.

#### 3.3.2. Real earnings management measures

Recent research increasingly pays attention to the prominence of earnings being managed through real activities manipulation in addition to accrual-based earnings management (Gunny, 2010; Roychowdhury, 2006; Zang, 2011). Roychowdhury (2006) finds that managers 1) use price discounts to temporarily boost firms' sales 2) overproduce to lower the cost of goods and 3) lower discretionary expenditure to

improve reported margins. These actions deviate from normal business practices and the primary purpose is to make certain stakeholders believe that certain financial reporting benchmarks have been met and reporting annual losses can be avoided (Roychowdhury, 2006). We specifically explore three metrics of real earnings management identified in Roychowdhury (2006).

First, firms can temporarily boost sales volumes by providing loose credit terms and price discounts. Nevertheless, they are likely to disappear when the credit terms and price are reverted. Even though the current period earnings are increased via the acceleration of the timing of sales, both price discounts, and more lenient credit terms are provided at the expense of lower cash flows in the current period (i.e., abnormal cash from operations). Second, firms can reduce the cost of goods sold by overproducing to increase earnings (i.e., abnormal production costs). Firms then can spread their fixed overhead costs over more units and thus lower fixed costs per unit. As long as the decrease in fixed costs per unit is not offset by any increases in marginal cost per unit, the total cost per unit decreases. As a result, the reported cost of goods sold (COGS) is reduced, which leads to higher operating margins. However, overproduction also incurs high production costs, which will further contribute to higher annual production costs relative to sales, and lower cash flows from operations. Third, firms can also reduce their discretionary expenses, such as R&D expenditure, advertising expenditure, and SG&A expenses. Reduction in these expenses will boost current period earnings (i.e., abnormal discretionary expenses). It could also lead to higher current period cash flows (at the risk of lower future cash flows) if the firm generally paid for such expenses in cash.

In a recent survey of top executives, Graham et al. (2005) show that managers are more willing to use real activities manipulation in comparison with accrual-based earnings management. This is because accrual-based earnings management is more likely to be scrutinized by auditors and regulators given accounting manipulation can have negative economic substances as shown in the notorious accounting scandals and frauds at the beginning of this century. Moreover, as a response to accounting scandals, more rigorous accounting rules and regulations are set up, which increases the litigation risks and makes managers prefer to shift from accrual-based earnings management to real earnings management. Cohen et al. (2008) find that managers have shifted away from accrual-based earnings management to real activities manipulation after SOX. In addition, several previous studies (Cohen et al., 2008; Graham et al., 2005; Zang, 2011) also suggest that real earnings management is positively associated with the cost of accrual-based earnings management, and accrual and real earnings management are negatively associated, indicating that there is a tradeoff between these two types of earnings management.

In line with prior literature (Cohen et al., 2008; Roychowdhury, 2006), we construct our real earnings management variables by employing three metrics to measure the levels of real earnings management: the abnormal levels of cash flow from operations (AB\_CFO), production costs (AB\_PROD) and discretionary expenses (AB\_EXP).

Following Roychowdhury (2006), we first estimate the normal levels of CFO, production costs, and discretionary expenses. For normal CFO, we consider CFO as a linear function of sales and a change in sales by employing the model below for each industry and year:

$$\frac{CFO_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + k_3 \frac{\Delta Sales_{it}}{Asset_{i,t-1}} + \varepsilon_{it}$$

We then capture the residuals from the regression above for each firm-year and use the residuals as the abnormal cash flow from operations.

We also employ abnormal production costs as our second proxy of real earnings manipulation. Previous literature (Badertscher, 2011; Cohen et al., 2008; Roychowdhury, 2006; Zang, 2011) considers production costs as the sum of COGS and change in inventory in a year and assumes expenses as a linear function of contemporary sales. We capture the residuals from the regression model below and use the residuals as the proxy for abnormal production costs:

$$\frac{PROD_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + k_3 \frac{\Delta Sales_{it}}{Asset_{i,t-1}} + k_4 \frac{\Delta Sales_{i,t-1}}{Asset_{i,t-1}} + \varepsilon_{it}$$

Our third measure of real earnings management is the abnormal discretionary expenses. In line with prior studies (Cohen et al., 2008; Cohen & Zarowin, 2010; Roychowdhury, 2006), we employ the regression below to calculate the normal levels of discretionary expenses and use the residuals as the measure of abnormal discretionary expenses:

$$\frac{DISX_{it}}{Asset_{i,t-1}} = k_1 \frac{1}{Asset_{i,t-1}} + k_2 \frac{Sales_{it}}{Asset_{i,t-1}} + \varepsilon_{it}$$

Since the above three measures of real earnings management capture different aspects of real activities, we also follow prior empirical research (Irani & Oesch, 2016; Kim et al., 2012; Zang, 2011) and generate a combined measure of real activities manipulation as our main proxy for real earnings management. The abnormal levels of cash flow from operations (AB\_CFO) and discretionary expenses (AB\_EXP) are multiplied by -1 so that higher values of AB\_CFO and AB\_EXP imply that the firm is more likely to engage in real activities manipulation. We do not multiply AB\_PROD by -1 because higher production costs suggest excess production and lower COGS. The combined measure of real earnings manipulation (COMBINED) is calculated as AB\_CFO + AB\_PROD + AB\_EXP and higher values of COMBINED indicate that the firm engages in more real activities manipulation. We recognize that the combined measure of real earnings management can potentially have different implications for earnings, we, therefore, report results corresponding to both the combined measure as well as three individual real earnings manipulation proxies.

### 3.4. Empirical models

To test the relation between CSR and financial reporting behaviors, we perform a pooled OLS estimation and regress accrual-based/real earnings management on CSR as well as the control variables listed below in the following regression:

$$\begin{aligned} ABS\_DA_{it} \text{ (or } REAL\_EM_{it}) &= \beta_0 + \beta_1 RAW\_CSR_{it} + \beta_2 RAW\_CSR_{it} \\ &* SOX_{it} + \beta_3 SOX_{it} + \beta_4 REAL\_EM_{it} \text{ (or } ABS\_DA_{it}) + \beta_5 MB_{it-1} \\ &+ \beta_6 SIZE_{it-1} + \beta_7 LEV_{it-1} + \beta_8 ROA_{it-1} + \beta_9 LOSS_{it} \\ &+ \beta_{10} RAW\_GOV_{it-1} + \beta_{11} FIRMAGE_{it} + \beta_{12} BIG4_{it} + \beta_{13} ADINT_{it} \\ &+ \beta_{14} RDINT_{it} + INDUSTRY\ FE + YEAR\ FE + \varepsilon_{it} \end{aligned} \quad (1)$$

To test the impact of SOX on the relationship between CSR and earnings quality, we follow Zang (2011) and generate an indicator variable that equals 1 if the fiscal year is after 2003, and 0 otherwise. We use the interaction term  $RAW\_CSR * SOX$  to test the impact of SOX on the relationship between CSR and earnings management. To mitigate the issue relating to correlated omitted variables, we employ a variety of control variables that may potentially affect a firm's financial reporting behavior and social performance. We control for the effect of growth opportunities and firm size ( $SIZE$ ) by including the market-to-book ( $MB$ ) ratio and a natural logarithm of a firm's total assets as prior studies show that these two variables are correlated with CSR and earnings management. We also control for the effect of a firm's financial performance by incorporating return on assets ( $ROA$ ) in the regression. Klein (2002) suggests that firms have incentives to manipulate accounting figures when they are about to violate financial covenants. Therefore, we incorporate leverage ( $LEV$ ) to capture the effect of this issue. Consistent with Kim et al. (2012), we also control for the effect of firm age ( $FIRM\_AGE$ ) in case our results are potentially driven by characteristics caused by firms' different developmental stages. We control for the effect of corporate governance in the regression by calculating corporate governance ( $RAW\_GOV$ ) in the KLD database. Previous studies find there is a nexus between CSR and corporate governance (Arora & Dharwadkar, 2011; Jo & Harjoto, 2011) and therefore corporate governance can affect both CSR and financial reporting behavior. In addition to corporate governance, we also add a dummy variable,  $BIG4$  that equals 1 if a firm's auditor is one of the Big4 auditors. Following previous studies, we also control for the effect of research and development and advertising in our regression. We compute R&D intensity ( $RDINT$ ) and advertising intensity ( $ADINT$ ) as R&D expenditure divided by sales and advertising expenditures divided by sales respectively. Given previous studies suggest that there is a trade-off between accrual-based earnings management and real earnings management (Cohen et al., 2008; Graham et al., 2005; Zang, 2011), we control for the effect of real activities manipulation ( $COMBINED$ ) in the  $ABS\_DA$  regressions and control for the effect of accrual-based earnings management ( $ABS\_DA$ ) in the real earnings management regressions. To examine the role of manager-shareholder incentive alignment on the relationship between CSR and earnings quality during the SOX, we measure the manager-shareholder alignment by  $DELTA$  (dollar change in wealth associated with a 1% change of the firm's stock price) (Bhandari & Javakhadze, 2017; Coles et al., 2006; Core & Guay, 2002).

## 4. Results

### 4.1. Descriptive statistics

Table 1 presents the descriptive statistics and shows a mean value of 0.057 for the absolute value of discretionary accruals ( $ABS\_DA$ ). The mean values of  $AB\_CFO$ ,  $AB\_PRO$ , and  $AB\_EXP$ , as well as  $COMBINED$ , are -0.041, -0.072, -0.050, and -0.163 respectively, indicating that, on average, firms practicing CSR are less likely to engage in real earnings management by temporarily boosting sales volumes by abnormal business practice, lowering the cost of goods sold via overproduction or reducing their discretionary expenditure.

Our primary variable of interest,  $RAW\_CSR$ , is slightly positive with a mean value of 0.389 and a median value of 0. In terms of control variables, the mean value of  $ROA$  is 0.053, indicating that CSR firms in our sample are, on average, prof-

**Table 1.** Descriptive statistics of variables in the baseline regression

	N	Mean	Median	Std.Dev	25th Percentile	75th Percentile
$ABS\_DA$	18,472	0.057	0.040	0.058	0.019	0.075
$AB\_CFO$	18,472	-0.041	-0.041	0.096	-0.092	0.008
$AB\_PROD$	18,472	-0.072	-0.067	0.191	-0.176	0.026
$AB\_EXP$	18,472	-0.050	-0.018	0.230	-0.152	0.067
$COMBINED$	18,472	-0.163	-0.130	0.425	-0.386	0.064
$RAW\_CSR$	18,472	0.389	0.000	2.329	-1.000	1.000
$SIZE$	18,472	7.406	7.281	1.525	6.309	8.355
$MB$	18,472	3.859	2.517	10.270	1.638	4.021
$ROA$	18,472	0.053	0.059	0.116	0.020	0.101
$LOSS$	18,472	0.181	0.000	0.385	0.000	0.000
$LEV$	18,472	0.203	0.189	0.171	0.039	0.314
$ADINT$	18,472	0.014	0.000	0.039	0.000	0.011
$RDINT$	18,472	0.059	0.007	0.271	0.000	0.064
$RAW\_GOV$	18,472	-0.218	0.000	0.648	-1.000	0.000
$FIRMAGE$	18,472	3.169	3.178	0.643	2.708	3.761
$BIG4$	18,472	0.888	1.000	0.316	1.000	1.000

itable firms. We also find the mean value of corporate governance ( $RAW\_GOV$ ) is negative, suggesting on average our sample firms have more corporate governance concerns than strengths. In addition, most of the sample firms are audited by one of the Big4 auditors.

Table 2 presents the Pearson correlation coefficients for selected variables. We find a negative correlation between CSR and the levels of discretionary accrual ( $ABS\_DA$ ) as well as other real earnings management proxies ( $AB\_CFO$ ,  $AB\_PROD$ ,  $AB\_EXP$ , and  $COMBINED$ ) which suggests that our sample firms with higher CSR engagement are less likely to engage in both types of earnings management.

### 4.2. CSR and discretionary accruals in the pre- and post-SOX period

Table 3 shows the main results of the multivariate regression of accrual-based earnings management using the absolute value of discretionary accruals and real earnings management measures. The first column shows that the estimated coefficient on CSR is positive and statistically significant in the accrual-based earnings management model, suggesting that firms with higher CSR engagement tend to have a larger magnitude of discretionary accruals and manage their earnings more aggressively before SOX. Specifically, increasing one point in the CSR score increases absolute discretionary accruals by 0.14%. In contrast, the coefficient on  $RAW\_CSR * SOX$  is significantly negative. Our results show that the magnitude of accrual-based earnings management has been significantly curbed by the increased regulatory scrutiny imposed by the passage of SOX. Given that the interaction term captures the marginal effect of CSR on accrual-based earnings management for the post-SOX period relative to the pre-SOX period, our results suggest that firms with high CSR engagement tend to have more accrual-based earnings management but CSR engagement becomes less influential in affecting accrual-based earnings management for the post-SOX period. In particular, the increase in the absolute discretionary accruals by one point in CSR is mostly offset by the passage of SOX (=0.0014-0.0013) for the post-SOX period. Overall, our results also suggest that the enhanced regulatory scrutiny of SOX has been effective in reducing the opportunistic financial reporting and that CSR firms tend to engage less in accrual-based earnings management in the post-SOX period. From a regulatory perspective, our results demonstrate that SOX as an accounting-related reform at least succeeds in constrain-

**Table 2. Correlation matrix**

	1	2	3	4	5	6	7	8
1. RAW_CSR	1							
2. ABS_DA	-0.022***	1						
3. AB_CFO	-0.131***	-0.103***	1					
4. AB_PROD	-0.137***	-0.112***	0.438***	1				
5. AB_EXP	-0.068***	-0.214***	0.063***	0.723***	1			
6. COMBINED	-0.128***	-0.189***	0.457***	0.939***	0.879***	1		
7. SOX	-0.059***	-0.075***	0.021***	0.077***	-0.017**	0.030***	1	
8. SIZE	0.322***	-0.151***	-0.090***	0.108***	0.210***	0.142***	-0.109***	1
9. MB	0.063***	0.042***	-0.058***	-0.078***	-0.072***	-0.087***	-0.007	0.023***
10. ROA	0.096***	-0.249***	-0.472***	-0.200***	0.150***	-0.116***	-0.060***	0.126***
11. LOSS	-0.083***	0.308***	0.280***	0.057***	-0.180***	-0.008	0.065***	-0.175***
12. LEV	0.027***	-0.022***	0.099***	0.131***	0.143***	0.159***	-0.018**	0.355***
13. ADINT	0.109***	0.030***	-0.018**	-0.189***	-0.282***	-0.242***	-0.020***	0.013*
14. RDINT	0.023***	0.085***	0.081***	-0.077***	-0.258***	-0.156***	0.031***	-0.095***
15. RAW_GOV	0.040***	0.009	0.014*	-0.009	0.000	-0.001	0.014*	-0.172***
16. FIRMAGE	0.148***	-0.159***	0.035***	0.107***	0.209***	0.169***	-0.178***	0.380***
17. BIG4	0.100***	-0.056***	-0.00800	0.029***	0.010	0.017**	0.118***	0.199***

  

	9	10	11	12	13	14	15	16	17
9. MB	1								
10. ROA	0.030***	1							
11. LOSS	0.003	-0.640***	1						
12. LEV	0.093***	-0.167***	0.086***	1					
13. ADINT	0.041***	-0.007	0.008	-0.017**	1				
14. RDINT	0.031***	-0.267***	0.153***	-0.086***	0.230***	1			
15. RAW_GOV	-0.004	-0.004	-0.002	-0.019***	-0.004	-0.011	1		
16. FIRMAGE	-0.003	0.117***	-0.159***	0.074***	-0.029***	-0.074***	-0.027***	1	
17. BIG4	0.018**	-0.014*	-0.017**	0.079***	0.000	-0.029***	-0.083***	0.010	1

\*\*\* p<0.01; \*\* p<0.05; \* p<0.1;

**Table 3. CSR and earnings management in the context of SOX**

	(1)	(2)	(3)	(4)	(5)
	ABS_DA	AB_CFO	AB_PROD	AB_EXP	COMBINED
RAW_CSR	0.0014** (2.32)	-0.0025*** (-2.66)	-0.0143*** (-5.80)	-0.0118*** (-4.48)	-0.0286*** (-5.35)
SOX	-0.0328*** (-8.11)	-0.0046 (-0.88)	0.0545*** (4.48)	0.0457*** (3.40)	0.0956*** (3.70)
RAW_CSR*SOX	-0.0013** (-2.03)	-0.0009 (-0.93)	0.0004 (0.15)	-0.0040 (-1.48)	-0.0045 (-0.81)
COMBINED	-0.0193*** (-11.15)				
ABS_DA		-0.2976*** (-14.21)	-0.2324*** (-6.03)	-0.4785*** (-9.64)	-1.0085*** (-10.91)
MB	0.0002** (2.49)	-0.0004** (-2.50)	-0.0012** (-2.35)	-0.0016*** (-2.66)	-0.0032** (-2.55)
SIZE	-0.0025*** (-5.07)	-0.0022** (-1.97)	0.0203*** (6.07)	0.0287*** (8.07)	0.0469*** (6.43)
LEV	-0.0099*** (-2.59)	-0.0018 (-0.26)	0.0417* (1.91)	0.1607*** (6.52)	0.2005*** (4.15)
ROA	0.0168*** (2.69)	-0.2538*** (-17.94)	-0.2277*** (-8.16)	0.1984*** (4.98)	-0.2832*** (-4.40)
LOSS	0.0439*** (25.47)	0.0574*** (20.67)	0.0211*** (4.10)	-0.0375*** (-5.93)	0.0410*** (3.57)
FIRMAGE	-0.0075*** (-7.78)	0.0108*** (5.00)	0.0164** (2.46)	0.0361*** (5.10)	0.0633*** (4.32)
RAW_GOV	-0.0012* (-1.69)	0.0038** (2.57)	0.0069* (1.79)	0.0125*** (3.12)	0.0232*** (2.78)
ADINT	-0.0337** (-2.15)	-0.0429 (-1.54)	-0.7962*** (-2.61)	-1.4293*** (-2.65)	-2.2685*** (-2.65)
RDINT	0.0046 (1.27)	0.0119*** (4.15)	-0.0338 (-1.07)	-0.1044* (-1.67)	-0.1264 (-1.34)
BIG4	-0.0003 (-0.13)	-0.0010 (-0.27)	-0.0038 (-0.37)	-0.0188* (-1.71)	-0.0236 (-1.07)
Industry_FE	Yes	Yes	Yes	Yes	Yes
Year_FE	Yes	Yes	Yes	Yes	Yes
N	18,472	18,472	18,472	18,472	18,472
Adj_R2	19.4%	26.7%	17.3%	27.7%	21.4%

ing accrual-based earnings management behaviors of certain firms. For control variables, we find the estimated coefficient for the combined real earnings management (*COMBINED*) is negative and significant, implying that firms choosing to engage in more aggressive accrual-based earnings management are less likely to engage in real earnings management, and vice versa. This result is consistent with studies that suggest that there is a trade-off between accrual-based earnings management and real activities manipulation (Graham et al., 2005; Cohen et al., 2008; Zang, 2011).

**4.3. CSR and real earnings management in the pre- and post-SOX period**

Columns 2 to 5 in Table 3 report the results of multiple regressions using measures of real earnings management as the outcome variables. Across all models, we find that the estimated coefficients on CSR are all negative and significant. Our evidence, therefore, suggests that firms with better CSR performance are less likely to involve in real earnings management. Considering the trade-off effect between accrual-based earnings management and real earnings management, we also control for accrual-based earnings management in our real earnings management regressions. The coefficients on the absolute value of discretionary accruals, *ABS\_DA*, are negative and significant, which again confirms the trade-off effect between the two types of earnings management. In terms of other control variables, the coefficients on *MB* is negative and significant for all real earnings management variables, suggesting that firms with high growth options are less likely to engage in real earnings management. We also find that the coefficients on *ROA* for *AB\_CFO*, *AB\_PROD*, and *COMBINED* are negative and significant, showing that firms with better profitability are generally less likely to engage in real earnings management.

Consistent with the accrual-based earnings management regressions, we interact CSR with the indicator variable SOX to observe the influence of SOX on the relationship between CSR and real earnings management. Cohen et al. (2008) find that managers have shifted away from accrual-based earnings management to real activities manipulation in the post-SOX period. Consistently, our coefficients of SOX indicator variables in column 5 generally reflect the shift from accrual-based earnings management to real earnings management from the pre- to post-SOX period. The four interaction terms between CSR and SOX in all real earnings management models capture the marginal effects of CSR on real earnings management in the post-SOX period. The insignificant coefficients show that firms practicing CSR do not tend to shift from accrual-based earnings management to real activities manipulation from pre- to post-SOX periods.

#### 4.4 Managerial equity incentives

We further investigate the influence of managerial equity incentives on the relationship between CSR and earnings management. We estimate our main models for the subsamples with high and low managerial equity incentives by using respective median values of Delta (dollar change in wealth associated with a 1% change in the firm's stock price). When managerial equity incentives represent the extent to which shareholder-manager interests are aligned, firms practicing CSR with high managerial equity incentives are less likely to engage in earnings management whereas firms practicing CSR with low manager-shareholder incentive alignment are more likely to engage in more opportunistic financial reporting behaviors. Accordingly, the relationship between CSR and earnings management is expected to be more pronounced for firms with low manager-shareholder incentives alignment. However, it is also possible that firms with high managerial equity incentives induce managers to opportunistic financial reporting behaviors if earnings management facilitates an increase in stock price which benefits managers' wealth.

In the first column of Table 4, we find the estimated coefficients *RAW\_CSR* and *RAW\_CSR \* SOX* are not significant for the high managerial equity incentives subsamples. In contrast, we find that the estimated coefficient on CSR is positive and significant at the 5% level for firms with low managerial equity incentives in column 2 of Table 4, indicating that low-alignment CSR firms are more likely to engage in accrual-based earnings management. Accordingly, we find that the estimated coefficient on interaction term *RAW\_CSR \* SOX* is negative and statistically significant at the 5% level, showing that firms with low manager-shareholder incentive alignment receive a more constraining effect of the regulatory scrutiny imposed by SOX in their financial reporting. Our further analysis shows that the estimated coefficients on *RAW\_CSR* and *RAW\_CSR \* SOX* are significantly different between the two groups. In terms of real earnings management, in columns 3 and 4, we consistently find that the coefficients on *RAW\_CSR* are negative and indicate that firms practicing CSR engage less in real earnings management and we do not find any significant results on interaction term *RAW\_CSR \* SOX*. In addition, we do not find that the estimated coefficients on *RAW\_CSR* and *RAW\_CSR \* SOX* are statistically different between the two subsamples.

**Table 4.** The impact of shareholder-manager incentive alignment on the relation

	(1) High ABS_DA	(2) Low ABS_DA	(3) High COMBINED	(4) Low COMBINED
<i>RAW_CSR</i>	0.0003 (0.53)	0.0022*** (2.80)	-0.0162*** (-2.95)	-0.0112* (-1.65)
<i>SOX</i>	-0.0295*** (-5.71)	-0.0430*** (-6.76)	0.1263*** (3.51)	0.1017*** (3.28)
<i>RAW_CSR * SOX</i>	-0.0006 (-1.07)	-0.0024*** (-2.72)	0.0034 (0.57)	0.0045 (0.64)
<i>COMBINED</i>	-0.0051** (-2.41)	-0.0004 (-0.14)		
<i>ABS_DA</i>			-0.2523* (-1.88)	-0.0116 (-0.11)
<i>MB</i>	0.0010*** (2.83)	0.0018*** (3.81)	-0.0334*** (-7.78)	-0.0317*** (-6.12)
<i>SIZE</i>	-0.0018*** (-2.85)	-0.0047*** (-5.44)	0.0511*** (4.90)	0.0604*** (5.56)
<i>LEV</i>	-0.0161*** (-3.02)	-0.0078 (-1.23)	-0.0838 (-1.19)	0.0369 (0.56)
<i>ROA</i>	-0.0162 (-1.15)	-0.0124 (-0.91)	-1.0124*** (-7.07)	-0.5032*** (-5.00)
<i>LOSS</i>	0.0462*** (11.90)	0.0437*** (16.69)	0.0845*** (3.74)	0.0805*** (5.97)
<i>FIRMAGE</i>	-0.0088*** (-7.14)	-0.0066*** (-4.48)	0.0245 (1.09)	0.0076 (0.41)
<i>RAW_GOV</i>	0.0004 (0.39)	-0.0009 (-0.71)	-0.0194* (-1.91)	0.0011 (0.11)
<i>ADINT</i>	0.0125 (0.46)	-0.0239 (-0.62)	-4.6662*** (-10.23)	-4.8384*** (-8.87)
<i>RDINT</i>	0.0514*** (3.39)	0.0969*** (4.89)	-3.1125*** (-15.01)	-3.2813*** (-19.91)
<i>BIG4</i>	0.0008 (0.29)	-0.0006 (-0.22)	0.0118 (0.29)	-0.0106 (-0.42)
Difference p-value ( <i>RAW_CSR</i> )		0.039**		0.5282
Difference p-value ( <i>RAW_CSR * SOX</i> )		0.078*		0.9015
Industry_FE	Yes	Yes	Yes	Yes
Year_FE	Yes	Yes	Yes	Yes
N	5,742	5,731	5,742	5,731
Adj_R2	19.4%	19.5%	48.8%	43.6%

#### 4.5. Analysis of Instrumental Variable Estimation

While using a list of control variables helps to alleviate the omitted variable concern in estimating the relation between CSR and earnings quality, we cannot entirely rule out the possibility that the results from our baseline regression may have endogeneity problems due to unobservable omitted variables. To alleviate endogeneity concerns, we perform two-stage least squares (2SLS) estimation by employing instrumental variables. We follow previous research (e.g., Bozzolan et al., 2015; Ferrell et al., 2016) and adopt the mean of CSR in year *t* of firms belonging to firm *i*'s 2-digit SIC code as an instrument for the CSR of firm *i* in year *t*. The fundamental incentive for using this instrumental variable is that a firm's CSR tends to be correlated in given industries, but arguably the industry-level CSR is not related to the financial reporting behavior of a single firm. In a similar vein, we also use the mean of CSR of firms with headquarters located in the same state as an instrument for the CSR of firm *i* in year *t*.

Table 5 shows that CSR is positively and significantly correlated with industry-level and state-level of CSR in the first stage. Our 2SLS results are consistent with the main results showing the positive relationship between CSR and accrual-based earnings management in the pre-SOX period whereas

**Table 5. 2SLS estimation: Industry- and state-level CSR**

	First Stage	Second Stage						
	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
	RAW_CSR	ABS_DA	RAW_CSR	ABS_DA	RAW_CSR	COMBINED	RAW_CSR	COMBINED
RAW_CSR		0.0037*** (3.01)		0.0038*** (2.74)		0.0160 (1.30)		-0.0480*** (-3.49)
RAW_CSR * SOX		-0.0023** (-2.08)		-0.0032** (-2.01)		0.0161 (1.23)		-0.0376** (-1.99)
SOX		-0.0308*** (-7.36)		-0.0035 (-0.19)		0.0364 (1.30)		0.4149*** (2.75)
COMBINED		-0.0152*** (-8.55)		-0.0165*** (-7.87)				
ABS_DA						-0.9778*** (-9.62)		-0.8332*** (-8.85)
CSR_IND	1.0035*** (18.02)				0.9790*** (17.52)			
CSR_STATE			0.7566*** (13.33)				0.7982*** (13.82)	
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18,472	18,472	18,472	18,472	18,472	18,472	18,472	18,472
Adjusted R2	31.1%	18.9%	31.7%	18.7%	28.77%	14.0%	30.1%	18.14%
First stage Cragg-Donald F-test statistics	1010.08		1142.98		930.33		1256.67	
First-stage Cragg & Donald Test	(p-value <0.01)		(p-value <0.01)		(p-value <0.01)		(p-value <0.01)	

In the first-stage regression, we regress CSR on instrumental variables and the control variables. In the second-stage regression, we regress earnings management on the predicted CSR and SOX along with other control variables. We employ the means of the CSR scores of all firms belonging to firm i's 2-digit SIC code (*CSR\_IND*) and firms headquartered in the same state (*CSR\_STATE*). The Cragg-Donald F-test statistics (the weak instruments' test) and the P-values are reported for the first stage. The p-values in parentheses are based on robust standard errors clustered at the firm level. \*\*\* p<0.01; \*\* p<0.05; \* p<0.1.

the accrual-based earnings management has been effectively curbed in the post-SOX period. Our 2SLS results are also consistent with the main results for real earnings management because we do not find any significant shift from accrual-based earnings management to real earnings management for the post-SOX period. Overall, our 2SLS estimation supports the main results generated from our baseline regressions.

**4.6. Financial crisis test**

Using the 2008-2009 financial crisis as an exogenous shock, Lins et al. (2017) find that high-CSR firms outperformed low-CSR firms in terms of stock returns, profitability, growth, and sales per employee relative to low-CSR firms during the financial crisis. Similarly, Buchanan et al. (2018) focus on the financial crisis setting and find that CSR firms experience higher firm values in the non-financial-crisis period but suffer more loss in firm value during the crisis. In this section, we also use the 2008-2009 financial crisis as an exogenous shock to firms to test the relationship between CSR and earnings quality in the context of the financial crisis. In line with Lins et al. (2017) and Buchanan et al. (2018), we employ the DID model with continuous treatment plus firm and year fixed effects to alleviate the endogeneity bias.

$$\begin{aligned}
 ABS\_DA_{it} \text{ (or } REAL\_EM_{it}) &= \beta_0 + \beta_1 CSR\_FIRM_{i,2006} * CRISIS_{it} \\
 &+ \beta_2 CSR\_FIRM_{i,2006} * POST\_CRISIS_{it} \\
 &+ \beta_3 REAL\_EM_{it} \text{ (or } ABS\_DA_{it}) + \beta_4 MB_{it-1} + \beta_5 SIZE_{it-1} \\
 &+ \beta_6 LEV_{it-1} + \beta_7 ROA_{it-1} + \beta_8 LOSS_{it} + \beta_9 RAW\_GOV_{it-1} \\
 &+ \beta_{10} FIRMAGE_{it} + \beta_{11} BIG4_{it} + \beta_{12} ADINT_{it} \\
 &+ \beta_{13} RDINT_{it} + FIRM\ FE + YEAR\ FE + \epsilon_{it}
 \end{aligned}
 \tag{2}$$

Following Lins et al. (2017) and Buchanan et al. (2018), we define socially responsible firms (*CSR\_FIRM*) if a firm has

positive CSR scores at the end of 2006 to lower the concern that firms change their CSR policies in response to the financial crisis. Therefore, our variable, *CSR\_FIRM*, does not vary over the sample period. We then use the propensity score matching (PSM) to construct the control group based on all the control variables in our baseline regressions plus the same industry and year. *CRISIS* is an indicator variable set to 1 for the years 2008 and 2009. *POST\_CRISIS* is an indicator variable set to 1 for the years after the financial crisis. The socially responsible firm indicator (*CSR\_FIRM*) is absorbed by the firm fixed effects. The key variables of interest are the interaction terms, *CSR\_FIRM \* CRISIS*, and *CSR\_FIRM \* POST\_CRISIS*.

**Table 6. Financial crisis test**

	Accrual-Based Earnings Management	Real Earnings Management
	(1) ABS_DA	(2) COMBINED
<i>CSR_FIRM2006 * CRISIS</i>	-0.0158** (-2.14)	0.0132 (0.72)
<i>CSR_FIRM2006 * POST_CRISIS</i>	-0.0066 (-1.12)	-0.0231 (-0.96)
Control Variables	Yes	Yes
Firm Fixed Effect	Yes	Yes
Year Fixed Effect	Yes	Yes
N	2,998	2,998
Adjusted R2	38.8%	90.2%

In Table 6, we find that the coefficient of *CSR\_FIRM \* CRISIS*, is negative and statistically significant whilst we do not find significant results on *CSR\_FIRM \* POST\_CRISIS* for discretionary accruals (column 1). Our results suggest that high-CSR firms are less likely to engage in aggressive accrual-based earnings management during the financial crisis. For real earnings management, we do not find any significant results on *CSR\_FIRM \* CRISIS* and *CSR\_FIRM \* POST\_CRISIS*

for real earnings management, which suggests that high-CSR firms do not exhibit the pattern of shifting from discretionary accruals to real earnings management in both periods.

#### 4.7. Robustness tests

Despite the simple summation approach to calculating a firm's overall CSR score enjoys prevalence in extant studies, [Manescu \(2009\)](#) finds that the comparison between scores across years and dimensions can be spurious as the number of strengths and concern indicators for most dimensions varies as the KLD database develops over time. In [Table 7](#), we, therefore, follow previous studies ([Deng et al., 2013](#); [Lins et al., 2017](#)) and develop the adjusted CSR scores as the alternative CSR measure by dividing the strengths and weaknesses for each dimension by the number of strength and weakness scores for the specific dimension and adding up the adjusted total strength scores and adjusted total weaknesses scores.

**Table 7. Alternative CSR scores**

	(1) ABS_DA	(2) AB_CFO	(3) AB_PROD	(4) AB_EXP	(5) COMBINED
ADJ_CSR	0.0088** (2.40)	-0.0139** (-2.39)	-0.0796*** (-5.10)	-0.0629*** (-3.76)	-0.1565*** (-4.66)
SOX	-0.0329*** (-8.17)	-0.0055 (-1.06)	0.0513*** (4.23)	0.0401*** (3.01)	0.0860*** (3.34)
ADJ_CSR*SOX	-0.0083** (-2.16)	-0.0022 (-0.37)	0.0175 (1.09)	-0.0046 (-0.28)	0.0106 (0.31)
COMBINED	-0.0193*** (-11.24)				
ABS_DA		-0.2983*** (-14.23)	-0.2373*** (-6.12)	-0.4841*** (-9.69)	-1.0198*** (-10.95)
MB	0.0002** (2.50)	-0.0004** (-2.52)	-0.0012** (-2.38)	-0.0017*** (-2.67)	-0.0034** (-2.57)
SIZE	-0.0024*** (-5.17)	-0.0030*** (-2.85)	0.0165*** (4.91)	0.0240*** (6.69)	0.0375*** (5.09)
LEV	-0.0100*** (-2.63)	-0.0003 (-0.04)	0.0484** (2.20)	0.1688*** (6.77)	0.2169*** (4.45)
ROA	0.0168*** (2.69)	-0.2545*** (-17.97)	-0.2308*** (-8.22)	0.1951*** (4.88)	-0.2902*** (-4.48)
LOSS	0.0440*** (25.48)	0.0575*** (20.69)	0.0216*** (4.18)	-0.0369*** (-5.83)	0.0422*** (3.66)
FIRMAGE	-0.0075*** (-7.76)	0.0107*** (4.95)	0.0162** (2.41)	0.0358*** (5.02)	0.0628*** (4.25)
ADJ_GOV	-0.0086** (-2.46)	0.0218*** (3.22)	0.0343* (1.93)	0.0572*** (3.11)	0.1134*** (2.95)
ADINT	-0.0338** (-2.16)	-0.0437 (-1.55)	-0.8047*** (-2.60)	-1.4387*** (-2.64)	-2.2871*** (-2.64)
RDINT	0.0046 (1.27)	0.0116*** (4.04)	-0.0350 (-1.08)	-0.1059* (-1.67)	-0.1294 (-1.35)
BIG4	-0.0002 (-0.10)	-0.0011 (-0.29)	-0.0040 (-0.39)	-0.0194* (-1.76)	-0.0244 (-1.10)
Industry_FE	Yes	Yes	Yes	Yes	Yes
Year_FE	Yes	Yes	Yes	Yes	Yes
N	18,472	18,472	18,472	18,472	18,472
Adj_R2	19.5%	26.6%	16.7%	27.2%	20.8%

In addition to the alternative measure of CSR, we also calculate discretionary accruals as in [Dechow et al. \(1995\)](#) as the alternative measure of discretionary accruals in [Table 8](#). Overall, the results of our robustness tests in [Table 7](#) and [Table 8](#) are similar to the results reported. The results confirm our findings that socially responsible firms are more transparent in their financial reporting after the passage of SOX.

**Table 8. Alternative discretionary accruals based on Dechow et al. (1995)**

	(1) ABS DA_JONES	(2) AB_CFO	(3) AB_PROD	(4) AB_EXP	(5) ALT COMBINED
RAW_CSR	0.0012** (2.16)	-0.0027*** (-2.87)	-0.0146*** (-5.88)	-0.0121*** (-4.54)	-0.0294*** (-5.44)
SOX	-0.0294*** (-7.29)	-0.0007 (-0.14)	0.0591*** (4.84)	0.0500*** (3.70)	0.1084*** (4.15)
RAW_CSR*SOX	-0.0013** (-2.04)	-0.0008 (-0.83)	0.0005 (0.20)	-0.0039 (-1.45)	-0.0042 (-0.75)
ALT_COMBINED	-0.0140*** (-8.15)				
ABS_DA_JONES		-0.2134*** (-9.92)	-0.1126*** (-3.09)	-0.4046*** (-8.61)	-0.7306*** (-8.30)
MB	0.0002** (2.30)	-0.0004** (-2.54)	-0.0012** (-2.37)	-0.0017*** (-2.67)	-0.0033** (-2.56)
SIZE	-0.0030*** (-6.06)	-0.0019* (-1.71)	0.0207*** (6.16)	0.0289*** (8.07)	0.0477*** (6.48)
LEV	-0.0097** (-2.43)	-0.0004 (-0.05)	0.0435** (1.99)	0.1622*** (6.53)	0.2054*** (4.21)
ROA	-0.0161** (-2.47)	-0.2631*** (-18.21)	-0.2343*** (-8.36)	0.1828*** (4.60)	-0.3147*** (-4.84)
LOSS	0.0456*** (25.12)	0.0541*** (19.16)	0.0160*** (3.04)	-0.0401*** (-6.20)	0.0300** (2.53)
FIRMAGE	-0.0076*** (-7.59)	0.0116*** (5.28)	0.0175*** (2.61)	0.0369*** (5.16)	0.0660*** (4.46)
ADJ_GOV	-0.0007 (-0.93)	0.0041*** (2.73)	0.0072* (1.85)	0.0129*** (3.20)	0.0242*** (2.87)
ADINT	-0.0298* (-1.94)	-0.0455 (-1.54)	-0.7984*** (-2.59)	-1.4334*** (-2.64)	-2.2773*** (-2.63)
RDINT	0.0070** (2.04)	0.0116*** (3.93)	-0.0345 (-1.07)	-0.1043* (-1.65)	-0.1272 (-1.32)
BIG4	-0.0012 (-0.55)	-0.0013 (-0.33)	-0.0039 (-0.38)	-0.0192* (-1.74)	-0.0244 (-1.09)
Industry_FE	Yes	Yes	Yes	Yes	Yes
Year_FE	Yes	Yes	Yes	Yes	Yes
N	18,472	18,472	18,472	18,472	18,472
Adj_R2	20.4%	25.4%	17.0%	27.4%	20.7%

## 5. Conclusions

This paper extends the literature on CSR by investigating how firms practicing CSR respond differently in their financial reporting in the context of changing regulatory regimes by considering the passage of SOX in 2002. Although recent literature suggests that firms with better CSR performance present more transparent and honest financial reporting practices ([Bozzolan et al., 2015](#); [Hong & Andersen, 2011](#); [Kim et al., 2012](#); [Martínez-Ferrero et al., 2013](#)), some studies also support the opportunistic use of CSR from the agency cost perspective ([Chih et al., 2008](#); [López-González et al., 2019](#); [Prior et al., 2008](#)). Our paper contributes to this debate by showing that CSR firms are more likely to engage in accrual-based earnings management but less likely to engage in real earnings management in the pre-SOX period. Moreover, we find that accrual-based earnings management has been significantly lowered by the passage of SOX and we find no evidence of firms practicing CSR significantly shifting from accrual-based earnings management to real earnings management in the post-SOX period. Given real earnings manipulation has more severe consequences than accrual-based earnings management, our results indicate that when facing the trade-off between accrual-based earnings management and real earnings management, socially responsible firms tend to choose less costly earnings management. Our results are consistent with the notion that firms with better CSR per-

formance are less likely to engage in costly real earnings management strategies (Bozzolan et al., 2015). Furthermore, we find that the relationship between CSR and accrual-based earnings management is moderated by the effect of managerial equity incentives. Our results show that firms practicing CSR with low manager-shareholder incentive alignment are more likely to engage in accrual-based earnings management and received a more constraining effect from the enhanced regulatory scrutiny of SOX. We also employ the 2008-2009 financial crisis as an exogenous shock and apply the DID method to investigate the relationship between CSR and earnings quality in the financial crisis context. Our results show that high-CSR firms are less likely to engage in aggressive accrual-based earnings management in a financial crisis period and also do not exhibit the pattern of shifting from discretionary accruals to real earnings management in both crisis period and post-crisis period.

Our study also has a number of limitations. First, one of the caveats of our study is that we employ U.S. data, which may limit the generalizability of our empirical findings to other contexts. In particular, the passage of SOX in 2002 provides us with an interesting context as the changing regulatory regime to consider how firms practicing CSR react to the enhanced regulatory scrutiny. However, this specific regulatory context for U.S. firms could also imply that the results of this study may not be able to apply to countries that have different regulatory contexts or institutional settings. Therefore, future research can examine the relationship between CSR and earnings quality in other regulatory settings where the corporate governance and institutional settings can be different from that of the U.S. Second, a firm's CSR performance could be related to unobservable omitted variables that are also associated with earnings quality, thus contributing to a spurious correlation between the two variables. Despite our attempt to control for various influential factors, the industry-year fixed effects that control for time-varying industry heterogeneity as well as the instrumental variables to address the potential endogeneity concern regarding the bidirectional relationship between CSR and earnings quality, it is admittedly not possible to entirely rule out the possibility that other omitted variables might potentially drive our results. Testing the link between CSR and earnings quality can be difficult because it is hard to prove causality in the absence of an exogenous shock. While our study employs the 2008-2009 financial crisis as an exogenous shock to test how the relationship between CSR and earnings quality reacts to financial turmoil, our paper is not designed to directly test the causality or the underlying mechanism through which CSR affects earnings quality. Hence, future research may use exogenous settings to reinforce the causal link between CSR and earnings quality.

Finally, this study has several implications from both academic and practical perspectives. In terms of academic implications, the findings of this study suggest that the passage of SOX that contains various accounting-related reforms can also have a significant influence on the financial reporting behavior of firms practicing CSR, which suggests that the regulatory context is one of the important factors in determining the relationship between CSR and earnings quality. Our results show that CSR firms engaging in more aggressive discretionary accruals in the pre-SOX period tend to have lower accrual-based earnings management in the post-SOX period, which could potentially explain the mixed results reported in previous research. In addition, we show that high-CSR firms engage less in real earnings management in both pre- and post-SOX periods, which implies that when facing the

trade-off between different types of earnings management, high-CSR firms opt for less costly earnings management.

For practical and regulatory implications, our study provides insight to investors and other stakeholders that the impact of CSR on earnings quality can differ depending on the regulatory contexts. Our results show that the magnitude of accrual-based earnings management is significantly curbed by the increased regulatory scrutiny imposed by the passage of SOX. From the regulatory perspective, our study also provides policy implications that SOX as an accounting-related reform is effective in curbing opportunistic financial reporting behaviors of firms practicing CSR. Therefore, for policymakers, it is important to understand firms' incentives behind CSR engagement.

Overall, our study speaks to the relevant literature on the relationship between accounting quality, corporate governance, and relevant legislation. In particular, we show that firms practicing CSR present more transparent financial reporting practices in the post-SOX period. These results inform the ongoing debate about the role of CSR in firms' business conduct and reporting with practical relevance to both regulators and investors.

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## Conflict of interests

The authors declare no conflict of interests.

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